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The Changing Influence of Market Structure on Performance in Rural Banking Markets 1985 Through 2005

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INTRODUCTION

Propelled by technological advances, financial innovations, deregulation, and demographic changes, the number of banks in the United States has fallen by almost 50 percent over the last 20 years. The most publicized mergers and acquisitions during this period of consolidation have been among the banking industry's larger players, but the great majority of bank mergers have actually involved smaller organizations.¹

In many cases, the most logical merger partners for small banks are other banks operating in their same local communities. This allows small banks to grow to a more efficient size without expanding into unfamiliar areas. However, all mergers are subject to the nation's antitrust laws, which help protect customers from potential abuses of market power. Mergers that attempt to monopolize or may lead to a significant reduction in competition in a banking market can be denied. In markets where there are many competitors and market shares are typically small, such as large cities, mergers between small community banks raise few if any antitrust concerns. For smaller cities, and especially for rural areas, this may not be the case, given the

small number of banks located in them. In such markets, antitrust concerns may prevent mergers among existing competitors.

Many of the factors that have provided the incentive and the ability for banking organizations to expand may also have implications for the approach taken in the review of bank merger transactions. For instance, legal and regulatory change has opened the doors to entry into local communities by large organizations, both regionally and nationally. Improvements in technology have also reduced the cost of managing operations over greater distances, as well as reducing the cost to customers of obtaining banking services outside their local communities.

All of these factors suggest that the traditional concept of a local banking market may have eroded and that our antitrust methodology may need to be revisited. This rethinking may be particularly important in small markets where there are often only a few local competitors. Many of the local markets that are most constrained by antitrust concerns are small rural areas, where in-market mergers may represent the most practical strategy for growth and even survival.

In this paper, we ask whether the relationship between traditional measures of market concentration and the performance of banks has changed in rural markets. That is, are banks in markets with fewer competitors able to extract higher profits by offering lower rates on deposits or charging higher rates on loans than banks in other, less concentrated markets? Our model compares the relationship between market concentration and bank performance and looks at changes in that relationship from 1985 through 2005. We conclude with a discussion of how the findings from the study may have possible implications for the evaluation of mergers in small local communities and for broader antitrust policy.

CHANGES IN THE BANKING INDUSTRY AND THEIR IMPLICATIONS FOR DEFINING GEOGRAPHIC MARKETS

Banking laws require the review of changes in ownership and control of banks for consistency with the antitrust laws. The federal banking agencies conduct this review for banking transactions, with oversight by the Department of Justice (DOJ). The objective of the review is to assess the effects a particular transaction has on banking market concentration and whether or not the transaction is consistent with merger guidelines established by the DOJ. (See Box – “Elements of Antitrust Analysis.”) These guidelines provide a “safe harbor” for those contemplating bank merger transactions. If a transaction falls within the guidelines, it most likely will receive only routine review. If it exceeds guidelines, the transaction will receive increased agency and DOJ scrutiny, which could lead to the denial of the transaction. In practice, however, parties to mergers are aware of the DOJ merger guidelines and typically do not propose transactions that may present antitrust issues. Consequently, the agencies deny few transactions on antitrust grounds.

In the agencies’ and DOJ’s competitive reviews, market concentration and the change in market concentration are important concerns. These concerns are predicated on the belief that market structure (number and size distribution of competitors in a market) affects competitor behavior and, in turn, competitor performance. This relationship is often referred to as the Structure-Conduct-Performance (SCP) hypothesis. For example, the smaller the number of competitors, the easier it may be to restrict output, raise prices, and increase profits. Additionally, the fewer the competitors, the fewer the alternatives that are available to customers seeking better terms.

Defining the market's geographic boundaries is necessary to determine the number of sellers in the market and the customers they serve. In the past, the high cost of conducting banking over long distances and restrictions on branching effectively kept the geographic market for banking services local. However, these barriers may be breaking down. Personal computers and high-speed, low-cost communications let customers inexpensively find, compare, and utilize banking services beyond their immediate locale. The same technological advances make it easier for banks and other financial service providers to manage geographically dispersed operations and make it less expensive to serve more distant customers.

Other major innovations in the business of banking, such as remote deposit, online banking, and ATM networks, also make banking over wider distances more feasible. Additionally, even if customers still choose to do business with local bankers, they come armed with increased information about the services and prices available to them from outside competitors. Moreover, customers have better access to nonbank financial products, such as money market and stock market mutual funds, that may serve as alternatives to traditional banking products, such as deposits. They also have wider access to and may more easily tap sources of credit from distantly removed, highly automated lenders that use credit bureau reports and credit scoring models in making loans. All of these factors force local competitors to compete more vigorously for their customers' business.

Finally, the mere threat of entry offered by the relaxation of branching laws and technological change may discourage anticompetitive behavior even in local markets with few existing competitors. Thus, local markets, such as the county or metropolitan areas typically used to approximate markets, may no longer adequately represent the appropriate geographic market for banking services.

There has already been substantial policy discussion and academic research addressing the geographic size of banking markets.² Although evidence is somewhat mixed, it appears that the

package of services that constitute commercial banking may not be nearly as local as once thought. Coupled with deregulation that makes it easier for banks to branch into new areas to take advantage of profit opportunities, greater geographic size of banking markets means that the walls that once afforded banks a measure of protection from competition have become more porous.³ Thus, even remotely located banks in rural areas may feel increased competitive pressure.

If indeed this is the case, traditional antitrust analysis that focuses on concentration in narrowly defined markets may no longer reflect financial services marketplace realities. Such a conclusion is particularly important for banks contemplating merger transactions in rural banking markets, which by their very nature tend to be highly concentrated. It is in these markets that antitrust issues often arise and may be the most difficult to resolve.

