CHANGES IN BANK OWNERSHIP: THE IMPACT ON OPERATING PERFORMANCE

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Contents

Bank Structure and Regulatory Policy

Rapid changes are transforming the structure of American banking. Expansion of branch systems, formation of bank holding companies, and the related acceleration of bank mergers are major trends apparent to bankers and students of banking.

The banking structure is largely determined by a framework of laws and regulatory decisions. State legislation establishes whether branch systems or bank holding companies may exist in particular states. Where such forms of banking are permitted, state laws often constrain the extent of such operations, for example by limiting branches to contiguous counties. Federal legislation is most evident in the areas of bank mergers and holding company operations. In this context of state and federal legislation, bank regulatory authorities must continuously make decisions affecting the banking structure. Such regulatory actions relate to mergers, holding company acquisitions, and charters for new institutions.

Major changes in legislation or regulation can have a significant impact on the banking system. In states, such as New York and Virginia, where laws recently were changed to permit expansion of branch banking or holding companies, the banking structure has been rapidly transformed. Ideally a law is amended to facilitate a desired alteration in banking structure. At times, however, laws are passed without careful evaluation of the desirability and probability of various outcomes. For example, new legislation may result in a state's banking structure being changed from one that is predominantly unit banking to one that is predominantly comprised of large bank holding companies or branch systems. Because such a transformation is generally irreversible, it is important that careful analysis precedes decisions to change various banking laws and regulations.

In recent years various studies have attempted to compare the performance of bank holding companies and branch systems with that of unit banks. These studies are of two major types. Some are cross-sectional, statistical comparisons of the performance of branches and unit banks.[1] Others compare the performance

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[1] See, for example, Irving Schweiger and John S. McGee, "Chicago Banking"; and Paul M. Horvitz, "Economies of Scale in Banking". A recent compendium that integrates the findings of various comparative banking studies is "Banking Structure and Performance" by Jack M. Guttentag and Edward S. Herman.

of a bank before and after it was absorbed into a branch system or holding company.[2] In these studies comparative "performance" is usually measured by various bank operating ratios. The research to date generally concludes that branch banks and holding-company affiliates, in comparison with unit banks, have higher loan-asset ratios. Also they place more emphasis on consumer loans and usually have higher service charges on demand deposit accounts. Expense ratios of branches and affiliates are found to be generally higher than those of unit banks. Other measures of comparative performance are generally not statistically significant or the results vary among the studies. Without claiming to be conclusive in their methodologies or findings, these studies have attempted to measure the comparative performance of various forms of banking. Such information is important to individuals concerned with possible changes in laws and regulations -- with their probable attendant impact on banking structure.

A principal finding of the comparative studies is that independent banks, on average, significantly increase their loan-asset ratios after being acquired by branch systems or bank holding companies. Such an increase in the loan-asset ratio is often seen to reflect a more "aggressive" loan policy, whereby a bank is better serving the "legitimate" credit needs of its customers. It can also be interpreted to suggest that a bank is making "riskier" loans and is less "sound". While such conceptual problems of defining and measuring the extent of sound credit thus persist, policy-makers must make decisions based on their interpretation of available information and the probable implications of their actions.

The policy dilemma of trying to facilitiate a more aggressive bank lending policy is exemplified by a recent decision by the Board of Governors of the Federal Reserve System. In November 1967 the Board ruled on an application by Central Wisconsin Bankshares, Inc. for approval to become a bank holding company by acquiring voting shares of Mosinee Commercial Bank.[3] While many factors were involved in the application and decision, it was observed that Mosinee Commercial Bank's loan-to-deposit ratio was "only about 35 percent, the lowest of any bank in the County. Only two of the ten other banks in the County had less than a 50 percent loan-to-deposit ratios". The majority of the Board of Governors voted to approve the application, citing, among other factors, "the greater <u>availability</u> of loan funds to be anticipated under Applicant's proposal". In their dissenting

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[2] See, for example, Paul M. Horvitz and Bernard Shull, "The Impact of Branch Banking on Bank Performance", especially pp. 155-162; and Robert J. Lawrence, <u>The Performance of Bank Holding Companies</u>.

[3] <u>Federal Reserve Bulletin</u>, December 1967, pp. 2053-2064.

statement, Governors Robertson, Brimmer, and Sherrill observed that control would be transferred even if the current application were denied and therefore "*if present* management has been insensitive to the needs of the community and the best interests of the bank, there is no reason to assume that successor management would follow the same course". Based on their banking experience, these dissenting governors foresaw probable changes in operating performance of a bank where control would change without its becoming an affiliate of a holding company. However, no published research results were available to confirm or reject their expectations.

This study provides new information about probable changes in the operating performance of banks that undergo shifts in control. As previously outlined, several studies have analyzed changes in operating characteristics of independent banks acquired by branch systems and bank holding companies. Recognizing the importance of these research contributions and their policy implications, this study extends them by analyzing the question: Do significant changes occur in the operating performance of banks where control changes among <u>individual</u> shareholders? Relating this question to the preceding comparative studies, are their findings concerning different patterns of operating performance associated only with changes in control through acquisition by branch systems or holding companies, or are such patterns also found among banks where control changes from one owner or group of owners to another? The answer to this question may have important implications for public policy.

Method of Analysis

This study compares the operating performance of banks before and after they experience changes in individual ownership. Observed changes in operating characteristics through time may reflect factors other than just the ownership change. Therefore to isolate these other sources of variation, control groups of "similar" banks that did not experience ownership changes are used throughout the comparative analysis. In addition to providing a benchmark for comparing the before and after performance of banks with new ownership, such control groups also are important to determine whether banks with certain operating characterics are more subject to change of individual ownership.

