

concentration-profitability relationship existed only in a period when geographic and product market barriers to competition were relatively high.

The mean return on assets data for Pennsylvania alone are markedly different from those of Ohio, and generally not in line with those expected if the traditional structuralist theory is presumed to be valid. In particular, mean returns for the two market types with relatively large numbers of competitors (seven or more rural markets and SMSA's) are greater than those in the two more concentrated classes in two of the three time periods. Virtually none of the differences in mean returns are statistically significant.⁹ Only two significant differences are evident and only in the 1982-1985 period. However, the tests indicate that mean returns in the two least-concentrated market categories are significantly greater than those for banks in the 4-6 bank markets. This is the opposite of what a structuralist would expect (the t-stats are 2.69 and 2.76, respectively).

Analysis of the data for the combined sample yields results similar to that of Ohio alone. However, as in Ohio, the profitability of banks in the most-concentrated market class is significantly greater than those in each of the other less-concentrated classes only in the earliest period (the t-statistics are

2.40, 1.65 and 2.66, respectively). In addition, the mean returns of banks in the "seven or more bank" class are significantly above those of SMSA banks over the same time span. No other significant differences are evident.

Summary and Conclusions

The traditional view that high concentration typically results in undesirable conduct and performance (monopolistic behavior) has come under attack in recent years. In essence, opponents cite the constraining influence of potential competitors on the actions of incumbent firms. The view that market structure is a relatively unimportant determinant of firm behavior presupposes that barriers to entry into any market are minimal.

Some observers allege that the regulatory and technological changes that have taken place in the financial services industry in recent years have significantly eroded barriers to competition between bank and nonbank financial institutions, making local banking markets contestable. The implication is that high concentration in such markets is unlikely to result in anticompetitive conduct, and so is not a cause for concern. Others maintain that meaningful barriers to competition continue to exist and that substantial increases in concentration should be prevented.

The evidence reviewed here is consistent with what one would expect to find if banking markets were, in fact, contestable. A significant relationship between market concentration and bank profitability was detected for the sample banks over the 1976-1978 interval, but in no other more recent time period. The disappearance of the relationship coincided with the liberalization of bank branching laws in Ohio and Pennsylvania and the expansion of S&L powers authorized by Congress in 1980 and 1982.

The findings imply that merger-related increases in concentration in states with minimal barriers to geographic expansion by banks are unlikely to result in monopoly profits for institutions in local markets affected.

If such mergers are in fact motivated by a desire to gain efficiencies, preventing them because of their impact on concentration would appear to be costly to society. Mergers that increase concentration might be opposed for a variety of noneconomic reasons. However, actual social benefits from preventing these mergers should be balanced against the potential economic efficiency gains that are lost.

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9. Note that there are only a few Pennsylvania banks in the two most-concentrated markets.

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

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ECONOMIC COMMENTARY

Competition and Bank Profitability: Recent Evidence

by Gary Whalen

The nature of the relationship between the number and size distribution of competitors in a market (market structure) and their performance is of crucial importance to bank regulators and others responsible for evaluating the competitive effects of bank and bank holding company mergers and acquisitions.¹

Analysis of such transactions has become increasingly important in the 1970s and 1980s as intra- and interstate barriers to geographic expansion by banks have fallen, spurring consolidation in the industry.

Until quite recently, most observers felt that concentration of business activity in the hands of a few large competitors in any industry inevitably creates what is called "market power," which allows firms to collusively raise and maintain prices above costs in order to earn monopoly profits. This view reflects several implicit assumptions. The first is that creating and enforcing tacit collusive agreements is relatively easy. The second assumption is that technological conditions, regulation, other barriers to entry, or the threat of predation, allow firms operating in the concentrated market to disregard potential competitors.²

Proponents of this traditional structuralist view have buttressed their case with evidence gained from a variety of studies in which concentration and profitability have been found to be positively related.

The public policy implication of this empirical finding is that mergers and acquisitions that boost concentration to some relatively high level should not be permitted. In essence, this has been the position of the Justice Department and bank regulators.

