STATE BRANCH BANKING LAWS--THEIR EFFECT ON ECONOMIC ACTIVITY

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ABSTRACT

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ON ECONOMIC ACTIVITY

By

Randall H. Hoemke

In 1964, when discussing the rapidly expanding economy of the State of California, J. Fred Weston raised the following question:

> Have the characteristics of commercial banking in California contributed to that growth? Or, has the growth taken place in spite of the characteristics of commercial banking in California?

His query is the basis for this attempt to determine which of the three systems of banking, as delineated by varying limitations on branching specified by individual state law, is most successful in stimulating economic activity in the state in which it is located.

The literature investigating branching as an alternative to Unit Banking is reviewed. Only the study by Cohen and Reid specifically addresses itself to the public interest and it is inconclusive in this regard. The

remainder concentrates primarily on analyzing cost structures suggesting that lower marginal costs imply lower price and larger quantity of investment funds devoted to specific loan categories if the applicable demand curve is downward sloping. Recent literature recognizes the importance of the demand side of the market in determining the proportion of the portfolio devoted to Loans and Discounts.

Information regarding portfolio income limited the portfolio breakdown to (a) Cash Items, on which no income is earned; and (b) United States Government Securities, (c) Other Securities, and (d) Loans and Discounts on which income is earned. The primary source of data was the year-end "Call Report" and the Annual Report of the Federal Deposit Insurance Corporation for the years 1946 through 1966. The proportion of the total portfolio devoted to each of these components is designated the Y (or dependent) variable. This is in accordance with work by Galbraith, Alhadeff, and others.

Russell's study was instrumental in establishing the independent profit variable [X_3 in Equation (1) and X_4 in Equations (2) through (4)]. Inclusion of the per capita real income variable (X_2) and the variable reflecting liquidity needs (X_1) is in accordance with principles expressed by Robinson.

Review of the elements of demand for each of the portfolio components led to the decision that the demand curves facing bankers in each of the banking systems are similar. The supply structure was analyzed and it was decided that there is no suggestion of difference in the willingness of bankers in varying market structures to supply a quantity of funds to a specific component at a given price. Consequently, the following hypothesis is adopted:

> It is hypothesized that no difference exists among the systems as to how they determine the proportionate share of their portfolio to devote to any one of the four components. Stated more specifically in terms of the statistical computation performed, it is not expected that the Statewide Branching system or the Limited Branching system is significantly different (as revealed by F tests) from the Unit Banking system in the proportion of its funds devoted to any one of the components analyzed (the Y variable) given the same motivations (as designated by the X variables) for having made that determination.

The use of Dummy Variables in the regression equations allows the variance attributable to the Statewide Branching system (D_1) or to the Limited Branching system (D_2) to be isolated from the variance present in the entire banking system. The technique makes possible, through the summing of the Constant and the Regression Coefficient of the Dummy Variable or through observation of the F significance, an evaluation of the extent to which the system indicated by a Dummy variable is different from the Unit Banking system.

To determine if any difference exists among the various banking systems, four sepecific tests are performed: (1) Cross-section regression for each of the twenty-one years of the study (1946 through 1966); (2) Time-series regressions across the entire time period of the study; (3) Estimated Y values at the means of the X variables based on the cross-section estimating equations; and (4) Estimated Y values at the means of the X variables based on the time-series estimating equations.

The findings of the study indicate the following:

(1) The Statewide Branching system is significantly different from the Unit Banking system in the manner in which it responds to similar motivations as regards the proportion of its portfolio devoted to:

(a) Cash Items:

In the Cross-section Regressions, the Statewide Branching system was found to be significantly different from the Unit Banking system at the 10 percent level in 12 out of 21 regressions--in 54.5 percent of the examples tested. In the Time-series Regressions, the Statewide Branching system was found to be significantly different from the Unit Banking system at the 5 percent level. The Estimated Values of Y

(Test 3) for the Statewide Branching system were less than the Estimated Values of Y for the Unit Banking system for each of the 21 years of the study--in 100.0 percent of the examples tested. The average of the estimated Y values for the Statewide Branching system is 7.3 percent less than the average for the Unit Banking system. The estimated Y value in the Time-series Regression for the Statewide Branching system is 3.4 percent lower than the estimated Y value for the Unit Banking system.

(b) United States Government Securities:

The Cross-section Regressions revealed that the Statewide Branching system is significantly different from the Unit Banking system at the 10 percent level in 5 out of 21 regressions--in 22.7 percent of the examples tested. The Time-series Regression indicates no difference between the Statewide Branching and the Unit Banking system. The Estimated Values of Y in the Cross-section Regressions for the Statewide Branching system is found to be lower than those in the Unit Banking system in all years except one. The average of the

estimated Y values is 10.55 percent lower than the average for the Unit Banking system. The Estimated Value of Y in the Time-series Regressions is 4.0 percent lower than that for the Unit Banking system.

(c) Loans and Discounts, Net:

The Cross-section Regressions indicate that the Statewide Branching system is significantly different from the Unit Banking system at the 10 percent level in 4 out of 21 regressions--in 18.2 percent of the examples tested. The Time-series Regression indicates that the Statewide Branching system is not significantly different from the Unit Banking system. The Estimated Values of Y in the Cross-section Regressions for the Statewide Branching system are higher than those for the Unit Banking system for each of the 21 years of the study. The average of these estimated Y values for the Statewide Branching system is 12.1 percent higher than the average for the Unit Banking system. The estimated value of Y in the Time-series Regressions is 2.1 percent higher that that of the Unit Banking system.

(2) The Statewide Branching system is not different from the Unit Banking system as regards the proportion of its portfolio devoted to "Other Securities."

(3) The Limited Branching system is similar to the Unit Banking system in all components.

It is concluded that the Statewide Branching system is different from the Unit Banking system as stipulated above and, in addition, that it devotes less of its investment portfolio to liquidity needs and United States Government Securities (components not contributing to local economic activity) while devoting a larger proportion of its portfolio to Loans and Discounts (a component contributing to local economic activity) than does the Unit Banking system. The Statewide Branching system, therefore, does contribute more significantly to economic activity than do the alternate systems.

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PREFACE

Branching and its limits are of present concern to legislators, economists, and bankers. In many states, bills are being considered for changing the limits within which banks are permitted to branch. It is hoped that this study will assist by providing clearer insight into the relationship between the operation of the industry and branch banking laws.

Appreciation is extended to Robert F. Lanzillotti, Chairman of my Advisory Committee, who first introduced me to the study of the banking industry. He has demonstrated almost endless patience throughout the project.

To Thomas R. Saving, my major professor, I offer my gratitude for his understanding, participation, and inspiration not only in the research but throughout my graduate study program. Without his encouragement, it would not have been completed.

My thanks to John Henderson, also a member of the committee, for establishing an excellence in scholarship which set the standard to which I aspired throughout the undertaking.

Recognition is also extended to Leo Dohagne and Terry Ellis, who assisted in preparing the computer input; to Arthur Havenner and Donald Brown, who did the programming; and to Roy Gilbert who designed the regression equation.

Any errors, of course, are my own responsibility.

Randall H. Hoemke

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CHAPTER I

INTRODUCTION

The market structure of commercial banking in the United States is closely controlled by various overlapping jurisdictions at both state and federal levels, making banking the most regulated industry in the country. The industry would reflect "the market structure that is most ideal in terms of public need"[1] through the interaction of free-market competitive forces if these forces were allowed to exercise their influence.

Because the market structure of banking is determined by legislative and executive decision rather than the exigencies of the market-place, discussion regarding the merits of varying market structure has filled the pages of bankers' association publications, scholarly journals, and reports of hearings in the halls of Congress. The discussion has expanded rapidly since 1960 as a result of two developments: (1) The Comptroller of the Currency abandoned the conservative policies previously practised by his

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[1]Comptroller of the Currency, Annual Report, 1964, Department of the Treasury (Washington, D. C.: Government Printing Office, 1964), p. 1.

office and (2) There was a renewed concern with planning and structure as means to attaining economic expansion. The Comptroller's determined policy to use the influence of his office to advance expansion has made timely any discussion regarding the relative merits of unit (and small) banking versus branched (and large) banking. Analitical difficulties are encountered, not the least of which is that largeness and branching do not necessarily exist together. Many branched banks are smaller than the largest of the unit banks.

The New Orientation

The arguments for and against branching have changed over the years. Some have become more applicable while others have lost their significance. For example, earlier arguments against branching were offered within a technological framework much more primitive than that which exists today. The argument previously advanced regarding the capability of a branch to operate with less liquidity because of its facility in transferring funds from its home office is not relevant. With well-developed lines of communication including data-phone and remote computer input stations, branches become extensions of their home office. The loan capability of each branch is equal to the loan capability of its home office. Branches operating with modern techinques are not separate banks as is assumed by

Galbraith[2] who writes from the viewpoint of the Canadian nationwide branched system--a system somewhat different as to geographical removal and remoteness from that observed in the United States where geographical areas as regards branching extend only to state borders. Also, the United States does not have large undeveloped territorial areas. Consequently, his fine treatise does not readily apply to the domestic market structure.

Branching in the early days of the nation was not a necessary solution to the need for financial resources. In the East where there was a long history of settlement, a sufficient number of wealthy citizens were available to provide the necessary capitalization to organize a bank. Because communication was poor, branch banking did not present economies of scale. Branches of early banks were autonomous and often had individual boards of directors. One of the most successful of the early branched banks, the Bank of Indiana, operated thirteen branches. Each was locally organized, had its capital subscribed by its own stockholders, and paid its own dividends subject only to the approval of the supervisory board of control at the home office.[3]

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[2]John A. Galbraith, The Economics of Banking Operations (Montreal: McGill University Press, 1963), pp. 195-215.

