The Expanding Geographic Reach of Retail Banking Markets

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In the view of most policymakers and economists, competition in retail banking takes place in local markets covering a relatively small geographic area. Banks are thought to design their services and set their loan and deposit rates in response to the supply and demand conditions prevailing in a particular city, county, or metropolitan area. In keeping with this view, studies of the competitiveness of banking markets generally focus on developments at the local level: for example, researchers and regulatory agencies assessing the effects of bank mergers on competition will examine the degree to which deposits in a given metropolitan area are concentrated in a few large banks.

A reevaluation of the idea that banking markets are local may, however, be overdue. The banking industry has undergone a remarkable transformation in the past twenty years. Deregulation has removed many of the geographic restraints on bank expansion; banks are now free to establish branches nationwide or to buy banks in other parts of the country. In addition, banks are seeking to achieve greater efficiency in payment, credit, and depository services by standardizing their product offerings, centralizing their operations, and shifting decision-making responsibility from local managers to the head office.

In light of these changes, this article investigates whether larger geographic areas have replaced cities and counties as the true marketplace for banking services. A review of data collected during 1996 and 1997 reveals that many banks set uniform interest rates for both retail loans and deposits across an entire state or broad regions of a large state. If banks were still operating in distinct local markets, their retail interest rates would show substantial intercity variation.

Regression analysis of the effect of market concentration on deposit rates provides additional evidence that local markets have been absorbed into larger arenas of

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competition: the significant relationship that earlier research detected between individual banks' deposit rates and measures of concentration at the local level is no longer evident, while a significant relationship does emerge at the state level. These results suggest that local markets the size of a single county or metropolitan area are no longer relevant and that state boundaries may offer a better approximation of the boundaries of retail banking markets.

We begin our investigation with a look at the events and ideas that have contributed to the conventional view that banking markets are local. A discussion of the forces that are reshaping the banking industry and undermining the concept of local markets follows. In the balance of the article, we present our statistical evidence supporting the emergence of larger retail markets.

How Banking Markets Have Conventionally Been Defined

The notion that retail banking markets are local in scope figured importantly in the Supreme Court's decision in the Philadelphia National Bank Case of 1963.[1] In ruling that the banking industry was subject to the nation's antitrust legislation, the Court determined that commercial banking was a bundle of services and that banking markets were local in coverage. Since then, the government agencies responsible for clearing mergers and acquisitions of banking organizations have followed the Court's lead by assessing competition within relatively narrow geographic areas.[2]

In measuring competition within local markets, regulators and other analysts have had to specify what is meant by "local." Most equate local markets in urban areas with the Census Bureau's metropolitan statistical areas (MSAs). For areas outside large cities, analysts often designate whole counties as separate markets.

Underlying the conventional definition of banking markets is the idea that market boundaries are determined from the demand side. In other words, the actions of households and business firms—the buyers of banking services—determine the reach of markets, not the actions of banks as the sellers of these services. Given the view that markets are determined from the demand side, the fact that households and businesses routinely rely on nearby institutions for most banking services has encouraged the perception that markets are quite small. Indeed, the majority of a bank's customers are typically drawn from a narrow area around each of its branch offices.

Nevertheless, commuting patterns suggest that urban markets, at least, should not be too narrowly construed. Because commuters can choose among banks convenient to their home or their workplace, they can readily switch institutions to obtain better quality or lower priced services. Recognizing that customers may be gained or lost in this way, banks operating in one part of a metropolitan area react to the price and service decisions of banks operating in other parts, even if their branch networks do not overlap. As a consequence, deposit and loan rates are highly correlated across institutions in the same metropolitan area. This correlation has supported the equation of local markets with entire metropolitan areas.

The view that geographic markets are local and determined from the buyer side was formed in the early 1960s, when unit banking—banks consisting of a single office—prevailed in seventeen states and branching was heavily restricted in most other states.

Forces of Change

In the past two decades, the banking industry has undergone profound regulatory and structural changes that may make conventional definitions of markets obsolete. These changes have affected the business environment in which banks operate, the internal organization of bank holding companies, and the design and delivery of banking services.

Deregulation of the Banking Industry

The view that geographic markets are local and determined from the buyer side was formed in the early 1960s, when unit banking—banks consisting of a single office—prevailed in seventeen states and branching was heavily restricted in most other states. As late as 1985, only twenty states permitted statewide branching. Since then, however, substantial deregulation has occurred. Unit banking has been abolished everywhere, and banks in all but five, less populous, states are permitted to establish branches throughout a state by merging with existing banks or entering de novo (Conference of State Bank Supervisors 1996).[3] These changes have led to tremendous growth in branch networks. U.S. banks in 1963 numbered 13,291, and they operated only 13,581 branch offices—a ratio of one to one. Since that time, the number of branches has quadrupled while the number of banks has shrunk. At year-end 1997, there were 60,320 branches of 9,143 banks, or more than six branches to every bank. This development alone suggests that markets now stretch beyond individual counties or metropolitan areas.

The relaxation of branching restrictions during the past two decades, coupled with numerous mergers and acquisitions, has led to substantial overlaps in banks' service areas. In the western region of New York State, for example, no bank operated branches in both Buffalo and Rochester, the region's main cities, in 1973. By 1978, only a small degree of overlap existed, with four banks operating branches in both cities (Federal Deposit Insurance Corporation 1973, 1978). Currently, however, twelve institutions operate in both cities, accounting for 94 percent of the combined $28.6 billion of deposits held in Buffalo and Rochester branches as of March 1997. Although the two metropolitan areas continue to be viewed as separate and distinct markets, the extensive overlap in branch operations indicates that retail banking in the two areas is essentially integrated.

Reorganization of Holding Companies

Another factor that suggests the disappearance of local markets is the internal reorganization of bank holding companies. Until recently, the management of multistate holding companies was decentralized, with different charters governing company operations in different states. Within states, holding companies sometimes operated several banks, each bank confined to a distinct region and each posting a different schedule of rates for its deposit and loan products. In effect, some holding companies were confederations of separately chartered banks. To address the inefficiencies arising from redundant facilities or nonstandard products and services, many holding companies are now centralizing their management structure, organizing their operations along business—rather than geographic—lines, and placing most, if not all, banking activities under a single charter.

Another factor that suggests the disappearance of local markets is the internal reorganization of bank holding companies.

The consolidation of decision making at headquarters should encourage holding companies that now set different rates within a state to adopt uniform rates.[4] In some cases, intrastate rate differentials arose because holding companies operating several banks within a single state had a company policy of giving each bank's management some autonomy in setting consumer loan and deposit rates. Regional managers were allowed to set rates or the terms of loans and deposit accounts on the basis of their knowledge of, or feel for, local market conditions or customer preferences. In other cases, intrastate rate differentials arose because a recently acquired bank had not yet been fully integrated into its holding company.