Statement of Hypotheses

The principal hypothesis to be tested is that significant changes occur in the operating performance of banks where control changes among <u>individual</u> shareholders. Furthermore it is hypothesized that the principal changes in operating performance are similar to those found in studies of independent banks acquired by branch systems or holding companies.[4] It is expected that independent banks, after changes in control, have significantly higher loan-asset ratios. Also it is expected that they place more emphasis on consumer loans and that their service charges on demand deposits are higher than similar banks. If these hypotheses cannot be rejected by empirical testing, it suggests that change in ownership is a critical variable in explaining observed changes in operating performance. A further implication is that change in ownership may be a more powerful explanatory factor than whether the new owners are individuals, branch systems, or holding companies.

Selection of Banks

When proposing to acquire an existing bank, a branch system or bank holding company must apply to the appropriate bank regulatory agency for approval of the proposed acquisition. The applications and resultant regulatory decisions became a matter of public record, and this availability of documented information undoubtedly has stimulated research concerning changes in branch systems and holdimg companies. In contrast, until recently there was no systematic public record of changes in control of banks by individual owners. In 1964, however, Public Law 88-593 was passed, requiring that federally-insured banks report changes in control to the appropriate Federal bank supervisory agencies.

In this study "change in control" is defined as the entry of new majority owners and new top management. This is a narrower definition of "change in control" than that specified by Public Law 88-593, which reports major changes in stock ownership among members of a family controlling a bank and among members of an established management group operating a bank. However, it is believed that the narrower definition, focusing on the entry of new controlling interests, is of greater analytical and public-policy concern.[5]

This study is limited to control changes of Minnesota banks. This limitation is adopted because there have been sufficient numbers of such changes to warrant statistical analysis and because it is desirable to confine the analysis to the banking structure of one state rather than introduce additional complexities

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[4] Lawrence, p. 24, and Horvitz and Schull, pp. 161-162.

[5] Further research can be done to measure possible changes in operating performance of banks where changes in control or management occur within a family or established management group.

of diverse banking structures.[6]

The time span is limited to the years 1960-66 because, as outlined shortly, selected operating ratios prepared by the federal supervisory agencies are used to measure performance; and these operating ratios are readily available only for recent years.

Independent banks in Minnesota that changed control during 1961-65 were identified.[7] (Because of the many banks in Duluth, Minneapolis, and St. Paul and the attendant problems of identifying their "market areas", all banks in these three cities are excluded from this analysis.) Probable changes in control during the period were initially identified by noting changes in top management, as reported in various editions of the Bank Directory of the Ninth Federal Reserve District. Whether control did change was then confirmed by reference to news articles and interviews with bank supervisory authorities. All reasonable efforts were made to confirm the data about changes in control. Such an identification procedure was necessary because of the absence of any public record of changes in independent control during the selected time period.

In Exhibit I the 724 commercial banks in Minnesota at year-end 1966 are classified by such criteria as: (1) rural or metropolitan location; (2) ownership characteristics; (3) par or nonpar status; and (4) number of banks in the same municipality. This Exhibit, which presents the framework for the subsequent statistical analysis, identifies three principal categories in which there are sufficient numbers of banks where control changed and "similar" banks where control did not change.

Of the 302 independent, rural, nonpar banks in one-bank towns, 33 underwent changes in control and management during 1961-65. These banks can be examined concerning their operating performance before and after the change of control. Of the other 302 independent, rural, nonpar banks in one-bank towns, 179 had no apparent change in ownership or top management during 1960-66. These banks, which are "similar"

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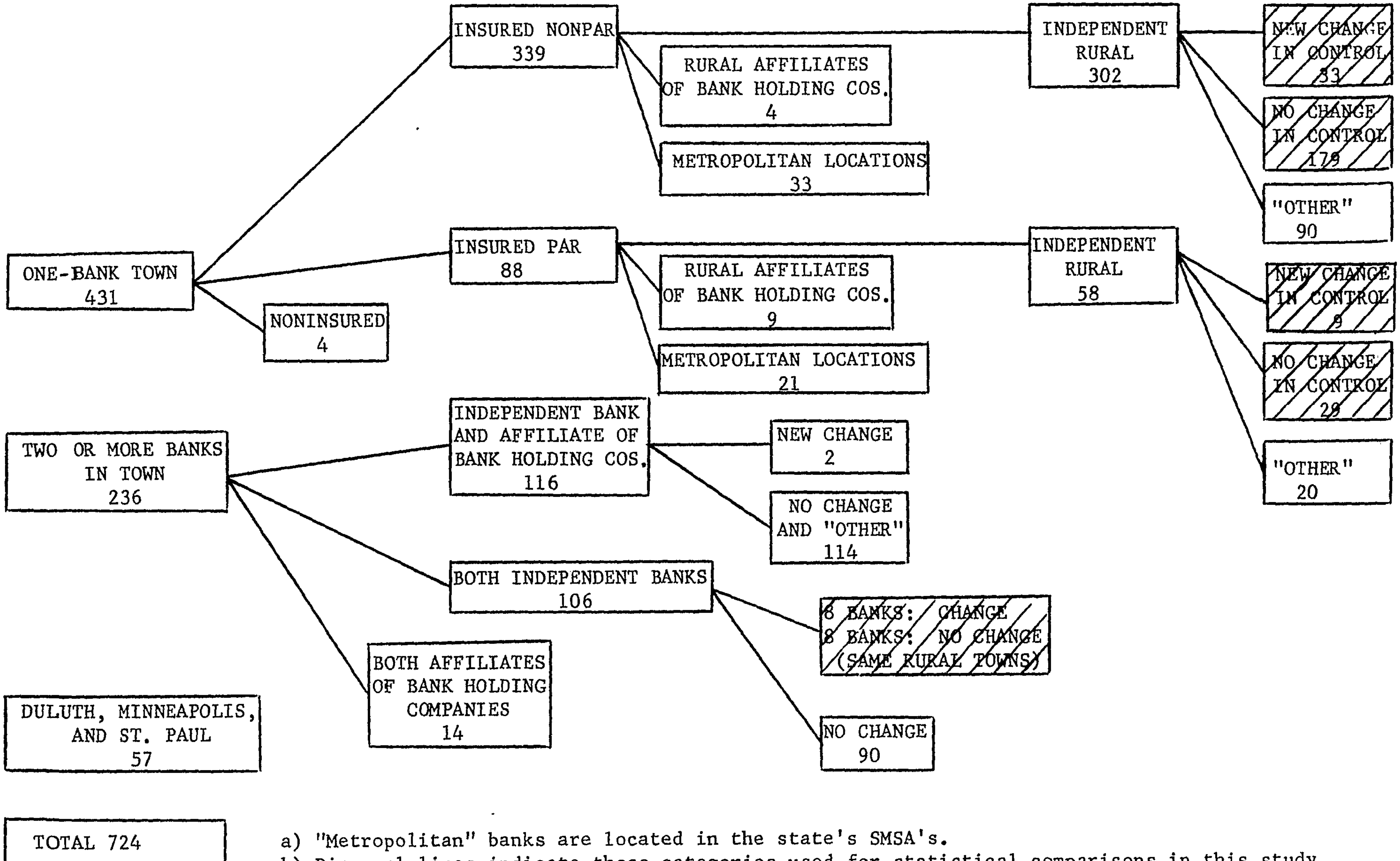
[6] A tabulation of reported changes in bank control between September 12, 1964, and December 31, 1966, indicates that 86 of the 943 reported changes occurred in Minnesota. That this relatively large number of changes in control is associated with the predominantly unit-banking structure of Minnesota is confirmed by observing similar extensive control changes in such unit-banking states as Florida, Illinois, and Texas. Source: "Acquisitions, Changes in Control, and Bank Stock Loans of Insured Banks," Staff Analysis for the Subcommittee on Domestic Finance, Committee on Banking and Currency, U.S. House of Representatives, 1967.