[3]Comptroller of the Currency, Annual Report, 1965-66, Department of the Treasury (Washington, D. C.: Government Printing Office, 1965-1966), p. 5.

Today, the Bank of America operates branches throughout the State of California, some of which are more than one thousand miles from its home office. Each branch is an extension of the home office with almost immediate communication. Under these modern conditions, branching takes on a new and different aspect.

The Literature

After some years of little or no concern given to bank market structure by members of the academic or governmental community, Alhadeff, in 1954, published his basic study.[4] It drew contrasts between unit and branched banks in California. The work inspired a resurgence of interest in whether an extension of the branching privilege represented a problem or an opportunity to the public or the banker. These and other milestones in the literature will be reviewed in Chapter III.

J. Fred Weston of the University of California at Los Angeles, in a statement prepared as part of the economic analysis of the proposed merger of the Crocker-Angelo National Bank and the Citizens National Bank, stated the following after having cited seven specific characteristics of the developing economic structure in the State of California:

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[4]David A. Alhadeff, Monopoly and Competition in Banking (Berkeley: University of California Press, 1954).

> The inter-connection between the seven characteristics may now be considered. California presents an impressive record of growth. Have the characteristics of commercial banking in California contributed to that growth? Or, has the growth taken place in spite of the characteristics of commercial banking in California? In my judgment a persuasive case can be made that the characteristics of commercial banking in California have made substantial contributions to the outstanding growth and achievment of the California economy.[5]

The discussion on branching continues because of the very unique structure of the banking industry in the United States. Each state establishes its own banking system. Some states subscribe to the branching technique while others are determined not to allow branches at all. Because the national banking system is restricted to the branching privilege extended to state banks by state laws, the national system is the center or nucleus for any controversy regarding the relative mertis of one system over another. The action of state legislatures has generated activity on the part of the Controller of the national banking system, but his actions, in turn, have influenced state banking supervisors.[6] It is evident that even more merging and branching would take place if the regulatory

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[5]J. Fred Weston, Economic Analysis of the Proposed Merger of the Crocker-Angelo National Bank and the Citizens National Bank, Affidavit submitted to Comptroller of the Currency, 1964.

[6]Almarin Phillips, "Competition, Confusion, and Commercial Banking," Journal of Finance (March, 1964), XIX, #1 (March, 1964), pp. 32-45.

agencies were removed completely from the industry. Crosse states the following:

> Without regulatory controls there would be a great many more mergers and a great many more new branches established. This trend represents the judgment of bank management and represents the long-range interests of the stockholders. These are the views of management both in the acquiring banks and those that they acquired. It takes two to tango! It is clear that bankers believe sincerely that there are efficiencies of scale, even economies. And I think they are right.[7]

The Framework for the Study

It was the stand taken by Weston cited above together with a similar general position he adopted in reviewing a book[8] on California banking that gave rise to an interest in banking market structure and its role in stimulating or, at least, supporting economic growth.

Recognizing that the United States is divided into fifty states each with its own individual banking organization and its own specific law governing branching and recognizing, also, that the states subscribing to a general classification of (a) Statewide Branching, (b) Limited Branching, or (c) Unit Banking are somewhat contiguous[9], a

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[7] Howard D. Crosse, "Bank Structure and Competition," Journal of Finance (May, 1965), XX, #2 (May, 1965), p. 352.

[8] J. Fred Weston, Review of California Banking in a Growing Economy, ed. by Hyman P. Minsky, National Banking Review, Vol. 3, #4, pp. 586-590.

[9] "Changes in Banking Structure, 1953-1962," Federal Reserve Bulletin, Board of Governors, Federal Reserve System (Washington, D. C.: Government Printing Office), p. 1195.

study which would contribute to a resolution of the question as to which of the three banking systems as regards branching was best for the economy of the state would be one which would attempt to determine which of the three systems was most successful in meeting the demands made upon it. The theory under which the study was structured is covered in Chapter IV.

The conclusion that "the principal impact of the commercial banks' operations on the economy is through their lending activities rather than through their deposit function"[10] led to structuring the study as an analysis of the investment portfolio of the banking systems. Russell's study[11] of the bankers' portfolio through the medium of his utility function and his conclusion that a banker responds to profit motivations in maximizing his utility was crucial in encouraging an analysis of how banking groups reacted to income motivations. Robinson's instructional work regarding management of bank funds was also important in approaching the analysis through the bankers' portfolio.[12]

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[10]"The Commercial Banks and Economic Growth," The Bulletin (New York: C. J. Devine Institute of Finance, New York University, December, 1960), #12, p. 21.

[11]William R. Ressell, "Commercial Bank Portfolio Adjustments," American Economic Review (May, 1964), Supplement, pp. 544-553.

[12]Roland I. Robinson, The Management of Bank Funds (New York: McGraw-Hill, 1962).

The importance of banking to economic growth is also asserted by the Institute of International Finance.[13] It concluded that "there is no shortage of bank capital at the present time, that none can be envisaged in the near future, and that inadequacy of capital resources of the commercial banking system is not likely to be an obstacle to long-range economic progress." It sets forth the assurance that, while it may not be possible to state that banks are specifically causal factors to economic growth, they are, at least, very instrumental in facilitating or assisting that growth.

A Word of Caution

A study which seeks to contrast one system or thing with another cannot help but express its arguments and conclusions in terms of one such entity in contrast with the other entity considered. As a result, authors are sometimes ascribed sympathetic positions when, in fact, such was not their position. For example, in this study, it is very easy to put the discussion in terms positive toward branch banking. This is simply because branch banking exists--and it is difficult to discuss something which does not exist.

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[13] "Bank Resources and Economic Growth," The I. I. F. Bulletin (New York: New York University, School of Business, February 24, 1946), Bulletin #195, p. 3.

CHAPTER II

THE STATE LAWS

The banking system in the United States developed into a dual system composed of banks chartered by the individual states over which has been imposed a system of federally-chartered banks. Further complicating understanding is the current limitation on branching by federally-chartered banks to the restrictions placed on state-chartered banks. In effect, the national banks of the system are subject to the laws of the fifty states in the extent to which they can expand by branching.

In viewing the derivation of the industry structure from a national standpoint, we have actually described the atmosphere in which each state individually established the law which defines the industry structure in that state. It would have been revealing to trace the development of the law in each individual state. However, sheer magnitude precluded its being undertaken.

Differences in State Laws

The state laws regarding branching are many and varied. Generally reviewed, those laws permit states to be broadly

classified into three distinct and separate groups. Some states allow branches to be established anywhere in the state, subject, of course, to the approval of the State Banking Authority. These states are classified as "State-wide Branching" States.

At the other extreme, some states do not allow banks to operate branches at all. These states are classified as "Unit Banking" states. In some of these states, limited-service offices are allowed, but the establishment of branch offices offering the full range of services available at the home office of the bank is specifically prohibited. The State of Iowa has the largest number of such limited-service offices. It had 161 such branches immediately after World War II. By the middle of the 60's, the number had expanded to 212. There are some full-service branches in this group which were in operation at the time the state law was changed. There are also some states in this group which have allowed branches to be established as exceptions to the law. The total number of branches operated in states which prohibit branching amounted to 568 in the mid-sixties, including, of course, some states other than Iowa which permitted limited-service branches. Even though branching does exist to some extent, the states are classified as belonging to this group because of a general practice of prohibiting branching or of allowing the establishment of offices which offer only limited services.

There is another group of states which allow branches on some limited basis. These limits are set in many ways. The most common is a stipulation that branches may be established only within the county limits of the home office location, or within a specific number of miles from the home office location, or within neighboring counties, etc. These states are classified as "Limited Branching" states.

The classifications have remained quite constant throughout the period of this study (1946 through 1966). Changes which have taken place in the state laws during the twenty-one post-World War II years have not been such as to realign the states. For example, New York relaxed its branching restrictions for banks located in the New York metropolitan area. The State of Virginia (in 1948 and 1952) expanded the limited provisions it formerly imposed on mergers. In 1963, New Hampshire changed from the "Unit Banking" to the "Statewide Branching" group. For purposes of the study, however, the state was kept in the Unit Banking category for the entire twenty-one year period of the study because it fell into this category for the greater number of years under consideration and because the statewide branching system in that state did not develop to any extent by 1966.

Extracts of the state laws regulating financial institutions appear in a publication of the Banking Law

Journal.[1] In this publication, existing state laws of all states except Vermont are extracted by recognized legal firms (sources are given) expressing the essence of the law in lay terms.

The States Classified

The classification of the states into the three groups cited above was accomplished by the Board of Governors and appeared in the Federal Reserve Bulletin.[2]

In an article which appeared in the National Banking Review, Shull and Horvitz[3] analyzed banking market structure in accordance with the Federal Reserve Bank's classification. However, they argue that South Dakota and Wisconsin, where branching is prohibited, actually have a significant number of branches in existence--69 in South Dakota and 162 in Wisconsin at the time of their study--and that this justifies their being classified with the states in the "Limited Branching" category. In like manner, they argue that Maine, while quite generally restricting branches to neighboring counties of the home office location, actually, because of

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[1]Banking Law Journal, Encyclopedia of Banking Laws (Hartford: LaMont-Cross, 1963).

