

# STUDIES

Federal Reserve Bank of Dallas

**Banking in the Southwest  
and the Rest of the Nation:  
*Where We Are and Where We Are Going***

Genie D. Short  
*Vice President*

**Brokered Deposits:  
*Determinants and Implications  
for Thrift Institutions***

Robert R. Moore  
*Senior Economist*

1988

1989

1990

1991

# Financial Industry Studies

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# Banking in the Southwest and the Rest of the Nation:

## *Where We Are and Where We Are Going*

Genie D. Short  
Vice President

Financial Industry Studies Department  
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During the past decade, the question of how to reform the U.S. banking industry has been widely debated among industry practitioners, policymakers, politicians, the academic community, and the general public. In an attempt to address declines in bank and thrift profitability, four major congressional bills were introduced in the 1980s—the Monetary Control Act of 1980, the Garn–St Germain Depository Institutions Act of 1982, the Competitive Equality Banking Act of 1987, and the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA). This year, Congress is considering another comprehensive reform package.

The debate currently surrounding banking reform has centered on several key issues, including expansion of geographic and product markets, regulatory restructuring, and deposit insurance reform. Given the significance of the changes being considered in the banking reform bill, the intense interest the legislation has generated is not surprising. As in the early 1980s, the discussion centers on how to deregulate the U.S. financial system while controlling for the moral-hazard problem inherent with mispriced deposit insurance guarantees. Unlike the early 1980s, however, much of the attention today has shifted from examining whether we need to change the current financial safety net system to determining how to proceed with needed changes when the profitability of many financial intermediaries is seriously

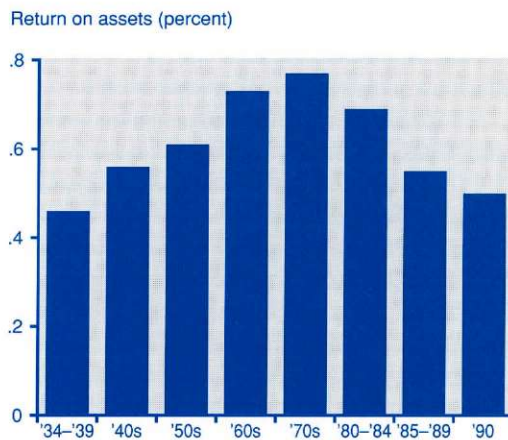
strained by asset quality problems.

In this article, I review the major factors that have contributed to the changing trends in bank profitability and examine some lessons learned from the banking difficulties that emerged in the Eleventh District, which is composed of Texas, northern Louisiana, and southern New Mexico. I then offer a perspective on the impact that the reform legislation may have on the banking industry. Finally, I address the question of why substantive reforms in banking have been difficult to implement despite persistent problems in the industry.

### What Caused the Decline in U.S. Bank Profitability?

Throughout most of the post–World War II period, U.S. banks generally prospered. Separations in geographic and product markets protected banks from competitive pressures, and deposit insurance increased the value of the banking franchise. Since the mid-1970s, however, U.S. bank profitability has been declining. As shown in Chart 1, the return on bank assets declined to slightly less than 0.7 percent during the

**Chart 1**  
Profitability of Insured U.S. Commercial Banks



SOURCES: U.S. Treasury Department, *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks* (Washington, D.C.: Government Printing Office, 1991); Federal Deposit Insurance Corporation, *Quarterly Banking Profile*, various issues.

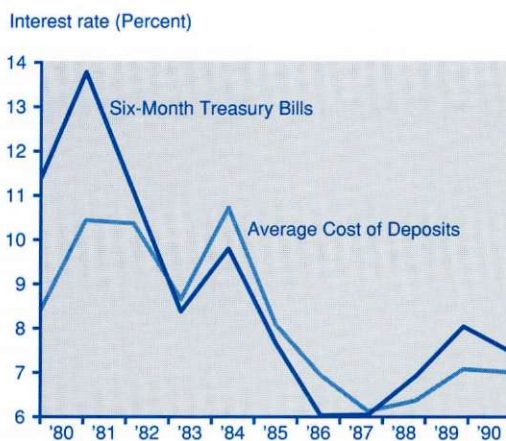
early 1980s and fell further to 0.55 percent later in the decade. Moreover, during 1989 and 1990, U.S. bank profitability as measured by the return on assets was about 0.5 percent, which is just above the return reported between 1934 and 1939, following the Great Depression.

The recent decline in bank profitability is not a new phenomenon. This trend has been evident for a number of years, and debates about the factors that contributed to declining bank profits have persisted for an equally long time. Much of the discussion has centered on the dramatic changes that have occurred in the banking environment since the 1930s as technological innovations and new competitors emerged.<sup>1</sup>

On the funding side, banks lost their competitive advantage in the early 1980s when Regulation Q interest-rate restrictions were phased out by the Monetary Control Act of 1980 and the Garn–St Germain Depository Institutions Act of 1982. Chart 2 shows that the interest-rate advantage that banks had maintained relative to short-term Treasury securities disappeared quickly after passage of the 1982 Garn–St Germain legislation, which accelerated the phase-out of Regulation Q interest-rate restrictions. The primary impetus for these legislative changes came from competitive pressures, particularly from money market mutual funds that offered comparable deposit products at higher yields than banks and thrifts.

Nonbank competitors also made considerable inroads into banking asset markets. The traditional role of banks has been to intermediate between depositors and borrowers by channeling short-term liabilities, including demand deposits, into longer-term loans. Because banks specialize in lending, they historically have been able to reduce the cost of acquiring timely information on the credit quality of individual

**Chart 2**  
The Disappearance of Banks' Funding Advantage in the 1980s



SOURCE: *Economic Report of the President*, 1991.

borrowers, thereby lowering the cost of credit.<sup>2</sup> However, recent technological advances in the processing and transmitting of information have enabled other financial intermediaries to compete more effectively with banks.

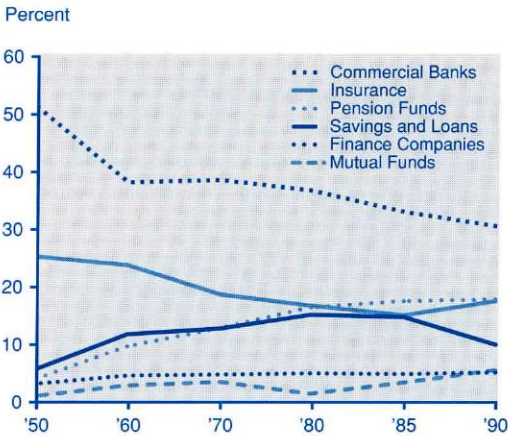
Chart 3 highlights the 20-percent decline in commercial banks' share of U.S. financial assets that has occurred during the past forty years. In 1950, banks controlled about 50 percent of the financial assets in this country. By 1990, the market share of banks had fallen to 30 percent, while pension funds and mutual funds made the most significant gains. In addition, within this smaller U.S. banking market, foreign-owned banks have steadily increased their share, as shown in Chart 4. Data for 1990 show that foreign-owned banks held more than 20 percent of the U.S. domestic banking market and about 25 percent of the market for commercial business loans.

Growth in commercial paper issued by nonfinancial borrowers also has far exceeded growth in bank commercial and industrial loans, as Chart 5 shows. Improved information technologies and the associated increase in the availability of credit information about large borrowers

<sup>1</sup> Kaufman (1991).

<sup>2</sup> Bernanke (1983), among others, discusses this role of banks.

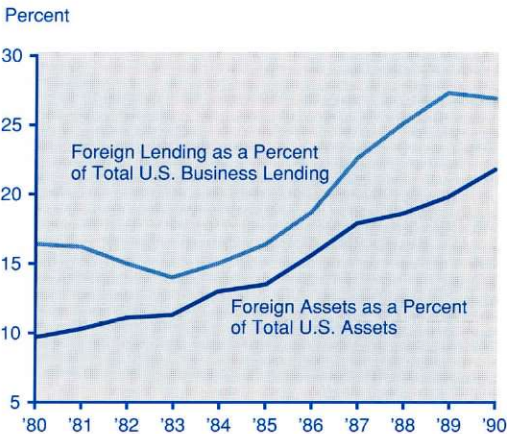
**Chart 3**  
Share of Financial Assets Held  
by Major Intermediaries



SOURCES: Board of Governors of the Federal Reserve System, *Annual Statistical Digest*, various issues.

helped spur the high growth in the commercial paper market relative to bank lending. As business borrowers increasingly turned to alternative sources of financing, banks attempted to reconfigure their lending activities, which resulted in increased real estate lending, as shown in

**Chart 4**  
Foreign Banks' Increasing Share  
of the U.S. Banking Market



SOURCE: *Statistical Abstract of the United States*, 1990.

Chart 6. These real estate loans became the primary source of recent bank losses.