At the same time that holding companies are reorganizing, they are making sizable investments in new technology, including credit scoring, twenty-four-hour telephone centers, and computer programs that form and analyze comprehensive customer databases. With

this new technology in place, the main bank can offer an array of standardized retail products and services at all branches. Interest rate and product design decisions, based on customer research performed and interpreted by head office personnel, can be applied uniformly throughout the firm. The automation of retail services and customer support should discourage banks from reverting to their former practice of setting retail deposit and loan rates locally, even in the event of changes in underlying conditions such as a sustained rise in the general level of interest rates or further consolidation in the industry.[5]

Previous Studies of Geographic Banking Markets

Since the Supreme Court ruling in the Philadelphia National Bank case, many studies addressing the problem of market delineation have supported the position that markets are local. Early research reported the findings of surveys that collected detailed information on the location of branch offices used by households and firms in a particular municipality. These local surveys, conducted during the 1960s and 1970s, found that a large majority of individuals did their banking near home or the workplace and that small business firms generally did theirs near their establishments (Gelder and Budzeika 1970). Recent national surveys, such as the 1995 Survey of Consumer Finances and the 1993 National Survey of Small Business Finances, have found that a large majority of households and small business firms continue to use nearby institutions.[6] Although banks and other financial institutions are promoting electronic delivery of their services, only a fraction of survey respondents indicated that they use out-of-town banks.

A few econometric studies in the 1960s and 1970s attempted to identify banking markets by analyzing how interest rates varied across locations. The results of these studies were subsequently discounted, however, because deposit and loan rates were constrained by regulation at that time. The dismantling of Regulation Q, particularly the deregulation of savings and NOW accounts at year-end 1982, created the first good opportunity to inspect patterns in deposit rates to determine the size of geographic markets. The first large-scale study following deregulation, conducted by Keeley and Zimmerman (1985), yielded mixed evidence on the size of markets. The study showed statistically significant differences in average NOW account rates across metropolitan areas and individual counties in California during the 1983-84 period—a result that supports the existence of local markets. But in the case of savings accounts, Keeley and Zimmerman found that rate differences across California were too slight to indicate local markets. They also discovered that differences in state averages for savings accounts rates were large, which meant that although the market for savings account deposits was not local, it was not so large that it was national.

A study by Jackson (1992) bolstered the earlier findings of Keeley and Zimmerman by rejecting the hypothesis of a national market for both NOW accounts and savings accounts. Nevertheless, Jackson could not reject the hypothesis of a national market for six-month time deposits. Rather than perform a static comparison, as Keeley and Zimmerman had done, Jackson used time series data for individual banks over the 1983-85 period to estimate the speed with which banks adjusted retail deposit rates following changes in the Treasury bill rate. The speeds of adjustment across cities were not sufficiently similar to indicate a national market for NOW acccounts and savings accounts.

Approaching the problem from a different angle, other researchers have examined the relationship between local deposit concentration—that is, the degree to which deposits in a particular locality are concentrated in a few banks—and variations in loan and deposit rates across localities. A finding that the relationship is statistically significant provides support for the notion that markets are local.

Berger and Hannan (1989) established that measures of concentration were linked to rate differences across MSAs in the era of deregulated deposit rates. Using data for the 1983-85 period, they showed that higher degrees of local concentration were correlated with lower rates on money market savings accounts. More specifically, their analysis concluded that the savings account rate tended to

run 2 basis points lower for every increase of 3 percentage points in the three-firm concentration ratio (the combined deposit share of the three largest competitors). Later studies have generally either confirmed and refined the Berger-Hannan study or extended the analysis to home mortgages and small business loans.[7]

Why a New Study of Market Size Is Warranted

Studies that have examined interest rate patterns to establish the geographic dimensions of banking markets have generally found that retail deposit or loan markets are not national. These results are often said to support the position that markets are very small and local. Nevertheless, while the hypothesis of a national market has often been rejected, a huge middle ground lies between a unified nationwide market and hundreds of markets no larger than a single county or metropolitan area. To establish the relevance of local markets, researchers need to look at data from abutting or nearby locations rather than data from cities scattered around the country.

The studies that have shown a link between deposit concentration in MSAs and differences in deposit and loan rates across cities also have important limitations. Their findings are consistent with markets that are local, but their results could also have been obtained if markets are quite a bit larger than local areas. As long as concentration in the true market area, which could encompass adjoining MSAs, is correlated with concentration in the local area, a relationship with interest rate variables would be found in the data. This means that the size of markets implied by deposit and loan rate data is still an open question.

The inconclusiveness of the existing evidence underscores the need to revisit the issue of market size. Also prompting such a reevaluation is the fact that the interest rate information used in earlier research may now be outdated. Most of the studies reviewed in the previous section relied on the findings of an annual nationwide survey of the rates and fees of retail deposit accounts in the 1983-87 period. As we have seen, banks since that time have been expanding the size and reach of their branch office networks, a development that could lead to wider geographic markets.

Interestingly, some aspects of the earlier studies hint at the possibility of wider markets in the wake of branching deregulation. First, institutions operating in a state that had unit banking or limited branching status at the time make up a sizable portion of the samples used. Neumark and Sharpe (1992) reported that one-fifth of their observations came from unit banking states and another third came from limited branching states. Second, some regression equations included variables that identified institutions located in unit banking or limited branching states. The estimated coefficients for location variables indicated that branching restrictions affected rate-setting behavior (Sharpe 1997). Finally, research by Hannan (1991b, 1997) showed that over the 1983-93 period, the effects of local concentration on deposit and loan rates were diminishing as branching restrictions were relaxed.

To establish the relevance of local markets, researchers need to look at data from abutting or nearby locations rather than data from cities scattered around the country.

In the next two sections, we address the weaknesses in earlier research as we explore the contours of retail banking markets. First, we examine consumer deposit and loan rate data collected across cities in the same state during March 1997 to determine whether the patterns observed are consistent with the existence of local markets. If banks operate in narrowly confined markets, they should be varying retail interest rates in response to local demand and supply conditions, and intracity differences in a bank's rate schedule ought to be observed. If banks operate in broad markets, they should be setting uniform rates over

regions that are wider than metropolitan areas. Uniform interest rates across an entire state would provide reasonably persuasive evidence that retail banking markets are not local.

Next we examine data collected in a 1996 survey to determine whether local concentration continues to tilt deposit rates to a bank's advantage. Uniform deposit rates over broad areas spanning several cities and the intervening regions suggest that this is no longer the case. To investigate the relationship between concentration and deposit rates more thoroughly, we use current data to reestimate some regressions specified in earlier research.

Intrastate Deposit and Loan Rate Patterns

The consumer deposit and loan data used in this section were collected by the Bank Rate Monitor, Inc., a service that provides retail pricing information for the industry.[8] The Bank Rate Monitor compiles rate information from banks in all fifty states. Although its survey tends to include only the single largest city in less populous states, it typically covers several cities in more populous states. In addition, the Bank Rate Monitor usually contacts each of the major banks at their branch offices in at least a few cities in the more populous states. The information collected on individual banks at multiple locations in the same state allows us to probe the geographic reach of markets. Here we examine six large states: New York, Michigan, Texas, California, Pennsylvania, and Florida.[9] Collectively, these states contain about 40 percent of the U.S. population.

The Bank Rate Monitor data offer a real advantage by providing rate information city by city, in contrast to previously used data sets that drew rate information only from banks' head offices. The survey does not, however, produce an ideal data set to explore the size of markets. First, only five to eight cities are surveyed in some large states. While this level of coverage may be more than adequate to meet the information needs of the survey's primary users, the performance of statistical tests requires that more cities within each state be included. Second, there are occasional gaps in coverage. The major banks in a state are not always shown to report a loan and deposit rate schedule for branches in every city included in the survey, although data on the amount of branch deposits indicate that these banks have a significant presence in some cities for which rate information is missing. In some cases, we obtained the missing information by contacting the bank directly. As a result, the data set appears to be sufficient to get a clear reading on the minimal size of markets.