[2]"Changes in Commercial Banking Structure," Federal Reserve Bulletin (Washington, D. C.: Federal Reserve Bank, 1963), p. 1195.

[3]Bernard Shull and Paul M. Horvitz, "Branch Banking and the Structure of Competition," National Banking Review (March, 1964), Vol. 1, #3, pp. 301-341.

the small number of counties and the large number of exceptions to the limitation, belongs in the Statewide Branching category.

The District of Columbia

Neither the Federal Reserve Bank nor Shull and Horvitz include the District of Columbia in their classifications. The banks in the District of Columbia are under the direct supervision of the Comptroller of the Currency and are, therefore, national banks. They are allowed to branch throughout the District area, but only within the limits of that area. The District of Columbia is bordered on three sides by the State of Maryland, which is a Statewide Branching state. The portion of the metropolitan area lying in Arlington County, Virginia, is outside the geographical limits of the District itself. The State of Virginia is a Limited Branching state.

The classification of the District of Columbia presented a problem in logic because banks are permitted to branch District-wide, but the District of Columbia is only one city. It was finally somewhat arbitrarily determined to classify the District of Columbia in the "Limited Branching" category because (a) its branches are permitted only within the limits of the District, (b) banks are not allowed to branch even throughout the metropolitan area of the city, and (c) it is expected that the greater contrasts of the study will be drawn between the Unit Banking group and the

Statewide Branching group. It was deemed desirable to keep these two groups structured as closely as possible to the structure used in other studies. This decision is not considered to be of crucial importance as the presence of the District of Columbia in any one group would not be distorting because of the relative size of the District to the total of the entire number of states making up a group.

The Classification Revised

The states have been regrouped in accordance with the classification used by economists Shull and Horvitz with the addition of the District of Columbia to the Limited Branching group, as follows:

Statewide Branching	Limited Branching	Unit Banking
Alaska	Alabama	Arkansas
Arizona	District of Columbia	Colorado
California	Georgia	Florida
Connecticut	Indiana	Illinois
Delaware	Kentucky	Iowa
Hawaii	Louisiana	Kansas
Idaho	Massachusetts	Minnesota
Maine	Michigan	Missouri
Maryland	Mississippi	Montana
Nevada	New Jersey	Nebraska
North Carolina	New Mexico	New Hampshire
Oregon	New York	North Dakota
Rhode Island	Ohio	Oklahoma
South Carolina	Pennsylvania	Texas
Utah	South Dakota	West Virginia
Vermont	Tennessee	Wyoming
Washington	Virginia	
	Wisconsin	

Line maps of the United States depicting these categories are included herein. The first (Figure II-1) sets forth the Federal Reserve Board classification and the second (Figure II-2) sets forth the classification outlined immediately above.

Attention is invited to the extent to which the groups are cohesive entities--that the states which are of the same classification are, generally, contiguous. The states making up the Statewide Branching group are found primarily in the West, with a scattering on the eastern seaboard. The states allowing no branching are primarily in the mid-western section of the country. Only Florida, West Virginia, and New Hampshire are separated from the main group. The cohesiveness of the Limited Branching Group is violated only by the removal of New Mexico and South Dakota from the main body of the states lying in the eastern portion of the mid-west to the east of the Mississippi River.

Because banking markets are primarily local in that the greater proportion of a bank's business comes from its immediately surrounding area, the fact that these groups are contiguous makes a comparison of banking systems by grouping states according to their branching laws somewhat more meaningful than it would be if the three systems were thoroughly and totally homogenized. Economic analysis of the effects of varied branching prohibition is aided by the geogrpahical distribution.

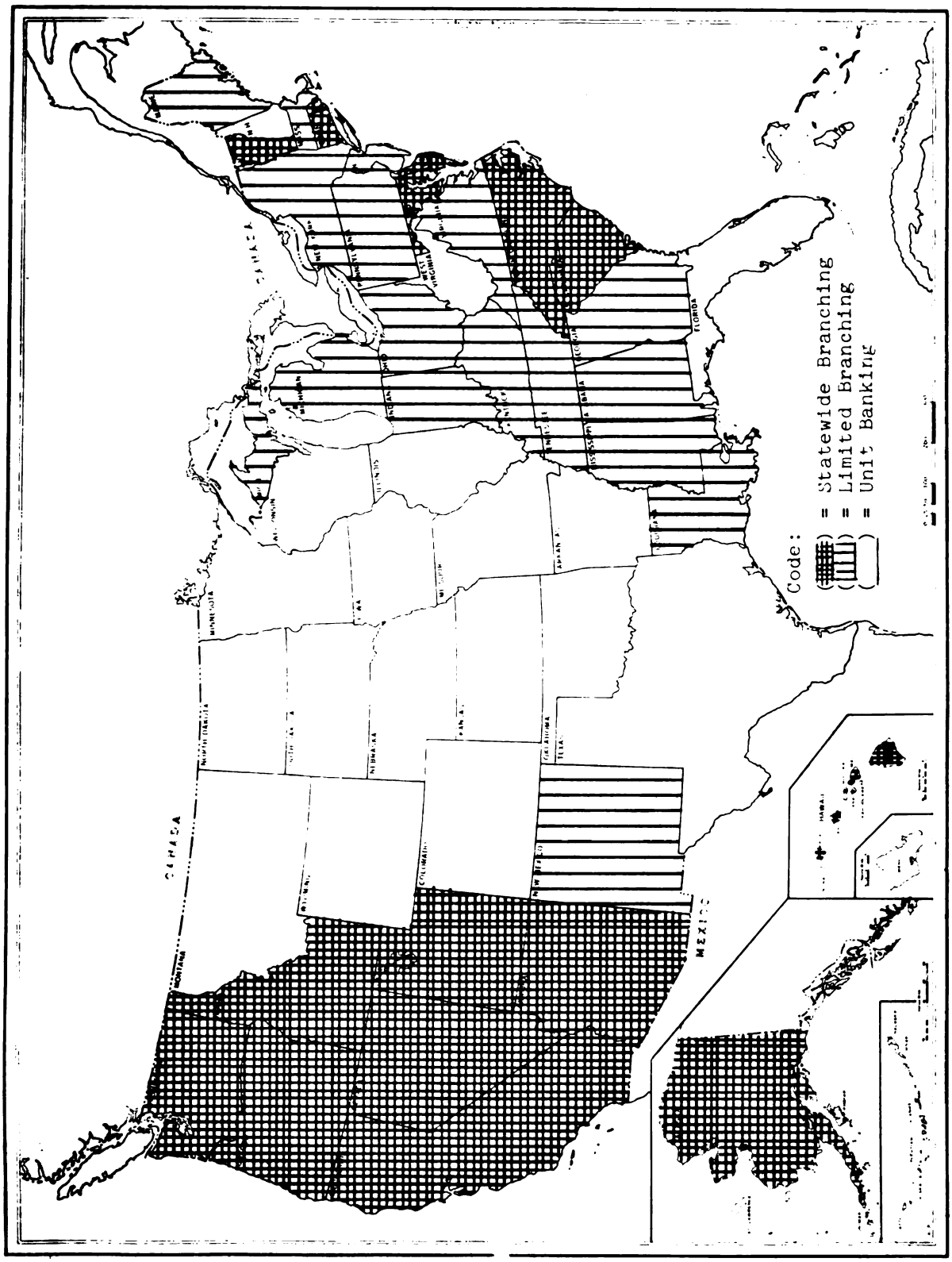

Figure II-1: States classified according to State Banking Law as regards limitation on branching--Federal Reserve Classification.

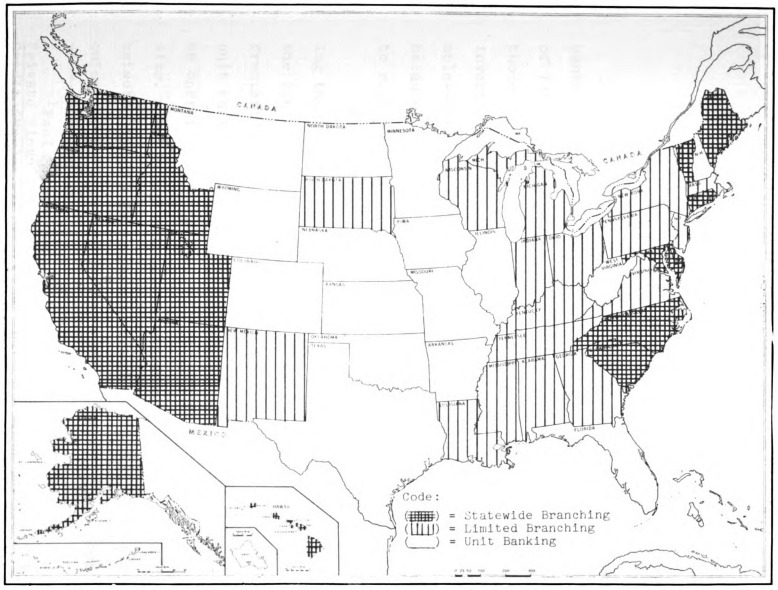

Figure II-2: States classified according to State Banking Law as regards limitation on branching--as revised.

CHAPTER III

REVIEWING THE LITERATURE

Bank market structure as regards the extent to which banks are permitted to branch has been under close scrutiny of late in an attempt to determine which system is best for those demanding and supplying bank services. The area of investigation is difficult, not because data are unavailable--the regulatory agencies have seen to that--but because the data made available do not make for easy answers to most evident questions.