Many analysts argue that banks accepted increased risk through real estate lending to compensate for reduced profit margins in their traditional business loan markets.<sup>3</sup> Chart 7 shows that by mid-1991 U.S. banks had nearly \$115 billion in troubled assets, including nonperforming and renegotiated loans and foreclosed real estate properties. And troubled real estate assets reached \$67 billion, accounting for close to 60 percent of the troubled assets at U.S. banks. This high concentration of problem credits was a key factor in the decline in bank profitability after the mid-1980s. A review of the factors that contributed to the Eleventh District banking difficulties may enable us to better understand and evaluate the banking trends that have emerged elsewhere in the country.

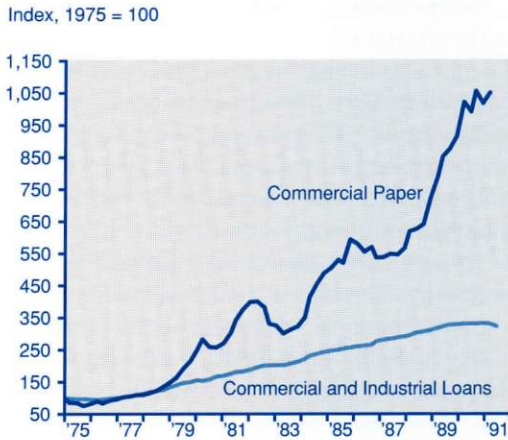
### Eleventh District Banking: Lessons from the Southwest

To understand the financial-sector difficulties that emerged in the Southwest, it is important to examine the factors that contributed to lending decisions made during the strong economic growth from the late 1970s to the early 1980s, those made during the mid-1980s when the Southwest economy experienced two separate energy-related recessions, and those made in the region's most recent slow economic recovery, which began in mid-1987.

The oil-price shock of the mid-1980s pushed the Eleventh District's economy into a steep recession. Nonagricultural employment in the three District states—Texas, Louisiana, and New Mexico—dropped by 390,000 from the fourth quarter of 1985 through the first quarter of 1987. This regional recession followed an earlier downturn that lasted from the second quarter of 1982 through the first quarter of 1983, with a decrease in employment of

<sup>3</sup> See, for example, Litan (1991).

**Chart 5**  
**Commercial Paper Issued**  
**by Nonfinancial Borrowers versus**  
**Bank Commercial and Industrial Loans**



SOURCE: CITIBASE, Citibank Economic Database.

290,000. The asset-quality problems that severely impaired Eleventh District banks during the 1980s initially were concentrated in nonperforming business loans that surfaced in 1982, following the weakening of oil prices. But bank loan growth remained strong in the region through 1984, even though the energy sector had turned down earlier. Chart 8 shows the composition of lending activity at Eleventh District banks from 1980 through 1990. From 1980 through 1984, loans at Eleventh District banks increased by \$45 billion, on an inflation-adjusted basis. This increase represented average annual inflation-adjusted increases of 13 percent, compared with 5 percent for the rest of the nation. Bank loan growth in the Eleventh District slowed to 0.8 percent in 1985, primarily from a reduction in business loan growth. But real estate lending remained strong through 1986, increasing by nearly 10 percent in 1985 and an additional 4 percent in 1986.

<sup>4</sup> See Short and Gunther (1988) regarding the effect of the most troubled financial institutions on the operations of solvent competitors.

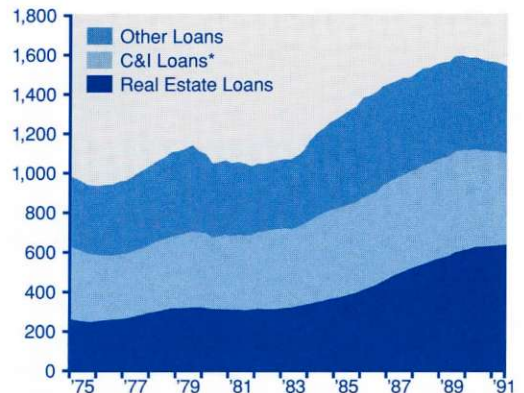
With hindsight, it is apparent that problem real estate loans ultimately proved to be the biggest challenge to the financial institutions in the Southwest, just as they have for financial institutions elsewhere in the country. And the decisions of many managers of Eleventh District financial institutions to maintain a high growth strategy despite the regional recession and the troubled energy-related credits that had already surfaced suggest that the propensity to become overexposed to risk at Eleventh District banks was greater than in past economic cycles. Rather than contributing to a sustained economic recovery in the region, the high growth strategies that the most aggressive institutions pursued ultimately exacerbated the difficulties that developed in the region's financial sector. And these difficulties affected virtually all the banks and thrifts in the Southwest, including the more conservatively managed firms.<sup>4</sup>

### Bank Profitability Improves in the Southwest but Deteriorates Elsewhere

The severe difficulties of the late 1980s continue to affect the performance of financial institutions in the region, but signs

**Chart 6**  
**U.S. Bank Lending**

Billions of dollars, adjusted for inflation



\*Commercial and Industrial Loans.

SOURCE: CITIBASE, Citibank Economic Database.

**Chart 7**  
**Troubled Assets,**  
**U.S. Insured Commercial Banks**

Billions of dollars



SOURCE: Report of Condition and Income.

of recovery have emerged. Since the beginning of 1990, Eleventh District banks have reported six consecutive quarters of positive net income, as shown in Chart 9. Return on assets increased to 0.44 percent in 1990 and strengthened further to approximately 0.7 percent during the first half of 1991.

The turnaround at the region's banks is primarily attributable to improvement of their troubled asset ratios. Chart 10 shows that, by the second quarter of 1991, the ratio of past-due loans and foreclosed real estate to total assets had fallen to 2.4 percent, slightly lower than the year-earlier level. But banking performance elsewhere in the country continues to slide, underscoring the greater volatility in U.S. bank earnings that has emerged across regions.

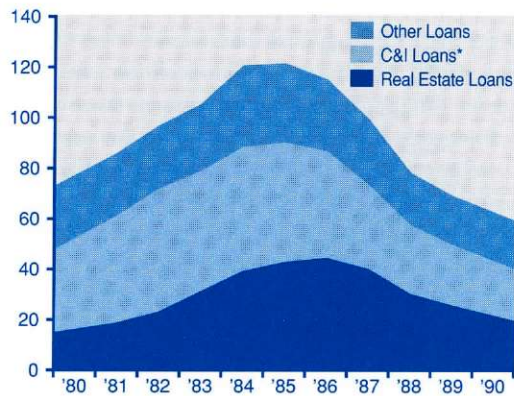
Serious asset quality problems similar in magnitude to those that emerged in the Southwest have now surfaced in other regions of the country, particularly in New England.<sup>5</sup> The troubled asset ratio at banks outside the Eleventh District has trended upward since the beginning of 1990 and was at 3.3 percent in June 1991. This ratio serves as a valuable indicator of a bank's financial strength. When the ratio of troubled assets reaches 5 percent or higher,

a bank is considered to have extremely serious earnings and asset quality problems.

Chart 11 shows the concentration of bank failures at both Eleventh District banks and at banks elsewhere in the country. From 1985 through 1990, 485 banks in the Eleventh District were closed because of failure, and those banks accounted for 46 percent of all U.S. bank failures and 69 percent of failed-bank assets. This year, the concentration of failures in terms of both size and number has shifted from the Southwest to the East Coast. Through September, twenty-nine banks had been closed in the Eleventh District, which compares favorably with the ninety-one closures that had occurred a year earlier. The 1991 bank failures in the Eleventh District accounted for about 30 percent of all U.S. bank failures, but these failed banks were small and accounted for only 3 percent of all 1991 failed-bank assets. In contrast, through September, twenty-

**Chart 8**  
**Composition of Lending**  
**at Eleventh District Banks**

Billions of dollars, adjusted for inflation

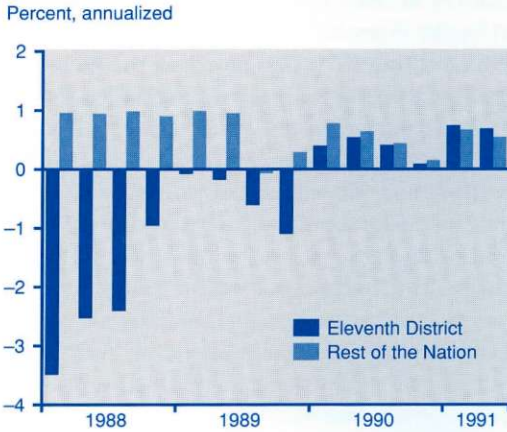


\*Commercial and Industrial Loans.

SOURCES: Report of Condition and Income; CITIBASE, Citibank Economic Database.

<sup>5</sup> For information about regional bank performance, see *FDIC Quarterly Banking Profile*, fourth-quarter 1990 and first-quarter 1991.

