THE PROFITABILITY OF UNIT BANKS VERSUS THE PROFITABILITY OF BRANCH BANKS

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Scope and Method of Study: In the past decade, considerable research has been undertaken concerning the performance of both unit and branch banks. This study has concentrated upon the comparison of unit and branch bank performance in one selected area, profitability. In order to empirically test the comparison of unit and branch banks profitability, 30 states were divided into unit banking states and branch banking states. Such a division resulted in two groups of 15 unit banks states and 15 branch banks states. Four types of data were collected for each state: (1) average assets, (2) average deposits, (3) per capita income, and (4) urban density. These four categories of data were then subdivided into various ranges of values. Subsequently, branch and unit banks with identical values of average assets, average deposits, per capita income, and urban density were compared by use of three profitability ratios.

Findings and Conclusions: Results of this study revealed that unit banks are more profitable than branch banks, generally speaking. Unit banks are more profitable than branch banks when both unit and branch banks of identical average asset classes are compared. It is also concluded that branch bank profitability is inversely related to average asset and deposit size. For states with equal average assets, equal average deposits, equal per capita income, and equal urban density unit banks are generally more profitable than branch banks except for the branch bank states with per capita income below $2,500 and urban density below 50%. Furthermore, the conclusion is reached that profitability is inversely related to per capita income and urban density in both branch and unit banking states.

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THE PROFITABILITY OF UNIT BANKS VERSUS

THE PROFITABILITY OF BRANCH BANKS

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CHAPTER I

INTRODUCTION

The past decade has witnessed a tremendous change in the evolution of the banking structure of the United States. The ever increasing availability of pertinent data, coupled with stimulated research innovation and techniques, has provided increased knowledge and awareness in the highly regulated commercial banking structure. The evolution of the commercial banking structure is best understood in terms of changes that have taken place throughout its history in the United States.

Growth and Importance of Banking

At the beginning, the establishment of commercial banks was severely restricted due to the fears that the commercial banking industry would be dominated by a relatively small number of banks concentrated along the Eastern seaboard. This led to the refusal of the rechartering of the second Bank of the United States, and it is noted that after the charter of the second Bank of the United States was revoked, there was an immediate increase in the number and obligations of commercial banks operating in the various states.[1]

Subsequent widespread bank failures turned attention to the necessity of retaining a competitive and unit banking system which at the same time could provide a stable circulating medium of exchange. However, the most noteworthy subsequent development from the viewpoint

of banking structure was the introduction of free banking. The free banking era, 1830 to 1860, had as its basic tenet the rule that entry into the banking system should be open to any person or group of persons as long as the obligations of the bank were backed by pledged securities of stable value.[2]

As free banking spread prior to the Civil War, various deficiencies in the banking system became apparent and bank failures were common. The Civil War drastically changed this trend as the National Banking Act was passed. The National Banking Act established the free banking principle at the federal level, thus emphasizing the importance of local, independent banking and a sound circulating medium.[3] Also, it provided charter and supervisory alternatives to state banking--resulting in what is now called the "dual banking system."

Following the Civil War, deposit banking assumed dominant importance, and the effects of bank failures upon the money supply became increasingly troublesome since circulating banknotes constituted a minor portion of the money supply. Thus, the public policy pendulum began to swing back toward some sort of centralized control. After several financial panics--most notably that of 1907--the Federal Reserve System was established in 1913. However, no change was made in the existing banking structure; the Federal System being, in effect, superimposed on that structure with the belief that it would eventually come to include all commercial banks.[4] Though it had the potential, the FRS failed to function adequately as a lender of last resort.

The establishment of a central bank did not bring the stability that had been desired. Indeed, during the prosperous years of the 1920's failures of commercial banks averaged 500-600 per year, and

with the onslaught of the Great Depression, thousands of banks terminated in the banking holiday of March 1933.

The direct outgrowth of this dramatic financial crisis was the passage of Banking Acts of 1933 and 1935. These acts provided increased authority for the central bank, plus the adoption of a federal system of deposit insurance. The net result was a retention of existing banking structure, with its thousands of independent banks, and a slowing of the tendency toward branch banking. This tendency is roughly descriptive of today's banking environment.

Present State of the Banking Industry

Commercial Banks as of December 1968 number 13,487 with total offices numbering over 28,000. Branch banks have shown the most consistent growth during the past years and in 1964 constituted over 50 per cent of all banking offices. Growth in the number of branches, particularly since the conclusion of World War II, is attributable to a number of factors. Possibly most significant has been the explosive growth of the suburbs and the consequent desire of commercial banks to follow their customers out of the cities. Also reflected in the rapid increase in number of branches is the increasing tendency for commercial banks to engage in a retail banking business, catering to needs of small borrowers and depositors as well as business firms.

The major inhibiting factor in the formation of new branch offices is statutory prohibition or limitation of branch banking in many of the states. In 1968 branch banking in any form was prohibited in 16 states, whereas 15 states restricted branch banking, usually to home office cities, counties, or special area. Only 20 states (including the

District of Columbia) permit statewide branch banking, and even within this group there are restrictions in several of the states.[5]

It seems apparent from examination of the trends during the past several decades that the number of banking offices will continue to expand. This expansion will occur primarily because of the increase in the number of branches rather than the number of banks. One fact is certain: the number of new banks is still considerably less than the number of branches being opened.

In the absence of the basic public policy regarding the need for a predominately large number of small independent banks locally oriented, it is likely that the commercial banking industry today would have consisted of a relatively small number of banks operating nationwide systems of branch offices. But while the United States banking system retains its small unit characteristic, the pressure for banking institutions sufficiently large enough to finance expanding businesses and industrial requirements has resulted in the development of various types of multi-office banking. This paper will be concerned with the two most predominant banking structures--branch and unit banking systems.

Definition of Branch and Unit Banking

A unit bank is one which conducts all of its business at one location; as of June 1964 there were 10,729 commercial banks which did not operate any branches and were thus classified as unit banks. If the definition of a unit bank is expanded to mean not only a bank operating at a single location, but also one which is indepently owned and managed, then it is impossible to determine the number of banks in the nation.[6]

On the other hand, branch banking refers to a system whereby a single legal entity operates more than one office. The basic characteristic of a branch banking system is that the various operations are controlled from a main office, though obviously the degree of independence enjoyed by managers of branch offices varies considerably from one bank to another.

Purpose

Perhaps the most controversial issue in American banking history and one in which feelings have been stronger than any other concerns the relative efficiency of branch banking. Throughout the past decade numerous studies have been undertaken to determine the performance of branch banks compared to unit banks. Valuable as they are as a start toward providing a facutal basis for decisions, empirical studies provide only part of the answers to questions involving fundamental value judgments.

Imperfect knowledge, nevertheless, is greatly to be preferred to the alternative. If the great amount of effort that has been and is now being expended on research in the field of banking markets and banking competition yields nothing else, it will have been worthwhile if it dispels some of the prejudices and preconceptions that have marked discussions of these subjects in the past.[7] The purpose of this study is to explore one small segment of the controversy surrounding unit and branch banking--the profitability of unit banking versus the profitability of branch banking.

Scope

The results of this comparison will be based upon the conclusions derived from ratio analysis, and the imputed values of the various ratios will prove or disprove the following hypotheses:

1. Unit banks in unit banking states are more profitable than branch banks in branch states for all equal average asset classes.

2. As average asset size decreases, the related profitability will increase for both unit and branch banks, but unit banks are more profitable than branch banks for each equal average asset class.

3. For branch banks and unit banks with equal average asset classes, profitability decreases as average deposit size increases. Again unit banks have higher profitability indexes than branch banks for all equal average deposit classes.

4. The higher the per capita income of the state, the lower the profitability of both unit banks and branch banks for classes of identical per capita income. For states with equal average assets, average deposits, and per capita income unit banks are more profitable than branch banks as measured by the three designated profitability ratios.

5. The less dense the population, the more profitable are unit banks in unit states, and the more profitable branch banks in branch states, other things equal (average assets, average deposits, and per capita income). Also, unit banks are more profitable than branch banks for all equal classes.

These hypotheses are tested by comparing 15 branch banking to 15 unit banking states. The data utilized to make these comparisons is derived from the "FDIC Report, 1968" and other information is taken from the Board of Governors.

Contents of Paper

This paper is divided into five chapters. This, the first chapter, is designed to give the reader a general description of the study, the

purpose, the questions to be answered, and the hypotheses to be proved or disproved. Chapter II is a review of the literature and is designed to inform the reader of the present state of knowledge and to summarize what has or has not been proven regarding the conflict of unit and branch banking. Chapter III describes the methodology applicable to the study. Chapter IV is concerned with the actual compilation of data, while Chapter V is a summary of the results with conclusions and implications for further study and analysis. The testing and conclusion of the formal hypotheses are contained in Chapter IV, and the implications of the acceptance or refutal of these hypotheses is stated in Chapter V.

FOOTNOTES

[1]Carter H. Golembe, "The Present Structure of the United States Commercial Banking System," The Bankers Handbook, ed. William H. Baugh and Charles E. Walker (Homewood, Illinois, 1966), p. 996.

[2]Ibid.

[3]Ibid., p. 97.

[4]Ibid., p. 1000.

[5]Ibid., p. 1001.

[6]Ibid., p. 1002.

[7]Business Conditions (Chicago, 1967), pp. 7-16.

