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# Are Rural Banks Facing Increased Funding Pressures? Evidence from Tenth District States

By *William R. Keeton*

During the last several years, concern has increased that changes in the financial system have made it harder for rural banks to attract enough deposits to meet local credit demands. While urban banks may face some of the same problems, it is widely believed that funding pressures have increased more for rural banks than for urban banks. In response, bank trade groups and rural development officials have proposed new measures to expand rural banks' access to loanable funds.

Three factors have led to the increased concern about the ability of rural banks to fund their loans. First, loan-deposit ratios have risen sharply, reaching record highs in the last two years. In the past, such high loan-deposit ratios have been taken as a sign that liquidity has been reduced to the bare minimum and that banks will be reluctant to make additional loans without receiving additional deposits. Second, rural deposit growth has been sluggish. Rural bankers attribute this sluggishness to the increased popularity of mutual funds and the death of older depositors with heirs in distant cities, and claim it has kept them from

meeting local credit demands. Third, increasing numbers of rural banks have been taken over by urban banks and converted to branches. According to some critics, these branches take in deposits but make few loans to local borrowers, forcing remaining rural banks to meet a bigger share of the community's credit needs with an unchanged supply of funds.

This article examines recent loan and deposit trends in Tenth District states to see what evidence exists for each of the three sources of concern about rural funding pressures and to see if the concerns are more justified for rural banks than urban banks. Overall, the evidence indicates that sluggish deposit growth has increased funding pressures at rural banks but not any more than at urban banks of the same size. In short, increased funding pressures appear to be a small-bank problem rather than just a rural problem. This finding is tempered, however, by two important caveats. First, funding pressures could become more severe at rural banks than urban banks if rural investors begin investing as much of their wealth in mutual funds as urban investors do. Second, small-bank funding pressures are likely to have a bigger impact on rural borrowers because small

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businesses in rural areas are more dependent on small banks for loans than small businesses in urban areas.

The first section of the article focuses on the concern about rising loan-deposit ratios, the second section on the concern about sluggish deposit growth, and the third section on the concern about takeovers of rural banks. The last section summarizes the evidence and briefly discusses the policy implications.

## I. THE RISE IN LOAN-DEPOSIT RATIOS AT RURAL BANKS

The first concern about rural funding pressures is that the loan-deposit ratios of rural banks have been rising sharply the last several years. Some analysts argue that a high loan-deposit ratio significantly increases the risk to a bank of suffering a liquidity crisis. Thus, as the loan-deposit rises, rural banks may become increasingly reluctant to make additional loans, leaving some local credit needs unsatisfied. Other analysts dispute that the increase in loan-deposit ratios is a sign of severe funding pressures, arguing that the risk of illiquidity is too small to discourage rural banks from making additional loans.

### *What are the issues?*

The concern about the rising loan-deposit ratio of rural banks is based on the idea that rural banks must worry about the risk of illiquidity because their small size makes it difficult for them to borrow on the open market. Most bank loans cannot be liquidated quickly. Thus, if a bank's depositors make unanticipated deposit withdrawals or if its loan customers unexpectedly draw down their lines of credit, the bank will either have to sell some of its security holdings or borrow on the open market. The higher a bank's loan-deposit ratio, the lower its cushion of security holdings will be, and the greater the likelihood that it has to borrow on the open market to meet an unexpected need for funds. Small

banks usually have to pay above-normal rates to borrow on the open market because they are not well known to creditors. Thus, as a small bank's loan-deposit ratio rises, the potential cost of illiquidity will go up, making the bank reluctant to extend new loans without receiving new deposits.

Recent empirical studies on the impact of monetary policy on bank lending support the view that a high loan-deposit ratio constrains the amount of credit extended by small banks. One study that examined bank lending behavior from 1976 to 1992 found that changes in monetary policy had a significantly bigger impact on lending by small banks than on lending by large banks, consistent with the view that small banks cannot borrow easily on the open market and are constrained in their lending by the amount of deposits they can attract (Kashyap and Stein 1995). A follow-up study by the same authors found that, among small banks, changes in monetary policy led to bigger changes in lending at banks with low ratios of securities to assets than at banks with high ratios of securities to assets (Kashyap and Stein 1997). This result suggests not only that deposits act as a constraint on lending at small banks, but that the constraint becomes more binding as the loan-deposit ratio rises.

Rural bankers claim their loan-deposit ratios have risen to the point where the supply of deposits is now acting as a severe constraint on their lending. They argue that further decreases in security holdings would impose too great a risk of illiquidity, and that borrowing on the open market is too expensive and too unreliable to serve as a source of loanable funds. According to this view, the increase in loan-deposit ratios at rural banks justifies some form of government intervention to expand rural banks' access to loanable funds (American Bankers Association).

Some analysts disagree that the increase in loan-deposit ratios is a cause for concern. According to these analysts, it is typical for loan-deposit ratios to increase during a cyclical

expansion, and if the recent increase looks steeper than normal, it is only because loan-deposit ratios were severely depressed in the 1980s. Rural areas have shared in the current economic expansion. During such periods, the expected return on loans tends to increase relative to that on securities, encouraging banks to shift out of securities into loans (Wood). Furthermore, the loan-deposit ratio at rural banks started out at an unusually low level in the early 1990s. Heavy loan losses and pressure from regulators caused many rural banks to become highly cautious in the 1980s, avoiding all but the safest loans. At the same time, increased bankruptcies and loan defaults caused many rural farms and businesses to avoid debt altogether and restructure their balance sheets. To the extent these factors held down the loan-deposit ratio, the recent increase in the ratio represents a return to normal conditions and not an increase in funding pressures.

These analysts also argue that recent changes in financial markets mean that a high loan-deposit ratio has less severe implications for liquidity than in the past (U. S. Department of Agriculture). Rural banks enjoy greater access to nondeposit funds now than they did in the late 1970s, the last time the loan-deposit ratio was high. For example, rural banks with more than 10 percent of their assets in real estate loans can qualify for a line of credit from the Federal Home Loan Bank System, an option that did not exist in the late 1970s. Rural bank loan portfolios are also more liquid than in the past. Specifically, rural banks hold a smaller percentage of farm and business loans and a higher percentage of home mortgages, which can be sold readily on the secondary market.

Finally, even if high loan-deposit ratios are creating funding pressures, it could be argued that these pressures are not unique to rural banks and thus do not justify remedial policies targeted at rural banks. If high loan-deposit ratios discourage rural banks from making new loans, it is

because their small size makes it difficult for them to borrow on the open market, not because they are located in rural markets. Small urban banks face the same difficulty borrowing on the open market. Thus, to the extent their loan-deposit ratios have risen, they could be facing the same funding pressures as rural banks.