The most frustrating difficulty encountered in reviewing the literature concerning banking market structure is the confusing of economies of scale and of structure. It is frequently stated that branch banking is more efficient than unit banking and it is often implied that a branch bank can be operated at less expense than a unit bank of the same size. In the Horvitz study,[1] a specific distinction is made between economies brought by becoming larger versus the economies, if any, brought by expanding a multi-plant operation.

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[1]Paul M. Horvitz, Economies of Scale in Banking," Private Financial Institutions, Commission on Money and Credit (Englewood Cliffs, New Jersey: Prentice-Hall, 1963), p. 8.

This distinction is not always clear and one finds that "big" and "branched" become synonyms or, at least, that the same results are attributed to "bigness" as are attributed to "branching." Some of this is understandable as expansion in the banking industry, because of the local nature of its market, is often accomplished through branching and many large banks are branched.[2] A serious error is committed by taking the next and seemingly logical step that everything said about large banking being able to operate at less cost also assumes these cost savings are attributable to expansion by branching. Actually, deterioration of control and increased occupancy costs in a multi-plant operation add to operating cost.

Another difficulty encountered in the study of banking markets is that the regulatory agencies, in asserting their influence, have created a market situation to which no regularly accepted economic market models apply.

Concentration statistics are effective in analyzing markets. Because banking markets are local, however, their usefulness is weakened. An area of low concentration may be experiencing many local markets with monopolistic suppliers. A low concentration statistic does not indicate the absence of monopoly influence as could be presumed in other industries.

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[2]Irving Schweiger and John S. McGee, "Chicago Banking, the Structure and Performance of Banks and Related Financial Institutions in Chicago and Other Areas," Journal of Business (Chicago, Illinois: University of Chicago, Graduate School of Business, 1961).

This difficulty is recognized in the Edwards study[3] when the author states:

> Large metropolitan areas should represent some of the most competitive banking markets in the nation. They offer more banking alternatives and more aggressive management than do smaller communities . . . communities with less than 50,000 people are not likely to have more than three or four banks. This study examines areas with no less than 20,000 people. The presence of monopolistic practices in metropolitan markets would indicate greater departures from competitive conditions in smaller population centers.

Further difficulty is indicated by Schweiger and McGee[4] when they find that markets with concentrated banking charge the highest rates for new car loans and cash installment loans. The rates charged varied inversely with the number of banks in each town.

The problem is revealed to be of wider ramification when it is realized that a market with only one supplier is as much a monopoly in a statewide branching state as it is in a unit banking state. To further complicate the argument, the market serviced by one bank in a state allowing branching would enjoy more complete services and policies determined in more competitive areas if that monopoly bank was a branch of a larger bank with its home office located in a competitive metropolitan center. The local market served by such a monopoly bank would be more competiively

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[3]Franklin R. Edwards, "Concentration and Competition in Commercial Banking: A Statistical Study," Research Report No. 26 (Boston: Federal Reserve Bank of Boston, 1964).

[4]Schweiger and McGee, op. cit.

oriented than if it was served by a unit bank in which all decisions were made in the local market and not in consideration of the competitive structure of the home office location.

An Overview

Phillips,[5] when recognizing the desireability of competition because of its effects on market performance and the allocation of resources, admits that the individual bankers are not persuaded by academic arguments that industry competition is lacking. As in other industries, bankers confuse market rivalry with competition and insist that even in a monopoly market competition exists because of bankers' concern with profits, market shares (with banks in other towns and other financial institutions), and growth. As evidence of the lack of competition in the banking industry, he cites:

> (1) the low failure rate and general stability in the structure of the industry, (2) the persistence of firms of less than optimal scale, and (3) price performance which is inconsistent with the results of multi-lateral market competition.[6]

He reviews the highly skewed distribution existing in the banking industry: of the 12,937 insured commercial banks at the end of 1963, 7,370 had total deposits of less than five million dollars. At the other extreme, only 314

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[5]Phillips, op. cit., pp. 32-45.

[6]Ibid., p. 34.

banks had deposits of more than one hundred million dollars and sixty-four had deposits of over five hundred million dollars.[7] If competition existed, large banks would not allow smaller banks to exist in their markets--the smaller banks would be absorbed. Advantages of size are not exploited as they would be if the market were more freely competitive.

Alhadeff[8] suggests that economies of scale are substantial up to at least five million dollars in deposits, then reach a plateau until the very largest banks are reached. If economies reach to five million dollars in deposits, fifty-seven percent of all commercial banks are of less than optimal size. Of the 12,933 insured commercial banks in 1962, 7,370 had deposits of less than five million dollars, 7,705 operated in one-bank towns--towns where the market was not of sufficient size to allow the attainment of optimum size. This argument is not entirely convincing because 1,800 banks operated in two-bank towns and 362 banks operated in three-bank towns. Many of these banks are smaller than optimum size. Competitive forces, if they existed, would have caused these banks to join together to attain opitimum size.

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[7]Federal Deposit Insurance Corporation, Annual Report, 1962 (Washington, D. C.), p. 134.

[8]Alhadeff, op. cit., p. 106.

Price behaviour in banking is especially difficult to analyze because of lack of published information. Information which is published is known not to apply to all situations. For example, an advertised rate will apply only to a very small segment of the total credit risk. Banks, in contrast to suppliers in other industries, charge different rates to different customers for the same type and size of loan. Some of the difference is attributed to variation in risk, type of collateral, time of repayment, amount of compensating balances, etc. But these factors do not account for all of the difference. Differences arise because the customers and the bank are in bilateral rather than in openly competitive bargaining positions in the negotiating process for loans. The customer with the greater number of alternatives (including not borrowing at all because of his excellent financial situation) will tend to get loan rates which are lower than will a customer with fewer or no alternatives. The bank operates as a discriminating monopolist. The willingness of the customer to "shop" around for better loan rates is precluded by the nature of the transaction. The borrower, because he finds the role of "supplicant" unpleasant and because he does not readily understand the intricacies of the banking process, allows the banker to act as a discriminating monopolist even in situations where the classical definitions of monopoly do not exist. Banks also discourage customer "shopping" for

better price by stressing the advantages of "one-stop" banking. A strong influence restricting competitive price determination is the desire by customers to minimize the disutility of a situation which, at best, seems to interfere with their individual sense of propriety as regards revealing information they deem to be confidential.

One could expect within the classical analytical framework to observe that interest rates would be lower and possess less variance in markets containing many suppliers than in markets having few or one supplier. Unit banks might be expected to offer more attractive rates than branched systems or holding company banks, but there is little to support such conclusions. The Edwards study[9] suggested that market structure variables are not associated with interest rates in any significant way.

After reviewing the influence of public regulation and the private rationalization of competition, Phillips suggests that commercial bank performance could be improved primarily by changing its market organization through the medium of changing the intent and purpose of the regulatory agencies. Most important from the standpoint of this study, he recommends that the current "needs and convenience" criterion be abandoned in favor of a less restrictive basis, that arbitrary limitations on de novo branching and

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[9]Edwards, op. cit., pp. 71-76.

branching by merger be relaxed, and also that the prohibition against branching over state lines be removed. He also recommends that restrictions on interest rates paid on deposits be eliminated.

Phillips recognizes that his suggestions for change would establish a national banking industry and spell the end of the dual banking system as it now exists. He does not expect that such changes will be accomplished very rapidly.

A "Seminal" Study[10]

The work that formed a basis or beginning for many others was the one by David Alhadeff of the University of California.[11] In 1954, Alhadeff published a study of California banking in which he directed his attention primarily to differences in load factor (the percent of Total Assets represented by notes and investments) in banks of varying size and of varying organizational structure as regards branching. Prior to the Alhadeff study:

> claims and counter-claims about relative operating efficiency usually had been supported by descriptive reasoning. For example, opponents of branch banking claim that branch banks have higher operating costs than unit banks that possess the same output because it is costly to coordinate the operations of more

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[10] Stuart I. Greenbaum, "Competition and Efficiency in the Banking Industry--Empirical Research and its Policy Implications," Journal of Political Economy, Supplement (August, 1967), p. 466.

[11] Alhadeff, op. cit.

> than one banking office. Branch banking proponents counter with the assertion that branch banks tend to employ more 'progressive' branch managers who operate their branches more efficiently than the department managers of unit banks operate their departments. Economies of scale operations are claimed for branch banks because they usually are larger than unit banks. That economies of scale do exist has been generally assumed rather than demonstrated.[12]

Alhadeff's study was the first to make extensive use of empirical data.[13] He concluded that the "load factor" showed:

> no clear tendency to vary with the size of unit bank except that the smallest unit banks invariably have the lowest load factors[14]

In contrast, the load factor tended to:

> vary directly with the size of a branched bank with the pattern of variation most sharply defined in the extremes of the different sizes of branched banks.[15]

Furthermore, the load factor for the average of the branched banks was higher in every year than the load factor of the largest unit banks. Even branched banks with the lowest load factor among all branched banks had a higher load factor than the average of the group of the largest unit banks. Alhadeff analyzed the differences which he observed by recognizing an important element which affects the load factor--the ratio of time deposits to total

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[12]George J. Benston, "Branch Banking and Economies of Scale," Journal of Finance (May, 1965), XX, #2, p. 312.

[13]Horvitz, op. cit., p. 10.

[14]Alhadeff, op. cit., p. 57.