**Chart 9**  
Return on Assets\* for the Eleventh District  
versus the Rest of the Nation



\* Ratio of quarterly net income to average assets.  
SOURCE: Report of Condition and Income.

eight banks failed in New England, and these failed banks accounted for nearly 55 percent of all 1991 U.S. failed-bank assets.<sup>6</sup>

### Financial-Sector Weakness and the Credit Crunch

The financial-sector distress that emerged in the Southwest has been associated with a subsequent decline in lending. From the 1985 peak through the end of 1990, the volume of total loans at Eleventh District banks declined by \$59 billion in inflation-adjusted dollars. Some of this decline represents the impact of loan writedowns and the reclassification of troubled real estate loans to "other real estate owned" (meaning foreclosed real estate) on bank balance sheets.

Paralleling the concerns expressed in the Southwest during the 1980s, troubled real estate credits are now cited as an

<sup>6</sup> New England includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

<sup>7</sup> For a discussion of the impact of credit availability on economic activity in Texas, see Gunther and Robinson (1991).

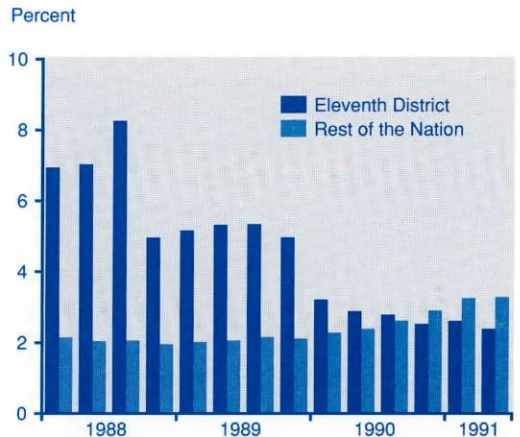
<sup>8</sup> See *American Banker* (1991a) and (1991b).

important source of recent weakness in U.S. bank lending. The heightened attention given to this issue reflects widespread concerns that tight credit conditions are restraining the U.S. economy's ability to recover from the recent recession. Banks are alleged to be unwilling or unable to extend loans to viable borrowers. At the same time, it is also likely that demand-side factors are playing a role, because bankers maintain that they are facing lower loan demand from creditworthy borrowers.

These alternative explanations frame the current debate about whether insufficient bank credit is constraining economic activity, both in this region and elsewhere in the country.<sup>7</sup> Observers widely acknowledge that bank credit practices have been reexamined in response to the massive loan losses that have occurred. But a more difficult question is whether changes in lending practices—either at the initiative of the banks or the bank examiners—are preventing creditworthy borrowers from obtaining loans.

These issues are being addressed at the nation's highest policy levels, and several measures aimed at increasing bank lending have been initiated.<sup>8</sup> Among the most recent

**Chart 10**  
Troubled Asset Ratio\* for the Eleventh District  
versus the Rest of the Nation

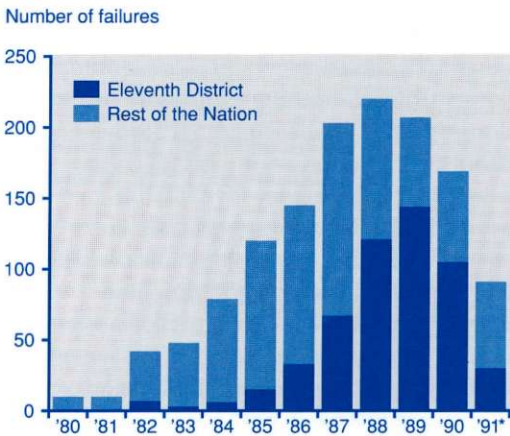


\* Ratio of loans past due ninety days or more, nonaccrual loans, and other real estate owned to end-of-period gross assets.

SOURCE: Report of Condition and Income.



**Chart 11**  
**Bank Failures in the Eleventh District**  
**and the Rest of the Nation**



\* 1991 data include failures through September 30.  
 SOURCE: Federal Deposit Insurance Corporation.

suggestions are a temporary relaxation of capital requirements, new accounting procedures designed to enhance the book value of real estate assets, more flexible procedures for bankers who wish to appeal an examiner's evaluation, and efforts to establish more uniform application of bank credit standards by the different regulatory agencies.<sup>9</sup> In addition, policymakers continue to emphasize the need to move forward with comprehensive banking reform legislation. The recent changes to regulatory practices may help banks manage current asset quality problems, but the Bush administration is also stressing that fundamental reform measures are needed to reestablish a well-functioning banking industry.<sup>10</sup>

### Treasury's Reform Proposal and the 1991 Banking Legislation

As the 1980s came to a close, a consensus had developed on the need to change both the financial structure and the incentive system under which U.S. depositories currently operate. Efforts to address the troubles facing the thrift industry, particularly from the inadequate funding available to close insolvent institutions, intensified after the passage of the FIRREA legislation

in 1989. But part of the FIRREA legislation also directed the U.S. Treasury Department to conduct a comprehensive study of banking reform, including an assessment of the U.S. system of deposit insurance and other issues of relevance to the competitiveness and structure of the U.S. banking system.

The Treasury's report, *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks*, was released in February. The report provided the framework for the 1991 banking reform legislation.<sup>11</sup> In completing its study, the Treasury was requested to consult the Federal Reserve System, the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation (FDIC), and several other government agencies. Congress also requested that the Treasury solicit input from individuals in the private sector.<sup>12</sup>

The reform proposals recommended in the Treasury study focus on four interrelated problems that have been identified as significant factors in the financial-sector distress that emerged in the United States during the 1980s. These problem areas are the decline in the competitive position and financial strength of U.S. banks in both domestic and international markets, the fragmented regulatory structure, the overextension of the federal safety net for deposits,<sup>13</sup> and the undercapitalized deposit insurance fund.

The changes recommended by the Treasury to solve these problems concentrated on three key issues: expanding the geographic and product markets in which

<sup>9</sup> U.S. Treasury Department (1991a). See also *American Banker* (1991b).

<sup>10</sup> See *American Banker* (1991b).

<sup>11</sup> U.S. Treasury Department (1991b).

<sup>12</sup> See FIRREA, section 1001.

<sup>13</sup> The *federal safety net* includes the current system of federal deposit guarantees for insured depository institutions and the discount window function of the Federal Reserve System.

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U.S. banks can compete, streamlining the bank regulatory framework to avoid overlapping responsibilities across bank regulatory agencies, and reducing the scope of deposit insurance coverage to minimize taxpayer exposure to losses and to reintroduce greater market discipline against excessive risk-taking. The Treasury made no specific recommendations for recapitalizing the bank insurance fund but supported efforts by the FDIC to work closely with the banking industry in developing a recapitalization plan for the fund.

The Treasury's report provided the framework for the legislation that was introduced in Congress this year. The legislative debates have centered on four key issues: product powers, geographic expansion, deposit insurance reform and recapitalization, and regulatory restructuring. Based on the marked-up versions of the bill that have progressed through the House and Senate Banking Committees, the legislation was expected to include greater emphasis on capital adequacy, minimal changes to the scope of deposit insurance coverage, restrictions on the use of brokered certificates of deposit,<sup>14</sup> some new asset powers, and continued progress toward interstate branching.<sup>15</sup>

The decline in U.S. bank profitability was a key motivating factor behind the

Bush administration's reform proposal. Concern shifted from the fear that, if left unrestricted, banks might gain excessive economic power to the idea that binding legal restrictions on product powers and geographic expansion have prevented U.S. banks from competing effectively in both domestic and global financial markets. Product restrictions, for example, have prevented banks from diversifying across product lines and from reducing costs through the efficient production of a full line of financial services. Branching restrictions have hindered banks' ability to benefit from geographic diversification, thereby reducing their efficiency and increasing their susceptibility to regional economic downturns.<sup>16</sup>

Analysts generally acknowledge that greater diversification likely would have helped reduce the concentration of bank failures in the Southwest and, more recently, in New England. The reductions in bank product and geographic restrictions that are expected from the pending legislation will help banks regain at least part of their lost competitiveness. But concerns persist that relaxation of product and geographic restrictions, while beneficial, will not be sufficient to establish a stronger, more efficient banking industry. Lessons from the thrift industry suggest that efforts to deregulate financial markets can be counterproductive if the remaining incentive structure does not complement the reforms. The 1980s demonstrated the unintended consequences of partial reforms that gave depository institutions expanded powers without reforming the system of federal deposit guarantees.

The proposed 1991 legislation attempts to deal with the moral-hazard problem of deposit insurance by placing greater emphasis on capital guidelines. Only well-capitalized banks will be granted increased powers and expanded opportunities to diversify geographically. The pending legislation also calls for prompt corrective action when dealing with problem banks. Providing authorization to regulators to

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<sup>14</sup> Moore, in this issue of *Financial Industry Studies*, examines the use of brokered deposits at thrift institutions before and after the passage of the FIRREA legislation.

<sup>15</sup> Recent amendments to the House version of the banking bill introduced by Representatives Dingell and Gonzalez placed restrictions on insurance and underwriting powers that are currently available to banks through bank holding company arrangements. The House rejected this version of the banking bill. As of this writing, it is now projected that only a narrow bill—including provisions to recapitalize the Bank Insurance Fund and greater emphasis on bank capital and regulatory oversight—will be enacted by Congress this year.