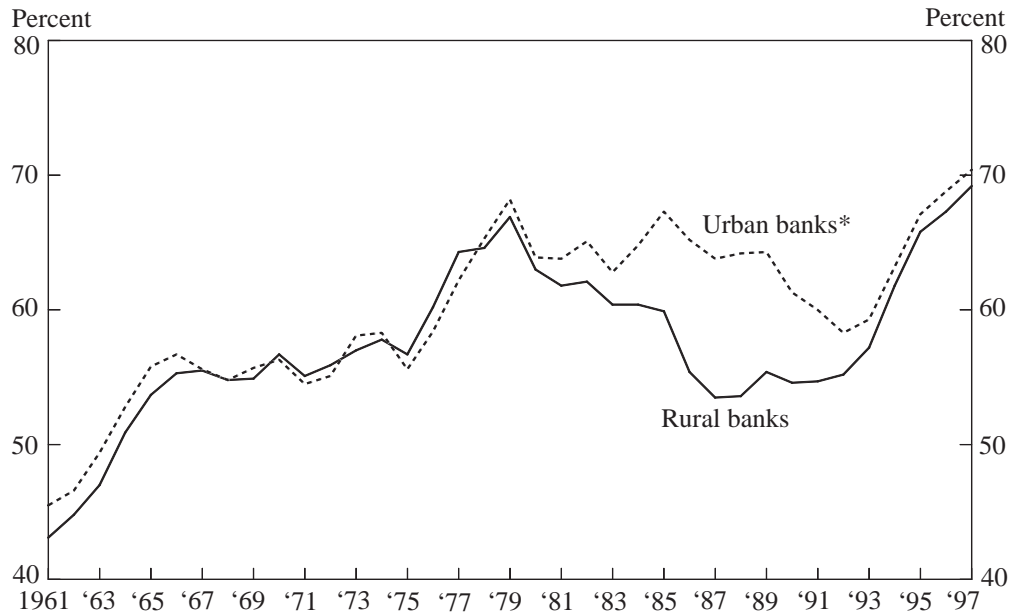
### *How much have rural loan-deposit ratios increased?*

Chart 1 compares the loan-deposit ratios of rural and urban banks over the last three decades.<sup>1</sup> In comparing loan-deposit ratios across banks, it is essential to control for the size of the bank. The larger a bank, the greater its access to capital markets will be and the more easily it will be able to borrow in the event of a liquidity crisis. Thus, within any market, the loan-deposit ratio will typically increase with the size of the bank. Rural banks are predominantly small. To ensure that differences between the loan-deposit ratios of rural and urban banks do not reflect differences in the size distribution of banks in the two types of market, Chart 1 compares rural banks with urban banks of similar size. Specifically, the urban loan-deposit ratio is computed as a weighted average of the loan-deposit ratio in three different size groups, using as weights the proportion of rural bank deposits in each size group.<sup>2</sup>

Chart 1 provides mixed evidence on funding pressures at rural banks. In support of the view that rural banks face significant funding pressures, the chart shows that the rural loan-deposit ratio has risen sharply during the last several years and is high by historical standards. From 1992 to 1997, the ratio increased 14 percentage points to just over 69 percent. That ratio was the highest on record, exceeding the previous peak in 1979 by a couple of percentage points.

Looked at from another perspective, however, the chart suggests that the funding pressures rural banks face today may not be so unusual.

Chart 1  
**LOAN-DEPOSIT RATIO**  
*Tenth District states, midyear*



\* For banks similar in size to rural banks (see text).

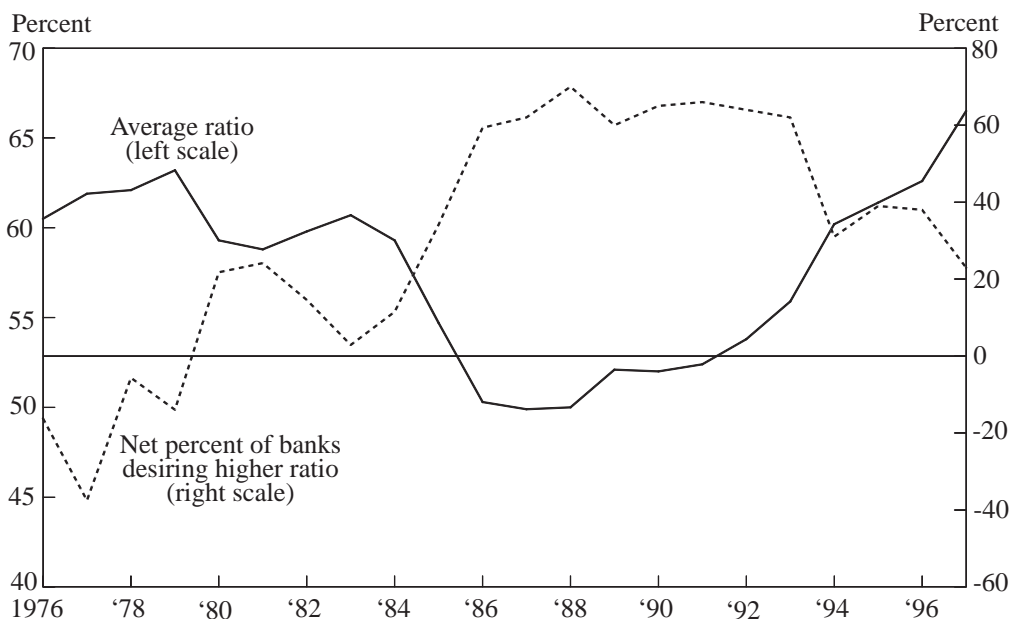
First, while the ratio is the highest on record, it is only slightly higher than in 1979, when rural banks arguably had less access to nondeposit funds and less liquid loan portfolios. Second, the chart confirms that the loan-deposit ratio of rural banks was unusually low in the late 1980s, helping explain why the recent increase looks so steep. Finally, the rural loan-deposit ratio has also increased sharply in other economic expansions, most notably the one from 1975 to 1979, when the ratio rose 10 percentage points.

While the recent increase in the rural loan-deposit ratio can be interpreted in different ways, Chart 1 provides strong evidence that funding pressures have not increased any more at rural banks than at similar-size urban banks. The

loan-deposit ratios of rural and urban banks moved closely together in the 1960s and 1970s. After that point, the two loan-deposit ratios diverged, with the rural ratio falling over 10 percentage points below the urban ratio in the late 1980s. At the end of the decade, the urban loan-deposit also turned downward, and by the early 1990s, the gap between the two ratios had narrowed considerably. Since then, the urban loan-deposit ratio has risen almost as much as the rural loan-deposit ratio, increasing 12 percentage points from mid-1992 to mid-1997. The urban loan-deposit ratio also continues to exceed the rural loan-deposit ratio, though by only a small margin.

Another source of evidence casting some doubt on the severity of funding pressures at rural

Chart 2  
 LOAN-DEPOSIT RATIO AT TENTH DISTRICT FARM BANKS  
 Fourth quarter



Source: Federal Reserve Bank of Kansas City, Agricultural Credit Survey.

banks is the quarterly survey of agricultural credit practices conducted by the Federal Reserve Bank of Kansas City. As indicated by the solid line in Chart 2, the average loan-deposit ratio of farm banks responding to the survey has increased sharply since the late 1980s and is the highest since the survey began. As shown by the dotted line, however, banks participating in the survey give little indication of being uncomfortable with their high-loan deposit ratios. As might be expected, the net percentage of banks saying they would prefer a higher loan-deposit ratio has declined markedly since the late 1980s. Surprisingly, however, the proportion of banks preferring a higher loan-deposit ratio still exceeds the proportion preferring a lower loan-deposit ratio by a significant margin—23 percentage points

in the fourth quarter of 1997. This experience stands in sharp contrast to the late 1970s, when the loan-deposit ratio was almost as high and the net percentage of banks preferring a higher loan-deposit ratio was negative.<sup>3</sup>

Those analysts who believe rural banks do not face significant funding pressures would argue that the more relaxed attitude of survey respondents to high loan-deposit ratios is a sign that rural banks are not as constrained by such ratios as they used to be. The survey results must be interpreted with caution, however, because respondents are not asked about the terms at which they would be willing to make additional loans. The banks that say they would prefer a higher loan-deposit ratio might insist that any additional

loans funded from nondeposit sources earn higher returns to compensate for the increased risk of illiquidity. If so, the high loan-deposit ratios at these banks could still act as a significant constraint on their lending.