Patterns in New York and Other Large States

In New York State, the Federal Reserve Bank of New York has delineated fifteen local markets that coincide roughly with metropolitan areas as defined by the Census Bureau.[10] The Bank Rate Monitor collects consumer rate information in five local markets: Buffalo, Rochester, Syracuse, Albany, and New York City. The survey's findings show that several banks currently post uniform rate schedules for savings accounts, retail time deposits, auto loans, and home equity lines of credit across New York State (Table 1).[11] Key Bank sets identical rates for all five cities. Chase Manhattan Bank's rates, while differing from Key Bank's, are also uniform across these same cities. (It is very important to note, however, that because banks engage heavily in product differentiation through office locations and level of service, rates do not converge across competitors in the same market.) Marine Midland Bank and Fleet Bank post rates that differ from their competitors' rates but are uniform across Buffalo, Rochester, Syracuse, and Albany, a

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span of 294 miles. Unlike Key Bank and Chase Manhattan Bank, Marine Midland Bank and Fleet Bank, N.A., set different rates for downstate New York. The rate differentials between the banks owned by the Fleet Financial Group reflect the division of its New York State business into upstate and downstate regions and the operation of two separately chartered banks, Fleet Bank (chartered in New York) and Fleet Bank, N.A. (chartered in New Jersey). The agreement reached by Fleet Financial Group in its acquisition of National Westminster USA explains its decision to operate under two charters.

A pattern of uniform rates across an entire state is not unique to New York. Several banks in Michigan, Texas, and California post uniform rates statewide. Deposit and loan rates for a few banks are shown for the largest cities in these states in Tables 2 through 4.[12] The practice of uniform pricing, however, goes beyond the banks and cities appearing in the tables. The survey contacted ten Texas banks at both their Dallas and Houston branch offices, although only four banks are shown in Table 3. These ten jointly hold 76 percent and 70 percent of total deposits in Dallas and Houston, respectively. All ten post identical deposit and loan rates in the two cities. Uniform pricing also applies to branches of these banks in either El Paso or McCallen. The survey contacted nine California banks at their branches in both San Francisco and Los Angeles, where the banks jointly hold 65 percent and 63 percent of total metropolitan area deposits, respectively. All nine post identical rates in the two cities. Some were also contacted at branches in Bakersfield, Fresno, Modesto, or Stockton; uniform pricing was found to apply to these branches as well.

The major banks in Pennsylvania and Florida do not set uniform rates statewide, but their rates are uniform over extensive areas, spanning several local markets as currently defined (Tables 5 and 6). The patterns in these two states may not provide unqualified support of state-level markets, but they strongly contradict the use of small local markets for the analysis of competition.[13]

While it is common for banks to set uniform rates at all of their branches within a particular state, rates usually differ among branches operated by the same bank or holding company but located in different states. The banks owned

Table 1
DEPOSIT AND LOAN RATES AT SELECTED BANKS: NEW YORK STATE

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
Key	All five	3.01	4.25	5.75	9.25	8.25
Chase Manhattan	All five	2.79	4.65	4.71	8.95	8.25
Fleet, N.A., and Fleet	All four upstate cities	2.32	4.34	4.55	9.25	10.00
	New York City	2.27	4.29	4.39	9.25	10.00
Marine Midland[b]	All four upstate cities	2.79	5.10	5.48	10.75	9.50
	New York City	2.73	4.71	5.14	9.25	9.50
M&T Bank and East New York Savings Bank[c]	Buffalo, Rochester, New York City	2.28	5.00	5.50	9.95	8.25
First Federal Savings and Loan of Rochester[d]	Buffalo, Rochester, Syracuse, New York City	2.55	5.50	4.74	9.75	6.49

Source: Bank Rate Monitor, Inc.

[a] The five cities are the four upstate cities of Buffalo, Rochester, Syracuse, and Albany, plus New York City.

[b] Marine Midland sets rates for Nassau and Suffolk County branches that differ from those shown for New York City. According to RateGram/RateFax (reported in *Newsday*), the rate on savings accounts at the Nassau and Suffolk branches is higher than the corresponding rate at the New York City branches, while the rates on time deposits are lower.

[c] First Empire Bank Corporation owns both M&T Bank and the East New York Savings Bank but operates in the New York City area primarily through the East New York Savings Bank. The rates at the East New York Savings Bank are the same as those at M&T Bank's upstate branches. First Empire has also recently opened two supermarket branches of M&T Bank in suburban Long Island. Deposit rates at these branches are higher than the rates at the East New York Savings Bank or at M&T's upstate branches.

[d] First Federal Savings and Loan of Rochester has been acquired by HSBC Holdings, the parent of Marine Midland.

by Fleet Financial Group, for example, set uniform rates within Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and upstate New York, but they do not set exactly the same rates in any two states (Table 7). The magnitude of these interstate rate differentials may be large enough to indicate separate markets at this time. Nevertheless, rate differentials such as these may fade away as banks take full advantage of the Riegle-Neal Interstate Banking and Branch Deregulation Efficiency Act, implemented on June 1, 1997, and as holding companies consolidate their operations into a single bank.

Why a Bank's Rates across Locations Might Converge

In principle, either the demand or the supply side of a market could be the source of pressure on a bank's interest rates in different locations to converge. But national surveys of households and small businesses find limited acceptance of

Table 2
Deposit and Loan Rates at Selected Banks: Michigan

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
Comerica	All five	2.30	4.60	5.10	9.25	10.25
First of America	All five	3.00	4.24	4.40	8.75	10.25
Standard Federal Savings and Loan	Detroit, Kalamazoo, Saginaw	3.25	5.00	6.00	9.00	10.25

Source: Bank Rate Monitor, Inc.

[a] The five cities are Detroit, Kalamazoo, Grand Rapids, Lansing, and Saginaw.

Table 3
Deposit and Loan Rates at Selected Banks: Texas

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit[b]
Bank One	All four	2.78	4.70	4.90	8.99	—
Bank of America	All four	3.05	4.39	4.65	13.50	—
NationsBank	All four	2.05	4.64	4.64	9.50	—
Texas Commerce	All four	2.12	4.28	4.65	9.50	—

Source: Bank Rate Monitor, Inc.

[a] The four cities are Austin, Dallas, Houston, and San Antonio.

[b] At the time of the survey, home equity lines of credit were prohibited in Texas.

Table 4
Deposit and Loan Rates at Selected Banks: California

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
Bank of America	All four	2.43	4.86	5.13	8.75	8.79
Wells Fargo	All four	2.38	4.87	5.15	N.R.[b]	8.92
Great Western	All four	2.50	5.35	5.50	10.75	9.24
Home Savings	All four	2.45	5.03	5.75	10.25	6.00

Source: Bank Rate Monitor, Inc.

[a] The four cities are San Francisco, Sacramento, Los Angeles, and San Diego.

[b] Not reported.

electronic banking and a strong preference for using nearby branches. Unless the responses to the survey questions are misleading or the overall findings are being misinterpreted, the surveys imply that pressure for convergence is not coming primarily from the demand, or buyer's, side.