<sup>16</sup> Samolyk (1991) examines the link between regional downturns and regional banking conditions.

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intervene earlier in the resolution process should reduce the cost of bank failures to the insurance fund and to the taxpayer. Questions remain, however, as to whether or not these changes, if enacted, will be sufficient to address the problem of mispriced deposit guarantees.<sup>17</sup>

### **Banking Reforms of the 1990s Compared with Those of the 1930s**

Much of the current financial structure in the United States originated in the aftermath of the Great Depression. The Banking Act of 1933, also known as the Glass–Steagall Act, defined commercial banks as separate and distinct from other types of financial firms and separate from other commercial firms. The legislation also authorized federal deposit insurance to restore public confidence in the U.S. banking system.

Deposit insurance was introduced in the United States ostensibly to accomplish two objectives. The first, most publicized objective was the protection of small depositors. The second goal was a monetary policy objective—the protection of the circulating medium of exchange. However, a third, much less publicized role for federal deposit insurance was the protection of small, independent banks.<sup>18</sup> The problem of deposit confidence that erupted during the banking crisis in the early 1930s was not unique to that period, and the solution of providing federal deposit guarantees was not a novel idea at the time. Branching restrictions had perpetuated a banking system that consisted of a large number of banks, many of them quite small. This situation gave rise to a unique banking structure with a unique set of problems—namely, that branching restrictions made U.S. banks unusually prone to deposit runs and suspensions.

The introduction of deposit insurance to address the problem of depositor confidence was only one component of the 1930s financial legislation. A number of other changes, most of which imposed restrictions on bank activity, were also introduced. Among other things, banks were prohibited from underwriting corpo-

rate securities, paying interest on demand deposits, and paying interest on savings and time deposits in excess of allowed limits. Asset and liability constraints, restrictive chartering policies, and limits to geographic expansion were intended to ensure safe banking by reducing competition. Incentives provided by deposit insurance to undertake excessive risk were thus partially offset.

The banking legislation of the 1930s reflected the prevailing view that excessive competition fostered imprudent risk-taking on the part of banks. The emphasis of the legislation was to limit the concentration of power at major financial institutions by carving out different markets for different types of financial intermediaries. By offering federal deposit guarantees to small depositors, the legislation also attempted to reduce the potential for destabilizing deposit runs on commercial banks. And the legislation established or maintained different responsibilities for the major bank regulatory agencies.

The thrust of the reform measures being discussed today is quite different. Most now tend to agree that the financial structure introduced in the aftermath of the Great Depression is no longer well-suited to promoting the effectiveness and competitiveness of U.S. banks in the marketplace. The emphasis of the Treasury's proposal was to remove barriers to competition in the private sector, reduce the scope of federal deposit guarantees, and streamline the regulatory structure. These divergent interests have offset each other in the legislative process, making the adoption of a comprehensive reform bill more difficult today than it was in the 1930s. Moreover, considerable disagreement still exists among policymakers regarding the extent to which we should roll back federal deposit guarantees to allow deposit-market discipline to have a greater impact on risk-taking at insured financial institutions.

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<sup>17</sup> Corrigan (1991) and Hoskins (1989).

<sup>18</sup> Golembe (1960).

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## Deposit Insurance Reform: Has the Time Come?

The current system of federal deposit insurance represents an attempt to protect depository institutions and the public from the potentially damaging effects of banking panics, in which depositors indiscriminately withdraw funds from the banking system by converting bank deposits into currency. Since its beginning in 1934, federal deposit insurance coverage has been expanded repeatedly, so that now it is not uncommon for all deposits, regardless of size, to be protected from loss when a bank fails.

By guaranteeing the full value of deposits, federal deposit insurance greatly reduces the potential for banking panics, but the extension of federal deposit guarantees has created its own problems. Without deposit guarantees, the threat of withdrawal by uninsured depositors concerned about the safety of their deposits provides a disciplinary role in guiding banks to maintain sufficient capital and to limit risk-taking. While the current system of deposit insurance reduces the likelihood of banking panics, it also effectively removes the incentive for depositors to monitor banks. This lack of deposit-market discipline encourages banks to reduce their capital-to-asset ratios and to pursue high-risk investments.<sup>19</sup> Because increased competition has reduced the value of bank charters in recent years, banks have had less to lose in the event of failure and, consequently, have become more prone to respond to the risk-taking incentives provided by deposit insurance.<sup>20</sup>

The system of regulatory constraints designed to substitute for the monitoring and disciplining role of depositors has not been fully effective, as evidenced by the unprecedented financial losses from recent bank and thrift failures. Since 1980, more than 1,300 banks have failed throughout the United States, with the bulk of these difficulties con-

centrated between 1985 and the present. Since 1985, the annual rate of U.S. bank failures has averaged nearly 2 percent. As shown in Chart 12, this rate is comparable to the bank failure rate in the 1920s. And with the exception of the Great Depression (when the rate of bank failures reached 20 percent), the concentration of banking problems during the past several years exceeds that which occurred during any other banking crisis in this country. In fact, the rate of bank failures during the banking panic of 1907 was 0.42 percent, less than half the current rate. The banking crisis of 1907 has important historical significance, because it is cited as a strong motivating force behind the establishment of the Federal Reserve System.

To an increasing number of depository institutions, the price of deposit insurance has become prohibitively high. Losses at the nation's insolvent thrifts crippled the Federal Savings and Loan Insurance Corporation fund, and banks now face the growing expense of recapitalizing the Bank Insurance Fund when low profitability already has strained the industry's competitiveness in the financial-services market. Reform measures currently under consideration link regulatory discipline to bank capital levels, culminating in bank closure before insolvency to minimize future losses to the Bank Insurance Fund. But concerns persist. Will such changes be sufficient, given the difficulty of measuring the present value of regulatory capital?

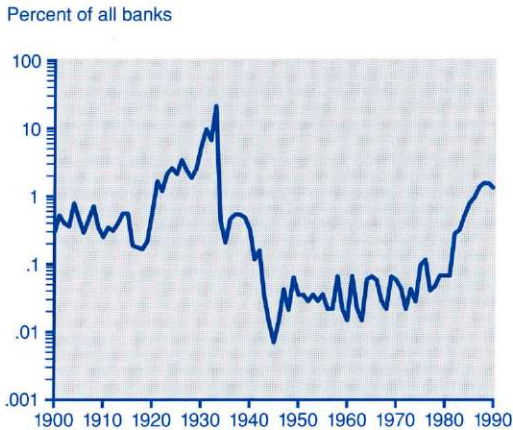
Evidence suggests that the appropriate policy response to current banking difficulties would be to relax the geographic and product restrictions under which banks currently operate. Disagreement persists, however, over the degree to which reintroducing deposit market discipline will result in severe banking panics. These concerns are centered on the potentially severe economic consequences that could result if less than 100-percent deposit insurance coverage is provided when settling failed banks, particularly those deemed "too big to fail." But the too-big-to-fail doctrine itself is now being questioned because of concerns that it adds to the cost of resolving large failed banks. Analysts also

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<sup>19</sup> See Short (1987) and Short and O'Driscoll (1983).

<sup>20</sup> Keeley (1990) discusses the decline in the value of bank charters and its effect on deposit insurance abuse.

**Chart 12**  
U.S. Commercial Bank Failure Rate\*



\* Vertical axis scale is logarithmic.

SOURCES: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States Colonial Times to 1970*; Federal Deposit Insurance Corporation, *Annual Report*, various issues; *Report of Condition and Income*.

have serious concerns about issues of competitive equity vis-à-vis smaller banks.<sup>21</sup>

Recent evidence about the impact of banking failures suggests that the potential adverse effects of banking panics on the health of solvent banks and macroeconomic activity have been exaggerated. Throughout most of U.S. banking history, losses on bank deposits have been very small and similar in magnitude to losses from failures of nonbank businesses. Moreover, evidence suggests that a spillover effect from the failure of a large bank to other banks would not have a severe adverse effect on general economic activity. Finally, even if a potentially damaging panic developed, the central bank could offset and reverse a generalized outflow of deposits from the banking system by extending credit to solvent banks through the discount window or by injecting reserves through open market operations.<sup>22</sup>

### Concluding Remarks

The difficulties that financial institutions in the Eleventh District experienced during the 1980s involved a number of complicated and interrelated factors—some economic,

some managerial, and others regulatory in nature.<sup>23</sup> The depth and duration of the economic downturn in Texas had a dramatic impact on the condition of the financial institutions in the region. And the impact of changing economic conditions in the Southwest was certainly an important determinant of the lending decisions made by the region's financial institutions. But the managerial decisions that were made at the banks and thrifts in the region also contributed to the financial difficulties that emerged. And these managerial decisions were influenced by the major legislative and regulatory changes introduced in the 1980s to deregulate the financial industry.<sup>24</sup>

In evaluating the broad-based financial-sector difficulties that emerged in the Southwest in the 1980s, a number of questions have surfaced about the decision to deregulate depository institutions without adequately addressing the moral-hazard problem inherent in the U.S. financial safety net. The events that emerged in the Southwest and that have now surfaced elsewhere in the country suggest that the legislative changes in the early 1980s that deregulated depository institutions while expanding the scope of federal deposit insurance coverage contributed to the portfolio choices and the subsequent financial-sector difficulties that have affected both borrowers and lenders in this country.<sup>25</sup>

<sup>21</sup> Proposed legislation would place some restrictions on the too-big-to-fail closure policy, although it is still uncertain what the final version of the legislation will include. For additional discussion of too-big-to-fail policies, see Short (1985).