To summarize, the evidence on loan-deposit ratios is mixed. On the one hand, loan-deposit ratios have risen sharply at rural banks in recent years. But on the other hand, some of the increase in loan-deposit ratios appears to be cyclical, and some of the increase represents a return to normal levels after the severe slump in rural lending in the 1980s. Also, survey evidence suggests that rural banks are not as uncomfortable with high loan-deposit ratios now as they were in the late 1970s.

To the extent that the higher loan-deposit ratios do signal an increase in funding pressures, those pressures would appear to be no more severe at rural banks than at small urban banks. It is important to note, however, that increases in small-bank funding pressures are likely to have a bigger impact on rural borrowers than urban borrowers. The borrowers most dependent on banks for credit are small businesses. Small businesses in rural markets are served primarily by small banks, whereas small businesses in urban markets are served by a combination of small and large banks. Small businesses in urban markets also have greater access to nonbank financial institutions such as finance companies and leasing companies.<sup>4</sup> A small urban business that cannot get a loan at a small bank because the bank has a high loan-deposit ratio may be able to obtain a loan from a larger bank or a nonbank financial institution. A small rural business may not have these options—first, because other banks in the community probably face funding pressures just as severe as the bank that turned down the loan, and second, because the nonbank financial institutions that lend to small businesses often do not serve rural markets. Thus, if high loan-deposit ratios constrain lending at small banks, credit to small businesses is more likely to be reduced in rural markets than urban markets.

## II. THE SLUGGISHNESS IN RURAL DEPOSIT GROWTH

A second source of concern about funding pressures at rural banks is that deposit growth in rural markets has been sluggish. Some analysts argue that the increased popularity of mutual funds and the aging of the rural population have reduced rural deposit growth without slowing growth in rural credit demands. As a result, rural banks are finding it increasingly difficult to fund their loans. Other analysts acknowledge that rural deposit growth has been sluggish but argue that much of the sluggishness has been due to weak economic growth and the one-time impact of the thrift crisis. Such factors would tend to reduce the need for deposits to finance loans and investments, leaving funding pressures unchanged.

### *What are the issues?*

Analysts concerned about the sluggish growth in rural deposits point first to the increased popularity of mutual funds. Shares in mutual funds are viewed as close substitutes for bank and thrift deposits because they pay open market returns, are easy to purchase and liquidate, and in some cases provide check-writing privileges. In the 1980s, most of the mutual fund competition came from money market funds. More recently, however, deposits have faced increasing competition from mutual stock and bond funds. These funds became more popular partly due to the rising share of the population between ages 35 and 55—the age group most concerned about saving for retirement and therefore most willing to make investments with high short-term risk but high long-term returns (Morgan). Stock and bond funds also benefited from an increased willingness of people in the 35-55 age group to invest in mutual funds (Laderman). As doubts arose about the health of social security, these individuals became more concerned about saving for retirement. And as the runup in stock prices persisted, they became more inclined to view stocks as good long-term investments.

While the shift out of deposits into mutual funds has occurred in all markets, some analysts argue that two special factors have caused investors to shift out of rural deposits even faster than urban deposits the last several years. The first factor these analysts cite is increased access by rural investors to mutual fund products. According to this argument, brokerage firms and mutual fund companies initially ignored rural markets and concentrated their marketing efforts on urban investors. As urban markets have reached the saturation point, brokerage firms and mutual fund companies have begun to focus more heavily on rural investors, causing a delayed shift by those investors out of deposits (Duncan).

The second factor that is claimed to be slowing rural deposit growth more than urban growth is the aging of the rural population. As the young have migrated to cities, many rural counties have been left with a high proportion of elderly residents. In Tenth District states, 15 percent of the rural population was 65 or older in 1996, versus 11 percent of the urban population. Moreover, in a quarter of rural counties in the district, the proportion of elderly exceeded 20 percent. Some of these older rural residents are wealthy investors who hold most of their funds in local banks. As these investors die and pass their estates on to children in distant cities, rural deposits decline because the heirs prefer to invest the funds in other ways—for example, in mutual funds or deposits in urban banks (Hansen, Guenther).

Some analysts acknowledge that rural deposit growth has been sluggish but argue that it has not increased bank funding pressures because it has reflected economic stagnation in rural areas. Many rural counties have enjoyed only modest economic growth in the 1980s and 1990s, as family farms have become less profitable and residents have moved to cities to seek higher paying jobs. If most of the recent sluggishness in rural deposit growth were due to such economic stagnation, there would be little reason to worry about a fundamental shift in preferences among

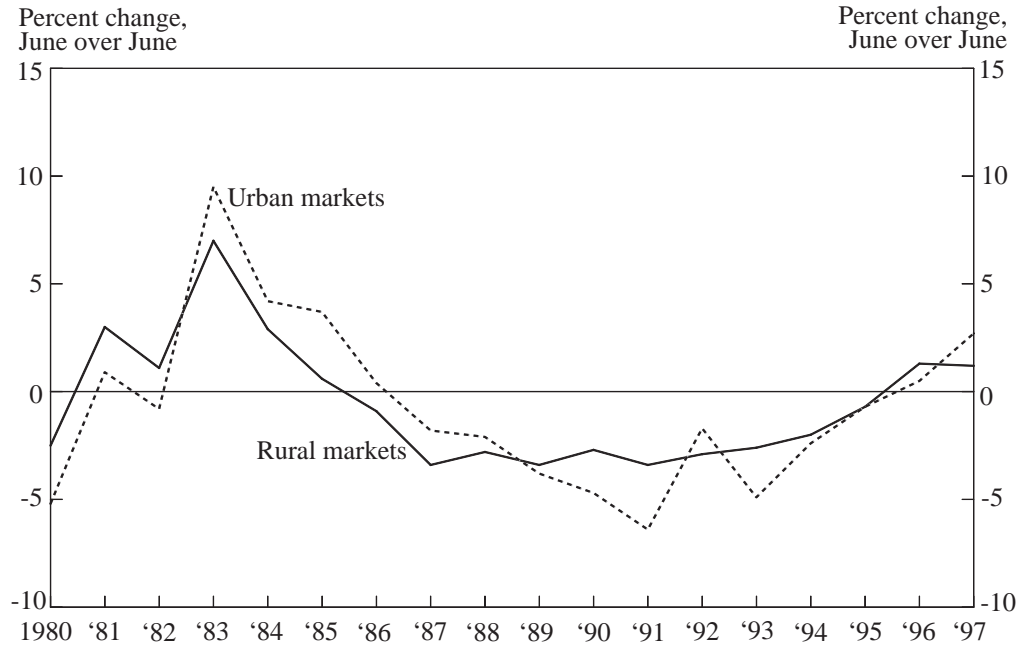
rural investors away from deposits toward mutual funds and other financial instruments. And there would be little reason to worry about funding pressures at rural banks, because the same economic slowdown that reduced rural deposit growth could also be expected to reduce rural loan demand.

Another factor that could have contributed to the sluggishness in rural deposit growth without increasing funding pressures at rural banks is the thrift crisis. During the 1980s, many poorly capitalized thrifts gambled and lost on risky real estate investments, plunging them into insolvency. When these thrifts were finally closed in the first half of the 1990s, some of their assets were taken over by healthy banks and thrifts but most were liquidated by regulators. Furthermore, healthy thrifts were required to pay higher insurance premiums to rebuild the thrift insurance fund, reducing their profits and slowing their asset growth. Some banks took advantage of the shrinkage of the thrift industry to expand their own real estate lending. It is widely agreed, however, that the net effect of the thrift crisis was to reduce the total amount of deposits needed to fund bank and thrift assets (Duca). If this effect accounted for most of the sluggishness in rural deposit growth, there would be little reason to worry about a shift in investor preferences away from deposits, and thus little reason to worry about increased funding pressures at rural banks.