However, criticisms of this view have increased in recent years. Economists of the so-called "Chicago School," and proponents of contestable market theory, have argued that insufficient emphasis has been given to the disciplinary role of potential competitors.³ They maintain that monopoly power can only exist and persist when barriers prevent potential competitors from entering a market in response to excessive profits earned by incumbent firms.

Chicago School economists cite government regulation and legislation as the sole source of truly effective entry barriers. Contestable market theorists also include the magnitude of sunk costs, (that is, unrecoverable fixed costs) necessary for entry into a market. If sunk costs required for entry are low, firms can easily go out of business if they suffer losses. Established firms then cannot use predatory pricing as a weapon to discourage new competitors. Thus, the ever-present threat of competition from new firms effectively constrains the pricing behavior of existing firms. These theorists have demonstrated that if a market is contestable, that is, with low barriers to entry and exit, it is possible to have intense competition, even if the number of actual competitors is quite small, or alternatively, if concentration is high.

Chicago School economists also offer an alternative explanation for the positive relationship found in empirical work between concentration and profitability. They suggest that performance determines market structure rather than the reverse. That is, that superior management, luck, and/or technological conditions cause firms to be profitable and to grow large, resulting in market concentration. Thus, they claim the positive concentration-profitability relationship does not necessarily indicate collusion.

Not surprisingly, given their beliefs about the importance of potential competition, those who subscribe to either the Chicago or the contestable market school have a different view about how the government should react toward mergers. Mergers, they believe, are motivated by a desire to gain a size-related cost advantage, and not by a desire to monopolize. Thus, they believe that mergers should not be prevented even if, or solely because, they result in increased concentration. In fact, to prevent these mergers entails real costs to society.

Even 10 years ago, it would have been difficult to argue that geographic and product-market barriers to competition faced by banks and other financial intermediaries were low enough, and the number of potential competitors large enough, for regulators to be unconcerned about the impact of market concentration on bank performance. However, this situation has changed significantly over the past decade.

Gary Whalen is an economist at the Federal Reserve Bank of Cleveland.

The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

1. Both the bank regulatory agencies and the Justice Department analyze the competitive impacts of bank mergers. For a summary of the procedure see D. Lehr and L. Loevinger, "A New Look at Bank Mergers," *Banking Expansion Reporter*, January 7, 1985.

2. For a discussion of the traditional view see Yale Brozen, *Concentration, Mergers and Public Policy*, Macmillan Publishing Co., New York, 1984, chapters 5 and 6.

Intrastate and interstate barriers to geographic expansion by commercial banks and by savings and loan organizations (S&Ls) have been removed in a large number of states. Remaining barriers have been circumvented in various ways (with loan production offices and nonbanking holding company subsidiaries, for example). The Monetary Control Act of 1980 and the Garn-St Germain Act of 1982 essentially allow S&L's to offer all the financial products and services of commercial banks. Largely unregulated diversified nonbank financial companies also now compete aggressively for both loan and deposit customers of banks. In addition, the increasing sophistication and declining cost of computer and telecommunications technology have made it possible for financial institutions to compete effectively in a geographic area without an extensive investment in brick-and-mortar offices.

Some observers suggest that these 1980s developments have made local loan and deposit markets more contestable or open to competition, in many states—at the very least in those with liberal intrastate branching laws. Thus, they say, merger-related increases in bank deposit concentration are not likely to result in undesirable bank conduct and performance, and so should not be viewed as worrisome.

Other experts, however, maintain that potential competition, particularly from nonbank financial firms that are unable to offer the entire cluster of products and services provided by commercial banks, does not yet effectively constrain the behavior of banks operating in any local market. Rather the number and size distribution of commercial banks operating in that market continues to be the primary determinant of bank conduct and performance, thus making high bank concentration a cause for concern.⁴

In studying this issue, I specifically examined the relationship between the number of commercial banks operating in various markets in Ohio and Pennsylvania and their profitability over various time periods from 1976 to 1985.