CHAPTER II

LITERATURE REVIEW

Perennially, one of the more controversial issues in banking has been the effects of branch banking on bank performance and profitability. A considerable amount of the controversy surrounding this subject is of a noneconomic nature; however, much writing and debate has focused upon purely economic issues. The purpose of this chapter is to examine the conclusions of those studies which have dealt primarily with economic issues.

Franklin R. Edward's Study

There are many major studies comparing bank performance in unit and branch areas. One of the major studies, "The Banking Competition Controversy," by Franklin R. Edwards, is concerned with the comparison of unit and branch banking performance. In this study there is an attempt to dispute the conclusion that bank performance does not vary with market structure. Mr. Edwards attempts to show that the banking structure does exert a significant influence on bank performance and, also, that the existing banking structure is primarily one of monopolistic competition. This implies, using the conventional theory of monopolistic competition, that the banking industry is characterized by higher prices, lower output, and greater profits than would prevail if a free entry or purely competitive market existed.

Definition of the relevant economic market for bank services, based upon price competition, has been considered basic to several studies conducted in the past, and Mr. Edwards notes many of the contributions of other authors pertaining to this subject. For example, a study undertaken by Shull and Horvitz, which is discussed in length in a latter part of this chapter, concludes that branch banking in metropolitan areas may be considered a single market, whereas unit banking in metropolitan areas represents more than one market structure. They reach this conclusion by using the degree of price disparity among banks as a guide for defining the relevant banking market. Two hypotheses are suggested: first, that rates are more uniform in metropolitan areas in which branching is permitted; and, second, that the larger the geographic area, the greater the disparity among prices, particularly in a unit banking area.[1]

A similar study by Schweiger and McGee suggests that legal boundaries create separate banking markets. By comparing two branch areas (Philadelphia and Cincinnati) which have a state boundary dividing them, it was shown that there was significant differences at the 1 percent level in the "mean" rates paid on time and savings deposits.[2] A reasonable conclusion is that these differences result from state boundaries which prevent unifications of the markets by restricting branches. This is a result of two different markets operating within the same general geographic area separated by only state boundaries and different legal regulations which create two different market structures.

Market structure is a general term referring to the organization of firms in the market and to the relationships among them. Structure,

in reference to banking, has many dimensions which escape accurate measurement. In the study by Edwards several measures of market structure are present, each encompassing a somewhat different structural dimension. His chief measure of market structure is the "concentration ratio," which simply reflects the size distribution of firms in a market.

This study is concerned with one important dimension of structure. This dimension of structure is organization--branch or unit. A basic premise is that two markets with identical concentration might not display similar competitive behavior if one of the areas allows branching and the other does not. For example, with many branch offices scattered throughout the market, a greater variety of competitive strategies may be available to a branch bank; therefore, there can be little doubt that branching could have an effect on bank performance.

Looking into Edwards' study in more depth, direct evidence of the impact of branching can be derived. Some of the evident patterns derived from his analysis are: branching markets display slightly lower average rates on time and savings deposits, lower ratios of consumer-total loans and business-total loans, higher ratios of real estate-total loans, and higher ratios of loans to deposits.[3]

In his article, Edward clearly shows the impact of branching. It makes clear that branch banks charge the highest of all average loan rates. Secondly, it shows that unit banks in branching markets pay rates equal to or higher than those paid by unit banks in unit markets; and branch banks pay the lowest of all rates. Third, branch banks have lower ratios of consumer and business loans to total loans than those of unit banks in unit markets, although the opposite

relationship prevails within branching markets. Fourth, the high ratios of real estate loans to total loans found in branching markets are the result of the high real estate ratio of unit banks in this area. Fifth, unit banks have by far the highest of all ratios of time to total deposits. And finally, unit banks in branching markets, as well as branch banks themselves, have higher ratios of loans to deposits than do other unit banks.[4] These results not only suggest that branching markets differ from unit markets, but also that branch banks differ from unit banks operating the same markets. Since branching has an obvious impact upon bank performance, its influence can be distinguished from other dimensions of structure, such as concentration. It is stated in Chapter I that the present study holds various dimensions of structure constant while allowing the dependent variable to fluctuate (either a branch banking state or unit banking state).

Perhaps no other measure of bank performance is more difficult to explain than bank profitability. A bank's prices or rates are only a partial explanation of its profitability. Its efficiency, size, loan-mix, deposit-mix, capital-deposit ratio, and type of organization are all important. Mr. Edwards tries to explore the association between concentration and bank profitability. He shows that as concentration increases, earnings also increase. He states that from the lowest to the highest concentration group there is a difference of a 13% rise in earnings.[5] This raises the question, "Through what mechanism does structure affect bank profits?" Mr. Edwards answers this question by referring to Shull and Horvitz's study. Shull and Horvitz find that profitability increases as loan rates rise, but falls as interest rates on time and savings deposits rise. This suggests

that concentration may effect bank profitability through its effect on bank prices.[6] Thus, high concentration may result in high profits because it permits banks to charge high loan rates while paying low rates for time and savings deposits. But this study does not reflect the difference of profitability between branching and unit states.

In summary of Franklin Edwards' study, the structural differences among markets apparently exerts an important influence on bank performance. The main dimension of market structure, "market concentration," was found to be associated with pricing, output, and profits of banks--high concentration being associated with high loan rates, low rates on time and savings deposits, and high profits. Thus, he claims, structural differences in a banking market have an important impact on bank performance.[7] Edwards' study concentrated upon structure and its related effects on performance of banking. It also shows the effect of market concentration (one dimension of structure) upon the profits of a bank, which in turn are only a single measure of a bank's performance. In order to gain further knowledge of branching profitability versus unit bank profitability it is helpful to look at other studies which offer additional information regarding this question.

Bernard Shull and Paul Horvitz's Study

Perhaps no other two men have contributed more to the understanding of branch and unit banking than Bernard Shull and Paul M. Horvitz. In an article "Branch Banking and the Structure of Competition" in the March 1964 issue of the National Banking Review, Horvitz and Shull state a basic tenet: that a relationship exists between market structure and performance.[8] The basic objective of their article is to describe

the influence of branch banks on the structure of commercial banking markets.

Shull and Horvitz analyze the relationship between branch banks and those elements of banking structure that affect the level of competition in banking. These elements include the number of banks in relevant banking markets, the degree of concentration in banking markets, and ease of entry into banking. The main findings of the study are as follows:

(1) The number of banks in a state seems to be associated with the status of branch banks. There are more in states that restrict banking, and the decline in the number of banks over the last decade has been greater in states with branch banks.

(2) In non-metropolitan areas, on the average, there are no fewer competitors in branch banking states than in unit banking states in the most relevant geographic markets, i.e., the local market.

(3) In large metropolitan areas there are more banks in unit banking states than in branch banking states.

(4) Concentration ratios are typically higher in metropolitan areas in branch banking states than they are in unit banking states. But these ratios are very high in all areas, and there is no evidence that the differences are economically significant.

(5) Economic barriers to entry in banking are low in comparison to such barriers in manufacturing. They are probably somewhat lower under branch banks than under unit banks.[9]

In summary, this first study undertaken by Shull and Horvitz suggests that neither in terms of number of competitors, nor concentration, nor in conditions of entry have the structures of local banking markets been adversely affected by branch banking in the United States. The weight of evidence suggests that, to the contrary, market structures are adversely affected by restrictions on branch banking.[10] In the preceding study they assumed that significant differences in structure would affect performance, and thus prepared the way for a further extension of research into banking structure and related performance.

Shull and Horvitz's Second Study

Their next major article "The Impact of Branch Banking on Bank Performance," published in December of 1964 by the National Banking Review, attempted to determine the influence of branch banks on several measures on bank performance: "prices" of the "products" offered; the "product mix;" efficiency or costs of producing banking services; the variety and convenience of the services offered; and long-run profitability. This article refers to many of the studies that have been undertaken concerning the effect of branch banking on performance and quotes many studies that are further reviewed in this chapter.

There are many avenues of possible influence of differences in performances between branch banks and unit banks. One possible reason is that branch banks are typically larger than unit banks and thus enjoy economies of scale. In addition, the geographic disperson of branch offices may permit a spreading of risks which would affect both "rates" and "product mix." Also, one would expect the performance

of all banking offices--branch and unit--and any particular market to reflect the more intense competition associated with lower barriers to entry. There are several important measurements of performance, and these in turn will effect the level of profits. Reviewing these measurements of performance allows a better understanding of the effects that branch banking has on performance, hence profits.

Efficiency and profitability are direct measures of performance. Efficiency is defined for commercial banks in the same way that efficiency is defined for non-bank firms. Efficiency, then, is related to the optimum size of the firm and the degree to which capacity is utilized. Most recent studies of economies of scale have found that branch banks tend to have higher operating costs than unit banks of similar size.[11] This suggests that unit banks can attain minimum optimum size at substantially lower asset sizes than branch banks. In other words, branch banking involves diseconomies at least until very large sizes are achieved.[12]

Branch banking has the definite advantage of extending its growth via geographic extension, but has the disadvantage of raising the minimum efficient size of banks. Thus, branch banks can overcome diseconomies by growth in branch banking states, while many unit banks have no way to grow to efficient size. It has been found that optimum operating size is reached at an asset size of $10 million.[13]

Another measure of efficiency, which in turn has a direct impact on profitability, is the concept of excess capacity. In the banking industry the concept of excess capacity would be conceptualized as "excess liquidity." Excess liquidity is simply that portion of a bank's assets which are not being put to a profitable use. David

Alhadeff in his book, Monopoly and Competition in Banking, confirms that branch banks as a group devote a larger proportion of their resources to loans than unit banks as a group.[14] Alhadeff's study is discussed at length at the end of this chapter. It has not been determined absolutely whether or not these higher liquid asset ratios of unit banks reflect "excess liquidity."