#### *How sluggish has rural deposit growth been?*

Every June, banks and thrifts file reports with regulators indicating the amount of deposits held at each office. Since the data are reported at the branch level, they can be used to measure total deposits held in rural and urban areas. This deposit measure is not perfect because the deposits booked at a particular office may be collected at an entirely different location. For example, large multistate banking organizations sometimes shift deposits and loans from banks

Chart 3  
**REAL DEPOSIT GROWTH**  
*Commercial banks and thrifts in Tenth District states\**



\* Excludes Casper, Wyoming, and Ottawa, Kansas (see text).

in states with high tax rates to banks in states with low tax rates, thereby reducing their total tax burden. And even smaller banks sometimes use deposit brokers to attract large time deposits from investors in other parts of the country. Despite these shortcomings, however, most banking analysts believe deposits booked at local branches provide a reasonably good measure of deposits held by local businesses and households.

Chart 3 shows annual deposit growth in rural and urban markets from 1980 to 1997, the last year for which data are available. Rural deposits consist of total deposits at rural offices, including not only the local offices of rural banks and thrifts but also the rural branches of urban banks

and thrifts. Similarly, urban deposits consist of total deposits at urban offices, most of which are head offices or branches of urban institutions but a few of which are branches of rural banks and thrifts. Both deposit measures are expressed in constant 1997 dollars to control for inflation.<sup>5</sup>

The chart confirms that rural deposit growth has been quite sluggish since the early 1980s. Rural deposit growth peaked in 1983, when the district agricultural and energy booms were just coming to an end.<sup>6</sup> Deposit growth then declined steadily, dropping below zero in 1986. Deposits continued to fall about 2 percent per year until the early 1990s, when the rate of decline began to moderate. Deposit growth did not rise above zero until 1996, however. During that year and



the next, deposits increased at a 1.3 percent rate, a significant improvement over the previous decade but well below the growth rates attained during the boom of the early 1980s.

Chart 3 also shows, however, that rural deposit growth has not been any weaker than urban deposit growth over the period. During some years, such as the mid-to-late 1980s, deposit growth was noticeably weaker in rural markets than urban markets. But in other years, such as the early 1980s and early 1990s, deposit growth was noticeably *stronger* in rural markets than urban markets. During the last four years, moreover, deposit growth has been remarkably similar in rural and urban markets. Urban deposit growth did rise somewhat above rural deposit growth in 1997. The gap was only 1.4 percentage point, however, too small a difference to conclude that the two growth rates have begun to diverge. Thus, the chart provides little support for the view that increased access of rural investors to mutual fund products and the aging of the rural population have caused rural deposit growth to slow more than urban deposit growth in recent years.

#### *Was the sluggishness due to weak economic growth?*

As noted earlier, the sluggishness in rural deposit growth would not increase funding pressures at rural banks if it were due to weak economic growth. Table 1 suggests, however, that the sluggish growth in rural deposits since the early 1980s can be explained in only small part by weak economic growth. The table shows average annual growth in real deposits and real personal income for successive five-year periods and the last three years. As the boom in the agriculture and energy gave way to a severe slump, rural income growth slowed in the second half of the 1980s, accounting for some of the slowdown in deposit growth during that period. Deposit growth declined almost three percentage points more than income growth, however,

suggesting that the slower deposit growth was not just a normal response to slower economic growth. In the first half of the 1990s, it is even more evident that sluggish deposit growth was not due to weak economic growth. During that period, income growth rebounded while deposit growth slowed even further. By 1995, deposit growth and income growth were again moving in the same direction. Deposit growth remained well below income growth, however, in sharp contrast to the first half of the 1980s.

While Table 1 confirms that rural deposit growth has been sluggish, it provides even less support than Chart 3 for the view that increased access of rural investors to mutual funds and the aging of the rural population have caused rural deposit growth to slow more than urban deposit growth. In the second half of the 1980s, deposit growth slowed more than income growth in urban markets, just as it did in rural markets. As a result, the gap between urban deposit growth and urban income growth widened to two percentage points, somewhat more than in rural markets. In the first half of the 1990s, urban income growth improved somewhat, but urban deposit growth plummeted. As a result, the gap between deposit growth and income growth in urban markets increased to almost six percentage points, *significantly* more than in rural markets. The picture was little changed in 1995 and 1996, when deposits grew slower than income in both types of markets but especially in urban markets.

The claim that rural deposit growth has not been any more sluggish than urban deposit growth after controlling for income growth can be tested more rigorously through regression analysis. For this purpose, the district was divided into 31 rural markets and 25 urban markets.<sup>7</sup> For each subperiod, a regression equation was estimated for all 56 markets using average annual income growth to explain average annual deposit growth. From this equation, an estimate was then derived of the difference between rural and urban deposit growth after controlling for

Table 1

**REAL DEPOSIT AND INCOME GROWTH  
IN RURAL VS. URBAN MARKETS**

*Tenth District states  
(average annual percent change)*

	Rural markets			Urban markets		
	Deposit growth	Income growth	Difference	Deposit growth	Income growth	Difference
1979-84	2.3	.7	1.6	1.6	1.9	-.3
1984-89	-2.0	-.7	-1.3	-.8	1.3	-2.1
1989-94	-2.7	1.0	-3.7	-4.0	1.8	-5.8
1995	-.7	1.8	-2.5	-.7	4.1	-4.8
1996	1.3	3.6	-2.3	.5	3.1	-2.6
1997	1.2	—	—	2.6	—	—

Note: Deposit growth is for midyear bank and thrift deposits expressed in 1997 dollars. Income growth is for annual personal income expressed in 1997 dollars. Data exclude Casper, Wyoming, and Ottawa, Kansas (see text).

Source: Summary of Deposits, U.S. Department of Commerce.

income growth. The first column in Table 2 shows the estimated effect of income growth on deposit growth in each subperiod, while the second column shows the estimated difference between rural and urban deposit growth after controlling for income growth. The table also indicates whether the estimates are statistically significant, in the sense of being too large to be attributed to chance.<sup>8</sup>

The results confirm that rural deposit growth has been stronger than urban deposit growth after controlling for income growth. Specifically, the second column of the table indicates that rural deposit growth exceeded urban deposit growth by 1.9 percentage points per year in the first half of the 1980s, 1.7 percentage points per year in the second half of the 1980s, and 1.3 percentage points per year in the first half of the

1990s. In all three subperiods, the difference in growth rates was statistically significant, though somewhat less in the first half of the 1990s than the earlier subperiods.