[7] All nonaffiliates of bank holding companies are classified as "independent" banks.

EXHIBIT I

MINNESOTA COMMERCIAL BANKS
A CLASSIFICATION FRAMEWORK

December 31, 1966



a) "Metropolitan" banks are located in the state's SMSA's.
b) Diagonal lines indicate those categories used for statistical comparisons in this study.

SOURCE: FEDERAL RESERVE BANK OF MINNEAPOLIS except for the change in ownership, thus serve as the control group for comparative performance. It will be noted that the remaining 90 of the 302 banks are classified as "other" in Exhibit I. These "other" banks underwent some changes in top management within a family or established management group, but control did not pass to new management and ownership; and therefore they are not analyzed in this study. As outlined previously, for purposes of analytical clarity and public-policy implications, this study focuses on the dichotomy of a sample of banks with new owner-management and a control group of similar banks with no major change in owner-management.

Also as outlined in Exhibit I, of the 58 independent, rural, par banks in one-bank towns, 9 underwent changes in control during 1961-65 while 29 experienced no major change in owner-management. This provides another sample of banks where ownership changed and a control group of similar banks with no major change of owner-management. Similarly, there are 8 rural towns in which one independent bank underwent an ownership change while the other independent bank in town had the same owner-management throughout the time period. These 8 towns thus provide another sample of banks with new owner-management and a control group of 8 banks in the same towns. In summary, Exhibit I identifies 3 samples of banks where ownership changed and 3 control groups of banks that are similar except for the attribute of change in ownership.[8]

Measures of Operating Performance

The principal measures of operating performance used in this study are the standard operating ratios prepared annually by the federal bank supervisory authorities.[9] Basically the revenue, expense, and profit figures are obtained from each bank's annual report of income and dividends while the balance sheet figures are compiled from reports of conditions submitted by each bank.[10] Of the approximately 40 operating ratios that are annually calculated, 19 were selected

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[8] Of the total 266 banks in these three samples, 246 had deposits of less than $5 million at year-end 1966. The 20 banks with deposits greater than $5 million are so distributed among the 3 samples and 3 control groups that they cannot be presumed to bias the statistical findings.

[9] Technically, these ratios are percentages. Recognizing these mathematical properties, they are referred to as ratios throughout this paper.

[10] For further information about the construction of these ratios, see "Member Bank Operating Ratios, Year 1967", FR 456 (Rev. 11-67), Board of Governors of the Federal Reserve System.

for analysis; the basis of selection being: (1) an a priori consideration of their probable importance for analysis; (2) their demonstrated importance as indicated in aggregate data (Appendix A); and (3) the fact that similar ratios were generally used in the studies of branch systems and bank holding companies. The 19 selected ratios are listed in Exhibit II.

In addition to the 19 selected operating ratios, 7 special ratios were calculated for this study:

Percentage of Total Assets

1. Consumer Loans
2. Farm Loans
3. Real Estate Mortgages
4. Business Loans

5. Other Current Operating Expenses

6. Total Operating Expenses

Percentage of Demand Deposits

7. Service Charges on Deposit Accounts

These special ratios were calculated because other studies generally found that previously-independent banks increased their emphasis on consumer loans and service charges on demand-deposit accounts after being acquired by branch systems and holding companies.[11]

The various ratios used in this analysis are those of 1960 and 1966. Data in these two time periods provide the before and after operating characteristics of banks where control changed during 1961-65. Similarly the ratios of 1960 and 1966 are used to measure possible shifts in operating characteristics among banks that did not experience changes in owner-management.