If the traditional structure-performance (monopoly) view is correct, the profitability of banks operating in highly concentrated markets should be significantly higher than banks operating in markets with larger numbers of actual competitors. Further, this relationship should remain evident over the entire period being examined. If the contestable market view is correct, however, and potential competition has become an important constraining force, significant differences in profitability should not be apparent for banks operating in markets with different numbers of actual competitors, at least in the later years of the period examined.

The Sample Design

Banks in Ohio and Pennsylvania were selected for analysis for several reasons. Most importantly, bank branching laws in both states were liberalized during the observation period, (Ohio on January 1, 1979 and Pennsylvania on March 1, 1982). This change in branching laws allows the relationship between concentration and bank profitability to be examined both before and after geographic barriers were lowered.⁵

In addition, S&L's are an important force in both states, particularly in Ohio. Since the interval of analysis spans the pre- and post-Monetary Control Act and Garn-St Germain Act periods, the impact of expanded S&L powers on the bank concentration-bank profitability relationship (if any) should be apparent.

Finally, unlike banks in other regions, the banks in both states generally have not engaged in a great deal of energy or agricultural lending. As a result, their performance has not been significantly affected by the boom and bust cycles occurring in these two sectors over the past several years. Thus, any relationship between the banks' performance and market structure should be easier to detect.

The particular banks analyzed were selected in the following way.⁶ First, all had to be in continuous operation over the 1976-1985 interval. Then, in each state, all single-market banks headquartered in non-SMSA (standard metropolitan statistical area) counties were included in the sample. Single-market banks are those with all their offices located within their home office county. The presumption is that non-SMSA counties are generally equivalent to rural banking markets. This selection procedure allows the number of actual bank competitors in each of these rural markets to be determined.

Banks in SMSA's in each state were included in the sample if all of their offices were within that particular SMSA, and if they were no larger than the mean asset size of the rural banks, plus one standard deviation. SMSA's are presumed to approximate urban banking markets.

Then the banks selected were classified into one of four categories based on the number of *actual* bank competitors faced in the market and market location. Three classes were created for rural market banks: 1-3 competing banks, 4-6 competing banks and seven or more competing banks. All SMSA banks were put into a single class that can be viewed as a "large number of competing banks" class.⁷

Annual return on asset figures (net income after taxes before securities transactions divided by average total assets) were obtained for each bank included in the sample, for each year of the 1976-1985 period, and were averaged over roughly three-year sub-intervals (1976-1978, 1979-1981, and 1982-1985).⁸ The particular sub-intervals were chosen by design. In the first period, bank branching was limited in both states, and S&L's had limited asset and liability powers. The second period was a rather turbulent transitional one. Ohio banks were then permitted to branch more freely but the Pennsylvania branching law had not yet been changed. S&L's had been given some additional powers, but would not receive others until 1982. In the final period, branching was liberalized in Pennsylvania, and S&L's finally

had essentially the same powers as banks. Thus, the intensity of potential competition presumably increased in each interval.

Then mean return on assets figures were computed for the banks in each competitive class for each of the three sub-intervals. If the traditional (monopoly) view is correct, and potential competition from bank and nonbank sources has been and continues to be relatively weak, the mean profit rate should be significantly higher in the highly concentrated rural markets than it is in less concentrated rural markets and SMSA's in all of the sub-intervals examined. It should also be higher in the less concentrated rural markets than it is in the urban ones. On the other hand, if potential competition has become a meaningful force over the period of analysis, significant differences in mean profit rates should not be apparent for banks in the different classes, at least in the most recent interval.

The Findings

The means and standard deviations of the return on assets figures for the banks in each class over time for each state separately, and for both states together, are presented in tables 1 to 3, respectively.