In the remainder of this paper, we identify rural markets across the country and describe their characteristics, including demographics, structure, and bank performance within them. We also review how the relationship between market characteristics and bank performance has changed over the last 20 years. We use a statistical model to assess the relationship between market structure and a variety of bank performance measures and analyze how the relationship between structure and performance has changed over time. Finally, we discuss the implications that our results may have for the way antitrust regulation is applied.

RURAL BANKING MARKETS AND THEIR CHARACTERISTICS

In analyzing the impact that mergers among banks with offices in the same local marketplace might have, the banking agencies look for the geographic area where the effect of a merger will be direct and immediate, the area where sellers operate and in which purchasers can practically turn to buy goods and services. To do this, their analyses focus on the degree of economic integration among areas. Where there are close ties among

communities, sellers respond to the actions taken by one another and buyers are aware of product options available to them.

In rural areas, the banking agencies often start with the county as an approximation of the banking market. One reason for this is that county government tends to tie cities, towns, and villages to a central location. Often this central location, the county seat, is the largest city in the county. As such, it serves as not only the seat of government but also as an economic hub, providing employment opportunities and vital shopping, medical, and other services to county residents. This is especially the case for rural markets that are distantly removed from larger cities.

It is these more isolated county markets (rural counties) that receive attention in this study because they tend to be highly concentrated and merger transactions within them are more likely to present antitrust issues. Therefore, for this analysis, we have identified a group of rural counties that are somewhat isolated from large population centers. To do so, we incorporated a classification system used by the Census Bureau and the U.S. Department of Agriculture called “Rural-Urban Continuum Codes” (also referred to as “Beale Codes”).

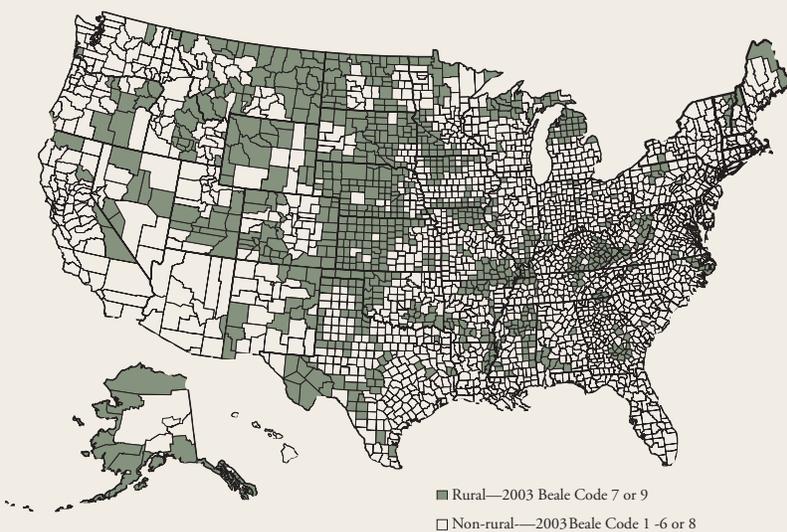
These codes break counties down into nine groups based on size, metro/nonmetro status, and whether they are adjacent to a metro area. Combining two of these groups, we identified 885 nonmetro counties (as of 2003), nationwide, each with populations of less than 20,000 and not adjacent to a metro area.⁴ We designated these counties as rural banking markets for the purposes of this study. These counties are shown in green on the map below. While they represented 28 percent of all counties in the country in 2003, they accounted for just 4 percent of the population, about 11 million people. They are located primarily in the Midwest and the intermountain West.

We next identify the competitors in the markets and their relative shares of market activity. Every year, both commercial banks and thrifts are required to report the dollar volume of deposits by the branch in which the deposits account was opened. This is the source of data traditionally used for competitive analysis in the banking industry and that we use in this paper.⁵

In addition, it is important to identify not just banks, but banking organizations. For instance, the market could include two banks owned by the same bank holding company, and for competitive analysis, they would be considered a single banking competitor. Therefore, we used the banking (or thrift) organization to measure market share.

The characteristics of the markets used in our analysis are presented in Table 1 at five-year intervals from 1985 through 2005. Several things stand out in this table. First, the structural characteristics of the markets have remained remarkably constant over the last 20 years. The average number of banking organizations in the markets grew from just 3.41 to 3.83 between 1985 to 2005, while the number of total competitors, including thrifts, fell slightly from 4.47 to 4.27. All the measures of

Map 1
Rural and Non-rural Counties—2003



Source: U.S. Department of Agriculture, Economic Research Service

TABLE 1**AVERAGE VALUES OF MARKET STRUCTURE AND DEMOGRAPHIC VARIABLES**

	1985	1990	1995	2000	2005
Number of Markets	857	859	863	863	863
Bank Deposits (\$000s)	92,448	110,551	127,683	152,101	180,480
Bank & Thrift Deposits (\$000s)	118,736	140,541	153,951	177,973	212,326
HHI - Banks Only	4908	4949	4821	4726	4607
HHI - With Thrift Adjustment *	4354	4438	4456	4397	4347
Percent of Markets with HHI <1800	6.88	6.17	4.29	5.68	5.32
1 - Firm Concentration Ratio	57.63	57.96	56.94	56.36	55.48
3 - Firm Concentration Ratio	92.77	93.31	92.77	91.83	90.90
5 - Firm Concentration Ratio	98.49	98.68	98.63	98.37	98.15
Percent of Markets With Only One Org	14.35	14.67	13.21	12.86	11.92
Percent of Markets With Org > \$1 Billion	29.52	34.69	49.13	57.59	62.04
Number of Banking Orgs in Market	3.41	3.33	3.44	3.64	3.83
Number of Total Orgs in Market	4.47	4.26	4.08	4.17	4.27
Market Population	12,677	12,322	12,737	12,945	12,898
Market Per Capita Income (\$s)	11,338	14,658	17,062	21,331	26,052
Five-year Change - Market Population	0.04	-4.24	2.94	0.69	-1.98
Five-year Change - Market Per Capita Income	51.41	29.61	17.53	25.08	22.52

* - only half of thrift deposits included - per Justice Dpt guidelines

market concentration (described in the Box on Page 12) remained very steady.⁶ The Herfindahl-Hirschman Index (HHI) with thrift adjustment, for instance, began at 4,354 and ended at 4,347.