Another measure of performance is service or accessibility. By use of regression analysis it was concluded that branch banking is likely to result in somewhat greater convenience of banking facilities in moderate and large sized non-metropolitan areas.[15] The number of additional facilities on the average is small in all but the largest communities, and the difference in small communities is negligible.[16]

Branch banks and unit banks are faced with similar operating problems, and if branch banks perform differently than unit banks, the principle reason would be that branch banks' decisions are transmitted throughout the state to many offices, while unit banks' decisions are made for only one bank. Branch systems strive for balance and diversification the same as unit banks, but individual branch offices are usually able to offer many specialized services. Available data indicate that, after allowing for bank size and volume of time deposits, branch banks make more consumer installment loans and mortgage loans than unit banks.[17] It is asserted that branch bank lending involves much more red tape due to its referral to the main office, but this problem is reduced to the extent that branch managers have a certain limit of discretionary lending of which no approval is necessary.

There can be no doubt that branching does affect the performance and competitiveness of the banks within its area. If it is true, as

suggested by the evidence, that branch and unit banks perform differently, one would expect the performance of unit banks to be altered significantly when acquired by branch systems because the unit banks would have to adhere to the different policies set forth by the acquiring branch bank. Alternatively, if the performance or profitability of unit banks is significantly altered when acquired by branch systems, one could infer that unit banks and branch banks perform differently, hence profitability would differ.[18] In regard to this preceding statement, Shull and Horvitz found that there is a strong tendency to make the policies of the acquired office conform to those of the acquiring bank. This generally meant a tendency toward higher rates paid on savings accounts and lower rates and more liberal terms on loans. In many of the mergers the most important effect was the introduction of new services which in some cases was very important to the community.[19] These changes as a result of merger tend to confirm the differences in performance between branch banks and unit banks observed by direct observations. Branch banks tend to have more favorable policies regarding savings deposit rates, loan terms, and services, but higher service charges.[20]

Shull and Horvitz's second study focused on piecemeal studies of a few selected areas. It is feasible to compare certain major performance characteristics of unit and branch states in statewide branching states, and of unit banks in unit banking states. Thus a state law permitting branching may, through its effect on condition of entry, alter the performance or profitability of unit banks operating within the state. In their study of the comparison of branch banks vs. unit banks Shull and Horvitz use bank operating ratios as measures of

performance. Some of these measures of performance are: the ratio of time-to-total deposits, interest on time deposits, interest charges on loans, loans to assets, and the rate of return on capital.

It is probably true that branch banking may separately affect both average effective rates on loans and loan-asset ratios. Lower barriers to entry tend to reduce interest charges on all type loans, and may also lead to reduction of liquidity and an increase in the loan-to-asset ratio. This in turn would have an effect on bank profitability.

Shull and Horvitz try to determine the effect of branch and unit banking on profitability, but their results are far from conclusive. They feel that measures of bank profitability are seriously imperfect because the common measures such as the ratios of "net current earning-to-capital," "net income-to-assets" do not fully disclose the profitability of banks.[21] One of the reasons for imperfect measurement is that the capital base in the first ratio is not as meaningful as it might be in other industries. Also, there is an incentive for banks to minimize capital-to-deposit ratios. The success with which a bank may operate safely for given values of particular ratios is dependent on its ability to diversify, i.e., spread its risk. The ratio of "net income-to-assets" is also a deficient measure of profitability--particularly for any given year.[22] It can be a deficient measure because net income, as reported, includes non-recurring gains and losses resulting from the scale of securities. Perhaps the best measure of profitability used by Shull and Horvitz is the ratio of "net current earnings-to-assets." This measures a mark-up on bank investment and serves as a reliable measure of profitability. The only important conclusion of

Shull and Horvitz is that they cannot rule out the possibility that profitability may be tied to branch banking.[23]

Table I reprinted from the National Banking Review, classifies performance characteristics for both unit and branch banks. The data refer to performance in both branch banking and unit banking states for 1962 and 1963.[24] This table reflects some very interesting facts, especially regarding profitability of branching and unit banking states. In 1963, the average interest rate on time deposits in branch banking states was slightly higher than in unit banking states; the average ratio of time-to-total deposits was substantially higher in branch banking states. Also, interest yields on loans were higher in these same states, as were loan-to-asset ratios.

The important facts to assimilate are the effects these performance characteristics, calculated in Table I, have on bank profitability. Higher averages for the first two ratios would tend to lower bank profitability, while higher averages for the second two ratios would tend to raise profitability. Accordingly, the earnings ratios presented in Table I do not show a consistent pattern. In 1963, net current earnings-to-capital averaged somewhat higher in branch banking states, and net income-to-total assets averaged somewhat lower than in 1962. Net current earnings-to-assets, perhaps the best available comparative measures show little difference. On the basis of this result, Shull and Horvitz conclude that bank profitability does not appear to be related to branch banking laws.[25]

Looking more in depth at their study, Table II classifies the same operating ratios for branch banking in branch banking states, unit banks in branch bank states, and unit banks in unit bank states.

TABLE I

PERFORMANCE CHARACTERISTICS OF COMMERCIAL BANKS IN BRANCH AND UNIT BANKING STATES, 1962-1963

Performance Characteristic	Banks in Branch Banking States		Banks in Unit Banking States	
	1963	1962	1963	1962
Interest on Time Deposits	3.24	3.08	3.13	2.75
Time Deposits to Total Deposits	44.17	43.10	34.44	31.66
Interest on Time Deposits to Total Deposits	1.43	1.33	1.08	.87
Interest on Loans	6.99	6.88	6.79	6.75
Loans to Assets	48.10	46.26	41.77	40.00
Net Current Earnings to Capital Accounts	14.24	14.50	13.90	14.51
Net Income to Total Assets	.68	.69	.73	.79
Net Current Earnings to Assets	1.23	1.23	1.21	1.26
Number of Banks	360	359	2826	2823

Source: Board of Governors, Federal Reserve System.

TABLE II

PERFORMANCE CHARACTERISTICS OF BRANCH AND UNIT BANKS IN BRANCH AND UNIT BANKING STATES, 1962-1963 (MEANS OF RATIOS FOR INDIVIDUAL BANKS IN PERCENTAGE FORM)

Performance Characteristic	Branch Banks in Branch Banking States		Unit Banks in Unit Banking States	
	1963	1962	1963	1962
Interest on Time Deposits	3.24	3.17	3.13	2.75
Time Deposits to Total Deposits	40.31	38.62	34.46	31.67
Interest on Time Deposits to Total Deposits	1.31	1.22	1.08	.87
Interest on Loans	6.83	6.91	6.79	6.76
Loans to Assets	52.74	50.22	41.76	39.98
Net Current Earnings to Capital Accounts	18.13	18.06	13.89	14.50
Net Income to Total Assets	.69	.73	.73	.79
Net Current Earnings to Assets	1.40	1.40	1.21	1.26
Number of Banks	110	110	2817	2817

Source: Board of Governors, Federal Reserve System.

The average ratios in Table II permit a separation of the performance characteristics of branch and unit banks operating under the same kind of branch bank law, and a comparison of unit banks operating under different branching laws. It should be noted that the patterns revealed in Table I are generally not disturbed by the further breakdown in Table II. There is one aspect of the earnings ratios that sheds new light on the subject of bank profitability. These ratios now suggest that branch banks may be the most profitable of the three classes of banks. The earnings ratio for all banks in branch bank states was diminished by the unit bank. As one can see, the ratio of net current earnings-to-capital accounts for branch banks in branch banking states is considerably higher than for the other two categories of banks. This might reflect the lower ratios of capital-to-assets of branch banks. However, the ratio of earnings-to-assets shown in Table VIII indicates higher profitability for branch banks.[26]

Another significant difference between the ratios for branch and unit banks in branch bank states is found in the ratio of time-to-total deposits. This ratio was considerably higher for unit banks in both 1962 and 1963. Consequently, the ratio of interest on time deposits-to-total deposits was also considerably higher at unit banks in these states than branch banks. There is little difference among average yields on loans at branch and unit banks in branch bank states. However, the loan-to-asset ratio at branch banks was considerably higher than at unit banks in these states.[27]

Table II shows unit banks in branch bank states have higher interest on loans comparable to those charged by branch banks, lower loan-asset ratios, comparable rates of interest on time deposit, and

higher time-to-total deposit ratios. Thus, Table II implies that branch banking is more profitable than unit banks in branch banking states.