<sup>22</sup> For more on these issues, see Kaufman (1989), Benston et al. (1986), Goodfriend and King (1988), Wall and Peterson (1990), and Gunther and Robinson (1991).

<sup>23</sup> For more about these factors, see Robinson (1990).

<sup>24</sup> See Robinson (1990).

<sup>25</sup> For an empirical investigation of the impact of moral hazard on bank risk-taking during the 1980s, see Gunther and Robinson (1990).

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Efforts to reintroduce a greater role for deposit-market discipline in controlling bank risk-taking would, over time, improve the overall performance of the banking industry. Such changes, however, are unlikely to be introduced in the current legislative environment. Our concern is that, if market forces continue to be discouraged from monitoring and shaping bank risk-taking because of implicit 100-percent deposit guarantees, expanded

powers for banks and a capital-based system of regulatory oversight will not be sufficient to ensure a sound banking system. In addition to measures that emphasize capital standards and regulatory oversight, successful banking reforms need to increase reliance on the incentives and self-correcting processes provided by the market to produce a safer, stronger, and more efficient banking industry.

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# Brokered Deposits:

## *Determinants and Implications for Thrift Institutions*

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Some analysts view the use of brokered deposits as a method to exploit the shortcomings of the deposit insurance system. Although brokered deposits can be used to exploit those shortcomings, they can also help improve the economy's ability to allocate capital. The adverse effects of brokered deposits emerge as a result of their 100 percent coverage by deposit insurance. In this article, I examine the determinants and implications of brokered deposits. I find that a low capital-to-asset ratio, high asset risk, and large thrift size are associated with a high probability that a thrift uses brokered deposits. In addition, evidence suggests that thrifts are less likely to use brokered deposits once they have been placed in conservatorship. These findings support concerns about brokered deposits being used to exploit the shortcomings of the deposit insurance system.

In the remainder of the article, I discuss recent conditions in the thrift industry, provide a brief overview of brokered deposits, examine the treatment of brokered deposits under the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA), present summary statistics regarding brokered deposits, develop and test a simple model of brokered deposit use, and discuss empirical results and policy implications.

### Thrift Industry Conditions

The troubled thrift industry has received widespread attention for several years. The combination of short-term deposit liabilities and long-term mortgage assets led to large losses in the thrift industry as interest rates

rose in the early 1980s. While declining interest rates later reduced these losses, this effect was offset by losses on problem loans beginning in 1986, as Cacy (1989) reports. By the end of 1988, 320 privately held thrifts, or 10.8 percent of all federally insured thrifts, were both unprofitable and insolvent, as Table 1 shows. These thrifts had an average return on assets of -11.3 percent and an average capital-to-asset ratio of -21.4 percent.<sup>1</sup>

Because of the failure and subsequent resolution of many insolvent thrifts since the enactment of FIRREA in August 1989, however, these figures improved somewhat by the first quarter of 1991. Table 2 shows that seventy privately held thrifts, or 3.1 percent of all federally insured thrifts, were both unprofitable and insolvent, and these thrifts had an average return on assets of -4.1 percent and an average net-worth-to-asset ratio of -6.8 percent. At the same time, 180 thrifts, with an average return on assets of -13.5 percent and an average net-worth-to-asset ratio of -30 percent, remained in the Resolution Trust Corporation's (RTC) conservatorship program.<sup>2</sup>

According to aggregate thrift data released by the Office of Thrift Supervision (OTS) for the second quarter of 1991, the thrift industry's troubles are far from over. While 85 percent of the nation's privately held thrifts were profitable and earned net income of \$1.42 billion, the industry's overall second-quarter earnings were lower than

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<sup>1</sup> The economically relevant value of net worth is not identical to the accounting value of net worth. Regulators have allowed thrifts to carry large amounts of goodwill on their balance sheets, and throughout this study *net worth* refers to net worth excluding goodwill. Also, the accounting value of net worth is flawed when assets are not *marked to market*; no attempt was made to adjust asset values to market value in this study.

<sup>2</sup> The first quarter of 1991 was the most recent date for which financial data on individual thrifts were available for this study. Progress has been made since then in resolving thrifts in conservatorship. As of September 30, 1991, there were 104 thrifts in conservatorship nationwide, eight of which were in Texas.

**Table 1**

Thrift Profitability and Net Worth at Federally Insured Thrifts, 1988:4

	<b>Unprofitable</b>	<b>Profitable</b>
<b>Insolvent</b>	320 Thrifts (10.8 percent of total) Mean ROA: -11.3 percent Mean C/A: -21.4 percent Mean BD/L: 5.9 percent	54 Thrifts (1.8 percent of total) Mean ROA: 1.5 percent Mean C/A: -4.6 percent Mean BD/L: 1.11 percent
<b>Solvent</b>	580 Thrifts (19.5 percent of total) Mean ROA: -1.4 percent Mean C/A: 5.0 percent Mean BD/L: 1.9 percent	2,016 Thrifts (67.9 percent of total) Mean ROA: .8 percent Mean C/A: 6.9 percent Mean BD/L: 1.0 percent

NOTE: ROA = annualized fourth-quarter return on assets  
C/A = ratio of equity capital less goodwill to assets  
BD/L = ratio of brokered deposits to liabilities

SOURCE: Author's calculations using thrift call report data.

those in the first quarter. The OTS attributed the drop in earnings to the unprofitable thrifts, which as a group lost \$1.03 billion.<sup>3</sup> The expense of resolving failed thrifts has reached \$160 billion, and an additional \$80 billion of funding is proposed in new legislation.<sup>4</sup> One factor that may have contributed to the expense of resolving thrift failures was brokered deposits.

### Overview of Brokered Deposits

Brokered deposits are deposits that are channeled to thrift institutions through investment bankers. A thrift may obtain deposits directly or through a broker. For example, if a thrift needs \$1 million in new deposits, it may obtain these deposits through a broker, who for a fee would divide the \$1 million among ten or more clients so that each depositor is fully insured.

There are several potential benefits of brokered deposits. One benefit is the improved flow of credit across regional

boundaries. A thrift may be able to obtain funds nationwide at a lower cost by using brokered deposits than it could by obtaining deposits directly. In addition, the brokered deposit market could improve competition by exposing geographically isolated thrifts to competition for deposits from thrifts nationwide.

Although potential benefits of brokered deposits exist, these deposits may exacerbate the problems inherent in the current system of deposit insurance. The insurance component of brokered deposits raises concerns because it allows thrifts to circumvent the \$100,000 per account ceiling on deposit insurance to obtain 100 percent explicit coverage of deposits. Under the current structure of deposit insurance, thrifts with low capitalization or risky portfolios are able to attract deposits without compensating insured depositors for the risk in the thrift's portfolio. This occurs because insured depositors are relatively unconcerned about the soundness of the thrift in which their deposit is located, given that they would be protected from losses if the thrift were to fail. The deposits in these high-risk thrifts represent

<sup>3</sup> Cope (1991).

<sup>4</sup> Thomas (1991).

**Table 2**

Thrift Profitability and Net Worth at Federally Insured Thrifts, 1991:1

	Unprofitable	Profitable
<b>Insolvent</b>	70 Thrifts (3.1 percent of total) Mean ROA: -4.1 percent Mean C/A: -6.8 percent Mean BD/L: 3.4 percent	36 Thrifts (1.6 percent of total) Mean ROA: .5 percent Mean C/A: -2.0 percent Mean BD/L: .89 percent
<b>Solvent</b>	284 Thrifts (12.4 percent of total) Mean ROA: -2.1 percent Mean C/A: 5.0 percent Mean BD/L: 1.5 percent	1,893 Thrifts (82.9 percent of total) Mean ROA: .7 percent Mean C/A: 7.1 percent Mean BD/L: .5 percent

NOTE: ROA = annualized first-quarter return on assets

C/A = ratio of equity capital less goodwill to assets

BD/L = ratio of brokered deposits to liabilities

Thrifts in conservatorship (180 thrifts) are excluded from the sample.

SOURCE: Author's calculations using thrift call report data.

potential losses for the thrift insurance fund. Brokered deposits expose the insurance fund to the risk of greater losses, because a high-risk thrift generally can attract more funds using brokered deposits than by using only locally generated deposits.