The contrary view—that the supply side of the

Table 5
DEPOSIT AND LOAN RATES AT SELECTED BANKS: PENNSYLVANIA

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
CoreStates	Philadelphia	1.90	3.10	3.50	8.99	8.75
	Allentown-Bethlehem, Scranton, Harrisburg	2.00	3.50	4.00	8.00	8.75
First Union	Philadelphia, Allentown-Bethlehem, Scranton	1.00	4.00	4.25	9.49	5.75
Mellon	Philadelphia, Scranton	2.00	2.75	3.25	9.49	9.50 (9.40 in SCR)
	Harrisburg, Pittsburgh	2.02	4.25	4.65	10.50	8.99
PNC	Philadelphia	2.00	4.26	4.75	9.00	9.75
	Allentown-Bethlehem, Scranton, Pittsburgh	2.49	4.30	4.75	9.25	6.99
	Harrisburg	2.19	4.52	4.91	9.50	9.50

Source: Bank Rate Monitor, Inc.

[a]The five cities are Philadelphia, Allentown-Bethlehem, Scranton (SCR), Harrisburg, and Pittsburgh.

Table 6
DEPOSIT AND LOAN RATES AT SELECTED BANKS: FLORIDA

Bank	Cities[a]	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
Barnett	Jacksonville	2.15	4.55	4.85	9.50	10.25
	Daytona Beach, Lakeland, Orlando, Melbourne	2.15	4.55	4.85	10.50	8.49
	Tampa	1.75	4.55	4.85	10.50	8.49
	Sarasota	1.75	4.55	5.00	9.50	8.49
	West Palm Beach	2.15	4.55	4.85	10.50	11.75
	Miami	2.15	4.55	4.85	10.50	8.49
First Union	Jacksonville	1.90	4.00	4.25	9.33	N.R.[b]
	Daytona Beach, Lakeland, Orlando, Melbourne	2.00	4.10	4.35	9.33	10.25
	Tampa	1.90	3.85	4.20	9.33	10.25
	Sarasota	2.00	3.85	4.20	9.33	10.25
	West Palm Beach	1.90	3.90	4.20	9.33	N.R.[b]
	Miami	1.90	4.00	4.25	9.33	10.25
NationsBank	All nine	1.01	4.15	4.60	10.00 (9.50 in WPB)	10.25
SunTrust	Jacksonville	2.20	4.81	5.00	8.50	10.25
	Daytona Beach	2.00	3.90	4.75	9.05	10.25
	Lakeland	2.00	4.75	4.95	10.35	10.25
	Orlando	2.00	4.75	4.90	8.50	10.25
	Melbourne	2.00	3.90	4.75	9.69	10.25
	Tampa, Sarasota	2.00	4.55	4.86	8.50	10.25
	West Palm Beach	2.00	4.40	4.60	8.75	7.25
	Miami	2.00	4.30	5.20	8.50	7.25

Source: Bank Rate Monitor, Inc.

[a]The nine cities are Jacksonville, Daytona Beach, Lakeland, Orlando, Melbourne, Tampa, Sarasota, West Palm Beach (WPB), and Miami.

[b]Not reported.

Table 7
DEPOSIT AND LOAN RATES ACROSS STATES: FLEET FINANCIAL GROUP

State	Money Market Deposit Account	Six-Month Time Deposit	One-Year Time Deposit	Auto Loan	Home Equity Line of Credit
Maine	2.02	3.82	4.03	9.25	10.00
New Hampshire	2.32	4.34	4.45	9.25	10.00
Massachusetts	2.17	4.18	4.45	9.25	9.75
Rhode Island	1.61	4.08	4.34	9.25	10.00
Connecticut	2.02	4.18	4.39	8.75	9.75
Upstate New York	2.32	4.34	4.55	9.25	10.00

Source: Bank Rate Monitor, Inc.

market is the source of pressure—reflects the changes that are being made in the management and operations of banks. Uniform interest rates might emerge because banks have centralized their operations and decision making at headquarters, adopted technology that diminishes the value of information collected at the branch or regional office level, or produced research showing that regional pricing does not enhance profitability. Any of these developments alone or in combination could lead a bank to regard a deposit or loan booked at one branch as a very close substitute for a comparable deposit or loan booked at another office location. Uniform rates would then come about because banks would react to a greater than expected volume of deposits taken or loans made in one part of a state by simply accepting the additional business. Banks would be less likely to respond by raising loan rates or dropping deposit rates in one location relative to rates in other cities, although at some point they might adjust a deposit or loan rate (or other terms of the deposit or loan) across the board if the total volume of that product was not meeting expectations.

A much less persuasive supply-side explanation takes into account administrative costs. Interest rates might tend to converge if administrative costs were rising so that banks could not derive any advantage—in terms of increased interest revenue or decreased interest expense—from varying their deposit and loan rates regionally. But with the trend toward greater computerization of retail operations and sharply declining prices for computer equipment, one would expect administrative costs to be falling, not rising. Therefore, administrative costs cannot readily explain the trend toward uniform retail deposit and loan rates.

HOW THE RELATIONSHIP BETWEEN CONCENTRATION AND DEPOSIT RATES IS CHANGING

Several studies using data from the mid-1980s showed that higher local concentration affected both the level of deposit rates and their speed of adjustment following changes in interest rates determined in the national money market. The uniform rates now seen over all or large parts of a bank's branch network suggest that these effects have disappeared in the wake of branching deregulation and the creation of extensive office networks. For example, the Buffalo area is characterized by higher concentration than neighboring Rochester, as measured by either the Herfindahl-Hirschman Index (HHI) or the three-firm concentration ratio.[14] Given the difference, the Berger-Hannan (1989) study would predict that money market savings rates would be 25 basis points lower in Buffalo, where banks are supposed to hold more market power, than in Rochester. But eight of the nine largest banks in Buffalo, collectively holding 94 percent of the area's deposits, set the same rate in their branches there as in their Rochester branches. Thus, savings account rates in western New York State do not appear to be influenced by local concentration. A comparison of five cities in New York State reveals that weighted and unweighted average savings account rates are similar across cities and there is no correlation between average rates and local concentration (Table 8).

In general, the breakdown of the relationship between local concentration and deposit and loan rates should occur everywhere rate uniformity is observed over a large region or an entire state. In Florida, Jacksonville is more concentrated than Miami; the three-firm concentration levels are 76 percent and 42 percent in the two cities, respectively. Three of the four banks shown in Table 6 post the same money market savings rate in the two cities, which are located at opposite ends of the state. The exception is the third largest bank in the Jacksonville area; the rate it posts in Jacksonville is 20 basis points higher than the corresponding rate in Miami, a reversal of what the concentration levels would lead one to expect. In Texas and California, the weighted and unweighted average rates are again similar across cities and they bear no relationship to local concentration (Table 8).

Table 8
AVERAGE SAVINGS ACCOUNT RATES ACROSS CITIES IN THREE STATES
Percent, Except As Noted

	New York State				
	Albany	Buffalo	New York	Rochester	Syracuse
Unweighted average	2.76	2.76	2.52	2.80	2.65
Weighted average	2.75	2.65	2.58	2.60	2.81
Banks sampled (number)	11	9	22	11	7
Combined deposit share	82	97	69	85	75
Three-firm concentration ratio	61	69	33	38	53
HHI (points)	1458	1899	748	992	1573

	Texas			
	Austin	Dallas	Houston	San Antonio
Unweighted average	2.69	2.85	2.79	2.74
Weighted average	2.46	2.53	2.49	2.72
Banks sampled (number)	6	13	14	10
Combined deposit share	51	80	76	75
Three-firm concentration ratio	41	49	41	49
HHI (points)	912	1396	890	1064

	California			
	Los Angeles	Sacramento	San Diego	San Francisco
Unweighted average	2.30	2.45	2.30	2.31
Weighted average	2.38	2.45	2.36	2.36
Banks sampled (number)	10	9	7	11
Combined deposit share	66	71	76	68
Three-firm concentration ratio	41	51	52	55
HHI (points)	900	1437	1222	1945

Sources: SNL Securities; Bank Rate Monitor, Inc.