Shull and Horvitz extend their study to include bank size and different conclusions are found. In regard to profitability, they conclude that net current-earning-to-capital are directly related to size. Consequently, the low ratios of unit banks, both in branch and unit states, and the relative high ratios of branch banks in branch states reflect in large measure the relative size of branch banks as compared to unit banks. Net income-to-assets shows some inverse relationships with size, particularly for unit banks in unit states. There is no observable relationship between the ratios of net current-earnings-to-assets and bank size, and in terms of this ratio branch banks are consistently the most profitable within each size category. In consequence, Horvitz and Shull conclude that classification by size does not alter their earlier observation--profitability among the three classes of banks is mixed. There is, however, some indication that the large branch banks are the most profitable.[28]

From Shull and Horvitz's study it is apparent that there are systematic differences in the performance of branch systems and unit banks. In general, it was found that branch banks are typically larger, but, for any given size, tend to have higher costs than unit banks. The loan-mix at branch banks and the higher loan-asset ratios would tend to make branch banks' profits higher. However, this tendency may be offset to some extent by their higher costs. Another area in which branch banks tend to outstrip unit banks is in the

variety of "products" offered and the convenience by multiple offices. This additional service of branch banks is a function of their size, and it should be remembered that in most unit bank communities the size of banks are constrained due to their inability to branch. Hence, Shull and Horvitz conclude that branch banks exert a definite influence on performance in many different ways and that mere existence of permissive branch banking legislation will alter the performance of unit banks because it would lower the barriers to entry, which in turn would increase competition. They also found that when branch banks acquire a unit bank, the acquired bank will conform to the rates charged by the acquiring bank. This conclusion was suggested because of post-merger performance. Specifically, interest on time deposits fell, loan rates generally fell, and loan terms and lending authority were generally extended to the acquired bank which was identical to the acquiring branch bank. The most important effect in the majority of mergers was expansion in the number of services offered by the bank.

In summary, Shull and Horvitz have shown there is a wide disparity of performance and profitability between branch bank states and unit bank states. It is also clear that there are regional differences in the performance characteristics of commercial banks.

David A. Alhadeff's Study

Perhaps the most comprehensive study undertaken on the comparison of branch banking and unit banking, and also the first of major importance, was done by David A. Alhadeff. His study, "Monopoly and Competition in Banking," was undertaken in the early 1950's and was published in 1954. The main purpose of his study was to examine

existing banking markets from a market structure viewpoint and to observe how banking markets and banking structures have been affected by banking concentration in the form of branch banks.

The analysis of the effect that branch banking has had on the banking market is based on the study of the state of California. California was chosen because branch banking has grown faster in California than in any other part of the country, and also, because operating ratios for branch banks in California were made available for the first time.

The first part of Alhadeff's study is concerned with defining the market structure in California. After concluding that banking structure is one of monopolistic competition, he turns his efforts toward measurements of performance.

In order to gain perspective into the relative performance levels of branch banking and unit banking one must compare the production potential of branch and unit banks. The measure of production potential that Alhadeff uses is the "load factor," which is simply loans and investments as a percentage of total assets.

Alhadeff's investigation revealed that in terms of both size and structure, branch banks have an inherent superiority in their ability to produce. Thus, with given resources a branch bank is able to produce a larger amount of credit than a unit bank. This is a direct result of the different load factors for branch and unit banks.

The reasons for different "load factors" could be a result of the ratio of time deposits to total deposits. The higher this ratio the more stable the liquidity requirements. This would result in decreasing reserve requirements, which in turn would allow a bank to generate

more loans and investments.

Alhadeff's study shows that branch banks as a group devoted a larger percentage of their resources to loans than did unit banks. This also held true in a comparison of unit banks with branch banks nearly comparable in size, i.e., the largest unit bank category.[29] Moreover, branch banks as a group expanded their loans more rapidly than unit banks as a group. Also, in branch banks the interbranch mobility of funds reduces the liquidity requirements of a single branch bank. Alhadeff shows that the superior loan performance of branch banks as a group was maintained even when their loan output was measured in terms of the growth of their own resources, and that the superior loan performance of branch banks as a group was not a function of selecting any particular year as a base period.[30]

Alhadeff's study shows that the performance of branch banks as a group were better than unit banks as a group. As measured by the load factor, however, some individual unit bank categories outperformed individual branch banks. On the other hand, the largest branch bank surpassed all of the unit banks in its loan output during almost every year of the study. For the groups as a whole, branch banks tended to outperform unit bank groups as depicted by Alhadeff's study.

The "load factor" is only one measure of performance, and in order to obtain a more meaningful comparison between branch banks and unit banks one must compare their costs. Alhadeff first looked at a comparison of unit costs and found that unit costs of branch banks as a group were higher than the unit costs of the largest unit banks in every year but one. On the other hand, branch banks as a group had lower unit costs than the average of unit banks in every year studied.

Another interesting factor noted by Alhadeff is that branch bank costs tend to increase as the size of the bank increases. Also, the pattern of unit costs between large unit banks and branch banks depends upon the relative size of the components of unit costs, viz., unit wage costs, unit miscellaneous costs, etc. The unit wage costs of the largest branch banks were always larger than the unit wage costs of the largest unit banks. Also unit interest costs on time deposits were invariably higher for the average of branch banks than for the largest unit banks. Thus, from the preceding information, one could generally state that branch banks have higher unit costs than the largest unit banks.

In regard to comparative cost patterns of branch banking and unit banking, Alhadeff finds that in terms of over-all performance, the largest unit banks have a cost advantage over branch banks (this is refuted in a study done by Schweiger). However, if unit interest costs are ignored, branch banks are nearly equal to the largest unit banks both on wage and miscellaneous cost.[31] This simple statement seems to qualify the commonly vaunted claims of branch banking proponents that branch banking is "superior" to unit banking because of alleged cost advantages. If interest costs are included in the full cost comparison, branch banking costs are actually higher than those of the largest unit banks.[32] The alleged cost superiority of branch over unit banking holds only when branch banks are compared to any but the largest unit banks. However, the cost advantages of branch banks are specifically related to their large size as well as their branch structure.

After studying the cost comparison of branch banks and unit banks,

Alhadeff looked at the pricing policy of branch banks and unit banks and finds a very interesting fact. He suggests that the higher average rates earned by branch banks are in some sense related to their structure in spite of their size, whereas for unit banks, size alone is a sufficient clue to the rates they earn.[33] This conclusion is very interesting since it has been alleged that branch banking structure results in low loan rates, whereas Alhadeff's study suggests that branch banking structure is statistically associated with high average rates.

Alhadeff measures profitability in three various ways: (1) net earnings on loans and investments, (2) net earnings on assets, and (3) net earnings on capital.[34] These different profit ratios illuminate diverse aspects of bank operations and behavior. Earnings on loans and investments describe the net markup on bank output while earnings on assets measure the basic earning power of a bank. Earnings on capital measure profitability from the viewpoint of owner contribution. It should be acknowledged that the net earnings are <u>not</u> net of taxes; therefore, non-economic factors such as charge-off and progressive tax rates will not reduce the comparability of unit and branch banking.

Looking first at net earnings on loans and investments Alhadeff finds that they are not strongly related to size of unit banks. In almost every year, the smaller banks earned a higher return on loans and investments than did large unit banks. This pattern occured because unit banks earned similar rates of return on securities as a whole. Thus, the contribution of the earnings on securities to net returns on loans and investments for different size unit banks tended to cancel out.

Net earnings on loans and investments are not strongly related to size of branch banks. The high earnings from loans and discounts and from miscellaneous earnings are compensated by the high unit costs of large branch banking, by the random relation of percentage earnings on securities to banks, and by the exceptions to the direct relation of loan rates and size of bank. As a result there is no distinctive ranking pattern of net earnings on loans and investments among different size branch banks.[35]

Although net earnings on loans and investments are not related to size of unit bank, it is useful to compare earning ratios of branch banks with those of the largest category of unit banks. As a group, branch banks usually enjoyed higher net earnings on loans and investments than the largest category of unit banks. This can be explained by the fact that on both government and other securities, branch banks usually earned less than the largest unit banks.[36]

Branch banks generally earned greater net returns on their capital than unit banks. By this measure branch banks are the more profitable form of bank organization. However, profitability on capital is greatly influenced by the relation of capital to total deposits. The relationship is largely a function of size and the banking organization rather than of individual performance. When the influence of the capital deposits ratio is excluded, as in the use of a net earnings/assets measure of profitability, branch banks' earnings are less easily distinguished from unit bank earnings because they are lower in about 50 per cent of the cases, and higher in about 50 per cent.[37]

An assets measure of profitability is influenced in part by the

load factory. Earnings on loans and investments are generally less for branch than for unit banks. For various reasons, branch banks do not earn more than unit banks on their loans and investments, and they experience only average profitability in terms of their earnings on assets. It is only when the leverage of a low capital-deposits ratio is admitted as an influence on profit figures that branch banks emerge as the more profitable form of organization.

Alhadeff compares branch banks with all unit banks of comparable size, i.e., the largest unit banks. This analysis shows that branch banks are, on the whole, more profitable than the largest unit banks irrespective of whether a loan and investment, asset, or a capital measure is the criterion of profitability. The basic superiority of branch banking earnings over those of the largest unit banks is established by their high earnings per dollar of loans and investments. Neither the load factor nor the capital-deposit ratio significantly alters the comparative profit relations on assets and capital from that established by earnings on loans and investments. The superior profitability of branch banks as compared with the largest unit banks can be traced back to the key operating factors which determine earnings on loans and investments--the average rate of interest on loans, the average return on securities, the product mix, size mix, loan mix, and unit costs.