*Was the sluggishness due to the thrift crisis?*

The other factor that could have depressed rural deposit growth without increasing funding pressures at rural banks was the thrift crisis. From mid-1989 to mid-1994, district thrifts lost a total of \$14 billion in rural deposits—\$11 billion at insolvent thrifts and \$3 billion at healthy thrifts (Table 3). About half the total deposits lost by thrifts during these years were acquired by the banking industry through deposit transfers, mergers, and branch purchases.<sup>9</sup> Applying that proportion to the \$14 billion loss in thrift deposits

Table 2

ESTIMATED DIFFERENCE BETWEEN RURAL  
AND URBAN DEPOSIT GROWTH*Controlling for income growth  
(percentage points)*

	<u>Effect of income growth</u>	<u>Gap between rural and urban deposit growth</u>
1979-84	.6**	1.9**
1984-89	1.4**	1.7**
1989-94	.5*	1.3*

\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

Note: Sample consists of 25 MSAs and 31 rural economic areas in Tenth District states, with each area given equal weight.

in rural markets would suggest a net decline in rural deposits due to the thrift crisis of \$7 billion—a little more than 7 percent of total deposits at the start of the period. This figure could either overstate or understate the true effect of the thrift crisis, however. On the one hand, some of the deposits that were paid off by regulators or voluntarily withdrawn from failing and healthy thrifts may have been reinvested in rural banks. In other words, part of the \$14 billion in lost thrift deposits may have been acquired by rural banks indirectly, resulting in a net deposit loss below \$7 billion. On the other hand, some of the thrift deposits acquired by rural banks may have been used to replace other deposits rather than increase loans and investments. In that case, the net loss of deposits from the thrift crisis would exceed \$7 billion.<sup>10</sup>

One way to estimate the impact of the thrift crisis on rural deposit growth more precisely is to compare deposit growth in rural markets where thrifts were important with deposit growth in

rural markets where thrifts were unimportant. If the net effect of the thrift crisis was to reduce rural deposit growth, the rural markets with the lowest deposit growth should be those with the largest amounts of thrift deposits at the start of the period—especially deposits in soon-to-fail thrifts. In this case, multiplying total rural thrift deposits by the estimated effect of local thrift deposits on local deposit growth should provide a reasonable estimate of the impact of the thrift crisis on rural deposit growth.

This approach leads to the conclusion that the thrift crisis accounted for some, but not nearly all, of the weakness in rural deposit growth in the first half of the 1990s. For all rural counties in the district, regression analysis was used to determine the extent to which 1989-94 deposit growth depended on 1989-94 income growth, the percent of 1989 deposits in insolvent thrifts, and the percent of 1989 deposits in healthy thrifts. The regression estimates imply that rural markets lost 72 cents of deposits for every dollar of

Table 3

## REAL RURAL AND URBAN DEPOSITS BY TYPE OF INSTITUTION

Tenth District states

	Rural markets			Urban markets		
	1989	1994	1997	1989	1994	1997
<b>Deposits</b> (billions of 1997 dollars)						
Thrifts	24.4	10.8	9.4	59.5	26.1	24.6
Soon-to-fail	10.6	—	—	21.8	—	—
Other	13.8	10.8	9.4	37.7	26.1	24.6
Banks	70.8	72.0	74.9	111.3	112.8	117.8
Rural	68.3	64.5	61.4	.3	1.5	2.1
Urban	2.4	7.5	13.6	110.9	111.3	115.8
Total	95.1	82.8	84.3	170.8	138.9	142.4
<b>Percent of total</b>						
Thrifts	26	13	11	35	19	17
Soon-to-fail	11	—	—	13	—	—
Other	15	13	11	22	19	17
Banks	74	87	89	65	81	83
Rural	72	78	73	*	1	1
Urban	2	9	16	65	80	81
Total	100	100	100	100	100	100

\*Less than 0.5 percent.

Note: Rural (urban) banks are banks headquartered in rural (urban) markets. Data are for midyear and exclude Casper, Wyoming, and Ottawa, Kansas (see text).

Source: Summary of Deposits.

deposits held in soon-to-fail thrifts, and 32 cents for every dollar of deposits held in healthy thrifts.<sup>11</sup> Applying these estimates to the deposit shares shown in Table 3 indicates that the thrift crisis reduced rural deposits by 12.6 percent over the five-year period, compared to an actual

decline in rural deposits of 12.9 percent. Thus, the estimates suggest that without the thrift crisis, rural deposit growth would not have been as weak but still would have been slightly negative.

The thrift crisis also helps explain why rural

Table 4

## ESTIMATED DIFFERENCE BETWEEN RURAL AND URBAN DEPOSIT GROWTH, 1989-94

Controlling for income growth and thrift crisis  
(percentage points)

<u>Effect of income growth</u>	<u>Effect of deposits in healthy thrifts</u>	<u>Effect of deposits in soon-to-fail thrifts</u>	<u>Gap between rural and urban deposit growth</u>
.5**	-.06*	-.19**	.5

\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

Note: Sample consists of 25 MSAs and 31 rural economic areas, with each area given equal weight. Thrift deposit shares are for the beginning of the period.

deposit growth exceeded urban deposit growth in the early 1990s, although rural deposit growth still looks no weaker than urban deposit growth after controlling for the crisis. Thrifts were more important in urban markets than rural markets in 1989, accounting for 35 percent of urban deposits versus 26 percent of rural deposits (Table 3). As a result, the thrift crisis should have had an even more adverse impact on urban deposit growth than rural deposit growth, accounting for some of the difference in the two growth rates during the first half of the 1990s.

To test this hypothesis, the approach used earlier to test whether rural deposits grew faster than urban deposits was repeated using thrift deposits as an additional factor to explain deposit growth. Specifically, the regression equation reported in the last row of Table 2 was re-estimated including the 1989 deposit shares of soon-to-fail and healthy thrifts in addition to income growth. As shown in Table 4, using the two thrift deposit shares reduces the gap between rural and urban deposit growth in the subperiod 1989-94 to 0.5 percentage point per year, an amount that is not statistically significant. Thus, when thrift effects are taken into account,

rural deposit growth does not compare as favorably with urban growth but still does not look any weaker than urban deposit growth.

On balance, then, the results of this section support the view that rural investors have been shifting out of deposits into mutual funds and other financial instruments, adding to funding pressures at rural banks. As in the previous section, however, the results do not suggest that these funding pressures are greater for rural banks than for urban banks of comparable size. Specifically, deposit growth turns out to have been just as sluggish in urban markets as in rural markets, even after accounting for differences in economic growth and the impact of the thrift crisis.

While reassuring, the fact that rural deposit growth has compared favorably with urban deposit growth until now does not mean it will continue to do so. In 1996, bank and thrift deposits were 66 percent of personal income in rural markets but only 45 percent of personal income in urban markets. This gap in deposit-income ratios suggest that despite increased access to mutual funds products and other financial instruments, rural investors are still more willing

to hold deposits than urban investors. If rural investors began to behave more like urban investors and the rural deposit-income ratio moved even part way toward the urban deposit-income ratio, rural deposit growth could fall well below urban deposit growth. Furthermore, while the aging of the rural population and the associated transfer of wealth to younger generations have had no discernible effect on rural deposit growth to date, the full effects of this demographic shift may not have been felt yet.

### III. INCREASED TAKEOVERS OF RURAL BANKS

The third source of concern about funding pressures at rural banks is the increased rate of mergers between rural and urban banks. Some analysts argue that urban banks are taking large amounts of deposits through their newly acquired rural branches and investing the deposits outside the community. As a result, remaining rural banks are being called on to make more loans to local borrowers without experiencing any increase in loanable funds. Other analysts disagree that takeovers increase funding pressures at remaining rural banks, arguing that urban banks will maintain lending to rural borrowers as long as the loans are profitable.

#### *What are the issues?*

Several factors have led to a high rate of mergers between rural and urban banks in the district during the 1990s. First, district states have significantly relaxed restrictions on statewide branching, giving urban banks much greater freedom to take over rural banks and convert them to branches. In the first half of the 1980s, no district state allowed banks to own branches through the state. These restrictions began to be relaxed in the second half of the 1980s, and by 1991 all seven states allowed statewide branching through acquisition.<sup>12</sup> Second, the high rate of rural bank failures during the agricultural crisis of the 1980s underscored

the risks of specializing in loans tied to the local economy. One way banks could diversify their loan portfolios and reduce their vulnerability to local economic downturns was to operate branches in both rural and urban markets. Third, increasing competition from nonbank financial institutions and consolidation in the farm sector may have led some rural banks to conclude they were too small to meet all the needs of their customers. Becoming a branch of a larger urban bank was one way for a rural bank to offer more financial services and make larger loans, helping the bank compete against mutual funds and non-bank lenders such as insurance companies and the Farm Credit System.