Statistical Procedures

The principal test procedure is a statistical comparison of the mean ratio of the banks where ownership changed and the mean ratio of the control group of similar banks.[12] The selected level of significance (one-tail test) is 5 percent.

Throughout the tests the null hypothesis is that there is no significant difference between the means of the two samples; they come from the same population,

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[11] Lawrence, p. 24 and Horvitz and Schull, pp. 161-162.

[12] Frederick E. Croxton and Dudley J. Cowden, Applied General Statistics, Second Edition, pp. 626-658, especially pp. 651-653; also, Taro Yamane, Statistics: An Introductory Analysis, First Edition, pp. 482-492.

EXHIBIT II

SELECTED OPERATING RATIOS

Percentage of Total Capital Accounts

1. Net Current Earnings

Percentage of Total Assets

2. Total Operating Revenue
3. Net Current Earnings

Percentage of Total Operating Revenue

4. Interest and Dividends on U.S. Government Securities
5. Revenue on Loans
6. Service Charges on Deposit Accounts
7. Salaries and Wages
8. Interest on Time and Savings Deposits
9. All Other Expenses
10. Net Current Earnings

Percentage of Total Loans (Net)

11. Revenue on Loans

Percentage of Total Assets

12. Government Securities
13. Other Securities
14. Loans (Net)
15. Cash Assets

Other Ratios (Percentages)

16. Capital Accounts to Total Assets
17. Capital to Total Assets Less Governments and Cash
18. Time to Total Deposits
19. Interest to Time Deposits

with the observed differences in the means resulting from sampling fluctuations. The alternative hypothesis for each comparison is based on observation of the data; and it is that the two samples come from different populations, one of which is greater (less) than the other. Therefore a one-tail test is used. Where a calculated t value leads to rejection of the null hypothesis, it does not prove the specified alternative hypothesis; but the data support its acceptance. For example, in 1960 the independent par banks in rural, one-bank towns that subsequently changed ownership had a mean ratio of cash assets/total assets of 12.8 (Table 1). The similar banks that did not undergo control changes had a mean ratio of 14.9. The t value is -2.05, and so the null hypothesis is rejected $[P(t < -1.69/d.f.=36) = .05]$ The data support, but do not prove, the alternative hypothesis that the mean ratio of 12.8 came from a population with a mean less than that of the population from which came the mean ratio of 14.9. Having recognized the limitations of the statistical tests, the findings are presented without continual qualifications.

To compare the performance of two banks in the <u>same</u> town, one of which underwent an ownership change while the other did not, a slightly different test procedure is used. Because the two banks are in the same town and are assumed to serve the same approximate market area, these banks are treated as nonindependent samples.[13] This procedure requires the use of mean differences between the relevant variables. For example, in one town in 1960 the loan-asset ratio of the bank that later changed ownership is 44.2 while the other bank has a ratio of 50.9. The difference is -6.7. In 1966 the first bank's loan-asset ratio is 56.5 while the second bank's is 54.3, a difference of +2.2. For each variable and each year the statistical test pools the differences (x_i) between each pair of banks. The mean difference ($\overline{X}$) of each set of differences is then calculated, and it is tested to determine whether it differs significantly from zero. The selected level of significance is again 5 percent.

To illustrate, in 1960 the 8 banks that later had new owner-managers have a ratio of consumer loans/total assets that is 1.9 points higher, on average, than the competing banks in the same towns (Appendix C). However this mean difference is found not to differ significantly from zero. In 1966, with new owner-managers, the 8 banks have a ratio of consumer loans/total assets that is 5.1 points higher, on average, than the competing banks that did not experience a change in ownership (Table 2). Such a mean difference of 5.1 can arise by chance less than 5 times

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[13] Croxton and Cowden, pp. 654-657.

out of 100 from the same universe with regard to $\overline{X}_p$. The preceding findings suggest that both groups of banks were similar with regard to their emphasis on consumer loans in 1960, but that the group of 8 banks with new owner-managers demonstrated a more aggressive consumer-loan policy in 1966.

Findings

The findings from the three statistical comparisons confirm the principal hypothesis that changes in individual control of banks is associated with significant changes in operating characteristics. For ease of reading, only the statistically significant results are presented in the tables of this section. The complete results from each statistical test are presented in Appendices B, C, and D.

Par banks in rural one-bank towns

In this test the operating characteristics of 9 banks that subsequently underwent ownership changes are compared to the characteristics of 29 banks that experienced no change in owner-management. The significant differences found in the before and after analysis are summarized in Table 1.

Before the ownership change, the only significant differences between the two groups is that the sample banks have a ratio of cash assets/total assets of 12.8 while the control group has a ratio of 14.9; and the sample banks have a higher percentage of capital accounts/total assets, 10.6 in contrast to 9.8. There are no other significant operating differences between the two sets of banks in 1960.

In 1966 the banks with new owner-management demonstrate some important shifts in operating performance. These 9 banks place more emphasis on loans than do the banks in the control group, as indicated by the higher ratios of loans/total assets and revenue on loans/total operating revenue. While the banks with new owner-management place greater emphasis on loans, some of their expenses are higher -- particularly salaries and wages. Also the ratio of total operating expenses/total assets is significantly higher than that of the control group. These different patterns of revenues and expenses apparently are somewhat offsetting because only one of the profit ratios (net current earnings/total capital accounts) is significantly lower.

