

# STUDIES

Federal Reserve Bank of Dallas

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*Was There a Connection?*

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# Financial Industry Studies

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# Moral Hazard and Texas Banking in the 1980s:

## *Was There a Connection?*

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Virtually every insurance scheme has what economists call the *moral hazard problem*. Insurance coverage effectively lowers the out-of-pocket costs of some services or activities to almost zero. As a result, individuals may respond to being insured by increasing the utilization of these services. When the method of insurance alters the behavior of the insured, moral hazard is said to exist.

For example, when the effect of a health insurance policy is to indemnify the insured against most medical care expenses and thereby lower the marginal cost of care to the individual, usage of medical services will likely increase. If obtaining automobile insurance against theft results in a more lackadaisical attitude toward securing your car, moral hazard is present. While this phenomenon has often been viewed as the result of moral perfidy, it can also be shown to be the outcome of rational economic behavior.<sup>1</sup>

Bank depositors have been federally insured since January 1934 when the Banking Act of 1933 took effect.<sup>2</sup> The purpose of deposit insurance is to protect both depositors and banks from the damaging effects of deposit runs. Throughout most of its history, the institutional framework of federal deposit insurance performed re-

markably well. Bank failures were few and far between, and the failures that did occur resulted mainly from corrupt or inept management.

By the 1970s, though, the financial sector began to experience greater turmoil. Several fairly large banks failed, and the overall number of bank failures increased. Problems in the thrift industry were even more pronounced. This pattern of financial-sector distress continued into the 1980s and was particularly evident in Texas. As bank and thrift problems deepened in the Southwest, increasing attention has focused on the causes of this unprecedented period of financial-sector turmoil.

The focal point of this analysis is the potential role of the risk-taking incentives arising from moral hazard as a causal factor behind the financial difficulties of Texas banks. First, we examine moral hazard's specific role in the current system of deposit insurance. Then, we provide some background information on the condition of Texas banks in the 1980s, along with an assessment of the potential causes of these problems. We next examine a proxy measure of bank risk-taking to discover any evidence indicating that deposit insurance may have altered the behavior of bank managers in a manner suggested by moral hazard. Our analysis indicates that moral hazard can offer at least a partial explanation for the financial state of Texas banks.

### Moral Hazard and Deposit Insurance

Depositors have little incentive to monitor the risk-taking activities of banks given that the safety of their deposits is guaranteed. In this manner, federal deposit insurance coverage alters the behavior of the insured. Banks and other insured intermediaries are thus able to obtain deposits at

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<sup>1</sup> See Pauly (1968) and the references cited therein.

<sup>2</sup> Before the advent of federal deposit insurance, many private and state-sponsored schemes existed. See Calomiris (1989) for a history of deposit insurance in the United States.

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rates not fully reflective of the underlying risk profile of these institutions.

The ability of insured depository institutions to put at risk funds that are guaranteed by the government may encourage insured institutions to participate in risky ventures that they otherwise might avoid. This moral-hazard feature of deposit insurance has received much theoretical attention.<sup>3</sup>

One way private insurance companies attempt to overcome moral hazard is to charge a premium for insurance coverage commensurate with the risk profile of the activity being insured. Federal deposit insurance, though, assesses a flat-rate premium, independent of an institution's risk profile. As a result, federal regulators impose capital requirements on banks as part of overall regulatory efforts to ensure safe and sound banking. Banks and other insured intermediaries become less willing to engage in risky activities when more of their own capital is at stake. Therefore, given the incentives to engage in activities with greater risk, one of the key linkages between moral hazard and federal deposit insurance is a bank's capital position. Banks are also less willing to take on risk when they possess high charter value or highly profitable growth opportunities.

### Texas Banking in the 1980s

The Texas banking industry experienced a roller-coaster ride of economic performance during the 1980s. In the early 1980s, Texas banks were considered to be among the strongest institutions in the nation. Then, developments in the energy industry—specifically declines in the price of oil that

began in 1981—subsequently plunged the Texas economy into a deep recession. The regional economy suffered another blow from the downturn that followed in the real estate sector. Inevitably, asset quality problems began to emerge at Texas financial institutions. Nonperforming loans at Texas banks climbed from approximately 3 percent of total loans at the end of 1982 to a peak of more than 8 percent at the end of 1987. Nonperforming loans at Texas banks have subsided somewhat, and at the end of 1989, nonperforming loans stood at about 6 percent of total loans. Along with these asset quality problems, Texas banks also began to suffer serious depletions in equity capital. Problems in the Texas thrift industry were even more severe.<sup>4</sup>