The data for Ohio banks alone seem to be consistent with the traditional structuralist view in all three of the time periods, that is, mean profitability is lower the larger the number of actual competitors in the market. However, if one conducts formal tests to determine whether the evident differences in mean returns across markets are statistically significant (pairwise t-tests are used), a different picture emerges. Significant differences are detected only in the earliest time interval (1976-1978), when the mean return of banks in rural markets with 1-3 competitors was significantly greater than those in each of the other three market types (the t-statistics are 2.26, 2.15 and 2.71, respectively). Thus, the Ohio findings indicate that a strong positive

allowed previously authorized one bank holding companies to purchase additional banks anywhere in the state. Previously de novo branching was permitted into contiguous counties.

6. The design is closely patterned on the one employed in Burke and Rhoades, op. cit., so that the empirical findings could be compared with theirs.

Table 1 Ohio Banks Mean Return on Assets (in percentage points)

Type of Market		1976-1978	1979-1981	1982-1985
1-3 Banks (N = 19)	Mean	1.25	1.26	1.13
	S.D.*	.307	.416	.486
4-6 Banks (N = 57)	Mean	1.06	1.22	1.00
	S.D.	.343	.436	.672
> = 7 Banks (N = 52)	Mean	1.07	1.19	0.93
	S.D.	.322	.447	.615
SMSA Banks (N = 72)	Mean	1.02	1.12	0.93
	S.D.	.402	.550	.620

*S.D. = standard deviation.

SOURCE: Reports of Income and Condition.

Table 2 PA Banks Mean Return on Assets (in percentage points)

Type of Market		1976-1978	1979-1981	1982-1985
1-3 Banks (N = 5)	Mean	1.25	1.21	1.22
	S.D.*	.416	.370	.301
4-6 Banks (N = 6)	Mean	1.03	1.04	0.88
	S.D.	.423	.331	.356
> = 7 Banks (N = 57)	Mean	1.18	1.22	1.30
	S.D.	.326	.344	.428
SMSA Banks (N = 79)	Mean	1.10	1.24	1.31
	S.D.	.283	.413	.500

*S.D. = standard deviation.

SOURCE: Reports of Income and Condition.

Table 3 OH-PA Banks Combined Mean Return on Assets (in percentage points)

Type of Market		1976-1978	1979-1981	1982-1985
1-3 Banks (N = 24)	Mean	1.25	1.25	1.15
	S.D.*	.322	.399	.450
4-6 Banks (N = 63)	Mean	1.06	1.20	0.99
	S.D.	.348	.428	.647
> = 7 Banks (N = 109)	Mean	1.13	1.21	1.12
	S.D.	.327	.395	.558
SMSA Banks (N = 151)	Mean	1.06	1.18	1.13
	S.D.	.346	.484	.591

*S.D. = standard deviation.

SOURCE: Reports of Income and Condition.

ity' in Highly Concentrated Banking Markets," unpublished manuscript, Board of Governors of the Federal Reserve System, 1985. See also the review of a large number of previous empirical studies, S. Rhoades, "Structure-Performance Studies in Banking: An Updated Summary and Evaluation," Staff Study 119, Board of Governors, August, 1982.

4. This is the conclusion reached in a recent empirical study, see J. Burke and S. Rhoades, "Profits, Potential Competition, and 'Contestabil-

3. For an example of the Chicago view see Brozen, op.cit.. For a complete discussion of contestable market theory, see W. Baumol, J. Panzar and R. Willig, *Contestable Markets and the Theory of Industry Structure*, Harcourt, Brace and Jovanovich, New York, 1982.

5. The Ohio law authorized de novo bank branching into counties contiguous to home office counties and statewide branching through merger. Prior to this time, de novo branching was restricted to within home office counties and banks could be acquired statewide through the multibank holding company device. The Pennsylvania law permitted de novo branching into counties bicontiguous to home office counties and

7. This classification scheme is arbitrary. A finer breakdown, as in Burke-Rhoades (i.e. 1-bank markets, 2-bank markets, etc.) was not possible since there were relatively few single market banks operating in 1- or 2-bank markets in Ohio and Pennsylvania.

8. Thus the profitability measure excludes gains and losses on securities transactions. It is felt that securities gains in any period will not be related to the intensity of market competition and so should not be included in profitability measures used in studies investigating the structure-performance relationship.