Par banks in rural two-bank towns

This test compares bank operating characteristics in 8 towns where control of one bank changed during 1961-65 while the owner-management of the other bank remained the same. As previously noted, in this case the banks are treated as nonindependent; and the figures reported in Table 2 are the mean differences that are

TABLE 1

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Par Banks in Rural One-Bank Towns

Ratio	Before (1960)		After (1966)	
	Banks that subsequently changed ownership	No change	Banks that changed ownership	No change
Cash assets/Total assets	12.8	14.9	--	--
Capital accounts/Total assets	10.6	9.3	--	--
Net current earnings/Total capital accounts	--	--	10.2	13.4
Loans (net)/Total assets	--	--	51.0	41.3
Revenue on loans/Total operating revenue	--	--	64.0	53.2
Salaries and wages/Total operating revenue	--	--	31.0	25.8
Total operating expenses/Total assets	--	--	4.3	3.9

[a]This table, which compares a set of 9 banks with a control group of 29 banks, presents only those ratios that are statistically significant at the 5-percent level. For a complete presentation of the ratio computations, see Appendix B.

TABLE 2

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent Banks in Rural Two-Bank Towns

Ratio	Before (1960)	After (1966)
	Banks that subsequently changed ownership	Banks that changed ownership
Other securities/Total assets	+5.6	---
Net current earnings/Total capital accounts	--	-6.6
Net current earnings/Total assets	--	- .5
Net current earnings/Total operating revenue	--	-9.8
Government securities/Total assets	--	-4.9
Salaries and wages/Total operating revenue	--	+5.9
Revenue on loans/Total loans (net)	--	+ .6
Consumer loans/Total assets	--	+5.1
Total operating expenses/Total assets	--	+ .6

[a]As outlined in the paper, the figures presented in this table are the mean differences between 2 banks in 8 towns that are statistically significant at the 5-percent level. For a complete presentation of the computations, see Appendix C.

statistically significant. In 1960, before the changes in ownership, the only significant mean difference between the two sets of banks is that the banks that subsequently changed ownership had a higher ratio of other securities/total assets. The category of "other securities" largely consists of municipal obligations.

After the change in ownership, the 8 banks were confronted by a profit squeeze. In 1966, each of the three profit ratios is significantly lower for the banks with new owner-managers. These reduced profits are largely explained by higher expense ratios -- particularly for salaries and wages. The higher expenses are not offset by significantly higher revenues. Among the asset ratios there is a significantly higher ratio of consumer loans/total assets for the banks with new ownership, and this is probably related to the finding that the banks with new ownership receive more revenue on loans as a percentage of total loans. The only other difference in asset ratios is that the banks where control changed hold a smaller percentage of government securities relative to their total assets.

Nonpar banks in rural one-bank towns

As indicated in Exhibit I, this category contains the largest number of changes in ownership. Thirty-two banks in this category underwent changes in control while 177 similar institutions had the same owner-management throughout the time period.[14] These nonpar institutions are analyzed separately because they are all nonmember banks while the par banks in rural one-bank towns are predominantly members of the Federal Reserve System and are therefore subject to different reserve requirements. Furthermore nonpar banks have been shown to have some operating characteristics that differ significantly from similar par banks.[15]

The significant differences found in the analysis of this category of banks are outlined in Table 3. In analyzing the sample banks and the control group in 1960, there are a number of differences in the operating ratios. While this may be due to the larger size of the sample and control group, it also suggests that these banks are not as "similar" as hypothesized by the classification techniques. While there are no significant differences in the profitability ratios of the two groups in 1960, there are some major differences in the composition of revenues and assets. The 32 banks that later had new owners have more of their

[14]Exhibit I indicates a total of 33 banks with new owner-management and a total of 179 banks with no change. However, complete data were not available for 3 institutions, and so they had to be eliminated from the statistical tests.

[15]Paul F. Jessup, The Theory and Practice of Nonpar Banking, 1967.

TABLE 3

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Nonpar Banks in Rural One-Bank Towns

Ratio	Before (1960)		After (1966)	
	Banks that subsequently changed ownership	No change	Banks that changed ownership	No change
Government securities/Total assets	35.9	32.5	--	--
Other securities/Total assets	12.0	9.8	--	--
Loans (net)/Total assets	39.7	45.1	--	--
Interest and dividends on U.S. government securities/Total operating revenue	26.8	22.9	--	--
Revenue on loans/Total operating revenue	50.9	54.8	--	--
Service charges on deposit accounts/Total operating revenue	2.8	3.8	--	--
Interest on time and savings deposits/ Total operating revenue	28.9	25.4	--	--
Total operating revenue/Total assets	4.9	5.1	--	--
Capital accounts/Total assets	8.6	9.4	--	--
Farm loans/Total assets	22.4	27.4	--	--
Business loans/Total assets	3.5	4.6	--	--
Net current earnings/Total capital accounts	--	--	10.4	12.6
Net current earnings/Total assets	--	--	.8	1.0
Net current earnings/Total operating revenue	--	--	15.0	19.1
Loans (net)/Total assets	--	--	47.8	45.1
Cash assets/Total assets	--	--	9.6	10.5
All other expenses/Total operating revenue	--	--	14.0	11.7
Consumer loans/Total assets	--	--	8.9	6.7
Real estate mortgages/Total assets	--	--	8.9	6.8
Other current operating expenses/Total assets	--	--	.5	.4
Total operating expenses/Total assets	--	--	4.5	4.2

[a]This table, which compares a set of 32 banks with a control group of 177 banks, presents only those ratios that are statistically significant at the 5-percent level. For a complete presentation of the ratio computations, see Appendix D.

total operating revenue coming from interest and dividends on government securities and less from revenue on loans and from service charges on deposit accounts. These revenue relationships are confirmed by the significantly lower percentage of loans to assets. While these significant operating differences appear in 1960, few of them reappear in 1966. One major difference in 1966 is that the banks with new ownership have a significantly higher mean ratio of loans/total assets, in contrast to the signficantly lower ratio in 1966.