In some contexts, the critical comparison of branch and unit banking centers around the most profitable category of unit banks, the penultimate size category. The penultimate size shows a fundamentally superior earnings on position when earnings are measured on either an assets ar a capital basis. Also, this size category leads all

other unit banks on an asset basis in eleven out of thirteen years; and on a capital basis it holds a commanding superiority. When compared to branch banks as a group, the penultimate size unit banks earned more per dollar of loans and investments in all years of the study period. On an asset basis, the penultimate size banks were more profitable in ten years and equally profitable in two more years. On a capital basis their earnings surpassed the earnings of branch banks in eleven years and matched them in two other years. Hence, in all three categories, there is definitely a size of unit bank that is more profitable than branch banks as a group.[38]

In short, Alhadeff states that profitability is not an unambigous concept. In the first place, profitability of given banks varies, depending upon the particular measure of profitability employed. Second, even with a given measure of profitability, it is not possible to state precisely whether branch or unit banks are the more profitable. It is true that branch banks on the average are more profitable than unit banks on the average, but the average is often misleading. In attempting to appraise the comparative profitability of branch and unit banking, the choice of the proper base as well as the relevant banks to be compared will depend upon the context in which the comparisons are made.

George J. Benston's Study

Another study undertaken by George J. Benston, Economies of Scale and Marginal Costs in Banking Operations, found that economies of scale were present for all the banking services analyzed. Comparing Benston's study to those of Alhadeff and Horvitz suggests many

similarities. They all analyzed the relationship between total operating costs, bank's size, and total loans and investments. Bank size was measured in terms of five to nine size-classes of total deposits. Both Alhadeff and Horvitz found that costs as a percent of loans and investments declined for banks with less than $5 million of total deposits, remained fairly constant for banks holding between $5 to $50 million in deposits, and then declined again for larger banks.[39] These results were similar to the ones found by Schweiger and McGee. Using multiple regression analysis with operating costs as a per cent of total costs serving as the dependent variable they reported that costs per thousand dollars of total assets (unit costs) declined at a decreasing rate until banks with total assets of approximately $50 million were reached. After this level the decline continued, but at a reduced rate.

The conclusions of the above studies on costs, as well as their methods of analysis are different; however, all of the studies indicate relatively high unit costs for the smallest banks. The major difference is that the studies of Alhadeff and Horvitz show approximately constant unit costs for middle range banks and lower unit costs for large banks; conversely, the Schweiger-McGee study showed reductions in unit costs as bank size increased for the middle range, and much smaller reductions over the range of large banks. This result can be contrasted to Benston's findings which suggest middle ranged banks show slight economies of scale, with "scale" measured by the number of deposit accounts and loans rather than total assets or deposits.

Without further analysis of the costs of banking one can state generally that branch banks tend to have higher operating costs than

unit banks of similar size because the preponderance of the evidence suggests that unit banks can attain minimum optimum size at substantially lower asset size than can branch banks. Therefore, costs are only one of many factors influencing profitability which must be taken into account when comparing the profitability of branch and unit banking.

Jerome Darnell's Study

One other study, "Profitability of Chain and Nonchain Banks," by Jerome Darnell focuses directly upon bank profitability. Darnell found that lower profitability ratios are more likely to be the rule among chain banks and nonchain banks. This is due largely to the fact that individual chain banks are smaller and have different balance sheet structure than do nonchain banks.[40] Chain banking, a form of banking concentration arising when two or more separately chartered banks are commonly owned, is only one of three ways of achieving concentration. The other two are branch and group banking.

Darnell reveals that one important reason for controlling a chain of banks is that it provides a "method of insuring coordination in operating policies in order to improve the profitability and competitive position of the affiliated banks."[41] He compares the profitability of chain banks with nonchain member banks by using analysis-of-variance tests. These tests were intended to determine if chain banks exhibit different profitability characteristics than nonchain banks.

For his measures of profitability Darnell used: net current earnings before income taxes, net income before related taxes, and net income after taxes. After compiling the profitability ratios he statistically tested the evidence by a fixed constant analysis-of-

variance test. These tests clearly demonstrated that chain banks are significantly less profitable than nonchain member banks. Darnell tried to explain the low profitability on the basis of the rural location of most of the chain banks. However, his argument was invalid due to the fact that there is an equal number of nonchain banks located in rural areas within his sample.

The size of banks provides one of the best explanations for the lower profitability ratios of chain banks. Darnell found by analysis-of-variance tests that there is a significant difference in two profitability ratios as size is allowed to vary. He attributed the lower profitability of chain banks to their smallness and inability to diversify.

Darnell also felt that balance sheet structure is another influential variable affecting the profitability of banks. Chain banks hold a larger proportion of their funds in the form of earning assets; but given a lower loan ratio, they also have a larger proportion of their funds being held as low yielding investments. Therefore, this results in the marginal earnings obtained from a larger investment portfolio being insufficient to offset the marginal return foregone by having lower loan ratios. He also found that the capital-to-asset ratio is higher for chain banks than for nonchain banks. When earnings are compared to capital accounts, a lower profitability ratio is evidenced in chain banks. Thus it is possible, that if chain banks relied less on capital accounts as a source of funds, their profitability could be enhanced.

In summary, these studies have focused directly upon the comparison of branch and unit bank performance and profitability. They provide a

strong background from which to further delve into the comparison of profitability of branch banks versus unit banks. The study undertaken in this paper is directly concerned with the comparison of profitability between unit bank in unit states and branch banks in branch states. It differs from these previous studies in that it concentrates only on profitability.

FOOTNOTES

[1]Franklin R. Edwards, "The Banking Competition Controversy," National Banking Review, III, (1965) pg. 313.

[2]Ibid., p. 314.

[3]Ibid., p. 316.

[4]Ibid., p. 318.

[5]Ibid., p. 321.

[6]Ibid., p. 326.

[7]Ibid., p. 328.

[8]Bernard Shull and Paul M. Horvitz, "Branch Banking and the Structure of Competition," The National Banking Review, I, (1964), pg. 306.

[9]Ibid., p. 340.

[10]Ibid., p. 340.

[11]Ibid., p. 340.

[12]Ibid., p. 340.

[13]Ibid., p. 340.

[14]David Alhadeff, "Monopoly and Competition in Banking," (Berkley, 1954) pg. 75.

[15]Shull and Horvitz, p. 341.

[16]Shull and Horvitz, p. 341.

[17]I. Schweiger and J. S. McGee, "The Structure and Performance of Banks and Related Financial Institutions," Journal of Business, XXIV, (July, 1961), p. 226.

[18]Paul M. Horvitz and Bernard Shull, "The Impact of Branch Banking on Bank Performance," The National Banking Review, II, (1964), p. 153.

[19]Ibid., p. 160.

[20]Ibid., p. 160.

[21]Ibid., p. 161.

[22]Ibid., p. 162.

[23]Ibid., p. 162.

[24]Ibid., p. 163.

[25]Ibid., p. 164.

[26]Ibid., p. 164.

[27]Ibid., p. 166.

[28]Ibid., p. 167.

[29]Alhadeff, p. 75.

[30]Ibid., p. 5.

[31]Ibid., p. 106.

[32]Ibid., p. 106.

[33]Ibid., p. 111.

[34]Ibid., p. 173.

[35]Ibid., p. 179.

[36]Ibid., p. 180.

[37]Ibid., p. 181.

[38]Ibid., p. 183.

[39]G. J. Benston, "Branch Banking and Economies of Scale," The Journal of Finance, XXI. (1965), pp. 319.

[40]Jerome Darnell, "Profitability Comparisons Between Chain and Non Chain Banks," Bankers Magazine, XI, (1968), p. 25.

[41]Ibid., p. 27.

CHAPTER III

METHODOLOGY

The purpose of this study is to compare the profitability of unit banking versus the profitability of branch banking. The comparison is based on three different measures: (1) net earnings on loans and investments, (2) net earnings on assets, and (3) net earnings on capital.

Each of the profitability ratios illuminates diverse aspects of bank operations, and taken together they summarize the major activities of a bank by revealing the net position of the firm in the interplay of prices, costs, and outputs. In the computation of these ratios it is noted that the net earnings are <u>not</u> net of taxes. Therefore, non-economic or extra economic factors, such as charge-offs and progressive tax rates, will not reduce the comparability of unit and branch bank profitability.

Bank profitability is the most difficult of all performance characteristics to explain. By use of profit ratios, however, the net effects of size, loan-mix, deposit-mix, capital-deposit ratio, and various activity ratios can be assimilated into a single measure.

The methodology followed in the comparison of unit bank profitability versus branch bank profitability is based upon a division of banks by states into two groups: (1) unit banks in unit banking states and (2) branch banks in branch banking states. This division

of states allows the comparison of 15 unit bank states to 15 branch banking states. The breakdown of states according to unit and branch states is as follows:

Branch Banks in Branch States	Unit Banks in Unit States
Arizona	Arkansas
California	Colorado
Connecticut	Florida
Delaware	Illinois
Idaho	Iowa
Maine	Kansas
Maryland	Minnesota
Nevada	Montana
North Carolina	Nebraska
Oregon	New Hampshire
Rhode Island	North Dakota
South Carolina	Oklahoma
Utah	Texas
Vermont	West Virginia
Washington	Wyoming

Separating the states into branch banking states or unit banking states, data for each branch and unit banking state is collected and classified into four categories: (1) average assets, (2) average deposits, (3) income per capita, and (4) population density (% rural and urban). These four categories will again be subdivided into various ranges of values. For example, average assets will be divided into ranges of $0 to 1 million, $1 million to 5 million, 5 million to 50 million, and over $50 million. The other variable will also be given ranges of values.