There are other noteworthy aspects of the structure of these markets. For instance, as of 2005, just 5.32 percent of the markets had an HHI below 1,800, which is the level above which the DOJ guidelines indicate competitive issues may arise. This suggests that a large percentage of rural market mergers would be subject to challenge by banking regulators or the DOJ. On the other hand, very few rural markets are true monopolies; just 11.92 percent of the markets in our analysis have only one competitor. Finally, more than 62 percent of the markets contain at least one large banking organization, defined as having assets of more than \$1 billion. This does not imply a competitor with \$1 billion of assets in the particular marketplace but rather that there is at

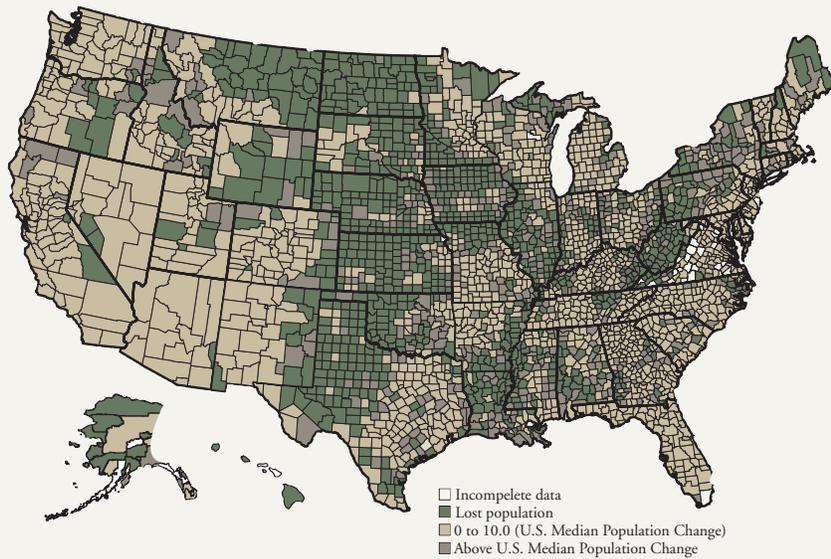
least one large out-of-market organization that has a branch office in the market.⁷ The presence of large competitors may provide some additional market constraint on locally owned competitors.

Another important aspect of these markets is that they have grown very slowly, if at all. Over the entire 20 years, the average population has grown only 1.7 percent to just 12,898 people. This compares to total population growth in the country of 24 percent. In Map 2, we show county population growth for the entire country from 1985 to 2005.

Counties in green lost population over this period. There is a remarkable degree of overlap in the rural counties in Map 1 and the counties with population loss in Map 2.

Bank deposits in the rural counties in Table 1 have also grown very slowly. In absolute terms, deposits have nearly doubled to just over \$180 million per market. However, this represents a compound

Map 2
Median Population Change 1985-2005



Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce

annual growth rate of just 2.7 percent, barely enough to keep up with inflation. Over the last 20 years, domestic deposits in the entire banking system grew about 75 percent faster.

The structural characteristics of these markets and the slow growth in both population and deposits have several implications. First, they both represent constraints on the possible growth of banks in the market. Further, most of these markets are considered highly concentrated, according to DOJ guidelines, making most in-market mergers infeasible if the current guidelines were applied. Second, there is very little opportunity for organic growth, as both population and deposit growth are stagnant.

The stable structural characteristics of these markets have implications as well. Because these markets are already highly concentrated by traditional measures, competitive theory suggests that the banks in these markets should be able to use their market power to generate better performance. If this were the case, we would expect outside entry to occur, as other potential competitors viewed the markets favorably.⁸ Outside entry would be further supported by less restric-

tive branching laws and improved technology. However, the average number of competitors and the level of market concentration have remained constant over the last 20 years. This suggests that these markets are not particularly attractive to outside entrants and that they may not be generating excessive profits.

Summarizing, rural markets are small (in terms of population and deposit size), slow growing, served by large and small banks and highly concentrated. They have shown little structural change over time; market concentration and the number of competitors are not significantly different in 2005 than in 1985.⁹

RURAL BANKS AND THEIR CHARACTERISTICS

Each bank included in our study has all its offices within a single rural county or rural market. The reason for limiting the sample to such banks is that almost all bank financial data is reported at the bank and not at the office level. By focusing on banks that operate in a single county, we can attribute any observed differences in performance to differences in market structure.¹⁰ Additionally, we limited our sample banks to those that had been in operation for at least five years. This helps eliminate any effects resulting from the special performance characteristics of new banks, although this made little difference in practice, since these markets contained very few new banks.

Table 2 presents average values for the financial variables for the banks used in our analysis for each five-year period from 1981-1985 to 2001-2005. We use five-year averages in our analysis to help reduce the possible effects of isolated events that may affect short-term bank performance but are not truly representative of underlying performance, such as a drought in an agricultural area that may cause a spike in loan loss provisions and reduced earnings.