While economic events precipitated the asset quality problems suffered by Texas banks, these factors alone cannot account for the deterioration observed in banks' balance sheets. The performance of Texas banks during the past decade can best be explained as the outcome of an adverse financial climate created by a combination of factors. Economic, regulatory, and managerial factors played a role in the events of the 1980s, although the specific impact of each one is difficult to distinguish and may vary.<sup>5</sup> The regulatory roots of financial-sector distress stem from some of the legislative changes that were enacted during the 1980s. In 1980, Congress passed the Depository Institutions Deregulation and Monetary Control Act, followed by the Garn-St Germain Depository Institutions Act of 1982. These laws granted new powers to the thrift industry in an attempt to provide relief from the interest-rate squeeze it suffered during much of the 1970s. Also, interest-rate ceilings on most deposit accounts at financial intermediaries nationwide were phased out, and entry restrictions were relaxed. As a result, financial institutions were allowed to venture into activities in which they may have possessed limited expertise, while at the same time they were facing an increasingly competitive marketplace.

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<sup>3</sup> See Merton (1977), Kareken and Wallace (1978), Buser, Chen, and Kane (1981), McCulloch (1981), and Marcus (1984).

<sup>4</sup> For more information about the condition of Texas financial institutions, see Short and Robinson (1990).

<sup>5</sup> For a specific assessment of the role of managerial decision-making on Texas bank performance, see Gunther (1989). See Robinson (1990) for a more complete description of the role of each of these factors.

While many observers have blamed deregulation for much of the financial difficulty, analysts must consider the more relaxed regulatory climate in conjunction with managerial incentives to incur more risk. This managerial contribution to the Texas banking problems emanates principally from the structure of federal deposit insurance. The existing framework of deposit insurance offers a classic example of the moral hazard problem. Deposit insurance alters the behavior of the insured and thereby offers incentives to banks to engage in excessively risky activities. Deregulation and increased competition likely interacted with moral hazard to generate recent financial-sector distress.

### Profiles of Bank Risk-Taking

In our analysis of moral hazard, we use changes in the loan-to-asset ratio to capture increases in risk-taking among Texas banks. We must acknowledge that no perfect measure of a bank's risk profile is readily available. Ideally, one would like a measure of the degree of ex ante risk-taking when assessing the incentives offered by deposit insurance. This would rule out ex post measures of risk, such as the troubled-asset ratio, the percentage of nonperforming loans, or measures of earnings volatility. If insured financial institutions engage in excessively risky activities that prove successful, the propensity to undertake more risk would not be apparent in these ex post measures.

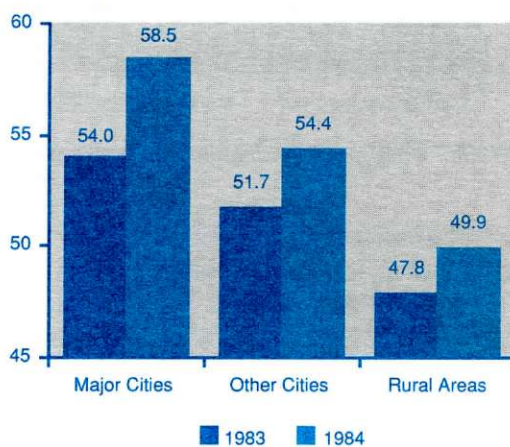
Changes in the loan-to-asset ratio appear to be a desirable proxy measure for the degree of ex ante risk-taking activity at Texas banks. When oil prices began to weaken in the early 1980s, concurrent developments in the real estate sector and other lending areas gave banks the opportunity to increase the risk of their overall asset portfolio by expanding loans.<sup>6</sup> Moreover, changes in the loan-to-asset ratio are fairly comparable across banks of varying size and market area. A bank's holding of total loans tends to rise during upturns in economic activity and fall during down-

turns. A higher proportion of loans would leave a bank more exposed to a deterioration in credit quality that could be caused by a downturn in economic activity. This risk could be lessened, though, by shifting some assets into safer categories, such as short-term government securities or other types of investments.

These features of the loan exposure of Texas banks make this measure an attractive risk proxy. We use a cross section of 1984 data for a sample of 453 insured Texas banks in an attempt to discover if changes in lending were related to previous changes in capital. If so, moral hazard offers a plausible explanation. Additional risk measures, such as concentrations of particular types of loans and deposits, are not analyzed here.