Notes: Weights in average rates are determined by a bank's total domestic deposits. In calculations of the Herfindahl-Hirschman Index, 50 percent weighting is given to the deposits of thrifts.

The effect of statewide branch networks should also change competitive conditions in MSAs that are not headed up by large banks. Small cities in which a community bank has the leading deposit share might seem to be more susceptible to the exercise of market power than metropolitan areas with populations greater than one million. But the presence of banks operating statewide branch networks would undermine the dominance that a community bank might have in a small city. A community bank must often compete in its home town against two or more banks operating a comparable number of branches there and posting uniform and competitive rates statewide. The ability of a community bank to wield market power in this setting, even if it is the leader in market share locally, would be tightly circumscribed. The leading community bank might set lower deposit rates or higher loan rates than its main competitors, but the reason would be the higher costs associated with product differentiation (for example, more convenient office locations or longer hours), not market power.

ESTIMATED EFFECT OF CONCENTRATION ON DEPOSIT RATES

The uniformity of several banks' deposit and loan rates across an entire state suggests that state boundaries now approximate the shape and extent of retail markets better than county lines or MSA designations. To investigate the expansion of retail markets more systematically, we use regression techniques to estimate the effect of local concentration on deposit rates. Recent data on deposit rates are drawn from the *Monthly Survey of Selected Deposits and Other Accounts*, the same source used in many of the studies reviewed earlier. The survey, conducted by the Board of Governors of the Federal Reserve System, collects information on checking and savings accounts and time deposits from 399 commercial banks and thrift institutions nationwide. Although the participants represent only 4 percent of all commercial and savings banks in the country, they operate about one-quarter of all banking offices.

For each type of account—savings, checking, and time—the respondents to the survey report the interest rate that is applicable to the largest volume of deposits.[15] That is, a bank may offer two or more types of savings accounts and may vary the interest rate and other terms of each type by location, but it will report the rate that applies to the largest dollar volume of savings account deposits.

A difficulty encountered in the analysis of this data set is formulating the appropriate treatment of a bank whose branch office network spans two or more local areas. If a bank varies deposit rates by location, the city offering the interest rate reported by the survey cannot be determined. We replicate the methodology of previous studies to ensure a close correspondence between the rate reported by the survey and the MSA to which a respondent is assigned. First, any respondent that has more than 25 percent of its deposits booked at branches outside its base of operations—the city where its head office is located and it presumably does the largest share of its business—is dropped from the sample. Second, a respondent that is retained in the sample enters the analysis only in its home city. It does not enter the analysis in any other city, even one in which it holds the largest share of local deposits. Taking these two steps increases the likelihood that a bank's response pertains to the city to which it is assigned. On the downside, however, these steps diminish the coverage of the sample markedly by filtering out many of the large participants in the survey.[16] With the expansion of branch networks during the past fifteen years, these two steps should now eliminate proportionately more survey participants than before and may undermine the reliability of the regression results.

The uniformity of several banks' deposit and loan rates across an entire state suggests that state boundaries now approximate the shape and extent of retail markets better than county lines or MSA designations.

Table 9 reports the effects of extracting a usable sample from the survey. In keeping with the practice of focusing on urban areas, established in earlier studies, we first pare the list of survey respondents by eliminating 91 rural banks. (These 91 banks—mostly small institutions—have a larger proportion of deposits at branches located in non-MSA counties than in any single MSA.) The list is pared further by eliminating another 108 banks whose operations are not concentrated geographically. These mostly large institutions operated 16,401 branches, more than two-thirds of the total number of branches covered by the survey. After all trimming is performed, the sample consists of 200 banks and retains 18 percent of the branches and 29 percent of the aggregate deposits covered by the survey. Thirty-three states (and the District of Columbia) and 91 MSAs, out of a total of 317 MSAs in the nation, are represented in the sample; in 10 of the 33 states, all banks are assigned to the same MSA. The sample provides coverage in the 91 MSAs that is less thorough than the number of survey participants and their size would suggest. About 5 percent of the aggregate number of banks in the 91 covered MSAs are included in the sample; they operated 12 percent of total branches in these MSAs.

Estimation Results

To investigate the effects of local concentration under present conditions, we use the sample just described to reestimate the regression equation specified in some earlier studies. A bank's deposit rate for a savings account, NOW account, or six-month time deposit is explained in the regression by concentration in the MSA (measured by the HHI) and some control variables: (1) the bank's total assets, to account for differences among banks related to their size; (2) the population of the MSA to which the bank is assigned, to account for differences among local areas

related to their size; and (3) dummy variables for each census division, to account for regional differences in wage rates, population density, or any other relevant characteristic.

{Our} results indicate that concentration at the local level no longer matters for interest rates paid to retail depositors.

Definitions of the variables are listed in Table 10; results are presented separately for the three types of deposits in Tables 11 through 13 (column 1) and compared with results reported by Hannan using 1993 and 1985 data (columns 3 and 4). Overall, the estimated coefficients and R^2 of the regression derived from 1996 data are comparable to those derived from 1993 data, but the estimated coefficient of the concentration variable for all three types of deposits is not significant (and, contrary to expectations, it is not even negative). These results indicate that concentration at the local level no longer matters for interest rates paid to retail depositors. By contrast, the importance of concentration in the mid-1980s is indicated by the high significance of the concentration variable in the savings account equation estimated using 1985 data (t-statistic of -6.79, shown in Table 11) and confirmed in other studies using data from the same era.

We estimate some additional sets of regressions to test the sensitivity of our results to the list of control variables and the definition of the concentration variable. When the control variables are expanded to include MSA income, MSA deposit growth, a bank's share of total MSA deposits, a dummy variable for thrift institutions, and a dummy variable for limited branching states—variables used in at least one of the earlier studies—coefficient estimates and t-statistics change only marginally

Table 9
COVERAGE OF BANKS PROVIDED BY THE SURVEY AND THE SAMPLE

Banks	Number	Branches	Number	Deposits	Dollar Volume
Banks in survey	399	Branches operated by the 399 banks	22,983	Deposits held at the 22,983 branches	1.28 trillion
less		*less*		*less*	
Banks located outside MSAs	91	Branches operated by these 91 banks	1,657	Deposits at these 1,657 branches	51 billion
less		*less*		*less*	
Banks that are not concentrated geographically	108	Branches operated by these 108 banks	16,401	Deposits at these 16,401 branches	822 billion
equals		*less*		*less*	
Banks in sample	200	Branches operated by these 200 banks outside the "home" MSA	803	Deposits at these 803 branches	34 billion
		equals		*equals*	
		Branches in sample	4,122	Deposits at branches in sample	370 billion

MEMO:
SUMMARY STATISTICS FOR THE NINETY-ONE MSAS INCLUDED IN THE SAMPLE

	Percentage of All Banks	Percentage of All Branches
Included in survey[a]	7.0	38
Included in sample[a]	4.7	12
Mean value of the percentage included	6.0	11
Median value of the percentage included	5.3	7
Upper quartile	7.7	16
Lower quartile	3.1	3
Maximum	23	41
Minimum	0.8	0.24

Note: The sample is drawn from the *Monthly Survey of Selected Deposits and Other Accounts* of the Board of Governors of the Federal Reserve System.