[15]Ibid., p. 57.

deposits. Again, although no strong pattern exists among unit banks between size of bank and the ratio of time deposit to total deposits, the smallest category of unit banks appeared to have comparitively low time deposit ratios. This relationship is not fortuitous but causal as the ratio of time deposits to total deposits affects the load factor in either or both of two ways. Because time deposits are subject to lower reserve requirements than demand deposits, a bank with high time deposit to total deposit ratio is able to "produce" more loans than another bank without that high ratio. Also, high time deposits imply less pressure on the bank for liquidity.[16]

Alhadeff goes on to state that bank size can be expected to affect liquidity requirements in somewhat the same manner. A large bank with a large number of depositors will not be unstabilized if even a large depositor makes a substantial withdrawal. A small bank, on the other hand, is more subject to drastic variation in liquidity demand because the accounts do not vary in size with the size of the bank. Another factor cited as contributing to the difference in load factors is the general practice in larger banks of carefully investing excess reserves in the open market. Another is the necessity of small banks to carry correspondent balances with larger banks in metropolitan centers on a continuing basis. These balances, of

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[16] Ibid., pp. 58-59.

course, are required in part by having to provide for the unstable liquidity demand mentioned above. As a result, the author concludes that smaller unit banks actually carry higher balances than do larger banks and the demand for liquidity is sufficient to overcome the generally higher reserve requirements to which larger banks are subjected.[17]

The load factor of branched banks is aided because inter-branch mobility of funds reduces liquidity requirements established by high time deposit ratios. Internal mobility permits a high turnover of resources as excessive demand in one area is met by shifting funds from areas where demand is not so strong. Thus, it is possible for branched banks to have a higher average load factor than the average of unit banks even when the time deposit ratios of the two groups is very similar. In fact, branch banks reflect higher load factors than unit banks even in those cases where banks have lower time deposit ratios. Thus, the inter-branch mobility of funds is instrumental in determining load factor.[18] The proportion of a bank's portfolio devoted to loans and investments is a function both of size of bank and of bank structure, but the influence of bank structure is more important. He concludes:

> In the net interplay of these factors, branch banks emerge with a clear superiority in load

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[17] Ibid., p. 16.

[18] Ibid., p. 60.

> factor over unit banks. Quite specifically, this conclusion means that, with given resources, branch banks have an inherent superiority over unit banks in their ability to produce all kinds of bank credit.[19]

Alhadeff finds that unit costs for different size banks decline fairly sharply in the lower ranges (up to approximately five million dollars in total deposits) and then remain quite constant up to a size of about fifty million dollars, then decline again in the range of the larger banks.[20] Greenbaum[21] argues that Alhadeff used loans and investments as a measure of bank output, relating the ratio of operating expenses to earning assets to still another variable--Total Deposits--in order to derive his cost curves. Greenbaum recognizes that the literature is replete with discussions as to the measuring of bank output. The use of earning assets to measure output implies that lending is the primary productive activity of commercial banking. This, of course, is what Alhadeff argued when he established the framework for his study.[22] Greenbaum contends that the use of earning assets as an output measure implies that all forms of bank credit are perfect substitutes to the community. This is in violation of the study

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[19] Ibid., p. 60.

[20] Ibid., p. 106.

[21] Greenbaum, loc. cit., p. 466.

[22] Alhadeff, loc. cit., pp. 9-19.

performed by him in 1964[23] and the study by Hester and Zoellner in 1966.[24] Greenbaum states that the reasons for using earning assets as a stock variable to represent flow concepts, while not uncommon, should be explicit and reasonably compelling as flow measures are readily available. He also suggests that current operating earnings would be preferable as measures of bank output.[25] In answer to those who would argue "that earnings assets, deposits, total assets, and current operating earnings are so highly correlated that the issue is more apparent than real," he found adjusted coefficients of determination which ranged from 0.015 to 0.701 for these items. Further, the functional relationships were linear, quadratic, or cubic depending on the measure used.[26]

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[23]Stuart I. Greenbaum, "Bank Structure and Costs: A Statistical Study of the Cost-Output Relationship in Commercial Banking," Ph.D. Dissertation (Baltimore: Johns Hopkins University, 1964).

[24]Donald D. Hester and John F. Zoellner, "The Relation Between Bank Portfolios and Earnings: An Econometric Analysis," Review of Economics and Statistics (November, 1966), XLVIII, pp. 372-386.

[25]Greenbaum, "Competition andEfficiency in the Banking Industry," loc. cit., p. 467.

[26]Greenbaum, "Banking Structure and Costs," op. cit., p. 247.

A Similar But Broader Study

In 1963, Paul M. Horvitz[27] completed a study similar in form to that of Alhadeff, using data covering a broader geographical area. His results regarding economies of scale are very similar to Alhadeff. In contrast to Alhadeff's confident case for the superiority of branched banks, Horvitz concludes that operating expenses of branched banks are greater than for unit banks. As he states it:

> This means, surprisingly enough, that four fifteen million dollar unit banks can be operated at lower cost than a sixty million dollar branched bank.[28]

Even the smallest size group of unit banks had lower cost, on the average, than the largest size branched banks. This was true in all cases except where banks had less than twenty-five percent of total deposits in demand deposits.

The Gramley Research

Lyle Gramley, in his well-known study,[29] used regression analysis on data secured from Earnings and Condition Reports to which he had access through the Federal Reserve Bank of Kansas City. He researched 270 unit banks in the Kansas City District and averaged the annual data for the years 1956 through 1959. His regressions used as a

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[27]Horvitz, op. cit., pp. 1-54.

[28]Ibid., p. 37.

[29]Lyle Gramley, Study of Scale Economies in Banking (Kansas City: Federal Reserve Bank, 1962).

dependent variable the ratio of current operating expenses to total assets while his main independent variable was total assets. Gramley considers the problem of defining an output measure very extensively and, in order to avoid this problem, he restricts his results. He states the following as part of his introduction:

> This study, then, will have to be content with a discussion of scale economies that is narrower in its scope and its implications. Since it is concerned with costs of operation and earnings at banks small and large, it necessarily deals with the question of efficiency in the performance of banking functions and its relation to bank size. The concept of efficiency that is dealt with, however, is a narrow one. The study is concerned with efficiency at individual banks, and does not seek to determine whether, from the standpoint of achieving maximum social efficiency, the bank system should be composed of small or large units.[30]

Because of this limitation, Gramley's results are of little application to the purpose and intent of this study as we intend here to throw some light on the very problem which he has eliminated--to aid in determining which banking system as delineated by its varying capacity to branch is best for the economy of the state in which it exists.

It will be sufficient for the record to observe that Gramley's study of member banks in the Tenth Federal Reserve District, most of which were unit banks, "did not lead to

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[30] Ibid., p. 4.

definitive conclusions supported by precise qualitative measures."[31]

The study revealed that pre-tax rates of return on bank assets rise with increasing bank size over the full range of bank sizes present in the sample. The author concludes with the following:

> It is evident, nevertheless, that rates of return on invested capital, both before and after taxes, rise quite sharply with increasing bank size among Tenth District Member Banks.[32]

Output Redefined

Greenbaum[33] attempted a study somewhat similar to that done by Gramley except that he did not avoid the "output" definitional problem. He divided output into two components: (a) lending, and (b) all other. Lending output was defined as the gross yield-weighted sum of the diverse earnings assets in each bank's portfolio. Experimentation indicated that sixteen classifications of earning assets provided ample disaggregation and satisfactorily homogeneous earnings-asset groupings.[34] He argues that his output measures recognize (1) the multi-product nature of commercial

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[31] Ibid., p. 58.

[32] Ibid., p. 59.

[33] Greenbaum, "Banking Structure and Costs," op. cit.

[34] Greenbaum, "Competition and Efficiency in the Banking Industry," loc. cit., p. 469.

bank output, (2) interbank price differences resulting from imperfect markets, and (3) production as a flow process.[35]

Greenbaum's study investigates the costs of banking and looks especially at costs in groups of banks differing in their market structure as regards branching. The study covers Federal Reserve member banks in two Federal Reserve Districts. In the Tenth District, only New Mexico allows branching. In the Fifth District, West Virginia was the only state that prohibited branching. In the Tenth District all but four of the 745 sample banks were classified unit banks, while in the Fifth District, of the 413 sample banks, 131 operated branches. The technique was to determine the difference, if any, in the earnings banks experienced on their assets as the quantity of funds invested in the specific type of assets varied. Current operating expense was used as a measure of cost. Cost was introduced into a regression equation by setting operating expense as a percent of Total Assets equal to a series of variables measuring output (type of loans) as a percent of total assets.

In the Kansas City District (where unit banking is prevelent) the study revealed a wide range of size of firm. The optimum size of firm was approximately 700 times as large as the smallest observed firm. Expansion from the smallest to the optimum size brought with it an estimated

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[35] Ibid., p. 470.

thirty-three percent reduction in average cost. Moreover, the elasticity of the cost function was -0.001 at the minimum observed output--i.e., a one hundred percent increase in output would bring about a 0.1 percent reduction in average cost. Thus, there were only very modest economies of scale over a large range of output. The author concluded that it was not to be expected that cost considerations would bring either output expansion or contraction.

In the Richmond District, the banks were divided into unit and branch banking groups. In the branched group, a variable was introduced relating to the number of branches the banks operated. In these tests, holding either the average plant size or the output constant and allowing the other to increase, resulted in lower average cost. In branch banking, therefore, economies could be derived that are impossible in a unit banking environment.