Chart 1 shows the average loan-to-asset ratio for three groups of Texas banks. Banks in major Texas cities experienced the great-

**Chart 1**  
Average Loan-to-Asset Ratio of Texas Banks (Percent)



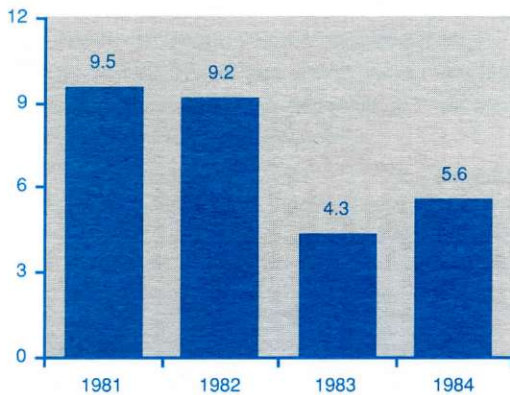
Source: Report of Condition and Income

<sup>6</sup> Changes in the tax laws in 1981 and 1984, which significantly reduced the number of years over which commercial real estate could be depreciated, increased the attractiveness of real estate lending. The 1986 tax bill subsequently lengthened the depreciable life of commercial real estate.

est increase in loan exposure and also exhibited the highest percentage of loans in their asset portfolios. In our analysis of bank risk-taking, then, we concentrate on banks in major Texas cities, where economic and financial cycles were most pronounced.<sup>7</sup>

Chart 2 shows the growth in equity capital of banks located in these major Texas cities. Equity growth was strong in the early part of the decade but then declined markedly in 1983 and recovered only slightly in 1984. If the moral hazard

**Chart 2**  
Average Equity Growth of Banks in Major Texas Cities (Percent, Adjusted for Inflation)



Source: Report of Condition and Income

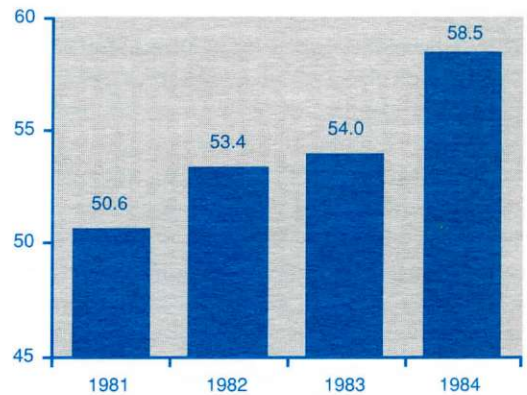
problem is present, then the drop-off in capital growth could lead to increases in banks' risk profiles.

Chart 3 shows the loan-to-asset ratio of banks in the major metropolitan areas for the years 1981–84. A particularly sharp increase in the loan-to-asset ratio occurred in 1984. So, a cursory review of the data

<sup>7</sup> These cities include Austin, Dallas, Fort Worth–Arlington, Houston, and San Antonio.

<sup>8</sup> Additional variables might also help explain changes in the loan-to-asset ratio. In a more formal regression framework, Gunther and Robinson (1990) find that changes in lending at Texas banks are significantly related to prior changes in both equity and loan exposure, among other factors.

**Chart 3**  
Average Loan-to-Asset Ratio of Banks in Major Texas Cities (Percent)



Source: Report of Condition and Income

indicates that, following a sharp decline in equity growth in 1983, the sample of banks in our analysis recorded a large increase in loan exposure. This increase would be consistent with moral hazard—managers, finding their banks in a weakened financial position, may have been motivated to increase expected earnings by assuming added risks.

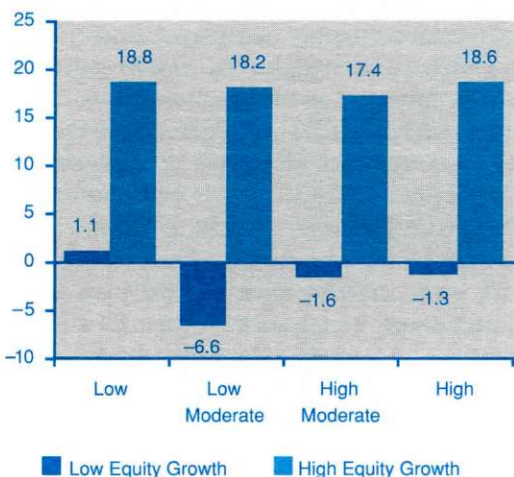
To assess the role of moral hazard in recent banking difficulties, we examine whether changes in loan exposure from 1983 to 1984 were related to the prior growth in equity among our sample of insured commercial banks. Equity growth serves as our measure of the overall financial health of banks. Low equity growth can reflect factors such as the adverse impact of economic downturns on bank portfolios or increased competition in previously protected markets. We hypothesize that the weaker banks with relatively low equity growth would be the most prone to exploit moral hazard incentives and take on excessive asset risk.