The use of brokered deposits by unhealthy thrifts may also have an adverse effect on healthy thrifts. Brokered deposits make it easier for unhealthy thrifts to siphon deposits away from healthy thrifts by offering higher interest rates on deposits that are fully insured.<sup>5</sup> This, in turn, weakens thrifts that would otherwise be profitable, thereby further increasing the insurance fund's exposure to losses.

### Brokered Deposits and FIRREA

In light of the adverse effects that may arise when weak institutions use brokered deposits, FIRREA contains provisions that restrict the use of brokered deposits by troubled institutions. In particular, paragraph 2224, section 224 states, "A troubled institution may not accept funds obtained, directly or indirectly, by or through any deposit broker for deposit into 1 or more

deposit accounts." This restriction may be waived on a case by case basis, however. Furthermore, thrifts in conservatorship are granted additional exemptions from the restriction on brokered deposits.

### Summary Statistics on Brokered Deposits

Evidence presented below shows that brokered deposits have been an important source of funds for thrifts.<sup>6</sup> As of year-end 1988, thrifts outside of Texas had an average of \$23.3 million in outstanding brokered deposits, and the average ratio of brokered deposits to liabilities was 1.4 percent; the ratio ranged from a low of zero to a high of 88.6 percent. In Texas, the average thrift had \$44.8 million in outstanding brokered deposits, and the average

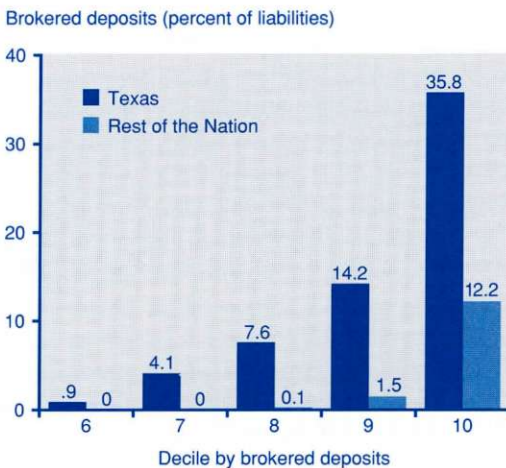
<sup>5</sup> Short and Gunther (1988) and Short and Robinson (1991) discuss interest rate premiums at unhealthy thrift institutions and the resulting adverse effects on healthy institutions.

<sup>6</sup> All of the data for this article were obtained from thrift call reports from the fourth quarter of 1988 and the first quarter of 1991. The sample was limited to thrifts with federally insured deposits.

ratio of brokered deposits to liabilities was 6.2 percent; the ratio ranged from a low of zero to a high of 54 percent. Also, 21.8 percent of thrifts outside of Texas used brokered deposits, while 48.5 percent of Texas thrifts used them. Chart 1 shows the brokered-deposit-to-liability ratio by decile for thrifts both within and outside Texas. Thrifts in the highest decile had an average brokered-deposit-to-liability ratio of 12.2 percent outside Texas and 35.8 percent within Texas. Nationwide, thrifts that were both unprofitable and insolvent had an average brokered-deposit-to-liability ratio of 5.9 percent, as Table 1 shows.

As of first quarter 1991, thrifts outside of Texas had an average of \$12.1 million in outstanding brokered deposits, and the average ratio of brokered deposits to liabilities was 0.9 percent; the ratio ranged from a low of zero to a high of 81.2 percent. In Texas, the average thrift had \$23.3 million in outstanding brokered deposits, and the average ratio of brokered deposits to liabilities was 4.6 percent; the ratio ranged from a low of zero to a high of 75.3 percent.

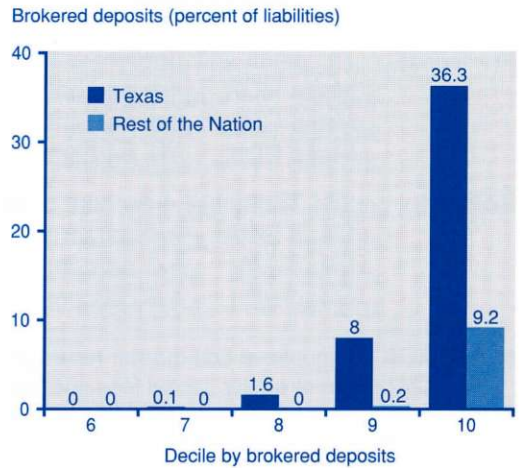
**Chart 1**  
**Brokered Deposit Use at**  
**Thrift Institutions, 1988:4**



NOTE: Brokered deposits were 0 percent of liabilities for all thrifts in deciles 1–5 and for non-Texas thrifts in deciles 1–7.

SOURCE: Author's calculations using thrift call report data.

**Chart 2**  
**Brokered Deposit Use at**  
**Thrift Institutions, 1991:1**



NOTE: Brokered deposits were 0 percent of liabilities for all thrifts in deciles 1–6 and for non-Texas thrifts in deciles 1–8.

SOURCE: Author's calculations using thrift call report data.

Also, 16.3 percent of thrifts outside of Texas used brokered deposits, while within Texas 36.4 percent of thrifts used them. Chart 2 shows the brokered-deposit-to-liability ratio by decile for thrifts both within and outside Texas. Thrifts in the highest decile had an average brokered-deposit-to-liability ratio of 9.2 percent outside Texas and 36.3 percent within Texas. Nationwide, privately held thrifts that were both unprofitable and insolvent had an average brokered-deposit-to-liability ratio of 3.4 percent, as Table 2 shows.

This preliminary look at the data reveals that brokered deposits were used more intensively among Texas thrifts than among thrifts in the rest of the United States, both in absolute dollar value and as a percentage of liabilities. Furthermore, the data reveal that the use of brokered deposits at the average thrift declined between 1988 and 1991, both in absolute dollar value and as a percentage of liabilities. Within the highest decile of thrifts, however, brokered deposits increased as a fraction of liabilities within Texas and declined modestly out-

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side of Texas. Hence, in the post-FIRREA environment, brokered deposit use has declined on average, but brokered deposits continue to be used intensively by a small proportion of thrifts.

### A Simple Model of Brokered Deposit Use

A simple model of brokered deposit use can be built on the following principle: Brokered deposits become more attractive relative to alternative sources of funds when the cost of obtaining funds through uninsured deposits rises relative to the cost of obtaining funds through insured deposits. As insured deposits become more attractive relative to uninsured deposits, a thrift will be more likely to seek insured deposits aggressively, using the brokered deposit market. Using this principle, the net-worth-to-asset ratio and measures of the risk in the thrift's portfolio will help determine the probability that a thrift will use brokered deposits. Also, I will examine the influence of the ratio of dividends to assets, net income after taxes, conservatorship status, and thrift size on the probability that a thrift will use brokered deposits.

The probability of using brokered deposits should be negatively related to the net-worth-to-asset ratio. When the net-worth-to-asset ratio rises, the riskiness of uninsured deposits falls, because there is a larger cushion of capital protecting uninsured depositors from declines in asset values. The reduction in the riskiness of uninsured deposits will reduce the competitive interest rate that the thrift must offer to attract uninsured deposits. This reduces the attractiveness of brokered deposits relative to uninsured deposits, therefore causing a decrease in the probability of using brokered deposits. In other words, the stronger the financial institution, the lower the need for brokered deposits.

The risk in a thrift's portfolio should have a positive influence on the probability of using brokered deposits.<sup>7</sup> An increase in the risk of the thrift's portfolio makes uninsured deposits riskier as well, which increases the competitive interest rate that

the thrift must offer on uninsured deposits. This increases the attractiveness of brokered deposits relative to uninsured deposits, therefore causing an increase in the probability of using brokered deposits. In this study, junk bonds, land loans, real estate held for investment, repossessed assets, and past-due loans are considered risky, while government securities and one-to-four family mortgages are considered safe. The risky assets can be divided into two groups: junk bonds, land loans, and real estate held for investment are considered *ex ante* risk measures, because these areas represent exposure to risks of loss in the future; repossessed assets and past-due loans represent *ex post* risk measures, because they indicate that risky loans were extended in the past. If patterns of risk-taking persist, then *ex post* measures of risk can be indicators of exposure to future losses. To examine the effect of risk in the thrift's portfolio on the probability of brokered deposit use, I divide all the aforementioned risk measures by total assets to control for the size of the thrift.

The theoretical effect of dividends paid by a thrift on the probability of using brokered deposits is ambiguous; paying dividends reduces the amount of internal funds available, leading to an increase in the probability of brokered deposit use, but paying dividends indicates financial strength, implying a decrease in the probability of brokered deposit use. Although the theoretical effect of dividends is ambiguous, the empirical effect has interesting policy implications; if an increase in dividends is accompanied by an increase in the probability of brokered deposit use, then thrifts may be replacing inside funds with outside funds, thereby increasing the probability of failure and the expected losses of the thrift

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<sup>7</sup> Risk, however, is difficult to measure, because the amount of risk an asset contributes to the overall risk in the portfolio depends on the covariance of the asset's return with the other assets' returns.

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insurance fund. To examine the effect of dividends on the probability of brokered deposit use, I divide dividends by total assets to control for the size of the thrift.