[a]In calculations of the percentage of banks included in the survey or the sample, a bank is counted multiple times if it has offices in two or more of the ninety-one metropolitan statistical areas.

(reported in column 2 of Tables 11 through 13).[17] If we give the deposits of thrift institutions either 50 percent or 100 percent weighting in the calculation of HHI instead of zero percent weighting—a reasonable modification to make if thrifts are important or full-fledged competitors of banks for household customers—the estimated coefficient on the concentration variable in the time deposit regression turns negative; however, this coefficient is still not significant. The t-statistics are -1.41 and -1.51, respectively, for 50 percent and 100 percent weighting of thrift institution deposits. (These results are not reported in the tables.) If the three-firm concentration ratio is substituted for the HHI as the measure of market concentration, results change marginally. (Again, the results are not reported.)

Table 10
LIST OF VARIABLES USED IN REGRESSIONS

Variable	Definition or Explanation	Sample Means[a] 200-Bank Sample	316-Bank Sample	390-Bank Sample
Savings account rate	Interest rate offered on money market savings accounts	2.59	2.49	2.54
NOW account rate	Interest rate offered on interest-bearing checkable deposit accounts	1.74	1.62	1.74
Time deposit rate	Interest rate offered on retail six-month time deposits	4.67	4.57	4.63
HHI	Herfindahl-Hirschman Index of concentration			
	Zero weight assigned to thrifts	MSA 1784	State 1191	State 1134
	50 percent weight assigned to thrifts	1357	888	860
	100 percent weight assigned to thrifts	1183	747	732
Three-firm concentration ratio	Sum of three largest deposit shares			
	Zero weight assigned to thrifts	MSA 63.3	State 50.3	State 49.0
	100 percent weight assigned to thrifts	50.5	40.0	39.5
Bank's total assets	Billions of dollars	3.54	5.74	4.67
Population	Millions	MSA 2.65	State 10.24	State 9.57
Average household income in MSA	Thousands of dollars	52.5	—	—
Per capita income in state	Thousands of dollars	—	18.9	18.7
Deposit growth	Percent	MSA 2.80	State 3.37	State 3.46
Bank's share of total deposits	Percent	MSA 6.39	State 4.72	State 3.90
Thrift institution	Number of institutions	39	52	57
Limited branching state	Number of institutions in AK, GA, KY, MT, OK, and WY	13	17	27

Sources: Board of Governors of the Federal Reserve System, *Monthly Survey of Selected Deposits and Other Accounts*; SNL Branch Migration Data Base (version 6.1); Federal Deposit Insurance Corporation.

[a]Three sets of regressions are estimated using different sample sizes, corresponding to the number of observations used in local-level regressions, state-level regressions excluding rural banks, and state-level regressions including rural banks. The sample sizes reflect the number of observations used in the savings account regressions. One to three fewer observations were used in the NOW account and time deposit regressions because of missing data.

STATE-LEVEL ANALYSIS

Next we estimate regression equations comparable to those just discussed to see whether concentration at the state level influences retail deposit rates. Some variables

Table 11
THE RELATIONSHIP BETWEEN A BANK'S SAVINGS ACCOUNT DEPOSIT RATE AND LOCAL AREA CONCENTRATION

	Year in Which Survey Was Conducted			
Explanatory Variables	1996 (1)	1996 (2)	1993 (Hannan 1997) (3)	1985 (Hannan 1991b) (4)
Intercept	2.35 (10.85)	2.56 (5.76)	2.62 (20.79)	7.12 (96.05)
MSA HHI (zero weight assigned to thrifts)	0.38E-4 (0.53)	0.51E-4 (0.68)	-0.46E-4 (-0.99)	-2.32E-4 (-6.79)
Bank total assets	0.22E-2 (0.43)	0.68E-2 (1.20)	-0.64E-2 (-2.25)	0.53E-2 (0.91)
MSA population	0.11E-1 (0.53)	0.99E-2 (0.44)	-0.23E-1 (-2.25)	-1.52E-2 (-1.26)
Per capita income in MSA		-0.57E-2 (-0.88)		
MSA deposit growth		-0.49E-2 (-0.50)		
Bank's share of total MSA deposits		-0.75 (-1.20)		
Thrift institution		-0.17 (1.13)		
Limited branching state		-0.32 (-1.52)		
Memo:				
Number of observations	200	200	341	330
R^2	0.061	0.091	0.074	0.124

Notes: Regional dummy variables are included in the 1993 and 1996 regressions, but the estimated coefficients are not reported. In the 1985 regression, the annual rate of business failures in the state in which a bank is located is included; the estimated coefficient for this variable is 0.12E-3 (1.26). Figures in parentheses are t-statistics.

used earlier are redefined in order to take this step: deposit concentration at the state level replaces deposit concentration at the MSA level, state population replaces MSA population, and so forth. The estimates are reported in Tables 14 through 16. The first set of state-level regressions (column 1) are estimated using almost the same sample of banks as before at the local level.[18] In this first set of regressions, the estimated coefficient on the concentration variable turns negative for all three deposit rates but is still insignificant.

The second and third sets of state-level regressions (columns 2 and 3) use a larger sample of 316 survey respondents because it is no longer necessary to match a bank with an MSA. Only small rural banks are now excluded.[19] This adjustment sharply improves the sample's coverage. With the return of 122 large banks, all but 345 branches covered by the survey are now included in the sample. In this pair of regressions, the estimated coefficient on the concentration variable has a negative sign and becomes significant in the savings account equation, but is still insignificant in the NOW account and time deposit equations. In the fourth and fifth sets of regressions (columns 4 and 5), the HHI measure is replaced by the three-firm concentration ratio. Zero weight is given to thrift institution deposits in the fourth regression, but 100 percent weight is given in the fifth regression. The estimated coefficient of the concentration variable is significant in both the savings account and NOW account equations, but still insignificant in the time deposit equation. Additional regressions are estimated (although not reported in the tables) in which 100 percent weight is given to thrift deposits in calculations of the the HHI, or extra control variables are included in the list of explanatory variables. The estimated coefficient for the

Table 12
THE RELATIONSHIP BETWEEN A BANK'S NOW ACCOUNT DEPOSIT RATE AND LOCAL AREA CONCENTRATION

	Year in Which Survey Was Conducted		
Explanatory Variables	1996 (1)	1996 (2)	1993 (Hannan 1997) (3)
Intercept	1.42	1.49	1.72
	(8.30)	(4.29)	(12.36)
MSA HHI	0.78E-4	0.96E-4	-0.54E-4
(zero weight assigned to thrifts)	(1.43)	(1.63)	(-1.06)
Bank total assets	-0.73E-2	-0.19E-3	-0.92E-2
	(-1.79)	(-0.42)	(-2.98)
MSA population	-0.39E-2	-0.45E-2	-0.39E-2
	(-2.43)	(-2.55)	(-3.45)
Per capita income in MSA		-0.35E-2	
		(-0.69)	
MSA deposit growth		-0.28E-2	
		(-0.37)	
Bank's share of total MSA deposits		-0.88E-2	
		(-1.77)	
Thrift institution		0.19	
		(1.64)	
Limited branching state		-0.20	
		(-1.20)	
Memo:			
Number of observations	197	197	341
R^2	0.212	0.245	0.254

Notes: Regional dummy variables are included, but the estimated coefficients are not reported. Figures in parentheses are t-statistics.