A bank's current exposure to risk might also affect incentives to engage in risk.<sup>8</sup> That is, those banks with a relatively large proportion of loans currently in their asset portfolio would not be expected to in-

crease their lending as much as those banks with a lower volume of loans. This situation may be due to both regulatory and liquidity constraints. Regulatory scrutiny might tend to increase or regulatory restrictions might be tightened for banks with relatively large exposures to risk, which would limit their ability to extend more loans. Also, banks with high loan-to-asset ratios would tend to hold relatively low amounts of liquidity in the form of U.S. government securities or federal funds sold. Such high-risk banks would not be in a position to increase their lending. Therefore, those banks with greater loan exposures could be expected to have difficulty expanding their loan exposures further in response to any declines in capital.

Chart 4 shows average equity growth for our sample of banks divided into four groups based on the level of the loan-to-asset ratio at year-end 1983. The four groups are classified as those banks with a low loan-to-asset ratio, a low moderate ratio, a high moderate ratio, or a high loan-to-asset ratio. Within each of the four groupings, the banks are classified according to whether they rank above or below the 50th percen-

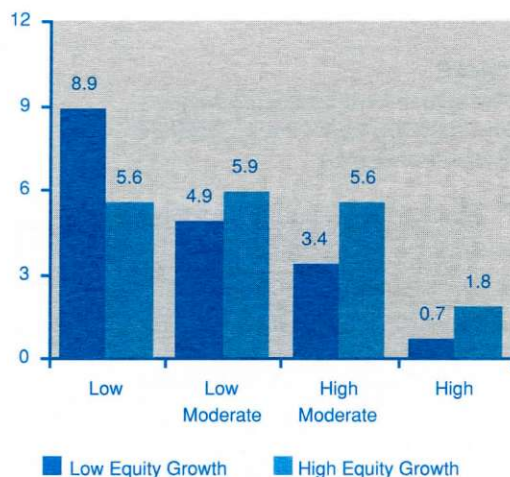
**Chart 4**  
Average Equity Growth of Banks in Major Texas Cities, 1982-83 (Percent)



Source: Report of Condition and Income

tile of the entire sample in terms of capital growth in 1983. For example, for banks with a low loan-to-asset ratio, those institutions with equity growth below the sample median recorded a 1.1-percent increase in equity. Banks with a high moderate loan-to-asset ratio but also in the upper half of all banks in terms of equity growth recorded a 17.4-percent increase in equity.

**Chart 5**  
Average Change in Loan Exposure at Banks in Major Texas Cities, 1983-84 (Percentage Points)



Source: Report of Condition and Income

For this same classification of banks, Chart 5 shows the average change in lending from 1983 to 1984. The mean values in Chart 5 indicate that, on average, banks in the low loan-to-asset group with low equity growth increased their lending by 8.9 percentage points—significantly more than the average 5.6 percentage-point increase for these low-risk banks with high capital growth. These movements in lending are consistent with moral hazard. For banks with a low loan-to-asset ratio, those banks with lower capital growth increased their lending by more than did those banks with higher capital growth.

When banks with a high loan-to-asset ratio—or banks with a high-risk profile—are considered, a different picture emerges.

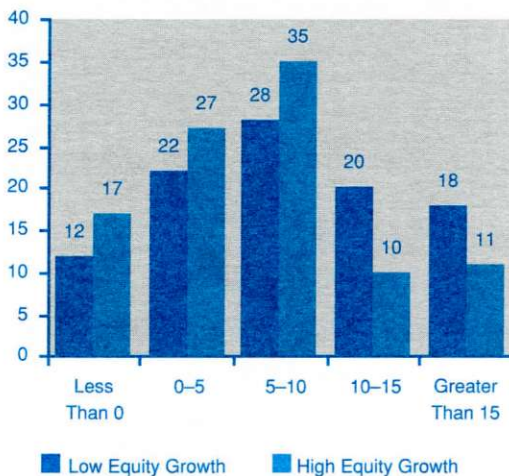
High-risk banks displayed no statistically significant difference in the 0.7-percent increase in lending at banks with low equity growth versus the 1.8-percent increase recorded by the banks with high equity growth. So, for those banks already heavily exposed to risk, either regulatory or liquidity constraints appear to dominate any moral hazard effects.