> When unit banks are merged into multi-office firms, costs will be reduced, even if the output of each office is left unchanged.[36]

The unit banking sub-sample of the Richmond District revealed a downward sloping cost curve suggesting that where branch banking is permitted, rising average costs may be forestalled by acquiring additional plants instead of increasing the output of existing facilities.

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[36] Ibid., p. 328.

> In effect, the institution of unit banking imposes a low-level optimum output rate upon firms in the banking industry.[37]

The cost performance of branched systems were compared with collections of unit banks having equal total output and number of offices. The results indicated that branch banks operated at lower average costs at all comparable levels of output than do the collections of unit banks. Surprisingly, the same result was not obtained when Richmond District banks were compared with similar groups of Kansas City District Banks.

Output Defined as Number of Accounts

George Benston[38] performed an interesting study of bank costs in which each bank was divided into six separate units: (1) Demand Deposits, (2) Time Deposits, (3) Mortgage Loans, (4) Installment Loans, (5) Business Loans, and (6) Securities. Each type of output is measured in terms of number of loans or deposit accounts with the average total value of the transactions included among the parameters of the cost functions.

A confusing aspect of Benston's study is that both liabilities of the bank (Deposits, for example) and Assets

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[37] Ibid., p. 328.

[38] George J. Benston, "Economies of Scale and Marginal Costs in Banking Operations," National Banking Review, II (June, 1965), 507-549.

of the bank (Loans and Securities) are considered measures of output. The assumption of a liability such as deposits would give rise to the production of output in the manner of loans or the purchasing of securities. A portion of the deposit balance exists because loans were produced--but the deposit balance so generated is transferred to other banks as loan proceeds are expended. The purchasing of deposits represents acquisition of factor input.

Benston provides for the evaluation of cost structures in banks which are branched through the use of dummy variables. He determines through regression technique that slight economies of scale exist as regards the level of cost experienced as the number of demand deposit accounts are increased. The cost curve as regards time deposits is very flat as the geometric mean number of accounts is reached. The mortgage loan marginal cost curve slopes upward at a decreasing rate; the installment loan marginal cost curve is consistently "U" shaped; and the business loan marginal cost curve is rather sharply downward sloping. The economies of scale in the handling of securities were not as great as expected. The elasticities of the cost curves were not as low as were expected. Apparently there are some costs that rise as the size of the portfolio increases.

In another article, Benston reviews his results as regards the extent to which economies of scale exist in

branched banks. It is here that he attempts to answer the following questions:

> (1) Is a unit bank of a given size more efficient than a branch bank of the same size, ceteris parabus, and, if so, how much are these costs and in which specific bank services are they found? (2) If banks should increase their demand deposits, installment loans, or other banking services by, say, ten percent, by what percentage will its costs increase, irrespective of its being a unit or a branched bank? (3) If branch banks, per se, are more expensive to operate than unit banks, but if there are economies of scale, will merging several unit banks into one branched bank result in lower or higher operating costs, and in which banking service will these net costs or cost savings be found?[39]

Benston recognizes that he cannot draw conclusions that may be applied to the entire banking system because the population from which his samples are drawn was limited to medium-sized banks. The study showed that branch banking does entail additional costs that are not offset by economies of scale:

> Branch banks with one or two branches do not have costs that are very different from those of unit banks; approximately half of the additional costs are due to occupancy expenses; and the marginal cost of additional branches beyond eight is probably very small.[40]

His analysis of occupancy expenses indicates that it is not evident that total costs expended on occupancy by a group of unit banks would be greater than those expended by

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[39] Benston, "Branch Banking and Economies of Scale," loc. cit., p. 313.

[40] Ibid., p. 331.

a branched bank with the same number of units. Contrary to other studies, he finds that branching can be accomplished only at higher costs. He states:

> It does not necessarily follow from these findings that charges would be higher to depositors and borrowers of branch banks. Other differences between branch and unit banks, such as ability and desire to take risks, may offset or reinforce differences in operating expense.[41]

Thus, he suggests that additional research be conducted to isolate further some of these differences.

An Analysis of Expense Structure

Using tabular statistical examination technique, Horvitz[42] achieves results quite similar to those of Alhadeff. He evaluated aggregate data published by Federal Deposit Insurance Corporation and found, when looking at expense classifications as a percent of loans and investments, that expenses tended to decline as bank size increased. He conducted an analysis of the expense structures which allowed comparison among the largest banks in the country (New York Federal Reserve District), the largest unit banks (Chicago Federal Reserve District), the smallest unit banks (Kansas City Federal Reserve District), and the largest branched systems in the country (San Francisco Federal Reserve District).

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[41] Ibid., p. 331.

[42] Horvitz, op. cit.

One conclusion of importance to this study is that a clear pattern results:

> when branch and unit banks were compared. For every size and time deposit ratio the branch banks had higher loan ratios.[43]

This was in accordance with the findings of Schweiger and McGee who also found a strong tendency for branched banks to make more loans than unit banks. Horvitz found, further, that branched banks had more mortgage loans than unit banks of the same size and time deposit ratio. These results were again in accordance with the Schweiger and McGee study which found that:

> large branched banks . . . , relative to assets, . . . lend about five times as much on home mortgages and one and one-half times as much on consumer installment loans as very large unit banks.[44]

Total earnings expressed as a percent of loans and investments showed a substantial advantage for branched banks over unit banks--something which could be expected from the high loan ratios and the higher proportion of high income installment loans experienced by branched banks. Not only were branch bank costs higher but there was also considerable spread between branch and unit banking costs. As the author states:

> This means, surprisingly enough, that four fifteen million dollar unit banks can be operated

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[43] Ibid., p. 34.

[44] Schweiger and McGee, loc. cit., p. 226.

> at a lower cost than a sixty million dollar branched bank.[45]

In summary, Horvitz states:

> While it seems clear that economies of scale in banking do exist, they are relatively small and are actually less important than the diseconomies of branch structure. These diseconomies are such that the per unit costs of a large branched bank are as high or higher than the costs of a small unit bank. This means that branching cannot be solely supported on the basis of cost advantages.[46]

He states, further, that the argument that branch banking must inevitably lead to monopoly is untenable because a small bank is more efficient in making small loans than is a large bank. In competition with a large branched bank, the small bank finds some disadvantages but has some advantages. He also states that the argument that branched banks would mean more facilities for some towns is not dependent on cost advantages for branched banks. He continues:

> Branches can exist in communities where unit banks cannot operate profitably even without any cost advantages. A community which provides a large deposit volume but little or no loan demand may prove a suitable location for a branched but not for a unit bank. The same is true of a community with a large loan demand but little deposit volume.[47]

Branching is a welcome means of expanding one's operation when that branching will take place into markets which

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[45] Horvitz, op. cit., p. 37.

[46] Ibid., p. 52.

[47] Ibid., p. 52.

are not evenly balanced as to the availability of deposit volume in comparison with the volume of loan demand which is available. These imbalances can be overcome by the inter-relationship which exists in a branched operation--an advantage this form or structure provides over the more rigidly separate structure of unit banking.

In conclusion, Horvitz states that nation-wide branched banks are very unlikely to be seen in the near future not only because of the general suspicion of the citizenry of bigness in this field and the opposition it would face as a violation of states' rights but because the small unit bank could compete on nearly equal terms with the large bank. Large banks have no advantage from the cost side and this would preclude the unit banks' being superceded by branches of a large bank.

An Expansion of the Benston Approach

In a very extensive study, Frederick W. Bell and Neil B. Murphy[48] examine costs in commercial banking and economies of scale inherent in expansion whether within existing facilities or by acquiring additional banking offices. The authors criticize Alhadeff, Horvitz, Greenbaum, and Gramley because they used as a basic independent variable a stock

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[48]Frederick W. Bell and Neil B. Murphy, Costs in Commercial Banking, Research Report #41 (Boston: Federal Reserve Bank, 1968).

variable which was related to a flow of costs. This is inconsistent with production theory. Other criticisms were made, especially of the Gramley and Greenbaum studies. The Benston study was thought to be the most fruitful to the measurement of bank costs. The authors see their study as an expansion on the Benston approach when they state:

> This study on returns to scale in commercial banking seeks to extend and enhance the Benstonian approach to the measurement of bank costs.[49]

Their theoretical model constructs a production relationship in which the authors stipulate as a measure of output the number of accounts serviced by the bank under consideration. Inputs to this output were Total Direct Costs, Labor Input, Capital Input, Materials Input, Wage Rate, Rental Rate on Capital, and Price of Materials. Branching was introduced with dummy variables allowing distinction to be made by number of branches operated. Variables introduced the consideration that more risky loans were serviced at higher cost than were business loans.

Using ordinary least squares technique after logarithmic transformation, increasing returns to scale were found for many bank functions:

> Demand deposits, business and real estate loans, securities, trust departments, and business development showed economies of scale that are statistically different from constant returns to scale at the five percent level. All functions except the safe deposit and time deposit functions

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[49]Ibid., p. 10.

> exhibited point estimates below unit for the scale parameter.[50]

Economies of scale were found for expansion of size of firm—for expansion within existing facilities. No economies of scale for expansion through increasing the number of branches were found. As a result, the authors stated:

> Expansion via merging and branching may substantially offset any economies which might accrue.[51]

The authors also investigated the varying productivity of labor as scale increased and found that the dis-aggregation of the cost function revealed a persistent tendency to economies with increases in scale. As regards branching, some of the economizing of labor was found to be impossible because of the necessity to duplicate labor services in the various branch locations. The additional cost of branching is mainly attributable to this problem and to the necessity for additional capital investment required in a branched operation. In fact, in a separate part of the study, the authors determined that:

> if bank expansion comes largely through branching, economies of scale may be offset by increased branching costs. Hence, firm expansion may take place under constant returns to scale.[52]

The study attempts to evaluate the impact of bank structure on inter- and intra-regional variation in production costs:

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[50] Ibid., p. 47.