While the 32 banks with new owner-managers moved toward the norm, as measured by some operating criteria, other measures indicate that these banks also experienced a profit squeeze in 1966. This is seen in each of the three profit measures presented in Table 3, and it is explained largely by the three higher expense ratios outlined in the table. (However, in contrast to the preceding two statistical tests, their salaries and wages are not signficantly higher.) Also the banks with new owners place more emphasis on consumer loans and real estate mortgages.

Summary and integration of findings

The preceding three statistical comparisons confirm the principal hypothesis that significant changes in operating characteristics are associated with changes in individual bank ownership. Furthermore, the hypothesized increases in the ratios of loans/total assets and consumer loans/total assets are generally confirmed by the tests. None of the tests, however, reveals a significant increase in the ratio of service charges on deposit accounts/demand deposits. Thus the hypothesized policy of higher service charges must be rejected -- a conclusion that differs from a finding common to the studies of branch systems or holding companies acquiring independent banks.

A principal finding of this study is the significantly lower profitability reported by banks that have undergone changes in individual ownership. This squeeze on profits arises mainly from increased expenses because the statistical comparisons usually do not reveal significant increases in the various sources of revenues. Salaries and wages comprise the major expense item that is significantly higher after a change in bank ownership. Two possibilities may explain this finding. First, new owners may add some key employees at relatively high salaries but may be reluctant to dismiss employees with long years of service and well-known in the community. Such a practice would result in redundant personnel and higher expenses. Second, new owners of a bank may finance their purchase largely by means of bank stock loans.[16]

[16] "The Structure of Ownership of Member Banks and the Pattern of Loans Made on Hypothecated Bank Stock", Staff Analysis for the Subcommittee on Domestic Finance, Committee on Banking and Currency, U.S. House of Representatives, October 21, 1964, especially pp. 11-14.

To service this debt they have an incentive to make their banks as profitable as possible. However, a potential increased level of profits may not be reported if the new owners increase a bank's expenses by paying themselves larger salaries in order to service their bank stock loans. Such possible explanations might be empirically tested in a subsequent study.

Various prices of bank services are not found to change significantly after a change in individual ownership. As noted, the hypothesis of an increased schedule of service charges must be rejected. Loan charges, as measured by the ratio revenue on loans/total loans, are significantly higher after the advent of new bank ownership in only one of the three tests. As a related finding, the interest paid on time deposits does not differ from that paid by similar banks.

The preceding findings are based on an analysis of three groups of banks in Minnesota that underwent ownership changes during 1961-65. The time span of the analysis is 1960-66, and the before and after analysis is limited to the years 1960 and 1966. Measuring the "after" performance in 1966, the latest year for which data were available, may not have permitted the passage of sufficient time to reflect fully the policy changes inaugurated by new management. Also, some of the "independent" banks included in this analysis may be elements in chain banking systems. Without minimizing the findings of this study, it is desirable to replicate features of it using: (1) banks in other states; (2) different time periods; and (3) alternative definitions of "change in control," for example, when management and ownership change among members of the same family or the same basic management group.

Conclusions

Significant changes in operating performance are associated with changes in individual bank ownership. A principal finding is that banks with new owner-managers tend to have higher loan-asset ratios. Also such banks place increased emphasis on consumer loans. While thus increasing their communities' loan availability, these banks generally do not charge increased prices for their services, as measured by revenue on loans/total loans and service charges on deposit accounts/demand deposits.

Preceding research has focused on changes in operating ratios of banks acquired by bank holding companies or branch systems. This study has extended their findings by demonstrating that certain similar changes in bank operating performance can be expected when control of a bank changes--whether the new owners are branch systems, holding companies, or individuals.[17] Change in control by any of these methods can be expected to result in a bank's subsequently having a higher ratio of loan/total assets and placing greater emphasis on consumer loans. While certain similar changes in subsequent operating performance can thus be expected, each of the principal alternatives--sale to a branch system, holding company, or individual ownership interests--may not be equally available or acceptable to the existing bank ownership desiring to sell its interest.

This study has analyzed probable changes in operating performance as measured by standard operating ratios. In developing policies and making decisions affecting the banking structure, other variables must also be considered and weights attached to them. Such variables include: the "quality" and "convenience" of banking services, the ability to recruit and retain effective management, possible economies of scale, and "competition." It is perhaps on these factors that further analysis should be focused and greater weight attached in future policies and decisions.

[17] Ideally a study should be done to measure the comparative changes to be expected under the three possible changes in ownership: branch system, holding company, or individual. Unfortunately the current banking structure and its recent changes do not readily provide comparable data for such a study. For example, in Minnesota during the time of this study, there were no acquisitions by holding companies or branch systems. Conversely, it is probable that in the states with many bank mergers, there are relatively few changes in individual ownership. To overcome such problems, a broad multi-state study may be desirable.

A P P E N D I X

APPENDIX A

Summary of Operating Ratios of Ninth District Member Banks: 1966[a]