Finally, Chart 6 plots the frequency distribution of changes in loan exposure for those banks in the low loan-to-asset ratio group. The frequency distribution shows the proportion of banks that altered their loan-to-asset ratio by certain specified

points or more, while only 21 percent of banks with high equity growth increased their lending by this amount.

These results suggest that the propensity to engage in risky activities depends on more than just changes in capital. A bank's current risk exposure influences the response of bank lending to changes in capital. As long as banks possessed the ability to expand their lending, lower growth rates of capital were associated with larger increases in lending, as moral hazard would suggest. However, once banks were more exposed to risk, those institutions with lower capital growth recorded statistically insignificant differences in lending compared to those banks with greater increases in capital. While this latter finding is inconsistent with moral hazard, it points out the potential importance of both regulatory and liquidity constraints at work.

**Chart 6**  
Changes in Loan Exposure in the Low Loan-to-Asset Group, 1983–84 (Percent of Banks)



Source: Report of Condition and Income

percentages. Because all possible changes in the loan-to-asset ratio have been included in the frequency distribution, the cumulative percentage of banks must equal 100. For these banks with room to expand their lending, 79 percent of banks with high equity growth increased their loan-to-asset ratios by 10 percentage points or less. But, consistent with moral hazard, 38 percent of banks with low equity growth increased their lending by 10 percentage

### Policy Implications

Federal regulators are well aware of the potential problems associated with federal deposit insurance. The Garn-St Germain Depository Institutions Act of 1982, as well as the recently enacted Financial Institutions Reform, Recovery, and Enforcement Act of 1989, mandated studies of the defects of the current system of federal deposit insurance. Attempts to reduce the moral hazard problem imply the imposition of increased market discipline. Greater reliance on surveillance by market participants, however, could result in the unavoidable side effect of a potential increase in depositor instability. That is, a trade-off or continuum of sorts exists between moral hazard and depositor safety, and any proposed reforms must confront this trade-off. Many analysts argue that the current institutional arrangement is close to the extreme of complete depositor safety, which then comes at the expense of almost maximum exposure to moral hazard. Banks in relatively conservative postures may confront strong incentives to respond to reductions in capital growth by increasing



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asset risk. This moral hazard phenomenon may lie behind the transition from the well-balanced bank portfolios characteristic of stable banking periods to the higher-risk portfolios that tend to characterize banks when their capital levels fall below regulatory standards.

A plethora of proposals has been advanced to remedy the shortcomings of the current structure of federal deposit insurance. Some of the measures proposed to

scale back the moral hazard problem include elimination of the flat-rate premium schedule, enhanced capital requirements, market-value accounting, and various coinsurance schemes. While no panacea exists, the pendulum must swing back toward allowing somewhat more deposit-market surveillance. Otherwise, financial institutions face the possibility of even more difficulties in the future.

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# Financial Strategies and Performance of Newly Established Texas Banks

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One of the many characteristics distinguishing the Texas financial landscape of the 1980s was the large number of banks established in the early part of the decade. Of the 1,936 insured commercial banks operating in Texas at year-end 1985, more than one-fourth had been established during the previous six years. The concentration of new banks was even greater in the large metropolitan areas of the state.

Texas financial conditions were also distinguished by a high number of bank failures beginning in 1986. The Texas economy experienced both rapid growth and contraction during the first half of the 1980s, before declining sharply in 1986. Those economic events precipitated a host of asset quality problems and bank failures during the remainder of the decade. While virtually all Texas banks experienced some degree of financial difficulty in this period, the newly established banks failed at a much higher rate than their mature counterparts.<sup>1</sup>

This article focuses on the financial strategies pursued by the newly established banks and the role of those strategies in determining bank performance. The financial strategies of the newly established banks contain some important lessons for both bank regulators and bank managers. Analysis of those strategies can help to characterize the dynamics of bank formation and thereby assist regulators in the ongoing

supervision of new banks. Similarly, the linkage between financial strategy and performance of the new banks can provide bank regulators and bank managers with valuable information on the risks associated with various banking activities.

Perhaps the most straightforward method of assessing the financial strategies of the Texas banks established in the 1980s is simply to compare their portfolio choices with those of their mature counterparts. Differences in financial performance between the two groups can then be related to differences in financial strategy. This methodology offers a clear representation of both the risk strategies pursued at the newly established banks and the linkages between risk-taking and bank performance. By focusing on financial strategy, the analysis also offers some insight into the current institutional arrangements that shape bank decision-making.