[51] Ibid., p. 68.

[52] Ibid., p. 181.

> It was demonstrated that a substantial inter-regional dispersion in production costs exists due to bank size, organization structure and relative wage levels. This may produce differential service charges between market areas. Intra-regional variation in cost was much less.53

The results give some justification for a regulatory policy in which new bank entry is encouraged to foster competition. Also, it is suggested that the recent growth in branched systems of branched banks acquiring unit banks is not so much to get efficiency but to achieve monopoly power.

The Effects of Concentration

A study quite different from those reviewed as to intent and content and which has implications for a study of branch banking is one by Franklin R. Edwards.54

Edwards attempted to determine whether or not the existence of monopoly power in commercial banking had a significant effect on mortgage rates. In determining the extent of monopoly power, he included in his analysis not only the large statewide branched banks but also bank groups—banks which are members of a holding company registered persuant to the Bank Holding Company Act of 1956.

Especially interesting from the standpoint of this study is the part of the paper which is concerned with bank organization. To accomplish this, a dummy variable indicating the type of market organization is added to the regression equation. The author concluded that the form of

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53 Ibid., p. 215.

54 Edwards, op. cit.

bank organization had no significant effect on differences in rates charged on loans.

As to an evaluation of the economic effect of mergers, Edwards concludes that many other relevant factors must be considered. At the heart of the merger question is the controversy over branch or unit banking. He states that branch banking provides more banking offices and a wider range of banking services than does unit banking. Branch banking also offers a lesser risk of failure because it can spread the risk over a widely-spread geographical area. Branch banking, because it is big banking, is solving the management succession problems faced by small unit banks. It also enhances credit mobility in that branch banking permits quick and convenient transfers from surplus areas to deficit areas.

But, in spite of all these advantages, branch banking, Edwards reminds the reader, does not offer the personal and informal services that unit banking offers.

Interests Served by Merger

A study which has implications for branch banking because of its recommendations for changes in regulatory policy is the one by Kallman Cohen and Samuel Reid.[55] The authors set the framework for their concern with the

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[55] Kallman J. Cohen and Samuel R. Reid, "Effects of Regulation, Branching, and Mergers on Banking Structure and Performance," Southern Economic Journal, XXXIV, #2 (October, 1967), 231-249.

problems of the effects of regulation, branching, and mergers on banking structure and performance as follows:

> It is obvious that the vast majority of mergers, 92 1/2 percent, were consummated in States which permit branching. The absorption of banks through merger in unit states was more than offset by the 687 new entrants during this decade. It is also interesting to note that both in absolute and in relative terms there was less entry of new banks in the thirty-two states permitting branching than in the eighteen unit banking states in this period.
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> For those who believe in the preservation and promotion of banking alternatives, the future is indeed bleak unless there is legislative and regulatory agency recognition of the problem. In the absence of this recognition, it appears that banking alternatives will decline at an accelerating rate in the years ahead. This pessimistic outlook is based on the following factors: First, the majority of bank mergers occur in states which permit branch banking, and Second, it is highly probable that branching laws will be liberalized in many states in the future. This prediction is based upon the effective redistricting which will eventually cause a shift in the balance of power away from the rural areas toward the metropolitan areas.
>
> A curious phenomenon exists in that a pro-merger attitude has such wide-spread acceptance among legislators and regulatory agencies without any clear-cut demonstratable evidence to support this position. The assumed benefits of bank mergers seem to be almost universally accepted as a fact of economic life.[56]

In 1960, the State of New York changed its banking law to permit New York City commercial banks to open branches in counties surrounding cities which counties have a population of at least 700,000 people. At the present time, this includes Nassau and Westchester Counties and provides for the merger or purchase of assets of banking institutions

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[56] Ibid., pp. 231-232.

involving New York City and Westchester or Nassau County Banks.

The State of Virginia also changed its banking law. Prior to 1940, Virginia permitted branching of both types, that is, general full branching and merger acquisition of another bank to be operated as a branch. In 1948 and 1952, the act was amended to expand the geographical area of branching. Branching in Virginia is now permitted anywhere in the State but only by merger. De novo branches continue to be restricted to the immediate area of the existing bank.

The study sets forth that there are three interested groups in bank behaviour: bank management, bank stockholders, and the public. A series of equations is used to represent the management interest. First, management is interested in the percentage change in total assets from one period to another. A similar equation is constructed which sets forth the percentage change in total deposits, for the change in loans and discounts, and for the change in employees.

Stockholder interests are set forth similarly in the percentage change in operating earnings per share adjusted for stock splits and stock dividends.

The interests of the public are represented by equations setting forth the percentage change in total assets

for the entire network of banks which had been combined into a single bank and for the percentage change in loans for the entire network of banks which had been combined into a single bank.

The study was first run on a nation-wide sample of 165 large commercial banks. It was run the second time in an attempt to see if the conclusions previously reached about these 165 large banks would remain valid when considerably more homogeneous groups of banks were examined for relatively brief periods of time. The data for the study was taken from a three-year period determined by the date of passage of the recent changes in banking legislation: 1959 to 1961 was used for New York while 1961 through 1963 was used for Virginia. Samples consisted of all commercial banks in the respective states from which it was possible to obtain information concerning all the relevant variables.

It would appear that management interests were well-served by the merger activity in each of these states. All four of the variables representing management interests are positively and significantly associated with merger activity in both New York and Virginia. Stockholder interests do not appear to be served by the bank mergers which have taken place. The public interest variables are not significantly associated with merger activity. Since mergers, per se, lead to a reduction in the number of banking alternatives available to customers, it would have been necessary that

there be a significant positive association between the public interest variables defined and merger activity to have made a prima facie case for bank mergers to be in the public interest. Therefore, the statistical findings in New York and Virginia indicate that most bank customers at least in the short run have not benefited from bank expansion by the merger route.

The following policy considerations grew out of the study: (1) Liberalize branching and encourage merger activity. As a result, one would expect an accelerated pace toward a concentrated banking structure in the state. Major benefits accrue to the owners of the acquired bank since a premium is paid for his franchise. (2) Liberalize branching and promote de novo branching instead of mergers. In this instance, the public will gain banking alternatives. (3) It is the opinion of the authors that the relaxing of branching restrictions, provided the citizens of the state demonstrate their approval preferably through the voting privilege, will help stimulate banking competition if priority is given to de novo branching rather than the merger alternative. Possibly, it should be provided that a public announcement be made concerning a proposed branch with priority for that location being given to qualified new entrants. This would increase the number of independent decision making units. Ideally, the citizens of a state would have a more direct voice in the type of banking law

which is passed in the state. The possibilities of this action materializing, however, are slim since the various bank trade associations undertake extensive lobbying activities. In the absence of the direct voting privilege, it is recommended that state legislatures concerned about optimum banking structure should give serious consideration to the various feasible alternatives. The welfare of special interest groups, the authors reiterate, should be subordinate to the public interest.[57]

Banking in Chicago

The Schweiger and McGee report on Chicago Banking is an extensive study prepared for the Chicago Association of Commerce and Industry in an attempt to "evaluate the adequacy of the financial structure of Chicago and Illinois."[58] Because of its complexity and length, it cannot be reviewed in detail. A summary of findings which appeared in the Journal of Business in 1961, indicated that small banks place a smaller proportion of their assets into loans than would larger banks of the same type whether they were unit or branched banks. Unit banks averaged smaller loan ratios than did branched banks of comparable size in each of the types of community tested. In fact, the scale of lending by branch banks was so much above that of unit banks that

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[57] Ibid., p. 249.

[58] Schweiger and McGee, loc. cit., p. 203.

small branched banks averaged a larger ratio of loans to assets than did unit banks of much larger size in comparable communities. This pattern was also revealed in the Chicago area when it was compared with comparable banks in similar-sized cities in other areas. Unit and branch banks were found to have different lending patterns. Very large unit banks loaned heavily in the commercial and industrial areas while branched banks had a more diversified loan portfolio. Small branched banks provided more business financing relative to assets as well as more mortgage and consumer financing than did comparable unit banks. Unit banking systems granted considerably less residential mortgage credit than did branched bank systems. As a result, the authors concluded that branched banks do not behave as mere combinations of smaller banks.

As to facilities, a unit banking system provides a larger choice of banking firms in a large city. In contrast, a branched system provides a wider choice of facilities in smaller areas. Unit banking areas have relatively more one-bank towns and towns with no banks than do branched bank areas. A branched bank system provides three to four times as many banking offices relative to population in large cities as do unit systems and, roughly, twice as many in suburban areas. Unit banking responds slowly to shifts in population and industry in providing new or additional banking facilities.

Branched bank areas experience a larger volume of long-term savings in local institutions relative to income than do unit banking areas. In unit banking areas, savers put more of their resources into postal savings, savings bonds, and cash, thus limiting the lending capacity of the banks. Multiple banking areas also revealed that total savings were higher on the average for both the banks and the savings and loan associations.