Table 13
THE RELATIONSHIP BETWEEN A BANK'S SIX-MONTH TIME DEPOSIT RATE AND LOCAL AREA CONCENTRATION

	Year in Which Survey Was Conducted		
Explanatory variables	1996 (1)	1996 (2)	1993 (Hannan 1997) (3)
Intercept	4.76	4.47	2.75
	(24.60)	(11.90)	(23.55)
MSA HHI	0.24E-5	0.34E-4	-0.63E-4
(zero weight assigned to thrifts)	(0.04)	(0.55)	(-1.50)
Bank total assets	-0.33E-2	0.59E-2	-0.66E-2
	(-0.72)	(1.20)	(-2.60)
MSA population	-0.99E-2	-0.34E-1	-0.14E-1
	(-0.56)	(-1.84)	(-1.46)
Per capita income in MSA		0.55E-3	
		(0.01)	
MSA deposit growth		0.49E-2	
		(0.60)	
Bank's share of total MSA deposits		-1.70E-2	
		(-3.30)	
Thrift institution		0.44	
		(3.55)	
Limited branching state		0.28	
		(1.60)	
Memo:			
Number of observations	197	197	320
R^2	0.059	0.182	0.092

Notes: Regional dummy variables are included, but the estimated coefficients are not reported. Figures in parentheses are t-statistics.

Table 14
THE RELATIONSHIP BETWEEN A BANK'S SAVINGS ACCOUNT DEPOSIT RATE AND CONCENTRATION AT THE STATE LEVEL

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	2.71	3.00	2.03	3.55	2.99	3.04	3.60
	(10.12)	(13.24)	(4.02)	(8.98)	(12.01)	(16.27)	(11.24)
State HHI (zero weight assigned to thrifts)	-0.14E-3	-0.22E-3	-0.33E-3			-0.24E-3	
	(-1.28)	(-2.29)	(-3.21)			(-3.00)	
State three-firm concentration ratio				-0.15E-1	-0.10E-1		-0.16E-1
(weight assigned to thrifts is shown in italics)				(-2.64)	(-1.96)		(-3.42)
				zero	*100 percent*		*zero*
Bank total assets	0.42E-4	-0.17E-2	-0.37E-2	-0.15E-2	-0.16E-2	-0.32E-2	-0.29E-2
	(0.009)	(-0.58)	(-0.98)	(-0.49)	(-0.52)	(-1.12)	(-1.01)
State population	0.13E-1	-0.44E-3	0.23E-3	-0.60E-3	-0.25E-2	-0.25E-2	-0.27E-2
	(1.60)	(-0.07)	(0.03)	(-0.09)	(-0.37)	(-0.42)	(-0.45)
Per capita income in state			0.44E-1				
			(1.92)				
State deposit growth			0.34E-1				
			(1.56)				
Bank's share of total state deposits			0.10E-1				
			(1.38)				
Thrift institution			0.32				
			(2.61)				
Limited branching state			-0.90E-1				
			(-0.49)				
Number of observations	194	316	316	316	316	390	390
R^2	0.088	0.070	0.114	0.075	0.065	0.073	0.079

Notes: Regional dummy variables are included but their estimated coefficients are not reported. Figures in parentheses are t-statistics.

Table 15
THE RELATIONSHIP BETWEEN A BANK'S NOW ACCOUNT DEPOSIT RATE AND CONCENTRATION AT THE STATE LEVEL

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.68	1.59	0.82	2.10	1.99	1.82	2.42
	(7.90)	(8.78)	(2.06)	(6.67)	(10.15)	(11.16)	(8.70)
State HHI (zero weight assigned to thrifts)	-0.36E-4	-0.36E-4	-0.58E-4			-1.08E-4	
	(-0.42)	(-0.48)	(-0.72)			(-1.54)	
State three-firm concentration ratio				-0.86E-2	-0.11E-1		-0.12E-1
(weight assigned to thrifts is shown in italics)				(-1.92)	(-2.64)		(-3.07)
				zero	*100 percent*		*zero*
Bank total assets	-0.12E-1	-0.97E-2	-0.40E-2	-0.94E-2	-0.93E-2	-0.13E-1	-0.12E-1
	(-3.31)	(-4.05)	(-1.38)	(-3.96)	(-3.91)	(-5.04)	(-4.91)
State population	-0.10E-1	-0.91E-2	-0.19E-1	-0.10E-1	-0.13E-1	-0.12E-1	-0.13E-1
	(-1.51)	(-1.72)	(-3.16)	(-1.93)	(-2.44)	(-2.28)	(-2.45)
Per capita income in state			0.37E-1				
			(2.06)				
State deposit growth			-0.70E-2				
			(-0.41)				
Bank's share of total state deposits			-0.14E-1				
			(-2.38)				
Thrift institution			0.27				
			(2.83)				
Limited branching state			-0.43E-1				
			(-0.29)				
Number of observations	192	314	314	314	314	387	387
R^2	0.181	0.141	0.215	0.151	0.160	0.195	0.210

Notes: Regional dummy variables are included but their estimated coefficients are not reported. Figures in parentheses are t-statistics.

concentration variable is almost always significant in the savings account regressions; the t-statistic is highest when zero weight is given to thrift deposits and extra control variables are included. The estimated coefficient for the concentration variable, however, is never significant at the 5 percent level in the additional NOW account and time deposit regressions.

Lastly, we estimate the regressions using an almost complete set of survey respondents, including small rural banks. For this larger sample of 390 observations, we report the results from two sets of regressions—one using the state HHI as the concentration measure and the other using the state three-firm concentration ratio—in columns 6 and 7. The estimate of the coefficient of the concentration measure is significant in both regressions for the savings account rate, and the estimate is also significant in the NOW account rate equation that uses the three-firm concentration ratio. As before, we estimate additional regressions in which 100 percent weight is given to thrift deposits or extra control variables are included. Although the results are not reported in the table, the estimated coefficient for the concentration variable is always significant in the savings account regressions; the t-statistics are in the range of -2.38 to -3.74. The estimated coefficient for the concentration variable is significant at the 10 percent level in half of the regressions explaining the NOW account rate. The t-statistics fall in the range of +0.51 to -3.13 and are

{Our} estimates indicate that an increase in concentration at the state level will have an economically meaningful effect on savings account rates.