The results of the analysis suggest that newly established Texas banks were much more aggressive than their mature counterparts in pursuing high-risk strategies. Moreover, high-risk strategies can explain the relatively high incidence of failure among the Texas banks established during the 1980s.

## Preponderance of New Banks

The five largest market areas in Texas—Austin, Dallas, Fort Worth—Arlington, Houston, and San Antonio—provide the basis for a direct comparison between mature banks and newly established banks. Rapid population growth in those five metropolitan areas, coupled with restrictions on branch banking, motivated the establishment of a large number of new banks. As of year-end 1985, fully 54 percent of the 381 independent banks operating in those

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<sup>1</sup> While the newly established banks contributed greatly to the large number of Texas bank failures overall, it should be noted from the outset that their direct impact on the quantity of assets in failed Texas banks was much less important because their average asset size was relatively small.

areas had been established during the previous six-year period.<sup>2</sup>

The stimulus to bank formation provided by population growth and unit banking was reinforced when the Comptroller of the Currency revised the chartering policy for national banks in 1980. The new entry requirements placed less emphasis on market conditions and focused, instead, on the organizing group and its operating plan. The revised policy is generally thought to have increased greatly the number of new bank charters.<sup>3</sup>

As shown in Chart 1, a high proportion of the 381 independent banks in the sample came into existence in the period from 1983 to 1985. The banks established in those three years alone represent 43 percent of the total sample. It was in the next year, 1986, that oil prices plummeted and the Texas economy declined into a severe recession.

### Incidence of Bank Failure

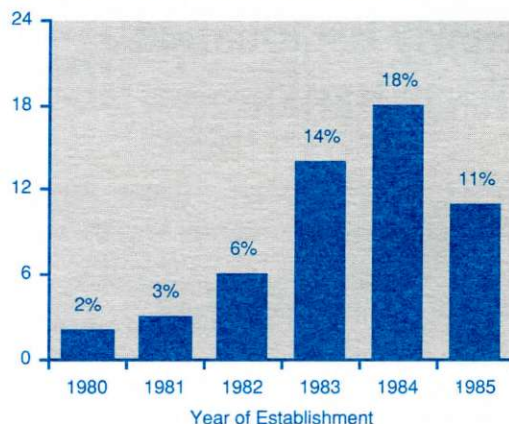
Bank failure constitutes a particularly relevant performance measure for newly established banks. In the increasingly competitive financial services environment, the ability of individual banks to survive has been tested more and more frequently. That test was especially severe for banks operating in the difficult economic environment prevailing in Texas for much of the 1980s.

The record indicates that the incidence of failure during the 1980s was substantially higher for newly established banks

<sup>2</sup> *Independent banks* are defined here as banks not affiliated with a multibank holding company. Bank subsidiaries of multibank holding companies are excluded from the analysis for several reasons. First, it often has been difficult to define "failure" for the individual bank subsidiaries of the large Texas holding companies that received government assistance. That consideration becomes important in subsequent sections of the analysis. Also, financial policy is more comparable across individual banks when relationships with sister affiliates are not involved.

<sup>3</sup> See U.S. Comptroller of the Currency (1980) for an outline of the policy change and a discussion of its intended effects.

**Chart 1**  
Concentration of New Banks  
in Five Major Texas Markets  
(Percent of All Independent Banks in 1985)



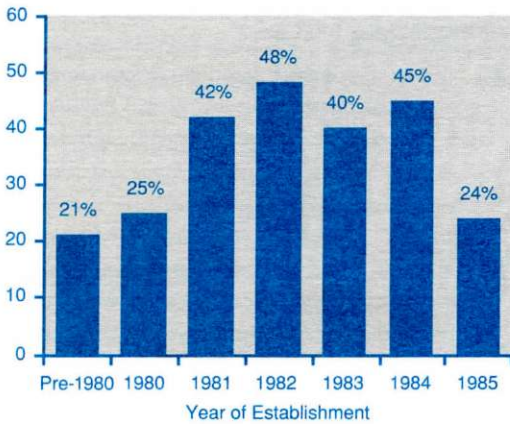
Source: Board of Governors, Federal Reserve System

than for mature banks. Of the sample banks that were established in the period from 1980 to 1985, 39 percent failed in the subsequent four years. In contrast, only 21 percent of the mature banks in the sample did not survive the last four years of the decade. This large difference in the incidence of failure between the two groups of banks is statistically significant.