I include the thrift's net income after taxes as a determinant of brokered deposit use. A firm operating with a net loss indicates riskiness; if the losses persist, then the thrift will eventually become insolvent, leading to possible losses for uninsured depositors. Also, firms with negative net income will not have internally generated funds available for their operations, and hence they will need a larger quantity of outside funds, some of which may come from brokered deposits.<sup>8</sup> To control for the effect of thrift size when examining the effect of net income after taxes on the use of brokered deposits, I divide net income after taxes by total assets.

Placing a thrift in conservatorship has an ambiguous theoretical effect on the probability of brokered deposit use. If reducing reliance on brokered deposits were a goal of the RTC, then the longer a thrift is in conservatorship, the lower its probability of brokered deposit use should become.<sup>9</sup> If, however, funding constraints were limiting the RTC's ability to resolve thrifts in conservatorship, then the probability of

brokered deposit use may increase as time in conservatorship increases.<sup>10</sup>

The size of the thrift should have a positive effect on the probability of brokered deposit use. Thrifts that are large relative to their local deposit base will be more likely to need to obtain deposits from outside their local market, leading to an increase in the use of brokered deposits by large thrifts. Additionally, size may be correlated with aspects of risk not captured in the other risk measures.

### Empirical Evidence Regarding Brokered Deposit Use

In this section, I assess the empirical validity of the simple model of brokered deposit use.

**Sorting approach.** One way of examining the data to see whether a thrift characteristic has an influence on brokered deposit use is to use a *sorting approach*. For example, to see whether the net-worth-to-asset ratio has an effect on brokered deposit use, the sample of thrifts can be sorted into four groups by their net-worth-to-asset ratio; the average use of brokered deposits can then be examined within each of the four groups. This sorting approach has the desirable feature of being simple, but it does not control for other factors.<sup>11</sup>

The results obtained using the sorting approach to examine the effect of the ratio of net worth to assets on the brokered-deposits-to-liabilities ratio are presented in Chart 3. In both 1988 and 1991, thrifts in the lowest quartile of net worth to assets had the highest ratio of brokered deposits to liabilities, suggesting that net worth has a negative effect on brokered deposit use. This result is consistent with the predictions of the simple model.

Chart 4 presents evidence regarding the effect of the size of the thrift (as measured by total assets) on brokered deposit use obtained using the sorting approach. The results show that thrifts in the top quartile by size have the highest ratio of brokered deposits to liabilities in both 1988 and 1991, suggesting that there may be a

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<sup>8</sup> Alternatively, unprofitable thrifts might obtain funds needed for operation by selling assets. Because of information problems, the thrift would be likely to sell its best assets, which provides an additional link between net income after taxes and the riskiness of a thrift.

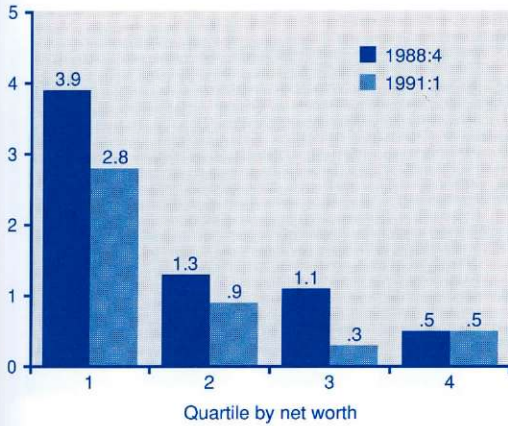
<sup>9</sup> Cole (1990) reports that the RTC used much of its initial allocation of funds to replace brokered deposits at thrifts in conservatorship.

<sup>10</sup> Kane (1990) points out that the limited resources of the RTC under FIRREA make it impossible to eliminate all the high-cost brokered deposits in thrifts in conservatorship.

<sup>11</sup> For example, if brokered deposit use is associated with risky assets, but thrifts with risky assets tend to have low capital, then brokered deposit use could be mistakenly attributed to low capital.

**Chart 3**  
**Brokered Deposit Use and Net Worth**

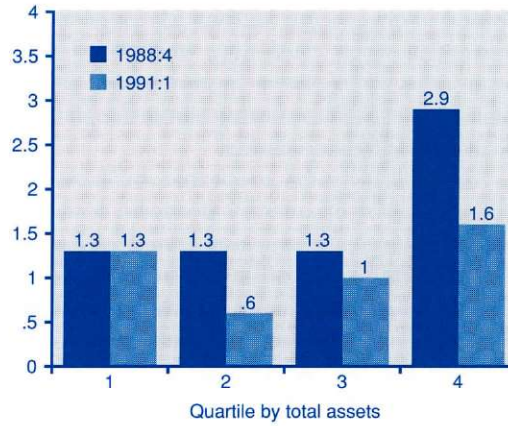
Brokered deposits (percent of liabilities)



SOURCE: Author's calculations using thrift call report data.

**Chart 4**  
**Brokered Deposit Use and Thrift Size**

Brokered deposits (percent of liabilities)



SOURCE: Author's calculations using thrift call report data.

positive effect of thrift size on brokered deposit use. This finding is also consistent with the predictions of the simple model.

Evidence regarding the effect of time spent in conservatorship on brokered deposit use obtained using the sorting approach is presented in Charts 5 and 6. When thrifts in conservatorship are sorted by the length of time spent in conservatorship, the ratio of brokered deposits to liabilities increases monotonically when moving from the lowest quartile to the highest, as Chart 5 shows, and the percentage of thrifts using brokered deposits increases monotonically when moving from the lowest quartile to the highest, as Chart 6 shows. These results suggest a positive relationship between the amount of time spent in conservatorship and reliance on brokered deposits. Furthermore, the average ratio of brokered deposits to liabilities was 6.3 percent for thrifts in conservatorship, compared with 0.7 percent for privately held thrifts.

**Probit model.** A probit model is used to measure the partial effect of each of the explanatory variables on brokered deposits, holding all the other variables constant. The probit model measures the effect of each of the explanatory variables on the proba-

bility that a thrift uses brokered deposits.<sup>12</sup>

Tables 3 and 4 present the numerical results, and the box titled "Determinants of Brokered Deposits" presents the qualitative results. The qualitative effect of net worth on the probability of brokered deposit use is the same in both samples. In each sample, an increase in net worth is associated with a reduction in the probability of brokered deposit use, as predicted by the theory discussed above. The effect of net worth on the probability of brokered deposit use is statistically significant at the 1-percent level in both samples.<sup>13</sup> The probit results are thus consistent with the sorting approach results presented in Chart 3. As a thrift becomes more poorly capitalized, it is more likely to rely on brokered deposits, which can increase the exposure of the thrift insurance fund to losses.

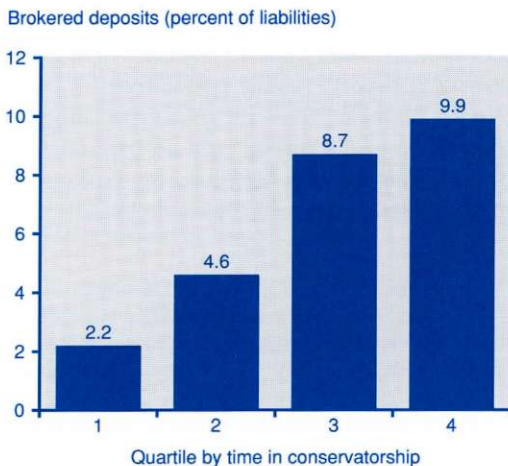
<sup>12</sup> See Judge and others (1982) for a discussion of probit models.

<sup>13</sup> Statistical significance at the 1-percent level implies that there is only a 1-percent chance of rejecting the hypothesis that the coefficient on the variable in question equals zero when the coefficient is in fact zero.

Furthermore, the use of brokered deposits by poorly capitalized thrifts contributes to the lack of market discipline on thrift activities. If poorly capitalized thrifts were denied access to the nationwide pool of insured deposits, then they would find it more difficult to obtain funds needed for operation. This would help limit the size of undercapitalized thrifts.

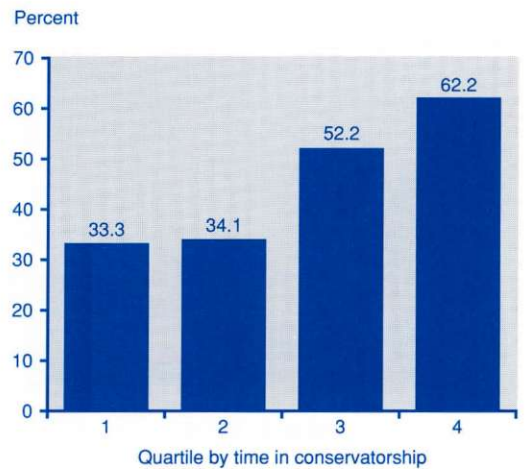
The probit results show that an increase in the fraction of a thrift's portfolio composed of risky assets is associated with an increase in the probability of brokered deposit use in both samples; the estimated coefficients on all the risk measures are positive, but the significance levels vary widely. Both the effect of the fraction of the portfolio composed of junk bonds and the effect of the fraction of the portfolio composed of real estate held for investment are significant at the 1-percent level in the 1988 sample and the 10-percent level in the 1991 sample. The effect of both the fraction of the portfolio composed of repossessed assets and the fraction of the portfolio composed of land loans are insignificant in the 1988 sample at the 10-percent level but are significant in the 1991 sample at the 1-percent

**Chart 5**  
**Brokered Deposit Use for**  
**Thrifts in Conservatorship, 1991:1**



SOURCE: Author's calculations using thrift call report data.