Such mergers between rural and urban banks may increase funding pressures at remaining rural banks if the merged banks reduce lending to creditworthy local borrowers and if these borrowers turn to other rural banks for credit. It may not be feasible for the managers of a large bank with widely dispersed operations to review every lending decision made at its branch offices. Thus, when a rural bank is taken over and converted to a branch of a distant urban bank, its loan officers may be given less authority to make credit decisions, resulting in fewer loans being made to local borrowers. In other cases, a rural bank may be discouraged from making local loans after it is taken over and converted to a branch because the acquiring bank was mainly interested in gaining access to low-cost deposits for investment in other markets. As long as the borrowers who are denied loans as a result of the takeover are creditworthy, other rural banks should be willing to lend to them. These banks may face increased funding pressures, however, because the increase in loan demand may not be matched by an increase in deposits.

Not all analysts agree that takeovers of rural banks increase funding pressures at remaining rural banks. One reason funding pressures at other banks might remain unchanged is that the banks taken over in mergers might not decrease

lending to local borrowers. Before being taken over, some rural banks may have loaned only a small percentage of their deposits because they were worried about the risk of illiquidity. And other banks may have limited lending to local borrowers because they did not want to tie their fortunes too closely to the local economy. Joining a large, geographically diversified bank with access to open market funds would reduce both concerns, enabling acquired banks to invest a higher proportion of their funds in loans to local borrowers.

Another reason takeovers might not increase funding pressures is that the borrowers who were denied loans after a merger might not be sufficiently creditworthy for other rural banks to want to lend to them. Some rural banks acquired in mergers may have made local loans that were only marginally profitable—for example, because the banks were not concerned about maximizing profits and were protected from takeover by the severe branching restrictions that existed in most district states until the late 1980s. If other rural banks had no interest in taking on such marginally profitable loans, their need for funds would not increase.

Finally, even if takeovers resulted in creditworthy borrowers being denied loans, funding pressures at other rural banks could remain unchanged because the banks acquired in mergers lost just as many depositors as loan customers. Anecdotal evidence suggests that some depositors prefer to do business with small local banks because they offer more personalized service and have closer ties to the local community. Also, mergers sometimes cause temporary disruptions in service due to difficulties in combining computer systems or establishing reporting relationships. If such factors caused a substantial outflow of deposits from banks acquired in mergers, other rural banks could find themselves with more than enough funds to satisfy their increased loan demand.

### *How important have takeovers of rural banks been?*

Deposits in rural branches of urban banks have increased significantly during the 1990s (Table 3). In mid-1989, the rural deposits of urban banks totaled only \$2.4 billion (1997 dollars). Over the next eight years, such deposits increased more than fivefold to \$13.6 billion. Because total rural deposits fell during this period, the rural deposit share of urban banks rose even more sharply, from 2 percent to 16 percent.

Table 5 shows that the increase in rural deposits of urban banks has come entirely through takeovers of rural banks and not through the opening of new branches or deposit growth at previously existing branches. Over the eight-year period, urban banks acquired \$11.7 billion in deposits through mergers with rural banks. That figure exceeded the total change in rural deposits of urban banks by \$0.5 billion, suggesting that rural banks taken over by urban banks suffered a net decline in deposits following the merger.

The table also shows that mergers between rural and urban banks have not abated during the last several years. In the first half of the 1990s, an average of \$1.0 billion in rural deposits was acquired by urban banks each year through takeovers of rural banks. During the next three years, rural deposits acquired through mergers averaged an even higher \$2.2 billion per year. Thus, despite the widely publicized decision by some large interstate banking organizations to withdraw from rural markets, other urban banks have remained sufficiently interested in rural acquisitions to sustain the rate of takeovers.

### *Have the takeovers increased funding pressures at other rural banks?*

A number of studies have tried to determine if banks taken over in mergers make fewer loans to local borrowers.<sup>13</sup> Unfortunately, however, loan data are reported only at the bank level, making it

Table 5

## CHANGE IN REAL RURAL DEPOSITS

Tenth District states  
(billions of 1997 dollars)

	Rural deposits of urban banks			Rural deposits of rural banks		
	Total change	Due to mergers*	Due to other factors	Total change	Due to mergers*	Due to other factors
1990	.9	.5	.4	1.8	-.5	2.3
1991	1.1	.7	.5	-.9	-.7	-.2
1992	1.3	1.7	-.4	-1.8	-1.7	-.2
1993	.7	.8	-.1	-1.3	-.8	-.5
1994	1.1	1.4	-.3	-1.6	-1.4	-.1
1995	3.0	2.9	.1	-2.9	-2.9	.0
1996	1.2	1.3	-.1	.5	-1.3	1.8
1997	1.9	2.4	-.5	-.7	-2.4	1.7
Total	11.1	11.7	-.5	-7.0	-11.7	4.7

\*Includes changes due to relocation of bank headquarters.  
Note: Changes in deposits are from June to June.  
Source: Summary of Deposits.

difficult to determine how a bank's loans change after it is merged into another bank and converted to a branch.<sup>14</sup> Furthermore, to establish that takeovers increase funding pressures at other rural banks, it is not enough to show that banks taken over in mergers make fewer local loans. As suggested above, two other conditions must be met. First, the borrowers who are denied loans must turn to other rural banks for credit and must be good enough risks for other rural banks to want to lend to them. And second, the banks taken over in mergers must lose fewer depositors to other rural banks than loan customers, so that the demand for loans at other banks goes up more than the supply of funds.

An alternative approach is to focus on loan and

deposit growth at rural banks that have remained independent, comparing banks in markets with high takeovers to banks in markets with low takeovers. If takeovers of rural banks have increased funding pressures on remaining rural banks, then loan growth should be observed to have exceeded deposit growth by a bigger margin at banks in markets with high takeovers than at banks in markets with low takeovers. In making such a comparison, it is important to control for other factors that could cause loan and deposit growth to differ across banks. One such factor is the amount of deposits acquired by the bank from thrifts through deposit transfers, mergers, or branch purchases. Another factor is whether the markets in which the bank operated experienced slow or rapid economic growth over the period.



Table 6

## ESTIMATED EFFECT OF TAKEOVERS ON 1989-96 LOAN AND DEPOSIT GROWTH

*Rural banks in Tenth District states*

	<u>Effect of income growth</u>	<u>Effect of thrift acquisitions</u>	<u>Effect of takeovers</u>
Loan growth	1.1**	.69**	.17**
Deposit growth	1.2**	.57**	.16**

\*\*Significant at the 1 percent level.

Note: Sample consists of 1,316 banks headquartered in rural areas in June 1996. Loan and deposit growth are adjusted for bank mergers. Income growth is the weighted-average growth of personal income in the bank's deposit markets. Thrift acquisitions are total deposits acquired by the bank from thrifts as a percentage of the bank's initial deposits. Takeovers are the weighted-average ratio of deposits taken over to deposits not taken over in the bank's markets, expressed as a percent.

This approach was implemented through regression analysis. In June 1996, there were roughly 1,300 rural banks in the district. For each of these banks, total loan growth and total deposit growth were calculated for the period from June 1989 to June 1996, adjusting for all mergers in which the bank was directly or indirectly involved. Separate regression equations were then estimated for loan growth and deposit growth. The variables used to explain loan growth and deposit growth were the total amount of deposits acquired by the bank from thrifts, the average growth in personal income in the bank's markets, and the average ratio of deposits acquired in mergers to other deposits in the bank's markets. The first column in Table 6 reports the estimated effect of income growth, the second column the estimated effect of thrift acquisitions, and the third column the estimated effect of takeovers.