As shown in Chart 2, the incidence of bank failure from 1986 to 1989 was particularly high for banks established from 1981 to 1984. For example, 48 percent of the banks in the sample that were established in 1982 failed in the latter part of the decade. The high rate of failure for the banks established in the 1980s contributed substantially to the overall number of Texas bank failures. If the newly established banks had failed at the same rate as mature banks, the total number of failures among the sample of banks would have been 31 percent lower.

The higher rate of failure for banks established during the 1980s is consistent with the view that the newly established banks pursued relatively high-risk financial policies. That view is supported by an analysis of the portfolio choices of the

**Chart 2**  
Failure Rate for Independent Banks  
in Five Major Texas Markets  
(Percent Failed, 1986–89)



Sources: Board of Governors, Federal Reserve System; Federal Deposit Insurance Corporation

newly established banks.

### Differences in Risk-Taking

To gauge the financial strategy of banks, one ideally would want to construct measures for decision variables, such as the expected mean and the expected variance of net returns. Measuring such variables accurately on the basis of publicly available information is, however, difficult.

As an alternative, this study uses portfolio shares as indicators of bank risk-taking. Risk-taking is assumed to be directly related to a bank's concentration of assets in the loan categories most sensitive to economic cycles, such as commercial and industrial loans.<sup>4</sup> Similarly, a low proportion of assets in relatively liquid categories, such as U.S. government securities or federal funds sold, is generally associated with aggressive financial policies. A high reliance on wholesale funds, such as large certificates of deposit, also can reflect aggressive banking strategies. Newly established banks may have been particularly prone to rely on such funding sources if they encountered difficulty in establishing a retail deposit base. Risk-taking, as mea-

sured by these proxies, is expected to increase the probability of bank failure.

The risk-taking proxies, along with other portfolio shares, are shown separately in Table 1, both for the sample banks established during the 1980s and for their mature counterparts. The newly established banks had, on average, a significantly higher concentration of commercial and industrial loans. They also held a significantly lower proportion of assets in U.S. government securities and funded a significantly higher proportion of assets with large certificates of deposit. The two groups of banks had similar concentrations of federal funds sold. Overall, the portfolio structure of the newly established banks reveals a high-risk posture relative to that of the banks established earlier. Although not shown in Table 1, high levels of risk-taking are particularly evident for the banks established in 1983 and 1984.

Also noteworthy is that the newly chartered banks had a significantly higher average equity-to-asset ratio than their mature counterparts. This higher level of capital would be expected to help reduce the likelihood of failure. Here, however, the higher capital of the newly established banks is associated with more aggressive portfolios. The relatively high incidence of failure among the newly established banks suggests that their high capital levels were not sufficient to offset fully their increased risk-taking.

### Risk-Taking and Failure

It remains to be determined whether the relatively high risk postures of the newly established banks can explain their high incidence of failure. This assessment is accomplished by comparing failure rates for mature banks and newly established banks with similar portfolio characteristics. If higher levels of risk, as measured by the risk-taking proxies, *cannot* account for the relatively

<sup>4</sup> Other loan categories, such as construction, could also be used. The importance of these other categories as avenues of risk-taking is unclear, however, for the small independent banks composing the sample.

**Table 1**  
Average Portfolio Composition of Independent Banks  
in Five Major Texas Markets, Year-End 1985  
(Percent)

	Establishment Date of Banks	
	Pre-1980	1980-85
<b>ASSETS</b>		
Loans	57.5	65.5*
Commercial and Industrial	17.0	23.7*
Real Estate	21.5	24.8*
Construction	4.1	7.1*
Nonresidential Property	8.3	8.1
Residential Property	9.1	9.6
Consumer	16.0	14.5
Other	3.0	2.5
U.S. Government Securities	12.8	5.2*
Federal Funds Sold	7.0	8.8
Other Assets	22.7	20.5*
<b>LIABILITIES, LOAN LOSS RESERVES, AND EQUITY CAPITAL</b>		
Federal Funds Purchased	0.5	0.6
Large Certificates of Deposit	17.7	31.5*
Other Deposits	71.6	52.8*
Other Liabilities	1.5	1.1*
Loan Loss Reserves	0.9	1.0
Equity Capital	7.8	13.0*

\* Significantly different at the 5-percent level from the corresponding ratio for banks established before 1980.

Sources: Board of Governors, Federal Reserve System; Report of Condition and Income.

high incidence of failure among the newly established banks, then the rate of failure should be higher for new banks than for mature banks with similar risk postures.