- MINNESOTA -

Summary Ratios	
Percentage of Total Capital Accounts	
Net Current Earnings	13.83
Net Income	10.49
Net Income After Taxes	7.96
Cash Dividends Declared	3.10
Percentage of Total Assets	
Total Operating Revenue	5.49
Net Current Earnings	1.06
Net Income After Taxes	.61
Sources and Disposition of Operating Revenue	
Percentage of Total Operating Revenue	
Interest and Dividends on U.S. Govt. Securities	19.76
Interest and Dividends on Other Securities	9.76
Revenue on Loans (1)	59.36
Service Charges on Deposit Accounts	5.57
Trust Department Revenue	.41
All Other Revenue	5.15
Total Revenue	100.00
Salaries and Wages	22.66
Pension, Hospitalization, etc.	2.61
Interest on Time and Savings Deposits	38.29
Net Occupancy Expense of Bank Premises	3.64
All Other Expenses	13.44
Total Expenses	80.63
Net Current Earnings	19.37
Net Losses or Recoveries (2)	-2.34
Net Increase or Decrease in Valuation Reserves	-2.11
Taxes on Net Income	3.58
Net Income After Taxes	11.32
Percentage of Securities and Loans	
Percentage of Securities	
Interest and Dividends on U.S. Govt. Securities	4.46
Interest and Dividends on Other Securities	3.49
Net Losses or Recoveries and Profits (2)	-.21
Percentage of Total Loans (Net)	
Revenue on Loans	6.86
Net Losses or Recoveries on Loans (2)	-.10
Distribution of Assets	
Percentage of Total Assets	
Government Securities	23.58
Other Securities	14.86
Loans (Net)	47.66
Cash Assets	12.12
Real Estate Assets	1.38
All Other Assets	.40
Total Assets	100.00

APPENDIX A--Continued

Summary of Operating Ratios of Ninth District Member Banks: 1966[a]

- MINNESOTA -

Other Ratios	
Percentages	
Capital Accounts to Total Assets	7.87
Capital to Total Assets less Govts. and Cash	12.67
Capital Accounts to Total Deposits	8.70
Time to Total Deposits	57.72
Interest to Time Deposits (3)	3.95
Number of Banks	221

(1) Includes Service Charges and Other Fees on Loans
(2) Excludes Transfers From and To Valuation Reserves
(3) Computed using only those banks with Time Deposits or Trust Departments respectively.

[a]These ratios are arithmetic averages of operating ratios of individual member banks. Each bank's ratios, therefore, has an equal weight in the calculations.

Source: Federal Reserve Bank of Minneapolis

APPENDIX B

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Par Banks in Rural One-Bank Towns

Ratio	Before (1960)		After (1966)	
	Banks that subsequently changed ownership	No change	Banks that changed ownership	No change
PROFITS				
Net Current Earnings / Total Capital Accounts	13.5	14.6	10.2[a,b]	13.4[a,b]
Net Current Earnings / Total Assets	1.4	1.3	.9	1.1
Net Current Earnings / Total Operating Revenue	28.7	27.1	17.1	21.6
ASSETS				
Distribution of Total Assets (Percentage of Total Assets)				
Government Securities	30.6	33.0	26.1	30.5
Other Securities	11.0	10.1	11.1	15.3
Loans (Net)	45.1	41.1	51.0[a]	41.3[a]
Cash Assets	12.8[a]	14.9[a]	10.8	11.9
REVENUE				
(Percentage of Total Operating Revenue)				
Interest and Dividends on U.S. Gov't Securities	21.8	25.0	20.7	26.5
Revenue on Loans	59.5	53.6	64.0[a]	53.2[a]
Service Charges on Deposit Accounts	3.4	5.0	3.5	4.2
EXPENSES				
(Percentage of Total Operating Revenue)				
Salaries and Wages	27.9	29.8	31.0[a]	25.8[a]
Interest on Time and Savings Deposits	27.3	25.0	36.7	35.5
All other Expenses	16.2	18.0	11.0	11.7

APPENDIX B--Continued

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Par Banks in Rural One-Bank Towns

Ratio	Before (1960)		After (1966)	
	Banks that subsequently changed ownership	No change	Banks that changed ownership	No change
OTHER RATIOS (Percentages)				
Total Operating Revenue / Total Assets	5.0	4.9	5.5	5.3
Revenue on Loans / Total Loans (Net)	6.5	6.4	6.9	6.9
Capital Accounts / Total Assets	10.6[a,b]	9.3[a,b]	9.3	8.7
Capital / Total Assets Less Governments & Cash	19.3	18.7	14.8	15.9
Time Deposits / Total Deposits	54.0	50.3	58.9	56.0
Interest / Time Deposits	2.7	2.6	3.7	3.6
SPECIAL RATIOS				
(Percentage of Total Assets)				
Consumer Loans	5.4	5.1	8.2	6.5
Farm Loans	28.2	21.9	27.5	19.5
Real Estate Mortgages	6.8	9.2	7.3	8.2
Business Loans	5.2	5.3	6.8	6.7
Other Current Operating Expenses	.6	.6	.4	.4
Total Operating Expenses	3.4	3.4	4.3[a]	3.9[a]
(Percentage of Demand Deposits)				
Service Charges on Deposit Accounts	.5	.6	.6	.6
Number of Banks	9	29	9	29

[a] Significant at 5-percent level. $P(t < -1.69/d.f.=36) = .05$
$P(t > 1.69/d.f.=36) = .05$

[b] In his study, The Performance of Bank Holding Companies, Robert J. Lawrence basically uses a two-tail test at the 5 percent level of significance. On the basis of a one-tail test, such a level of significance is 2½ percent. All the significant results in this Appendix are also significant at the 2½ percent level except those noted by a "b".