Table 2
Average Values of Bank Financial Variables

As of year-end	1985	1990	1995	2000	2005
Number of Banks	1,856	1,472	1,104	782	655
Asset Size (\$000s)	26,858	32,757	39,457	46,678	55,759
Operating Income (\$000s)	260	342	639	752	811
Five-year averages ending in					
As a Percent of Assets:					
Net Income After Taxes	0.97	0.71	1.07	1.13	1.10
Operating Income Before Taxes	0.90	0.93	1.47	1.49	1.32
Operating Income + Salary & Benefits	2.39	2.43	3.05	3.11	2.95
Operating Income + Noninterest Expenses	3.95	3.81	4.43	4.28	4.11
Net Interest Income	4.44	3.83	4.02	3.92	3.73
Noncore Funding Sources	8.63	8.84	9.03	12.79	12.96
Total Loans	48.42	45.07	48.55	54.43	55.55
Equity Capital	9.36	9.57	10.69	11.73	12.02
Operating Income to Equity Capital	8.73	8.84	14.44	13.50	11.71

The data in Table 2 show substantial changes in both the number of banks operating in rural markets and in their performance. For instance, the number of banks fell from 1,856 in 1985 to 655 in 2005, a decline of nearly 65 percent. This partially mirrors the overall decline in banks across the country.¹¹ The decline in our sample banks also reflects banks establishing offices in other counties, which would remove them from our analysis subsequent to when they became multicounty operations.

The financial performance for our study banks largely reflects the markets they serve and general performance patterns found for banks of similar size. For example, the growth in average asset size from \$26.9 million in 1985 to \$55.8 million in 2005 roughly mirrors the deposits growth discussed previously in the context of Table 1 data. Additionally, the changes in earnings and other financial variables shown in Table 2 are approximately the same as those for all small banks in the country over the same period. These include improvements in earnings, increases in capital and loans, and greater reliance on noncore sources of funding.¹²

BANK PERFORMANCE MODEL

To assess the effects of market concentration on performance, we constructed a model that quantifies the relationship between the structure of the marketplace and various measures of bank performance, primarily earnings measures. The model hypothesizes that bank performance is a function of individual bank characteristics, general economic conditions, and the competitive structure (number and relative size of firms) of the market in which it operates.

The bank performance measures included in our model and their expected relationship to market concentration are:

Net operating income (NOI) to total assets:

One of the most obvious places for market power to reveal itself is in bottom-line bank performance. Banks with market power, all else equal, should be more profitable than other banks for any given level of risk assumed.

The bottom-line earnings measure we use is NOI. This measure reflects the outcome of ongoing operations and eliminates tax effects and extraordinary items.

NOI to equity:

This is an alternative bottom-line measure and the one of most interest to shareholders; it is their return on investment. Like the previous measure, it should be positively related to market concentration and associated market power, all else equal, for any given level of assumed risk.

NOI plus salary and benefits to assets and NOI plus total noninterest expense to assets:

In many small banking organizations, there are very few shareholders (or a few shareholders own a very large share of the bank). In addition, the large shareholders or family members are often employees of the bank, typically in senior management positions. In such situations, profits resulting from market power may not flow to a bank's bottom-line. Instead, these profits may be paid out as higher salaries and/or amenities, e.g., bank car, conference travel to desirable locations, nicer office furnishings, etc. This is sometimes referred to as "expense preference." To the extent that this might occur, looking only at net earnings may understate the actual impact of structure on performance. Therefore, we considered two additional earnings measures: NOI plus salary and benefits to assets and NOI plus total noninterest expense to assets. In both cases, the expectation is that these performance measures are positively related to the level of market power.

Net interest income to assets:

Banks are primarily in the business of acquiring liabilities, principally deposits, and generating an interest rate spread between those liabilities and the assets that they purchase or produce, including securities and loans. In a local banking market, banks' customers for loans and their providers of deposits are often drawn from the same groups of consumers and businesses. This suggests that if the banks have some degree of market power, they will be able to exercise it with respect to the interest rates that they offer on both loans and deposits. Loan rates will tend to be higher and deposit rates lower, resulting in greater net interest income, which is the difference between the two.

We ran our model separately for each of these performance measures. In the model, we used several measures of market concentration including a bank-only HHI, an HHI adjusted for the level of thrift deposits, and the 1-, 3-, and 5-firm concentration ratios. The thrift-adjusted HHI is the measure of market concentration most often used by the DOJ and the banking regulators. However, the other concentration measures are often used in academic research, and they may exhibit a more consistent or stronger relationship with our performance measures than the thrift-adjusted HHI. To help isolate the impact of other variables on bank performance, we also included bank-only factors, such as asset size and capitalization; market demographic factors, such as population and per-capita income and growth rates in these measures; and statewide banking measures.¹³

We ran the model for each five-year period from 1985 to 2005. We did this to see if the relationship between bank performance and market structure changed over time. If new technologies and changes in laws and regulation have made rural banking markets less meaningful, the expectation is that any observed structure-performance relationships should decline over time.

FINDINGS FROM THE STATISTICAL ANALYSES

The key findings from the statistical analysis are presented in Table 3. The description of findings is focused on the thrift-adjusted HHI, since similar statistical relationships were found with different measures of market power.¹⁴ (The table in Appendix 1 gives the full statistical results for all the measures of market concentration for each performance variable and for each period.) Table 3 indicates the strength of the statistical relationship between the thrift-adjusted HHI and each of the selected financial variables for each five-year period from 1981-85 through 2001-2005. For those periods/variables with a blank value, the statistical probability of a relationship between the performance variable and HHI fell below levels generally considered significant for research purposes.