The regression results provide no evidence that takeovers of rural banks by urban banks increased funding pressures at remaining rural banks. Specifically, the results show that take-

overs have increased loan growth and deposit growth at surviving banks by roughly equal amounts, leaving loan-deposit ratios unchanged. For each percentage-point increase in the ratio of deposits acquired in mergers to other deposits, loan growth at remaining banks increased by an average of 0.17 percentage point but deposit growth increased by nearly the same amount. Both effects are statistically significant, although the regressions explain only a small part of the total variation in loan and deposit growth among rural banks.<sup>15</sup>

The finding that takeovers of rural banks have increased deposit growth at other rural banks helps explain why deposit growth has been so strong at those rural banks that have remained in business. The last column of Table 5 shows that deposits of rural banks not taken over in mergers have increased by a total of \$5 billion in the 1990s, offsetting two-fifths of the decline in rural bank deposits due to mergers. Some of this deposit growth has come through thrift acquisitions, especially at the beginning of the decade.

The regression estimates suggest, however, that some of the growth has also come from rural banks outcompeting the rural branches of urban banks for deposits.

In short, while takeovers of rural banks have increased significantly, the evidence does not suggest mergers have increased funding pressures at other rural banks. Takeovers do appear to have increased loan growth at other rural banks, consistent with the claim that banks acquired in mergers make fewer loans to local borrowers. But takeovers also appear to have boosted deposit growth at other rural banks, consistent with anecdotal evidence that some depositors prefer to do business with local banks. Thus, to date, the net effect of takeovers has been to leave funding pressures essentially unchanged.

#### IV. SUMMARY AND CONCLUSIONS

This article has examined three sources of concern about funding pressures at rural banks—the increase in loan-deposit ratios, the sluggish growth in deposits, and the increased rate of takeovers of rural banks by urban banks. Overall, the evidence suggests that funding pressures have increased at rural banks but not any more than at urban banks of the same size.

The available evidence does not support the view that takeovers of rural banks have increased funding pressures at other rural banks. Takeovers do appear to have increased loan growth at remaining rural banks. But these banks have gained just as many new depositors as new loan customers, leaving funding pressures unchanged.

Evidence on loan-deposit ratios is more mixed. Loan-deposit ratios have risen sharply at rural banks during the last several years, consistent with the view that rural banks face increased funding pressures. Some of the increase in the loan-deposit ratio appears to be cyclical, however, and some represents a return to normal levels after the precipitous decline in rural lending in the

1980s. Also, survey evidence suggests that rural banks are not as uncomfortable with high loan-deposit ratios now as they were in the late 1970s.

The strongest support for the view that rural banks face increased funding pressures comes from the sluggishness in rural deposit growth. If this sluggishness were due to weak economic growth or the thrift crisis, there would be no reason to expect rural banks to have a harder time funding their loans. The article finds, however, that rural deposit growth was quite weak even after controlling for these factors. Thus, the evidence supports the view that rural investors have been shifting out of deposits into mutual funds, forcing rural banks to finance their lending in other ways.

While this article finds some evidence of increased funding pressures at rural banks, those pressures do not appear to be unique to rural banks. Loan-deposit ratios have not risen any more at rural banks than at urban banks of similar size, and deposit growth has been just as sluggish in urban markets as in rural markets. Thus, the evidence does not support the view that increased access to mutual funds and an aging population have caused rural deposit growth to slow more than urban deposit growth, creating greater funding pressures for rural banks than for urban banks of similar size. The article noted, however, that the ratio of deposits to income is much higher in rural areas than urban areas, suggesting that rural investors are still more willing to invest in deposits than urban investors. If rural investors began to behave more like urban investors, rural deposit growth could fall behind urban deposit growth, causing funding pressures to become more severe for rural banks than similar-size urban banks.

The fact that small banks in both rural and urban markets face funding pressures due to weak deposit growth provides some support for considering measures to improve access of small banks to open market funds. Small banks have

traditionally enjoyed less access to open market credit than large banks because creditors do not have as much information about their underlying financial condition. Measures aimed at narrowing this information gap could help small banks compensate for the slowdown in deposit growth and maintain their lending.

Whether there is any justification for policies targeted at rural banks is less clear. The fact that small rural banks face the same funding pressures as small urban banks would seem to argue against policies aimed specifically at rural banks.

Such a conclusion may be unwarranted, however, because small businesses are more dependent on community banks for credit in rural markets than urban markets. A small urban business that cannot get a loan at a small bank because the bank faces severe funding pressures may be able to turn to a large bank or nonbank financial institution. A small rural business may not have this option, because other local banks face just as severe funding pressures as the bank that turned down the loan and because nonbank financial institutions often do not serve rural markets.

## APPENDIX

This appendix provides further details on the regression equations estimated in the article. Table 2 reports estimates of the difference between rural and urban deposit growth during different subperiods after controlling for income growth. These estimates were obtained by estimating the following regression equation, the results for which are reported in Table A1:

$$GDEP_{mt} = a_t + b_t GINC_{mt} + c_t RURAL_m \quad t=1,2,3. \quad (1)$$

$GDEP_{mt}$  is average annual percent growth in real deposits in market  $m$  over subperiod  $t$ ;  $GINC_{mt}$  is average annual percent growth in real personal income in market  $m$  over sub-

period  $t$ ; and  $RURAL_m$  is a dummy variable equal to 1 if market  $m$  is rural. Deposits and personal income for each year were deflated by the CPI excluding food and energy. The three subperiods for which the equation was estimated are 1979-84, 1984-89, and 1989-94.

The sample for equation (1) consists of 25 urban markets and 31 rural markets. Market definitions are based on Component Economic Areas (CEAs), the geographic unit used by the Bureau of Economic Analysis. Most CEAs are centered around a metropolitan statistical area (MSA) and include both urban and rural counties. However, some CEAs include only urban counties,

Table A1  
ESTIMATED COEFFICIENTS FOR EQUATION (1)

Subperiod	Intercept	$GINC$	$RURAL$	No. of obs.	$R^2$
1979-84	.19 (.42)	.62** (3.93)	1.85** (3.76)	56	.30
1984-89	-2.40** (5.31)	1.39** (8.96)	1.72** (2.72)	56	.62
1989-94	-4.38 (6.99)	.54* (2.51)	1.32* (2.04)	56	.13

Note: Absolute value of t-statistic is in parentheses.

\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

Table A2  
ESTIMATED COEFFICIENTS FOR EQUATION (2)

Intercept	DINC	FTDEP89	HTDEP89	No. of obs.	R <sup>2</sup>
-1.32 (1.09)	.61** (9.23)	-.72** (9.49)	-.32** (5.31)	434	.28

Note: Absolute value of t-statistic is in parentheses.

\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

while others include only rural counties. Each rural (urban) market in the sample consists of a collection of rural (urban) counties in a CEA that lies mainly inside the district. In those few cases in which the CEA extends outside the district, only district counties are included. Also, a few district counties are omitted from the sample because they belong to CEAs lying mainly outside the district.