Source: Calculated from data provided by the Federal Reserve Bank of Minneapolis

APPENDIX C

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent Banks in Rural Two-Bank Towns

Ratio	Before (1960) Banks that subsequently changed ownership	After (1966) Banks that changed ownership
PROFITS		
Net Current Earnings / Total Capital Accounts	-1.8	-6.6[b]
Net Current Earnings / Total Assets	--	- .5[b]
Net Current Earnings / Total Operating Revenue	-1.9	-9.8[b]
ASSETS		
Distribution of Total Assets (Percentage of Total Assets)		
Government Securities	-3.7	-4.9[b,c]
Other Securities	5.6[b,c]	2.9
Loans (Net)	-3.9	2.4
Cash Assets	1.2	- .7
REVENUE		
(Percentage of Total Operating Revenue)		
Interest and Dividends on U.S. Gov't Securities	- .5	-3.0
Revenue on Loans	-5.1	6.2
Service Charges on Deposit Accounts	-1.3	--
EXPENSES		
(Percentage of Total Operating Revenue)		
Salaries and Wages	.1	5.9[b]
Interest on Time and Savings Deposits	.1	.6
All other Expenses	1.7	1.5

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent Banks in Rural Two-Bank Towns

Ratio	Before (1960) Banks that subsequently changed ownership	After (1966) Banks that changed ownership
OTHER RATIOS (Percentages)		
Total Operating Revenue / Total Assets	.1	.2
Revenue on Loans / Total Loans (Net)	.1	.6[b,c]
Capital Accounts / Total Assets	.8	.5
Capital / Total Assets Less Governments & Cash	.6	- .2
Time Deposits / Total Deposits	2.3	.8
Interest / Time Deposits	--	.1
SPECIAL RATIOS		
(Percentage of Total Assets)		
Consumer Loans	1.9	5.1[b]
Farm Loans	-1.3	--
Real Estate Mortgages	-2.0	-1.4
Business Loans	.3	1.0
Other Current Operating Expenses	--	.1
Total Operating Expenses	.2	.6[b]
(Percentage of Demand Deposits)		
Service Charges on Deposit Accounts	- .2	--

[a]This statistical test measures the <u>mean differences</u> in bank operating characteristics in 8 towns where control of one bank changed while the owner-management of the other banks remained the same.

[b]Significant at 5-percent level. $P(t < -1.895/d.f.=7) = .05$
$P(t > 1.895/d.f.=7) = .05$

[c]In his study, The Performance of Bank Holding Companies, Robert J. Lawrence basically uses a two-tail test at the 5 percent level of significance. On the basis of a one-tail test, such a level of significance is 2½ percent. All the signficant results in this Appendix are also significant at the 2½ percent level except those noted by a "c".

Source: Calculated from data provided by the Federal Reserve Bank of Minneapolis.

APPENDIX D

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Nonpar Banks in Rural, One-Bank Towns

Ratio	Before (1960)		After (1966)	
	Banks that subsequently changed ownership	No change	Banks that changed ownership	No change
PROFITS				
Net Current Earnings / Total Capital Accounts	13.4	13.5	10.4[a]	12.6[a]
Net Current Earnings / Total Assets	1.1	1.2	.8[a]	1.0[a]
Net Current Earnings / Total Operating Revenue	22.4	23.9	15.0[a]	19.1[a]
ASSETS				
Distribution of Total Assets (Percentage of Total Assets)				
Government Securities	35.9[a,b]	32.5[a,b]	29.4	30.8
Other Securities	12.0[a,b]	9.8[a,b]	12.4	12.9
Loans (Net)	39.7[a]	45.1[a]	47.8[a,b]	45.1[a,]
Cash Assets	11.8	11.9	9.6[a]	10.5[a]
REVENUE				
(Percentage of Total Operating Revenue)				
Interest and Dividends on U.S. Gov't Securities	26.8[a]	22.9[a]	24.5	26.2
Revenue on Loans	50.9[a]	54.8[a]	56.0	53.6
Service Charges on Deposit Accounts	2.8[a]	3.8[a]	3.3	3.5
EXPENSES				
(Percentage of Total Operating Revenue)				
Salaries and Wages	31.3	33.3	30.6	28.7
Interest on Time and Savings Deposits	28.9[a]	25.4[a]	35.9	36.1
All other Expenses	17.5	17.4	14.0[a]	11.7[a]

APPENDIX D--Continued

A STATISTICAL COMPARISON OF OPERATING CHARACTERISTICS BEFORE AND AFTER A CHANGE IN OWNERSHIP[a]

Independent, Nonpar Banks in Rural One-Bank Towns

Ratio	Before (1960) Banks that subsequently changed ownership	Before (1960) No change	After (1966) Banks that changed ownership	After (1966) No change
OTHER RATIOS (Percentages)				
Total Operating Revenue / Total Assets	4.9[a]	5.1[a]	5.7	5.6
Revenue on Loans / Total Loans (Net)	6.4	6.3	6.7	6.7
Capital Accounts / Total Assets	8.6[a]	9.4[a]	8.2	8.7
Capital / Total Assets Less Governments & Cash	17.0	18.0	13.6	15.9
Time Deposits / Total Deposits	55.8	52.8	60.7	59.0
Interest / Time Deposits	2.7	2.7	3.7	3.7
SPECIAL RATIOS				
(Percentages of Total Assets)				
Consumer Loans	5.0	5.5	8.9[a]	6.8[a]
Farm Loans	22.4[a]	27.4[a]	24.7	24.9
Real Estate Mortgages	8.7	7.7	8.9[a]	6.7[a]
Business Loans	3.5[a,b]	4.6[a,b]	5.0	5.3
Other Current Operating Expenses	.6	.7	.5[a]	.4[a]
Total Operating Expenses	3.7	3.8	4.5[a]	4.2[a]
(Percentage of Demand Deposits)				
Service Charges on Deposit Accounts	.4	.5	.6	.6
Number of Banks	32	177	32	177

[a]Significant at 5-percent level. $P(t < -1.65/d.f.=207) = .05$
$P(t > 1.65/d.f.=207) = .05$

[b]In his study, The Performance of Bank Holding Companies, Robert J. Lawrence basically uses a two-tail test at the 5 percent level of significance. On the basis of a one-tail test, such a level of significance is 2½ percent. All the significant results in this Appendix are also significant at the 2½ percent level except those noted by a "b".

Source: Calculated from data provided by the Federal Reserve Bank of Minneapolis.

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