**Chart 6**  
**Percentage of Conservatorship Thrifts**  
**Using Brokered Deposits, 1991:1**



SOURCE: Author's calculations using thrift call report data.

and 10-percent levels, respectively. The effect of the fraction of the portfolio composed of past-due loans is not statistically significant in either sample. The overall results obtained for the effect of holding risky assets are consistent with the theoretical prediction regarding the effect of risk on brokered deposit use; thrifts that hold a large fraction of their portfolio in risky assets are likely to use brokered deposits.

An increase in the fraction of a thrift's portfolio composed of government securities leads to a decrease in the probability that the thrift uses brokered deposits in both samples; the effect is significant at the 1-percent level in both samples. Also, an increase in the fraction of the thrift's portfolio composed of one-to-four family mortgages leads to a decrease in the probability that the thrift uses brokered deposits in both samples, with significance at the 1-percent level. These results are consistent with the previous prediction regarding the effect of risk on brokered deposit use; thrifts that hold a large fraction of their portfolios in safe assets are unlikely to use brokered deposits.

The dividends paid as a fraction of assets have a positive effect on the prob-



**Table 3**  
 Probit Estimates for Brokered Deposit Use, 1988:4

Variable	Estimated Coefficient	Standard Error
INTERCEPT	.156	.101
ANWA**	-1.15	.374
JUNKA**	10.2	3.54
GOVTA**	-3.85	.578
MTG14A**	-1.98	.172
REOA**	5.90	2.13
DIVA#	36.7	21.4
PD60A	.504	.822
REPODA	.836	.821
LANDA	1.02	.771
NIA**	-5.48	2.31
A**	.141	.019
TEXAS	.00681	.121

n=2979      -2 x log likelihood ratio = 612.41

#denotes significance at the 10-percent level

\*\*denotes significance at the 1-percent level

Dependent Variable:

BD = 1 if brokered deposits > 0 (702 observations)

BD = 0 if brokered deposits = 0 (2,277 observations)

Independent Variables:

ANWA = assets minus liabilities minus goodwill divided by total assets

JUNKA = securities rated below investment grade divided by total assets

GOVTA = government securities divided by total assets

MTG14A = mortgage loans on one-to-four family structures divided by total assets

REOA = real estate held for investment divided by total assets

DIVA = cash dividends paid divided by total assets

PD60A = loans sixty or more days past due divided by total assets

REPODA = repossessed assets divided by total assets

LANDA = land loans divided by total assets

NIA = net income after taxes divided by total assets

A = total assets (in billions of dollars)

TEXAS = 1 if the thrift is in Texas, 0 if not in Texas

SOURCE: Author's calculations using thrift call report data.

ability of brokered deposit use in the 1988 sample, with significance at the 10-percent level, but the effect is not statistically significant in the 1991 sample. Hence, the concern regarding dividend payments causing inside funds to be replaced by insured outside funds may be less warranted in 1991 than it was in 1988.

An increase in the thrift's net income after taxes relative to assets causes a decrease in

the probability of brokered deposit use in the 1988 sample, with significance at the 1-percent level, while the effect was not statistically significant in the 1991 sample. This suggests that the market relied on net income as an indicator of risk to a greater extent in 1988 than in 1991.

An increase in the size of the thrift (as measured by total assets) leads to an increase in the probability of brokered

**Table 4**  
 Probit Estimates for Brokered Deposit Use, 1991:1

Variable	Estimated Coefficient	Standard Error
INTERCEPT**	-.488	.113
ANWA**	-3.10	.564
JUNKA*	20.0	10.5
GOVTA**	-3.55	.739
MTG14A**	-.915	.197
REOA#	7.22	4.14
DIVA	24.7	26.8
PD90A	.211	2.15
REPODA**	5.41	.999
LANDA#	2.30	1.29
NIA	1.56	2.01
A**	.120	.0171
TIMECON*	-.00114	.000575
TEXAS	-.224	.159

n=2467            -2 x log likelihood ratio = 367.95

# denotes significance at the 10-percent level

\* denotes significance at the 5-percent level

\*\* denotes significance at the 1-percent level

Dependent Variable:

BD = 1 if brokered deposits > 0 (429 observations)

BD = 0 if brokered deposits = 0 (2,038 observations)

Independent Variables:

All independent variable definitions are the same as those in Table 3, with the following exceptions:

PD90A = loans ninety or more days past due and still accruing divided by total assets

TIMECON = number of days in conservatorship, 0 if not in conservatorship

SOURCE: Author's calculations using thrift call report data.

deposit use; this effect was significant at the 1-percent level in both samples. This is consistent with the theoretical prediction regarding the effect of thrift size on brokered deposit use. The results are also consistent with the findings obtained using the sorting approach presented in Chart 4. Size may have a positive influence on the brokered deposit ratio because as a thrift becomes larger, it is more likely to exhaust the supply of locally available deposits, causing it to seek deposits nationwide through brokered deposits.

I estimated the effect of the amount of time spent in conservatorship on the probability of brokered deposit use only for the 1991 sample, and the effect was negative and

significant at the 5-percent level. This implies that the longer a thrift is in conservatorship, the less likely it is to rely on brokered deposits. This result contradicts the findings obtained using the sorting approach presented in Chart 6, which showed that the percentage of thrifts using brokered deposits increased as the time spent in conservatorship increased. This inconsistency arises because the sorting approach did not control for the other determinants of brokered deposit use. For example, the thrifts in conservatorship had much lower capital-to-asset ratios, on average, than the privately held thrifts. After controlling for the positive effect of low capital and other factors on

### Determinants of Brokered Deposits

Determinant	Expected Sign	Estimated Sign		Significance	
		1988:4	1991:1	1988:4	1991:1
Net Worth	-	-	-	< 1%	< 1%
Junk Bonds	+	+	+	< 1%	< 10%
Government Securities	-	-	-	< 1%	< 1%
Residential Mortgages	-	-	-	< 1%	< 1%
Real Estate Holdings	+	+	+	< 1%	< 10%
Dividends	?	+	+	< 10%	> 20%
Repossessed Assets	+	+	+	> 20%	< 1%
Past-Due Loans	+	+	+	> 40%	> 80%
Land Loans	+	+	+	> 10%	< 10%
Net Income	-	-	+	< 1%	> 40%
Size	+	+	+	< 1%	< 1%
Days In Conservatorship	?	NA	-	NA	< 5%
Texas Location	?	-	-	> 80%	> 10%

NOTE: See Tables 3 and 4 for numerical values of the estimates and definitions of the variables.

SOURCE: Author's calculations using thrift call report data.

brokered deposit use, the probit analysis reveals that conservatorship actually reduced the probability that a thrift would use brokered deposits.

Finally, the effect of a Texas location does not have a statistically significant effect on the probability of brokered deposit use in either sample, after controlling for the effects of the other explanatory variables. Texas thrifts are no more likely to use brokered deposits than other thrifts in similar financial condition.

#### Policy Implications

Brokered deposits, as the theory predicted, are more likely to be used when underlying factors cause the cost of obtaining funds through uninsured sources

to rise relative to the cost of obtaining funds through insured sources. Decreases in the capital-to-asset ratio, increases in the risk in the portfolio, and increases in thrift size are associated with increases in the probability of brokered deposit use. The results support concerns regarding the use of brokered deposits to exploit the current shortcomings of the deposit insurance system. Hence, some may view FIRREA's restriction on brokered deposit use by troubled thrifts as a desirable first step in curbing the abuses of deposit insurance, although the evidence suggests that deposit insurance may continue to be exploited through brokered deposits. It is, however, only the insurance aspect of brokered deposits that has proven troublesome, and

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current policy proposals may not go far enough in reforming deposit insurance.

Because deposit insurance is not priced in a way that reflects the risk in the thrift's portfolio, thrifts with risky portfolios are in effect receiving subsidized deposit insurance. These thrifts are able to maximize the value of the subsidy by increasing their holding of risky assets and financing the risky assets through insured deposits, including brokered deposits. This behavior increases the thrift insurance fund's expo-

sure to losses if these risky activities cause the thrift to fail. While there is nothing fundamentally wrong with engaging in risky activities, there will be an excessive amount of lending to risky activities when the cost of funds does not fully reflect the risk, as is the case under deposit insurance. The best policy may be to address the problems inherent in the current system of deposit insurance, which are at the root of the recent difficulties associated with brokered deposits.

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