Table 3
Impact of Thrift—Adjusted HHI On Five-Year
Average Performance

	Five - Year Periods Ending				
	1985	1990	1995	2000	2005
Net Income to Assets	**				
NOI to Assets	***				
NOI + Salaries to Assets	***				
NOI + Noninterest Expense to Assets	***	***	***	***	*
NOI to Equity	***				
Net Interest Income to Assets	***	***	***	***	

* - Significant at the 90 Percent Level

** - Significant at the 95 Percent Level

*** - Significant at the 99 Percent Level

For the other periods/variables, a rising number of asterisks indicates increasing statistical significance from 90 percent (*) to 99 percent (***).¹⁵

The model results indicate a very strong relationship between structure, as measured by the HHI, and most performance variables in the first five-year period. However, after the 1981-85 period, the statistical relationship between the net earnings variables and HHI disappears. A strong relationship remains between HHI and net interest income through the 1996-2000 period. However, by the 2001-2005 period, the relationship between all bank performance measures and the HHI either weakened or fell below levels considered statistically significant. This suggests that by the last period in the study, the relationship between market concentration and performance had weakened substantially.

The strong and consistent statistical relationship between net interest income and HHI through 2000 is consistent with the SCP hypotheses. It suggests that banks in more concentrated markets are capable of increasing interest rates on loans and/or of decreasing interest rates paid on liabilities relative to banks in less concentrated markets.

While most of our results are consistent with the SCP hypothesis through the 2000 period, some of them give us pause. One concern is the strong and consistent relationship between net interest income and concentration coupled with the nearly nonexistent relationship between NOI and concentration, since net interest income is a major contributor to NOI. The fact that the former is related to concentration and the latter, for the most part, is not leads us to ask “where did the money go?” Our model results tell us that it was not into salaries, since the NOI+salaries variable is only related to concentration in the 1981-1985 period.

Instead, it appears that the higher net interest income in banks in more concentrated markets went into higher noninterest expenses, since NOI+noninterest expense is related to concentration in all but the last period covered, 2001-2005. The largest component of noninterest expenses is building and equipment, but this category also includes such items as management and director fees, club memberships and civic organization dues, meeting travel, training expense, car expenses, donations, and a host of other fees and charges. Many of these items could fit into the category of perquisites or benefits and provide some support for the expense preference theory mentioned earlier.

However, while expense preference might suggest some reduction in the relationship between structure and bottom-line earnings, we would not expect this relationship to disappear entirely, if the SCP hypothesis holds. That is, we would expect that at least some banks in concentrated markets would extract greater profits as salaries or as bottom-line earnings. However, we do not observe either of these occurring, except in the 1981-1985 period.

The other area of concern is that it is only in the last observation period that the consistently strong relationships between the performance measures and concentration wane or disappear. While this may indicate an actual breakdown in the performance/concentration relationship by this later period, it may also be the product of

banking and economic conditions existing during the 2001-2005 period. For instance, the 2001-2005 period was noteworthy for strong overall banking conditions, including very low loan losses, rising capital, strong earnings, and low interest rates. Seeing this pattern extended beyond the 2001-2005 period would provide further confirmation of the apparent trend.

In addition to identifying those financial variables that had a statistically significant correlation with market structure, we also estimated the impact that a representative change in market structure would be predicted to have on net interest income to assets, in this case a 1,000-point increase in thrift-adjusted HHI.¹⁶ This part of the analysis allows us to interpret the economic relevance of a change in market share, as well as the statistical significance of it.

These results are presented in Table 4. The first row of the table shows the average values of the net interest income variable in each five-year period. The second shows the predicted changes in an absolute sense, and the bottom row shows the predicted percentage changes. For instance, for 1985, there is a predicted change of 0.093 in net interest income to assets associated with a 1,000-point increase in HHI. Since the average value of net interest income in that period was 4.44, this represents a 2.10 percent change in the ratio (or $100 \times 0.093 / 4.44$). In other words, a 1,000-point increase in HHI would be predicted to improve a bank's net interest income by about 2 percent in 1985.

The results in Table 4 indicate that the impact of a change in HHI tends to decline from 1985 onward and that most changes are quite small. After 1985, none of the predicted percentage changes in the values of the variables exceeds 1.65 percent when the HHI increases by 1,000 points. Of course, mergers resulting in larger changes in HHI would generate larger predicted changes in the performance measures. For instance, if a bank with 60 percent of the market merged with a bank with 40 percent, the increase in HHI would be 4,800, and the predicted changes in the financial variable would increase by 4.8

times those shown in Table 4. However, the predicted percentage changes in the variables would remain well under 10 percent in every period but 1985. Therefore, even where we end up with just a single banking organization, the change in market structure does not lead to large changes in predicted performance after 1985.

POSSIBLE IMPLICATIONS OF THE STATISTICAL FINDINGS

Despite reservations in the statistical results discussed above, it appears that isolated rural banking markets may no longer be the protected islands they once were. The relationship between bottom-line earnings and market structure disappeared after the earliest period of the study, and by the last period, virtually all the structure/performance relationships had weakened to levels below statistical significance.

Consequently, even in these isolated county banking markets, concentration may be less important than it once was. Phrased in another way, a market HHI of 1,800 in 1985 does not have the same implications for market competition as an HHI value of 1,800 in 2005. Thus, there may be a need to stretch the limits set in the DOJ guidelines, knowing that concentration measures may no longer capture the full extent of market competition. This is especially true in light of the greater potential that now exists for entry to moderate uncompetitive behavior.