For each range of average assets the profitability ratios will be computed, and then one can determine if profitability appears to be a function of size. Also, branch banks and unit banks of equal asset size can be compared by examining the profitability ratios while holding size constant. This same procedure is repeated for values of

average deposits, income per capita, and population density.

After determining if profitability is a function of these variables, each unit and branch state with identical values for several variables is compared. For example, the profitability of a branch state with average assets of 50 million, deposits of 10 million, 2000 income per capita, and 65% urban density could be compared to the profitability of a unit bank state with identical classifications.

Following the comparisons, an attempt is made to attach a measure of significance and reliability to the conclusions drawn. The reliability is measured relative to the results expected if random forces were in operation.

The source of data used to compute the profitability of branch and unit banking is the "Annual Report of Bank Operating Statistics, FDIC, 1968." Another source of data will be the U.S. Bureau of Census, which is used to provide the density data and the per capita income of each branch and unit state.

CHAPTER IV

THE COMPARISON OF UNIT AND BRANCH BANK STATES

The objective of this, the fourth chapter, is to compare the profitability of branch and unit banks. The comparison between unit and branch banking is based on three profitability ratios: net earnings to total assets; net earnings to loans and investments: and net earnings to capital.

These profitability ratios are computed for each of the thirty unit and branch banking states. There are exactly 15 unit banking states and 15 branch banking states used in this study. Table I shows the computed values of each profitability ratio for both the unit and branch bank states.

Hypothesis I

The first comparison of branch banking and unit banking is based on the results of Table III. Taking the mean of each profitability ratio, one can see that unit banks, on the average, rank higher than branch banks in all three profitability measures. Testing of the first hypothesis is based on average values for all unit bank states and all branch bank states. Results suggest (in Table III) that unit states are more profitable than branch banks in branch states as measured by all three ratios.

TABLE IIIA

PROFITABILITY RATIOS OF BRANCH BANK STATES

Branch Banking States	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Arizona	.52	.006	5.83
California	.75	.009	8.85
Connecticut	.97	.012	11.41
Delaware	1.39	.020	13.69
Idaho	1.00	.013	12.63
Maine	1.06	.011	12.42
Maryland	1.01	.016	12.70
Nevada	.63	.008	8.34
North Carolina	1.29	.009	14.49
Oregon	.92	.008	12.33
Rhode Island	1.10	.011	10.04
South Carolina	1.58	.016	14.54
Utah	1.12	.012	13.89
Vermont	1.00	.010	12.48
Washington	1.10	.012	12.91
Average	1.03	.0115	11.84

*Note: Net earnings before taxes (in all tables)

TABLE IIIB

PROFITABILITY RATIOS OF UNIT BANK STATES

Unit Banking States	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Arkansas	1.09	.011	12.13
Colorado	1.14	.012	13.33
Florida	1.01	.011	13.77
Illinois	.97	.011	12.41
Iowa	1.03	.011	11.76
Kansas	1.16	.014	12.34
Minnesota	.80	.010	10.79
Montana	.97	.011	13.35
Nebraska	1.22	.013	12.35
New Hampshire	1.25	.014	13.57
North Dakota	1.07	.010	13.50
Oklahoma	1.11	.013	12.92
Texas	1.05	.012	12.41
West Virginia	1.27	.016	13.64
Wyoming	1.07	.011	12.43
Average	1.08	.012	12.71

Hypothesis II -- Proof or Denial

This part of the study attempts to prove or disprove the second hypothesis which states that "as average asset size decreases, the related profitability increases for both unit and branch banks, but unit banks remain higher for each asset class." For testing this hypothesis banks are first grouped into branch banks and unit banks. Next, these two groups are subdivided on the basis of average asset size. Once this is done, average profitability of each of the respective subgroups is compared. The results of testing these hypotheses are contained in Table IV.

First, looking at Table IV, it can be seen that there is no significant relationship between declining average bank offices assets and the three profitability indexes on a state-by-state comparison. They appear to be random in nature for both unit and branch banking states; it is concluded that profitability, as measured by the three profitability ratios, is not a function of average assets alone.

Extending this analysis to include various average asset classes, different results are concluded. By classifying average assets into various asset size classes, profitability appears to be a function of average asset size. Average asset size is broken down into four classes: (1) over $16 million, (2) between $15 million and $12 million, (3) between $12 million and $7 million, and (4) below $7 million. Table IV shows that profitability is inversely related to average asset size for all three profitability ratios in branch banking states. Net income as a percentage of assets increases from .75, in branch banking states with average assets of over $16 million, to 1.27 in branch banking states with less than $7 million in average assets. Net income as

TABLE IVA

PROFITABILITY IN BRANCH BANK STATES AS A FUNCTION OF AVERAGE ASSET SIZE

Average Assets	State	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Over $16 Million	California	.75	.009	8.85
Average		.75	.009	8.85
Between	Delaware	1.39	.020	13.69
$15-$12 Million	Connecticut	.97	.012	11.41
	Nevada	.63	.008	8.34
	Oregon	.92	.008	12.33
	Rhode Island	1.10	.011	10.04
Average		1.00	.0118	11.16
Between	Utah	1.12	.012	13.89
$12-$7 Million	Washington	1.10	.012	12.91
	Arizona	.52	.006	5.83
	Maryland	1.01	.016	12.70
	North Carolina	1.29	.009	14.49
	Vermont	1.00	.010	12.48
	Idaho	1.00	.013	12.63
Average		1.01	.011	12.13
Below $7 Million	Maine	1.06	.011	12.42
	South Carolina	1.58	.016	14.54
Average		1.27	.0135	13.48

TABLE IVB

PROFITABILITY IN UNIT BANK STATES AS A FUNCTION OF AVERAGE ASSET SIZE

Average Assets	State	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Over $16 Million	Illinois	.97	.011	12.41
	Florida	1.01	.11	13.77
	Texas	1.05	.12	12.40
	Colorado	1.14	.12	13.33
Average		1.04	.0115	12.98
Between $15-$12 Million	West Virginia	1.27	.016	13.64
	Minnesota	.80	.010	10.79
	Oklahoma	1.11	.013	12.92
	New Hampshire	1.25	.014	13.57
Average		1.11	.013	12.73
Between $12-$7 Million	Arkansas	1.09	.011	12.13
	Montana	.97	.011	13.35
	Wyoming	1.07	.011	12.43
	Iowa	1.03	.011	11.76
	North Dakota	1.07	.010	13.50
	Kansas	1.16	.014	12.34
	Nebraska	1.22	.013	12.35
Average		1.09	.0115	12.58

a percentage of loans and investments and net income as a percentage of capital increased from .009 and 8.85, in the highest average asset states, to .0145 and 13.48 respectively for the lowest average asset state.

This relationship does not hold true to the same degree for unit banks in unit banking states. Profitability as measured by net earnings to assets and net earnings to loans and investments increase as average assets decrease in the first two asset classes, but then decreases slightly for the lower average asset class. On the other hand, net earnings to capital appears to be directly related to average asset size. The ratio of earnings to capital decreases from 12.98 in the over $16 million class to 12.58 in the $12 million to $7 million class.

Extending the analysis to the comparison of unit and branch bank profitability, it is concluded that unit bank states appear to be more profitable than branch banking states for all asset classes of comparable size. This result is clearly seen in Table IV. Although unit banks are more profitable than branch banks for equal average asset classes, the smallest class of branch banks are more profitable than any class of either unit or branch banking states. Therefore, Hypothesis II is only partially true. That is unit banks are more profitable than branch banks of equal average asset size.

Hypothesis III

The purpose of this section is to prove or disprove the following hypothesis: "for branch banks and unit banks with equal average asset classes, profitability increases as average deposit size increases." The results derived from testing this hypothesis suggest that unit banks

have higher profitability ratios than branch banks of equal average deposit size.

In order to prove or disprove Hypothesis III a comparison is made between profitability and average deposit size. As seen from Table V there is no significant relationship between average deposits and profitability for each branch or unit banking state when a comparison is made on a state-by-state basis. However, when profitability is a function of average deposits, the identical findings are concluded that were found when profitability was a function of average assets. This conclusion is easily understood by noting that average assets and average deposits are directly related. When unit and branch banks are ranked according to either average assets or average deposits, they have identical rankings. Therefore, the comparison of profitability of unit and branch banks, based on average deposit size, yields the identical results as the comparison of profitability of branch and unit banks based on average asset size.