To facilitate the comparisons, the sample of banks is divided into four groups on the basis of capital and risk. Banks in the first

group fall below the sample median in terms of the equity-to-asset ratio and also below the median of a risk index based on the risk-taking proxies.<sup>5</sup> Hence, banks in the first group have both low capital and low risk. The second group comprises banks that fall below the median of the equity-to-asset ratio and above the median of the risk index. Thus, the second group can be characterized as having low capital and high risk. Formed similarly are a third group of banks with high capital and low risk and a fourth group with high capital and high risk. The majority of the newly established banks fall in the high-risk groups—the second and fourth groups—

<sup>5</sup> Principal components analysis was used to combine the four risk-taking proxies into a single linear combination while retaining as much information about their total variation as possible. The first principal component of the risk-taking proxies explains 42 percent of their standardized variance. The eigenvector is as follows: commercial and industrial loans, 0.64; large certificates of deposit, 0.56; U.S. government securities, -0.48; and federal funds sold, -0.23.

while the majority of the mature banks fall in the low-risk groups—the first and third groups.

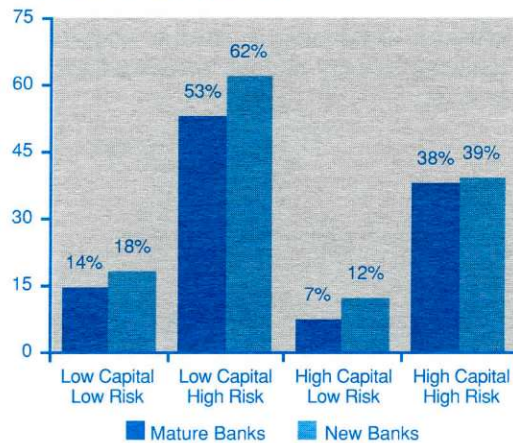
The rate of failure for mature banks and newly established banks in each of the four groups is shown in Chart 3. The figures indicate that banks with high levels of risk tended to fail at relatively high rates. Moreover, the difference in the failure rate between mature banks and newly established banks is comparatively small and statistically insignificant within each group. The newly established banks did *not* fail at significantly higher rates than their mature counterparts with *similar* capital and risk. These findings support the view that the relatively high risk postures of the newly established banks gave rise to their relatively high incidence of failure.<sup>6</sup>

### Concluding Remarks

In summary, the evidence presented here suggests that managerial risk-taking was an important determinant of the survivability of Texas banks. Most important, the relatively high failure rate for newly established Texas banks can be explained by high-risk financial policies.

It is important to ask which factors may have contributed to the relatively high levels of risk evident among the newly established banks. The high-risk posture of the new banks may partly reflect a desire for rapid growth. Because the new banks started out with relatively high capital ratios, they may have wanted to lower those ratios through rapid growth. A high-risk posture may have been adopted to facilitate that growth. Also, high overhead expenses—including salaries, expenses of premises, and expenses of fixed assets—lowered the median return on assets for the banks established from 1980 to 1984 to 0.14 percent in 1985. That compares unfavorably with a median return of 0.99 percent on assets for the mature banks in the sample. Hence, the newly established banks may have taken on additional risks in an effort to bolster lagging earnings. Moreover, a lack of established customer relationships and little market recognition may have

**Chart 3**  
Failure Rate, by Capitalization and Risk  
(Percent Failed, 1986–89)



Sources: Board of Governors, Federal Reserve System; Federal Deposit Insurance Corporation; Report of Condition and Income

motivated the newly established banks to assume a high-risk posture. The mature banks, on the other hand, may have taken on less risk in an effort to protect their relatively high holdings of these intangible assets from loss through failure.

One potential extension of the analysis would be to assess empirically the impact of the large rise in Texas bank charters on the financial policies of mature banks. The large number of new and aggressive competitors may have induced mature Texas banks to adopt a more aggressive risk posture. An increasingly competitive financial marketplace, coupled with the risk-taking incentives inherent in current institutional arrangements, may then have motivated a general increase in financial-sector risk.<sup>7</sup>

<sup>6</sup> See Gunther (1990) for an econometric analysis of this issue.

<sup>7</sup> The moral hazard problem associated with the current system of deposit insurance is one of the contributing factors behind the potential relationships outlined in this paragraph and the preceding one. See Gunther and Robinson, this issue, for a discussion and direct investigation of the moral hazard problem.

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## References

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