Table 4
Predicted Impact of a 1000 Point increase in Thrift-Adjusted HHI On the Average Value of Net Interest Income

	1985	1990	1995	2000	2005
Average Value	4.44	3.83	4.02	3.92	3.73
Predicted Change In Value	0.093	0.050	0.044	0.065	0.012
Predicted Change As Percentage of Average Value	2.10	1.30	1.10	1.65	0.31

In some ways, the banking agencies already do this in their competitive analyses by including mitigating factors. These factors are usually non-quantifiable market features that lessen or shade anticompetitive effects implied by exceeding DOJ guidelines.¹⁷ In terms of freedom of entry, factors such as liberal state interstate banking and branching laws, greater ease in establishing branches, and a customer base that embraces electronic banking all have an important bearing on market competitiveness and all deserve a more important place in the agencies' portfolio of mitigating factors. In any event, it appears that the analytical basis for assessing the impact of market concentration is even more nuanced than it once was.

SUMMARY AND CONCLUSIONS

In this paper, we looked at the structural characteristics of small, isolated, rural banking markets and how those characteristics relate to the financial performance of the banks in them. We paid particular attention to how these relationships evolved over the last 20 years. These markets are typically quite small in terms of both population and banking activity. This very smallness has served as an impediment to in-market expansion by these banks, because their markets are almost invariably viewed as concentrated by traditional measures used in antitrust reviews.

Our analysis offers some evidence that the relationship between traditional measures of market concentration and bank performance may be changing in these markets. In particular, our research shows that, after the 1981-1985 period,

the relationship between earnings and market concentration broke down significantly. By the 2001-2005 period, there were very few statistically significant relationships still evident between concentration and any performance variables.

These findings are consistent with our initial hypothesis that changes in legal branching status, technology, and the business of banking since the early 1980s have significantly eroded the traditional geographic market. Even in these seemingly isolated banking markets customers now have a myriad of additional choices available to them. Further, the possibility of entry by out-of-market firms has increased tremendously with the elimination of branching restraints and improvements in technology. The fact that the structural characteristics of the markets in our analysis have remained remarkably constant suggests that these markets are not particularly attractive for entry. This, in turn, is another indication that the banks in concentrated local markets are not engaging in monopolistic behavior to the detriment of their customers.

Consequently, market power associated with traditional measures of concentration in these markets may have dissipated over time. This indicates that antitrust analysis may not have kept pace with changes in the financial services industry, which suggests a possible rethinking of the criteria used to judge the impact of market concentration. In turn, this may open the doors to allowing banks to seek in-market mergers that increase their size and their ability to compete effectively with larger out-of-market firms.

Box

Elements of Antitrust Analysis

ANTITRUST ANALYSIS OF BANKING PROPOSALS

The Federal Deposit Insurance Act (FDIA), the Bank Holding Company Act (BHCA), and the Change in Bank Control Act (CIBCA) provide for the antitrust review of bank and bank holding company transactions and change in control notifications. These Acts assign the responsibility for antitrust review of banking transactions to the Federal banking agencies and the Department of Justice (DOJ).

The wording of the antitrust sections in FDIA, BHCA, and CIBCA is similar and incorporates the standards set out in the nation's antitrust laws. These laws make it illegal for anyone to engage in any transaction that would create or further a monopoly in the business of banking in any part of the United States. This statement on its face seems relatively straightforward. However, the terms, "business of banking" (**product market**), "part of the United States" (**geographic market**), and "**create or further monopoly**," are subject to interpretation, and it is left to the banking agencies, the DOJ, and the courts to define them. The following summarizes these basic concepts and how they are applied to antitrust analysis of a banking proposal. As you will see, the product and geographic markets affected by a banking transaction are important determinants of whether or not it passes antitrust muster.

THE PRODUCT MARKET

The product market in antitrust analysis defines the goods and services that are purchased by consumers whose quantity, quality, and price may be influenced by combining firms. For banks, these goods and services include such things as transaction accounts (checking accounts, NOW accounts, and money market accounts), time and savings accounts, loans (agriculture, business, consumer, and real estate), safety deposit boxes, trust services, and other products and services normally provided by full-service banks. Although a wide variety of firms offer similar or substitute products for these services, none is viewed as offering the full range of services provided by banks. Therefore, for analytical purposes, commercial banking is considered the relevant line of commerce or the product market effected by a bank merger, acquisition, or change in control. Having said this, it is important to note that the agencies and the DOJ often disaggregate the "cluster of services" offered by banks and focus on a transaction's competitive affect on individual product lines. Most often, the focus is on small business lending, a line of commerce where there are few close substitutes for lending by banks.

Although the agencies and the DOJ view banks as the principal competitors for one another, they recognize that other financial service providers offer many similar products. Consequently, they include them in their analyses, but usually not as full competitors for banks. For example, thrifts are often accorded one-half weight in competitive analyses done by the Federal Reserve. However, this does not mean they cannot be accorded greater weight in analyses. For instance, thrifts may be treated as a bank equivalent, given full weight, if they actively engage in business lending.

THE GEOGRAPHIC MARKET

The geographic market in antitrust analysis refers to the area or section of the country in which firms produce or sell their goods and services. It is the area where customers, either large or small, feel the competitive impact of a merger or acquisition. It is the area where a bank can impose a small but significant nontransitory price increase.

The agencies, the DOJ, and the courts consider the geographic market for banking services to be local in nature. Convenience is the principal reason for this consideration. Customers for banking services prefer them to be nearby, choosing to bank near where they live or places that they frequent such as workplace or shopping locations.