Hypothesis IV -- Proof or Denial

This section is devoted to proving or disproving the hypothesis: "The higher the per capita income of the states, the lower the profitability of both unit and branch banks. For states with equal average assets, average deposits, and per capita income classes, unit banks are more profitable than branch banks when measured by the three profitability ratios." Table VI suggests that on a state-by-state comparison there is no significant relationship between per capita income and profitability for unit and branch bank states. However, by grouping unit and branch banks into various classes of per capita

TABLE VA

PROFITABILITY IN UNIT BANK STATES AS A FUNCTION OF AVERAGE DEPOSIT SIZE

State	Average Deposits	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Illinois	29,458	.97	.011	12.41
Florida	25,248	1.01	.011	13.77
Texas	20,530	1.05	.012	12.41
Colorado	17,619	1.14	.012	13.33
West Virginia	11,786	1.27	.016	13.64
Minnesota	11,865	.80	.010	10.79
Oklahoma	11,473	1.11	.013	12.92
New Hampshire	10,776	1.25	.014	13.57
Arkansas	10,697	1.09	.011	12.13
Montana	10,550	.97	.011	13.35
Wyoming	10,043	1.07	.011	12.43
Iowa	8,745	1.03	.011	11.76
North Dakota	7,560	1.07	.010	13.50
Kansas	7,352	1.16	.014	12.34
Nebraska	7,111	1.22	.013	12.35
Average		1.08	.012	12.71

TABLE VB

PROFITABILITY IN BRANCH BANK STATES AS A FUNCTION OF AVERAGE DEPOSIT SIZE

State	Average Deposits	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital	Net Income After Taxes on Assets
California	16,638	.75	.009	8.88	.55
Delaware	12,686	1.39	.020	13.69	.98
Nevada	12,104	.63	.008	8.34	.53
Connecticut	11,924	.97	.012	11.41	.65
Oregon	11,879	.92	.008	12.33	.69
Rhode Island	10,974	1.10	.011	10.04	.81
Utah	10,214	1.12	.012	13.89	.83
Washington	9,864	1.10	.012	12.91	.82
Arizona	9,521	.52	.006	5.83	.45
Maryland	8,368	1.01	.016	12.70	.69
Vermont	6,964	1.00	.010	12.48	.77
Idaho	6,944	1.00	.013	12.63	.67
North Carolina	6,786	1.29	.009	14.49	.94
Maine	4,786	1.06	.011	12.42	.84
South Carolina	4,615	1.58	.016	14.54	1.15
Average		1.03	.0115	11.84	

TABLE VIA

PROFITABILITY OF BRANCH BANK STATES AS A FUNCTION OF PER CAPITA INCOME

Per Capita Income	State	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Over $3000	Connecticut	.97	.012	11.41
	California	.75	.009	8.85
	Delaware	1.39	.020	13.69
	Nevada	.63	.008	8.34
	Washington	1.10	.012	12.91
	Maryland	1.01	.016	12.70
	Rhode Island	1.10	.011	10.04
	Oregon	.92	.008	12.33
Average		1.00	.012	11.30
Per Capita Income Between $3000-$2500	Vermont	1.00	.010	12.48
	Arizona	.52	.006	5.83
	Maine	1.06	.011	12.42
	Utah	1.12	.012	13.89
Average		.92	.010	11.15
Per Capita Income Below $2500	North Carolina	1.29	.009	14.49
	Idaho	1.00	.013	12.63
	South Carolina	1.58	.016	14.54
Average		1.29	.013	13.45

TABLE VIB

PROFITABILITY OF UNIT BANK STATES AS A FUNCTION OF PER CAPITA INCOME

Per Capita Income	State	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Over $3000	Illinois	.97	.011	12.41
	Colorado	1.14	.012	13.33
	Minnesota	.80	.010	10.79
	Iowa	1.03	.011	11.76
	Nebraska	1.22	.013	12.35
	Kansas	1.16	.014	12.34
	New Hampshire	1.25	.014	13.57
	Wyoming	1.07	.011	12.43
Average		1.08	.012	12.50
Between $3000-$2500	Florida	1.01	.011	13.77
	Montana	.97	.011	13.35
	Texas	1.05	.012	12.41
	Oklahoma	1.11	.013	12.92
Average		1.03	.012	13.11
Below $2500	North Dakota	1.07	.010	13.50
	West Virginia	1.27	.016	13.64
	Arkansas	1.09	.011	12.13
Average		1.14	.0124	13.10

income, a significant relationship becomes apparent.

One can see from Table VI that as per capita income decreases all three profitability ratios increase in magnitude for both unit and branch bank states. This is true except for the lowest per capita income class (less than $2500).

Table VII is a further extension of the comparison of unit and branch bank profitability. Table VII is divided into various groups of constant average assets and constant average deposits. Each branch and unit state is ranked ordinally according to its average assets and average deposits class. Then for each unit and branch bank state with equal average assets and average deposits classes, the per capita income of each unit and branch bank state is allowed to vary. This allows one to determine the relationship between profitability and per capita income while holding average asset classes and average deposit classes constant.

In the first classification of branch and unit states each ratio provides a different answer. No significant relationship is concluded for unit bank states. For example, earnings to assets decline from 1.06 for states with equal average assets, equal average deposits, and per capita income over $3000, to 1.04 for states with equal average assets, average deposits, and per capita income between $3000-$2500. The opposite is true for earning as a percent of capital, in unit banking states. Earnings as a percent of capital increase from 12.87 to 13.09 respectively. The magnitude of these changes is so small as to render any conclusion insignificant.

When average assets are held between $12-$15 million and average deposits between $21-15 million while allowing per capita income to

TABLE VIIA

AVERAGE PROFITABILITY FOR UNIT BANK STATES AS A FUNCTION OF PER CAPITA INCOME: HOLDING AVERAGE ASSETS AND AVERAGE DEPOSITS CONSTANT

Average Assets	Average Deposits	Per Capita Income	Earnings to Assets	Earnings to Loans & Investments	Earnings to Capital
Over $16 Million	Between $30-$20 Million	Over $3000	1.06	.0015	12.87
Over $16 Million	Between $30-$20 Million	Between $3000-$2500	1.04	.0015	13.09
Between $15-$12 Million	Between $20-$15 Million	Over $3000	1.02	.012	12.18
Between $15-$12 Million	Between $20-$15 Million	Between $3000-$2500	1.11	.013	12.92
Between $15-$12 Million	Between $20-$15 Million	Less Than $2500	1.27	.016	13.64
Below $12 Million	Between $11.5-$6.5 Million	Over $3000	1.12	.012	12.22
Below $12 Million	Between $11.5-$6.5 Million	$3000-$2500	.97	.011	13.35
Below $12 Million	Between $11.5-$6.5 Million	Below $2500	1.08	.0105	12.81

TABLE VIIB

AVERAGE PROFITABILITY OF BRANCH BANK STATES AS A FUNCTION OF PER CAPITA INCOME: HOLDING AVERAGE ASSETS AND AVERAGE DEPOSITS CONSTANT

Average Assets	Average Deposits	Per Capita Income	Earnings to Assets	Earnings to Loans & Investments	Earnings to Capital
Over $16 Million	$30-$20 Million	Over $3000	.75	.007	8.85
$15-$12 Million	$20-$15 Million	Over $3000	1.00	.0118	11.16
Below $12 Million	$11.5-$6.5 Million	Over $3000	1.05	.014	12.80
Below $12 Million	$11.5-$6.5 Million	$3000-$2500	.088	.95	10.74
Below $12 Million	$11.5-$6.5 Million	Below $2500	1.15	.011	13.56
Below $7 Million	$11.5-$6.5 Million	Below $2500	1.58	.016	14.54

vary, it appears that profitability is inversely related to per capita income in unit bank states. Profitability as measured by earnings to assets, earnings on loans and investments, and earnings to capital increased from 1.02, .012, and 12.18 in unit states with per capita income over $3000, to 1.27, .016, and 13.64 in unit states with per capita income of less than $2500.

In the third and final class average assets below $12 million, average deposits between $11.5 million, and per capita income taking values of over $3000 to below $2500, a few significant conclusions are suggested. In this class earnings to loans and investments is directly related to per capita income in unit bank states. It decreases from .012 in unit bank states with per capita income of over $3000, to .010 in unit states with per capita income below $2500. This does not hold true for branch banks when measured by earnings to loans and investments.

Comparing unit and branch bank profitability for the third classification of assets and deposits, branch bank states with per capita income over $3000 are more profitable than unit bank states when measured by earnings to loans and investments and earnings as a percentage of capital. In the states with identical average assets and deposits, and per capita income between $3000-2500, unit banks are the more profitable. However, when per capita income declines below $2500, branch banks are more profitable than unit banks as measured by all three profitability ratios.

Hypothesis V

The purpose of this section is to prove or disprove the final hypothesis: "The less dense the population, the more profitable are unit banks in unit states and the more profitable are branch banks in branch states. However, unit banks are still the most profitable, other things equal (assets, deposits, income per capita, and density)." By use of Table VIII it is suggested that on a state-by-state comparison profitability is not directly related to urban density (percentage urban). However, by classifying urban density into various ranges or classes of average density, different conclusions are suggested. Table VIII shows that by dividing unit and branch states into various ranges of density that profitability is inversely related to the percentage of urban population for both unit and branch bank states. As population density decreases, profitability increases for both unit and branch banks.

Table VIII also suggests that on the average, unit banks are more profitable than branch bank states of equal urban density. This is true for all classes of average density except the smallest urban population class. This suggests that branch banks are more profitable than unit banks in the less urban populated states (urban density less than 50%).