Table 16
THE RELATIONSHIP BETWEEN A BANK'S RETAIL SIX-MONTH CERTIFICATE OF DEPOSIT RATE AND CONCENTRATION AT THE STATE LEVEL

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	5.23	4.79	4.45	4.81	5.02	4.71	4.64
	(20.53)	(24.08)	(10.57)	(13.97)	(23.35)	(28.00)	(16.12)
State HHI (zero weight assigned to thrifts)	-0.20E-3	-0.45E-4	-0.42E-6			-0.14E-4	
	(-1.94)	(-0.54)	(-0.01)			(-0.20)	
State three-firm concentration ratio				-0.18E-2	-0.75E-2		0.65E-3
(weight assigned to thrifts is shown in italics)				(-0.37)	(-1.69)		(0.15)
				zero	*100 percent*		*zero*
Bank total assets	-0.44E-2	-0.59E-2	0.20E-2	-0.59E-2	-0.56E-2	-0.74E-2	-0.75E-2
	(-1.01)	(-2.25)	(0.65)	(-2.25)	(-2.16)	(-2.89)	(-2.91)
State population	-0.84E-2	-0.27E-2	-0.16E-1	-0.25E-2	-0.54E-2	-0.55E-2	-0.53E-2
	(-1.08)	(-0.47)	(-2.47)	(-0.44)	(-0.91)	(-1.03)	(-0.99)
Per capita income in state			0.66E-3				
			(0.04)				
State deposit growth			0.27E-1				
			(1.49)				
Bank's share of total state deposits			-0.21E-1				
			(-3.26)				
Thrift institution			0.52				
			(5.09)				
Limited branching state			0.13				
			(0.84)				
Number of observations	193	315	315	315	315	389	389
R^2	0.079	0.071	0.187	0.071	0.079	0.076	0.076

Notes: Regional dummy variables are included, but their estimated coefficients are not reported. Figures in parentheses are t-statistics.

highest using the three-firm concentration ratio.

Our regression results provide estimates of the effect of greater concentration on savings account rates: an increase of 20 percentage points in the three-firm concentration level causes savings account rates to fall on the order of 20 to 30 basis points. The estimated effect of a substantial increase in the HHI on savings account rates is comparable: a 1000 point increase in the index causes rates to fall 25 basis points. These estimates indicate that an increase in concentration at the state level will have an economically meaningful effect on savings account rates.

Conclusion

For many years, analysts seeking to delineate geographic markets for retail banking services have referred to demand forces and consequently have judged banking markets to be small and local. The current practice among banks in New York and other large states, however, is to set uniform retail deposit and consumer loan rates across an entire state or large regions of a state. This pattern implies that the geographic reach of these markets is much larger than a metropolitan area. Furthermore, a shift to broader markets, determined from their supply side, is a development that is congruent with the growth of branch office networks and with the changes implemented by holding companies in both their operations and their internal organization.[20]

Estimates of the relationship between retail deposit rates and measures of market concentration provide further evidence that banking markets have expanded. Using 1996 data, this analysis finds that the statistically significant correlation that existed at the local level in the mid-1980s has disappeared. In addition, the analysis finds a significant correlation at the state level for some measures of concentration and some deposit rates. Against this background, markets now appear to be at least as large as a state, but how much larger is less clear. Our intuition tells us that markets are unlikely to be perfectly coincident with state borders. Nevertheless, state borders offer a better approximation of the territory over which banks compete for household customers than do counties or metropolitan areas.

The scope of markets may stretch beyond individual states fairly soon, however, with the advent of full interstate branching and further consolidation. The choices of households may also promote expansion of geographic markets from the demand side. Many individuals currently hold shares of mutual funds, and half of all mutual fund accounts are opened with sponsors whose marketing tools are mainly confined to the mail and telephone. Even now, some bankers comment that a sizable proportion of customers rarely, if ever, come into a branch office. If depositors are offered incentives in the form of higher yields or lower minimum balance requirements, many might be prepared to switch to an out-of-town bank, a development that would create a national market for retail banking products.

Significantly, larger retail banking markets may be more competitive than is commonly perceived. For many years, the public did not regard retail banking as a highly competitive business because branching restrictions protected local markets for depository institutions. Despite the lifting of these restrictions, it seems that few people believe that vigorous competition has broken out. This article's finding that markets are growing larger in geographical scope casts doubt on the persistent belief that competition is weak. Because the industry is less concentrated at the state and national levels than at the MSA level, competition among banks should be spirited.

ENDNOTES

The author thanks Joseph Doyle for research assistance and helpful comments throughout the preparation of this study.

1. See *United States v. Philadelphia National Bank*, 374 U.S. 321 (1963).

2. It is recognized, however, that certain products, such as all-purpose credit cards, are offered in a national setting.

For a description of current procedures for defining markets and evaluating the level of competition in these markets, see Amel (1997) and Herlihy et al. (1997).

3. The states are Arkansas, Georgia, Kentucky, Oklahoma, and Wyoming.

4. Banc One Corporation, which has operated seventeen banks and used seventeen corresponding pricing regions in Ohio, is planning to consolidate operations in the state into a single bank and to offer identical checking and savings account rates at all branches, although it will use three regions to set rates on certificates of deposit. See *Bank Rate Monitor* (1997).

5. Although this article argues that organizational and technological changes will promote uniform rates, Calem and Nakamura (1997) have developed a theoretical model, based on a Bertrand pricing game, that predicts uniform rate setting.

6. Kennickell, Starr-McCluer, and Sundén (1997) summarize the findings of the most recent household survey and Cole and Wolken (1995) the findings of the small business survey.

7. Among these studies are Hannan (1991a, 1997), Hannan and Berger (1991), Neumark and Sharpe (1992), Rhoades (1992), and Sharpe (1997).

8. The Bank Rate Monitor standardizes the information it obtains on loan rates by using the following criteria: Auto loan rates are based on a $16,000 new car loan with 10 percent down and a four-year term. Home equity line of credit rates are for an open-ended line and are based on the minimum amount that can be borrowed or the minimum credit line, whichever applies. Rates offered may be introductory.

9. Illinois and New Jersey are two large states that could not be included because the survey covers only Chicago and Newark.

10. Ten New York banking markets center on a city designated as the core of an MSA. The other five center on a city that is not part of an MSA.

11. The practice of setting uniform rates for savings and NOW accounts was observed in California as early as the mid-1980s (Keeley and Zimmerman 1985).

12. The data cover deposit and loan rates for households but not for small business firms. Nevertheless, uniform rates and fees seem to apply to these firms as well. Information from some banks indicates that a single schedule of terms and fees is set for small business checking accounts throughout a state.

13. Ohio is a large state in which regional deposit rate patterns are observed. The large holding companies have each operated multiple banks in the state but may soon consolidate them and change their rate-setting strategies (see endnote 4).

14. The HHI is defined as the sum of the squared market shares of all banking organizations operating in an area. We calculated the HHI for urban markets using branch deposit data collected June 30, 1996, and information on bank ownership as of April 21, 1997.

15. Banks are asked to supplement their responses to the survey by providing information on rate tiers and corresponding balance requirements. In the regressions, the lowest rate reported is used.

16. Control variables are added to the regression equation to account for differences among local markets and among banks. Measurement of control variables also becomes problematic for banks whose branch network spans several cities.

17. The control variables are expected to play a more important role in state-level regressions than in MSA-level regressions because MSAs are made to be fundamentally similar in their construction, while states are very different from one another.

18. Two money center banks are excluded because they have no retail operations. Delaware banks are excluded because state concentration measures are skewed by the presence of large credit card banks. A District of Columbia bank is also excluded.

19. The sample is increased first by bringing back banks that could not be matched reliably with a single MSA. Then the largest of the rural banks (those holding more than $1 billion of assets) are added because an examination of their deposit base found that a substantial proportion of their deposits were held at branches located in MSAs.

20. The level of competition in small business lending has also been evaluated for many years in the context of very local markets. A parallel trend toward broader geographic markets may also be occurring for this banking product. While active competition in the supply of small business credit is certainly a concern of policymakers, this topic is beyond the scope of the article.

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