Unfortunately, there is no bright line that demarcates market boundaries. It is difficult to determine where the competitive influence of one bank ceases to influence the behavior of another, a sign that the two banks may be competing against one another. To deal with this problem, the agencies and the DOJ look for commercial interaction among places that tie them together to form a market where the interaction is strong. Most often, the focal point of these markets is a population center. Attached to these centers are other places where commuting and shopping patterns and communication flows create an integrated economic unit or market. It is in these areas that, as a matter of convenience, customers might logically view banks as competing sources of banking services. In rural areas, the county seat is often tied with outlying cities, towns, and villages, making the county the market. For metropolitan areas, metropolitan statistical areas, where suburban counties are joined with those containing the central city, may serve as the market. In many instances, these default market definitions may be altered substantially based on further analysis of interaction among places by the agencies and the DOJ.

CREATE OR FURTHER MONOPOLY

The ability to create or further a monopoly, under current antitrust analysis, is assumed to depend upon market concentration. The logic applied is that fewer market competitors, all else equal, make it easier for them to cooperate with one another to restrict output and raise product prices.

Market concentration can be measured a number of ways. In its 1982 Antitrust Guidelines, the DOJ adopted the Herfindahl-Hirschman Index (HHI) as the primary concentration measure to be used in antitrust analysis. The HHI for a market is the sum of the squared percentage of market shares of competitors in the market. It takes the value 10,000 in the case of a monopoly market and approaches zero in a purely competitive one. Other measures of market concentration often used are market concentration ratios. These measures sum up the market share of the top “n” firms in a marketplace. Common measures used are the 1-, 3-, and 5-firm concentration ratios.

In terms of the DOJ guidelines, only small changes in concentration resulting from within market mergers or acquisitions are permitted when market concentration is high. Table 1 sets out the DOJ guidelines as they are applied to banking transactions. The guidelines provide parties to mergers and acquisitions with a safe harbor, which facilitates their planning and helps reduce their cost from entering into transactions that are likely to face greater antitrust scrutiny. However, it is important to note that transactions that fall outside the guidelines are not necessarily denied. There may be a host of extenuating circumstances that reduce the significance of increased concentration resulting from a transaction.

These could include failing firm, declining market, rapidly growing market, unique operations, aggressive nonbank financial service providers, etc. Such circumstances may allow a transaction to go forward even though it exceeds the guidelines.

Table 1.
U.S. Department of Justice Merger Guidelines

	Moderately Concentrated Market		Highly Concentrated Market	
Post Merger HHI	Below 1800		Above 1800	
HHI change	Under 200	Over 200	Under 200	Over 200
Chance of DOJ challenge	Unlikely	Depends upon situation	Unlikely	Likely

To calculate market concentration changes and hence the competitive effects of a banking transaction, the banking agencies use bank deposits as a proxy for the cluster of products and services a bank provides. Deposits are used as a proxy for a practical reason. Deposit information is available for individual bank branches while little other financial information is reported by banks at the branch level. Branch office deposit information is used to calculate institution market share and calculate the market's HHI level and change. It is at this stage of antitrust analysis that weights are applied to nonbank institutions that operate in a market. As mentioned earlier, thrifts are typically given one-half weight for analytical purposes. This means that only one-half of their deposits are used in calculating market concentration measure. For example, only \$5 million of a savings and loan branch with \$10 million in deposits would be included in concentration calculations. Typically, credit unions are given zero weight unless they are actively engaged in small business lending. The agencies then compare the resulting HHI to DOJ guidelines. Transactions that are unlikely to receive increased DOJ scrutiny are handled routinely. Those that do not meet the guidelines receive greater attention.

Product and geographic markets ultimately identify the competitors that parties to merger and control transactions face which have significant implications for these transactions passing antitrust review. More broadly defined markets, all else equal, translate into more competitors, lower market concentration, and less likelihood of antitrust challenge. Conversely, more narrowly defined markets potentially mean fewer competitors, more concentrated markets, and a greater likelihood of a transaction raising antitrust concerns.

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ENDNOTES

¹Smaller banking organizations, for purposes of this study, are commercial banks with \$1 billion or less in total assets.

²For instance, see the papers listed in the Bibliography.

³Deregulation that loosened restrictions on branching resulted in relatively strong growth in branches serving rural areas (Gunther). Improved efficiency due to technological advances may be more important for helping banks expand geographically than helping them achieve greater scale economies (Berger et al.)

⁴This data is updated approximately every 10 years. While we used the 2003 designation, nearly all of these counties were in the same categories in earlier periods as well.

⁵Most measures of bank conditions, such as assets, are only reported at the head office level, regardless of where the bank actually has offices. So, for example, Bank of America is headquartered in Charlotte, N.C., but has thousands of offices throughout the country. So, it would be inappropriate to analyze it as if it competed solely in the Charlotte market and nowhere else. This would make the use of its head office financials very misleading as indicators of market concentration.

⁶The Box describes the HHI more fully. The 1-, 3-, and 5-firm concentration ratios represent the percentage of a total market deposits held by the 1, 3, and 5 largest banking organizations, respectively, in that market.

⁷While we used a cutoff value of \$1 billion, many of these markets have at least one very large competitor with a regional or national banking presence.

⁸Of course, there are factors other than profitability that would influence the choice to enter a market, such as growth potential.

⁹Although measures of competition may not have changed, there has been a subtle, qualitative change. Over the years, head offices of banks in many rural counties have become branch offices of banking organizations not necessarily headquartered in the same county. Thus, decision-making regarding operational matters may be distantly removed from where the branch is located and may only bear a passing relationship to local market conditions. For example, Berger et al.; and Hannan and Prager observe that multimarket firms may adopt uniform rates across markets. Consequently, it is possible that rates on loans and deposits and prices for services are set remotely and reflect competitive conditions well beyond a county market.