Extending the analysis to include Table IX, further findings are suggested. Table IX compares the profitability of unit and branch banks of approximately equal average assets and deposits while allowing urban density to vary within each classification of unit and branch banks states. In other words, unit and branch banks states

TABLE VIIIA

PROFITABILITY OF UNIT BANK STATES AS A FUNCTION OF URBAN DENSITY

State	Urban Density	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Illinois	81%	.97	.011	12.41
Texas	75%	1.05	.012	12.40
Average		1.01	.0115	12.41
Colorado	74%	1.14	.012	13.33
Florida	74%	1.01	.011	13.77
Oklahoma	63%	1.11	.013	12.92
Minnesota	62%	.80	.010	10.79
Kansas	61%	1.16	.014	12.34
New Hampshire	58%	1.25	.014	13.57
Wyoming	57%	1.07	.011	12.43
Nebraska	54%	1.22	.013	12.35
Iowa	53%	1.03	.011	11.70
Montana	50%	.97	.011	13.35
Average		1.08	.012	12.60
Arkansas	43%	1.09	.011	12.13
West Virginia	38%	1.27	.016	13.64
North Dakota	35%	1.07	.010	13.50
Average		1.15	.0125	13.15

TABLE VIIIB

PROFITABILITY OF BRANCH BANK STATES AS A FUNCTION OF URBAN DENSITY

State	Urban Density	Net Earnings on Assets	Net Earnings on Loans & Investments	Net Earnings on Capital
Rhode Island	87%	1.10	.011	10.04
California	86%	.75	.009	8.85
Connecticut	78%	.97	.012	11.41
Utah	75%	1.12	.012	13.89
Arizona	75%	.52	.006	5.83
Average		.90	.010	10.00
Maryland	73%	1.01	.016	12.70
Nevada	71%	.63	.008	8.34
Washington	68%	1.10	.012	12.91
Delaware	66%	1.39	.020	13.69
Oregon	62%	.92	.008	12.33
Maine	51%	1.06	.011	12.42
Average		1.02	.011	12.06
Idaho	48%	1.00	.013	12.63
South Carolina	41%	1.58	.016	14.54
North Carolina	40%	1.29	.009	14.49
Vermont	39%	1.00	.010	12.48
Average		1.22	.012	13.54

TABLE IXA

AVERAGE PROFITABILITY FOR UNIT BANK STATES AS A FUNCTION OF URBAN DENSITY: HOLDING AVERAGE ASSETS CONSTANT

Average Assets	Urban Density	Earnings to Assets	Earnings to Loans and Investments	Earnings to Capital
Over $16 Million	Over 75%	.97	.011	12.41
Over $16 Million	75%-50%	1.05	.012	13.33
Over $16 Million	Below 50%	1.07	.0115	13.35
$15-$12 Million	Over 75%	--	--	--
$15-$12 Million	75%-50%	1.05	.012	12.43
$15-$12 Million	Below 50%	1.27	.016	13.64
$12-$7 Million	Over 75%	--	--	--
$12-$7 Million	75%-50%	1.09	.011	12.45
$12-$7 Million	Below 50%	1.08	.0105	12.81
Below $7 Million	Over 75%	--	--	--
Below $7 Million	75%-50%	--	--	--

TABLE IXB

AVERAGE PROFITABILITY FOR BRANCH BANKS STATES AS A FUNCTION OF URBAN DENSITY: HOLDING AVERAGE ASSETS CONSTANT

Average Assets	Urban Density	Earnings to Assets	Earnings to Loans and Investments	Earnings to Capital
Over $16 Million	Over 75%	.75	.009	8.85
$15-$12 Million	Over 75%	1.04	.0115	10.72
$15-$12 Million	75%-50%	1.00	.013	11.46
$15-$12 Million	Below 50%	--	--	--
$12-$7 Million	Over 75%	1.12	.012	13.89
$12-$7 Million	75%-50%	1.05	.014	12.80
$12-$7 Million	Below 50%	1.10	.011	13.20
Below $7 Million	75%-50%	1.06	.011	12.42
Below $7 Million	Below 50%	1.58	.016	14.54

are divided into classes of equal average assets and deposits. Each class is then subdivided into various urban density classifications.

In the first class, average assets over $16 million and urban density over 75%, unit banks are more profitable than branch banks for each profitability index. It is also suggested by Table IX that profitability is inversely related to urban density. Looking next at the second classification, average assets between $15-$12 million, profitability is again inversely related to urban density for both unit and branch bank states. For example, in branch banks states, profitability as measured by earnings to loans and investments and earnings to capital increases from .011, and 10.72 in states with urban density over 75%, to .013 and 11.46 in states with urban density between 75 and 50 percent. An inverse relationship between profitability and urban density is suggested for unit banks. This is also found to be true in the case when urban density declines for 75-50 percent to less than 50 percent in unit bank states.

The third classification shows no specific relationship between profitability and urban density. Table IX shows unit banks are more profitable than branch banks of the same urban density when measured by earnings to assets and earnings to capital. However, as urban density declines for unit and branch bank states with equal average assets of between $12 and $7 million, branch banks are the more profitable.

Turning to the last classification, average assets less than $7 million it is suggested that profitability is inversely related to urban density in branch bank states. Also, branch bank states with average assets of less than $7 million and urban density of less

than 50 percent are the most profitable of any other previous classification of unit and branch bank states.

Implications of Chapter IV

The results suggested by the preceding analysis tend to support the various hypotheses stated, although parts of the hypotheses are disproved. A summary of the findings formulated in this chapter is presented in the following chapter, and the related implications are discussed.

CHAPTER V

CONCLUSION

Throughout this study an attempt has been made to compare the relative profitability of unit banks and branch banks. The comparison was based on three different profitability measurers: (1) net earnings on loans and investments, (2) net earnings on assets, and (3) net earnings on capital.

The basic methodology involves a division of 30 states into unit banking states and branch banking states. Such a division resulted in two groups of 15 unit bank states and 15 branch bank states. Four types of data were collected for the states: (1) average assets, (2) average deposits, (3) per capita income, and (4) urban density of each state. These four categories of data were then subdivided into various ranges of values. Subsequently, branch and unit bank states with identical values of assets, deposits, per capita income, and urban density were compared.

The first comparison between unit and branch bank profitability was designed to see if profitability is a function of average asset size. Next, the effect of changes in average deposits and per capita income were examined. Finally, the comparison was concluded by adding one additional variable in the study, urban density. The results of all of the preceding comparisons are summarized in the following paragraphs.

Conclusion of Hypothesis 1

When individual unit and branch banks are examined on a state-by-state basis, there appears to be no significant relationship between average asset size and profitability. However, when banks are grouped into relative asset classes, it is found that unit banks in unit banking states are more profitable than branch banks for all equal average asset classes.

Conclusion of Hypothesis 2

By classifying average assets into various asset size classes, profitability appears to be an inverse function of average asset size for branch banking states. However, this relationship does not hold true to the same degree in unit banking states. Profitability as measured by net earnings to assets and net earnings to loans and investments increases as average assets decrease in the first two asset classes, but then decreases slightly for the lower average asset class. On the other hand, net earnings to capital appears to be directly related to average asset size. In the comparison of unit and branch bank states, unit banking states appear to be more profitable than branch banking states for all asset classes of comparable size.

Conclusion of Hypothesis 3

Unit banks have higher profitability than branch banks for all equal classes of average deposit size. These results are identical to these derived in testing the first hypothesis because average deposits are directly related to average assets. Thus, identical rankings of

unit and branch states result when average assets or average deposits are used as a ranking criterion.

Conclusion of Hypothesis 4

Generally speaking, for states with equal average assets, equal average deposits, and equal per capita income unit banks are more profitable than branch banks. It is also suggested that profitability is inversely related to per capita income in both branch and unit banking states. When a direct comparison of unit and branch banking is made, it can be concluded that unit banking is more profitable than branch banking for every range of per capita income except the lowest classification.

The comparison of unit and branch banking states is further extended by comparing unit and branch bank states of identical average assets classes and identical average deposits while allowing per capita income to vary within each class. In the largest classes of average assets and average deposits no significant results were concluded. However, in the second largest classification profitability appears to be inversely related to per capita income in unit bank states. The overall results also suggest that unit banks are more profitable than branch banks in each of the first two classes. In the third largest classification, unit banks are more profitable than branch banks when per capita income is between $3000 and $2500. However, when per capita income declines below $2500, branch banks are the more profitable. Thus, unit banks are generally more profitable than branch banks in all classes except the lowest classification.

Conclusion of Hypothesis 5

On a state-by-state comparison profitability is not directly related to urban density. However, when unit and branch banks are divided into various classes of urban density, they are found to be inversely related to profitability. In other words, as urban density decreases, profitability increases in both unit and branch bank states. It appears that, on the average, unit banks are more profitable than branch banks of equal urban density except for the lowest urban density class. In the lowest classification, branch banks are the more profitable. Additional information was obtained by comparing unit and branch banks of approximately equal average assets and deposits while allowing urban density to vary within each average asset classification.

In the first two classifications, profitability appears to be inversely related to urban density for both unit and branch banks. Within these first two classifications unit banks are more profitable than branch banks. In the third largest classification unit banks are more profitable for high urban density, but as urban density declines, branch banks become more profitable. It is also noted that branch banks with the lowest urban density and lowest classification of average assets are the most profitable of any class.

In summary, it is generally suggested that unit banks are more profitable than branch banks. However, it is also suggested that branch banks are more profitable than unit banks in cases involving the lowest per capita income and lowest urban density. It is also concluded that in the largest states (highest average assets, deposits, per capita income, and urban density) unit bank states are more profitable than branch bank states. Hence, the conclusions generally

support the hypotheses stated earlier in this paper.

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