On page 53, the article reports estimates of the relationship between rural deposit growth and beginning-of-period thrift deposit shares for the subperiod 1989-94. These estimates were obtained by estimating the following regression equation, the results for which are reported in Table A2:

$$DDEP_m = a + b DINC_m + c FTDEP89_m + d HTDEP89_m. \quad (2)$$

$DDEP_m$  is the percent change in real deposits in market  $m$  from mid-1989 to mid-1994;  $DINC_m$  is the percent change in real personal income in market  $m$  from 1989 to 1994;  $FTDEP89_m$  is the percent of mid-1989

deposits in market  $m$  held in offices of soon-to-fail thrifts (thrifts closed by the RTC over the next five years); and  $HTDEP89_m$  is the percent of mid-1989 deposits in market  $m$  held in offices of healthy thrifts (thrifts *not* closed by the RTC over the next five years). The sample consists of 434 rural counties in the district.

Table 4 reports an estimate of the difference between rural and urban deposit growth over the subperiod 1989-94 after controlling for thrift effects as well as income growth. This estimate was obtained by estimating the following variation on equation (1), the results for which are reported in Table A3:

$$GDEP_m = a + b GINC_m + c FTDEP89_m + d HTDEP89_m + e RURAL_m. \quad (3)$$

$GDEP_m$  and  $GINC_m$  are defined as in equation (1), while  $FTDEP89_m$  and  $HTDEP89_m$  are defined as in equation (2). As in equation (1), the sample consists of 25 urban markets and 31 rural markets.

Finally, Table 5 reports estimates of the impact of takeovers of rural banks on loan and deposit growth at remaining rural banks, controlling for both thrift acquisitions and local income growth. These estimates were obtained by estimating the following equations, the results for which are reported in Table A4:

$$DDEP = a + b THRIFTDEP + c DINC + d TA E ER \quad (4)$$

$$DL AN = a + b THRIFTDEP + c DINC + d TA E ER \quad (5)$$

$DDEP$  and  $DL AN$  are the percent changes in nominal deposits and nominal loans at bank  $i$  from mid-1989 to mid-1996, adjusted for acquisitions of other banks. These variables were calculated by dividing the 1996 deposits and loans of bank  $i$  by the 1989 deposits and loans of bank  $i$  and of all banks directly or indirectly acquired by bank  $i$  during the seven-year period.  $THRIFTDEP$  is the total amount of thrift

deposits directly or indirectly acquired by bank  $i$  over the period, expressed as a percent of the 1989 deposits of bank  $i$  and of all banks directly or indirectly acquired by bank  $i$ .  $DINC$  is average income growth in the markets in which bank  $i$  operated, and  $TA E ER$  is a measure of average takeover activity in the markets in which bank  $i$  operated. Specifically,

$$DINC = \sum_m \alpha_m DINC_m \quad (6)$$

$$TA E ER = 100 \sum_m \alpha_m \frac{RUDEP89_m}{RRDEP89_m}, \quad (7)$$

where  $DINC_m$  is the percent change in nominal personal income in market  $m$  from 1989 to 1996;  $\alpha_m$  is the fraction of the 1989 deposits of bank  $i$  and of all banks directly or indirectly acquired by bank  $i$  that were held in market  $m$ ;  $RUDEP89_m$  is the total 1989 deposits held in market  $m$  by rural banks that

Table A3.

ESTIMATED COEFFICIENTS FOR EQUATION (3)

Intercept	GINC	FTDEP89	HTDEP89	RURAL	No. of obs.	R <sup>2</sup>
-.45 (.43)	.53** (3.38)	-.19** (6.44)	-.06* (2.10)	.46 (.87)	56	.56

Note: Absolute value of t-statistic is in parentheses.

\*Significant at the 5 percent level

\*\*Significant at the 1 percent level.

Table A4

## ESTIMATED COEFFICIENTS FOR EQUATIONS (4) AND (5)

Dependent variable	Intercept	THRIFTDEP	DINC	TAKEOVERS	No. of obs.	R <sup>2</sup>
<i>DLOANS</i>	38.25** (4.66)	.69** (4.65)	1.07** (5.38)	.17** (3.37)	1,316	.05
<i>DDEP</i>	-4.31 (.93)	.57** (6.74)	1.16** (10.30)	.16** (5.51)	1,316	.14

Note: Absolute value of t-statistic is in parentheses.

\*Significant at the 5 percent level.

\*\*Significant at the 1 percent level.

were directly or indirectly taken over by urban banks during the next seven years; and  $RRDEP89_m$  is the total 1989 deposits held in market  $m$  by rural banks that were *not* taken

over by urban banks during the next seven years. The sample for equations (4) and (5) consists of 1,316 banks headquartered in rural counties in mid-1996.

## ENDNOTES

- <sup>1</sup> Rural banks are defined as those headquartered in rural markets and urban banks as those headquartered in urban markets. As will be discussed in detail later, some urban banks have rural branches and some rural banks have urban branches.
- <sup>2</sup> The three size categories are less than \$100 million in assets, \$100 million to \$300 million in assets, and \$300 million to \$1 billion in assets (1997 dollars). In mid-1997, 59 percent of the total deposits of rural banks were in the first size category, 26 percent in the second size category, and 15 percent in the third size category.
- <sup>3</sup> Surveys of agricultural credit practices by other Federal Reserve Banks have obtained similar responses (U.S. Department of Agriculture).
- <sup>4</sup> According to a national survey of small business finances by the Board of Governors, a third of small businesses in urban areas used financial services from nondepository financial institutions versus a fifth of small businesses in rural areas (Cole and Wolken). Farmers may not be as adversely affected by funding pressures at rural banks as small businesses because farmers can borrow from government-sponsored enterprises such as the Farm Credit System.
- <sup>5</sup> The data in this article exclude Casper, Wyoming, and Ottawa, Kansas because of extreme fluctuations in deposits at a large thrift headquartered in Ottawa and a large interstate bank headquartered in Casper.
- <sup>6</sup> Some of the surge in deposit growth in 1983 was due to the introduction of money market deposit accounts, which allowed banks and thrifts to compete more effectively with money market mutual funds.
- <sup>7</sup> Each rural market consists of all rural counties in a Component Economic Area, the geographic unit used by the Bureau of Economic Analysis. Each urban market is a metropolitan statistical area (MSA).
- <sup>8</sup> All regressions estimated in this article are explained in greater detail in the appendix.
- <sup>9</sup> Banks acquired \$18 billion in deposits from failed thrifts and \$6 billion from healthy thrifts, out of a total decline in thrift deposits of \$47 billion. Data are unavailable at the branch level on the amounts of thrift deposits acquired by banks, making it impossible to separate out acquisitions of rural thrift deposits from acquisitions of urban thrift deposits.
- <sup>10</sup> Another reason the \$7 billion figure might underestimate the deposit loss is that depositors of insolvent thrifts often received a lower interest rate when their funds were transferred to a healthy bank. The change in terms may have caused some of these depositors to reassess their investment alternatives and shift out of deposits into mutual funds or other financial instruments.
- <sup>11</sup> The sample consisted of 434 counties. All estimated coefficients were statistically significant at the 1 percent level, and the  $R^2$  for the regression was 0.28.
- <sup>12</sup> Nebraska allowed statewide branching in 1985, Kansas in 1987, Oklahoma and Wyoming in 1988, Missouri in 1990, and Colorado and New Mexico in 1991. Some states still restrict *de novo* branching.
- <sup>13</sup> Most of these studies have focused on the impact of mergers on small business loans. For a recent review of the literature, see Board of Governors.
- <sup>14</sup> This problem is especially acute when a small bank is taken over by a much larger bank, because any change in lending at the new branch will be swamped in the data by changes in lending at the acquiring bank's other offices.
- <sup>15</sup> The  $R^2$  was .05 for the loan equation and .14 for the deposit equation. While low, these figures are not unusual for such regressions.

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