¹⁰The actual determinant was whether the banking organization (that is, the holding company) had bank subsidiaries with offices in a single county.

¹¹From 1985 through 2005, the number of banks nationwide fell by 48 percent primarily as banking firms merged and converted banks to branches.

¹²Ratio definitions are described in the Appendix.

¹³See the Appendix for listing and description of all factors considered in the bank performance model and the statistical methodology utilized.

¹⁴This is the measure typically employed by the DOJ and the bank regulatory agencies.

¹⁵Full statistical results are available from the authors, upon request.

¹⁶This would be the equivalent of a bank with a 50 percent market share merging with one with a 10 percent share.

¹⁷Although the banking agencies use concentration measures to assess a transaction's consistency with the DOJ merger guidelines, such measures do not capture extenuating circumstances that may reduce the significance of increased concentration resulting from a transaction. Consequently, there may be instances where transactions may marginally exceed DOJ merger guidelines but may be found consistent with approval once account is taken of special market factors. Consideration of such factors allow the banking agencies to fine-tune their antitrust analyses to account for individual market differences.

APPENDIX

The statistical results reported in this paper were based on a series of linear regression models of the form:

$$PV = f(\text{MSV, BK, BK-State, D}) + e$$

Where PV is a selected bank-level performance variable, MSV is a selected market structure variable, BK is a series of bank-specific variables, BK-State is a measure of bank asset quality at the state level, and D is a series of county-wide demographic variables. The models were reestimated at five-year intervals from 1981-1985 through 2001-2005. The MSV, BK, BK-State, and D variables were as of each period end, while the PV variables were averaged over each of the five-year periods.

There were six performance variables evaluated, each in a separate regression equation:

- Net income after taxes to assets
- Net operating income before taxes and extraordinary items (NOI) to assets
- NOI plus salaries and employment benefits to assets
- NOI plus noninterest expenses to assets
- NOI to equity capital
- Interest income net of interest expense to assets.

The models were estimated separately for four different market structure variables:

- Market HHI including only commercial banks
- Market HHI with half weight given to the deposits of thrift institutions

- The three firm concentration ratio, including only commercial banks
- The five firm concentration ratio, including only commercial banks.

The bank-specific variables included the asset size of the bank, expressed as the natural log of assets, and the bank's ratio of equity capital to assets. The state level bank asset quality measure was the state median value of the ratio of loans past due 90 days or more or on nonaccrual status to total loans within peer groups defined by asset size and predominant type of lending and matched to banks within the same peer groups.

The county-wide demographic variables included population size, per capita income, and the five-year growth rates in population and per capita income.

With five periods, six performance variables, and four market structure variables, there were a total of 120 separate regressions estimated. Within each five year interval, the PV and MSV variables changed in each regression, while the BK, BK-State, and D variables remained the same.

The effects of the structure variables on each of the performance variables in each period are summarized in the following table. Asterisks indicate the level of statistical significance in each estimate with "***" indicating the strongest level of statistical evidence. A missing value indicates that any relationship between the structure and performance variables falls below the level normally considered statistically significant.

Analysis of the impact of Market Structure on Bank Performance

1985 Structure and Avg Performance From 1981 Through 1985

	Bank HHI	HHI With Thrift Adjustment	Three Firm Concentration Ratio	Five Firm Concentration Ratio
Net Income to Assets	*	**		
NOI to Assets	***	***	*	
NOI + Salaries to Assets	***	***	***	**
NOI + Noninterest Expense to Assets	***	***	***	***
NOI to Equity	***	***	*	
Net Interest Income to Assets	***	***	***	***

Analysis of the impact of Market Structure on Bank Performance (continued)

1990 Structure and Avg Performance From 1986 Through 1990				
	Bank HHI	HHI With Thrift Adjustment	Three Firm Concentration Ratio	Five Firm Concentration Ratio
Net Income to Assets				
NOI to Assets				
NOI + Salaries to Assets			**	***
NOI + Noninterest Expense to Assets	***	***	***	***
NOI to Equity				
Net Interest Income to Assets	***	***	***	***
1995 Structure and Avg Performance From 1991 Through 1995				
	Bank HHI	HHI With Thrift Adjustment	Three Firm Concentration Ratio	Five Firm Concentration Ratio
Net Income to Assets				
NOI to Assets				
NOI + Salaries to Assets				
NOI + Noninterest Expense to Assets	***	***	***	***
NOI to Equity				
Net Interest Income to Assets	***	***	***	***
2000 Structure and Avg Performance From 1996 Through 2000				
	Bank HHI	HHI With Thrift Adjustment	Three Firm Concentration Ratio	Five Firm Concentration Ratio
Net Income to Assets				
NOI to Assets				
NOI + Salaries to Assets			*	
NOI + Noninterest Expense to Assets	***	***	***	***
NOI to Equity				
Net Interest Income to Assets	***	***	***	***
2005 Structure and Avg Performance From 2001 Through 2005				
	Bank HHI	HHI With Thrift Adjustment	Three Firm Concentration Ratio	Five Firm Concentration Ratio
Net Income to Assets				
NOI to Assets				
NOI + Salaries to Assets				
NOI + Noninterest Expense to Assets		*	***	***
NOI to Equity				
Net Interest Income to Assets			**	**
* - Significant at the 90 Percent Level ** - Significant at the 95 Percent Level *** - Significant at the 99 Percent Level				