> Apparently the potential for attracting savings into local institutions are so inadequately tapped in unit banking areas that both banks and savings and loan associations can increase their deposits with the change in structure and the more vigorous competition for savings that often accompanies it.[59]

Regarding costs and earnings, the authors state:

> Branch banks tend to have higher costs and lower net current earnings on capital than do unit banks of the same size. But branched banks are of larger average size. As a consequence, a greater proliferation of banking offices can be achieved more cheaply, and with higher net current earnings by branch banks than by many small unit banks. No doubt, some of the present disadvantages of unit banking stem from blocked entry; but not all. Even in periods of essentially free entry into banking—as in the twenties—branch banking provided more facilities than unit banking.[60]

Two Studies by Shull and Horvitz

Bernard Shull and Paul Horvitz, in two articles,[61] analyzed the influence of branch banking on the structure

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[59] Ibid., p. 211.

[60] Ibid., p. 215.

[61] Shull and Horvitz, loc. cit., pp. 301-341; Shull and Horvitz, "The Impact of Branch Banking on Bank Performance," National Banking Review (December, 1964), pp. 143-188.

of the market and also on bank performance. In the first, the authors make the observation that there are fewer banks in states with branch banking—and that the decline in the number of banks over the last decade has been greater in states with branch banking. The downward trend shows a slackening in recent years. This would appear to be a very striking and significant conclusion in view of what one would expect to have taken place in view of the recent trends toward increased branching through the merger and de novo routes. In the second, the authors find that areas with populations over 7,500 experience larger increases in number of banking offices under branch banking than under unit banking. In smaller communities, there are more banking offices in unit banking states but the differences are quite small. It becomes evident that the first article does not discuss banking offices. It focuses its attention on banks as entities—on banks, regardless of the number of branches. The conclusions of the first study are not surprising within this framework. One is easily led to forget that bank markets are primarily local in nature and a community served by a branch of a larger bank or by a single unit bank is being served within a monopoly framework. The authors recognize this and determine that their data is inadequate to analyze the local market structure in the industry. They then gathered data on the number of banks in each town in the United States not a part of a metropolitan area. Within this structure, they found the highest

average number of banks in branch banking states. While the difference was not large between unit banking and branch banking states, it was significant enough:

> to refute the implication of overall state comparisons; i.e., that the extension of branch banking leads to smaller numbers of competing banks in local markets.[62]

Then the authors looked at Standard Metropolitan Statistical Areas and found that smaller metropolitan areas had about the same number of banks whether in branch or unit banking states. In the larger areas, there were considerably more banks under unit banking than under branch banking. Again one must remember that the authors are talking about banks—and not about banking offices. Concentration statistics reveal that unit bank areas are less concentrated than branched areas but the difference does not appear to be significant from an economic point of view.

A final summary of the conclusions of the first article states the following:

> Our analysis suggests that neither in terms of number of competitors, nor concentration (measures of actual competition), nor in terms of conditions of entry (potential competition) 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 banks.[63]

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[62]Shull and Horvitz, "Branch Banking and the Structure of Competition," loc. cit., p. 340.

[63]Ibid., p. 341.

In the second article, the authors conclude that there are systematic differences in the performance of branch systems and unit systems. Other studies are cited as having indicated that:

> Branched systems tend to have high loan-asset ratios (and low liquid-asset ratios), a high proportion of retail-type loans in their loan portfolio, lower rates and lower maturity on retail-type loans, high rates on time and saving deposits, and high service charges on demand deposits. 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 bank profits higher, but this is offset to some extent by their higher costs.[64]

They point out that the important difference between branched and unit systems is in the range of services provided. Branched systems offer a large variety of services. They also offer greater convenience because they have multiple offices. The additional service is, at least in part, a function of their larger size. The authors note that it must be remembered that the size of banks in unit banking communities is severely restricted by their inability to branch. The capability to branch, then, is a significant influence on bank performance. The threat of potential entry is not as serious to a branched bank as it is to a unit bank and the threat of increased competition by branching causes unit banks in branch banking states to operate differently than do unit banks in unit banking

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[64] Shull and Horvitz, "The Impact of Branch Banking on Bank Performance," loc. cit., p. 176.

states. They operate more nearly like the branched banks with which they compete. This, of course, is not an unexpected conclusion.

The authors note that there is a general tendency for branches of banks to follow pricing policies similar to those of their main offices and to offer, as far as is possible, the same services as are provided at the main office. Since the main office is typically located in a large city with substantial numbers of banks in direct competition with each other, the branch brings into what would otherwise be a monopoly market the policies determined in the competitive market of the home office.

Bank Entry and the Public Interest

Motter and Carson[65] evaluated the extent to which bank entry served the public interest.

When the State of New York, in 1960, passed its Omnibus Banking Bill, it opened the suburban counties of Westchester and Nassau to entry to New York City Banks. The expansion into these counties was rapid. An economic situation was created which made possible the evaluation of the effect of bank expansion under relatively closely controlled conditions. The study, in large part, was devoted:

> to an ex-post evaluation of the effects of these policies in so far as this can be accomplished by

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[65]David C. Motter and Deane Carson, "Bank Entry and the Public Interest: A Case Study," National Banking Review (June, 1964), pp. 469-512.

> examination of bank costs and rates of return, the structure dimension of bank performance, and the benefits that have redounded to consumers of bank services.[66]

Two interrelated tests were adopted to determine if the county was overbanked:

> Are the rates of return to Capital for Nassau banks in the aggregate, and for most individual banks, at a level which threatens the ability of the system to provide an adequate quantity and quality of banking output over the long term . . . Is the Nassau banking system currently performing adequately from the standpoint of its customers, and has there been an improvement or a worsening of this performance in recent years?[67]

The authors determined that overbanking did not exist in the county because rates of return were at levels which allowed the continued supply of a broad line of banking services and products and that the system materially improved in performance in a number of dimensions in recent years. Specifically, the study revealed that the increase in the number of banking offices in the counties did not result in a deterioration of the aggregate rate of return to capital in comparison with all insured banks in the United States. The expansion of banking offices in the counties provided additional banking service to the customers. The evidence also indicated that the increase in banking competition lowered installment loan rates. Analyzing the expansion by submarkets of the counties showed high correlation between

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[66] Ibid., p. 511.

[67] Ibid., pp. 511-512.

the distribution of banking offices and distribution of deposits with various income and population measures.

The authors concluded overall:

> Nassau County has a viable dynamic and balanced banking system which compares very favorably with the banking systems of other areas in the extent to which it meets the needs of its customers. The recent sharp increase in the number of banking offices represented a process of catching up with the growth of demand for banking services in the country.[68]

There are in the literature many examples of empirical research concerned with the demand side of the market. This literature often directs its attention to the problem from the standpoint of the demand for credit from the banking community by the business or household sector. A typical example of such an approach is that by Frazer[69] in which he questions the effectivity of the monetary controls of the Federal Reserve System at various phases of the business cycle. He is concerned with an important aspect of the entire problem under consideration in this study but it is felt that the field is too broad to be taken into consideration.

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[68] Ibid., p. 512.

[69] William J. Frazer, Jr., Compendium on Monetary Policy Guidelines and Federal Reserve Structure, Subcommittee on Domestic Finance of the Committee on Banking and Currency, House of Representatives (Washington, D. C.: Government Printing Office, 1968), pp. 191-198.

CHAPTER IV

THE THEORETICAL STRUCTURE

The purpose of this study is to determine the differences, if any, which exist among the various banking systems as to restrictions on branching and their impact on the economic activity of the state in which those systems are located. Various studies have touched upon this subject, mostly tangentially. One study approached the problem in a discussion of the overall role of commercial banks in economic growth, and concluded:

> The principal impact of the commercial banks' operations on the economy is through their lending activity rather than through their deposit functions.[1]

Another states that "the characteristic function of the banking system is provision of business loans."[2] Later, arguing that the market for bank loans can be examined in isolation, the author states:

> Trade credit is the only important example of alternative sources of supply for short-term bank business loans which can meet, at least, some of

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[1]"Commercial Banks and Economic Growth," The Bulletin, op. cit., p. 21.

[2]Alhadeff, Monopoly and Competition in Banking, op. cit., p. 9.

> the tests of a reasonable substitute. At best, however, even trade credit is a highly imperfect substitute for bank loans and under most conditions does not constitute a competitive alternative source of supply. Hence, the market for bank loans can be examined by itself."[3]

Finally, Galbraith makes the following statement which expresses the essential features of the major hypothesis of this study:

> The banking system that maximizes its cash reserves and which keeps these reserves most fully utilized does a better job of supplying funds to the community than banking systems that are less efficient in these tasks.[4]

Many of the studies reviewed in Chapter III generally attempt to pinpoint the differences among banks located in different market structures especially with respect to their changing capacity to make loans as they expand either "firm" or "plant." While those questions are similar to the one being posed here, the studies only suggest or imply that differences noted among the systems result in a greater or lesser quantity of loans being made with the resulting impact on economic activity being left to the speculation of the reader. Only Cohen and Reid[5] and Motter and Carson[6] attempt to evaluate the extent to which public interest is served. The first study was inconclusive in this regard while

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[3] Ibid., p. 19.

[4] Galbraith, The Economics of Banking Operations, op. cit., p. 173.

[5] Cohen and Reid, loc. cit., pp. 231-249.

[6] Motter and Carson, loc. cit., pp. 469-512.

the second revealed that increasing the branching privilege provided additional banking sucess.

In this study, an attempt is made to determine the extent to which the economic activity in a state is influenced by the bank market structure specified by state law. As commercial banks supply investment funds to the existing demand, economic activity is generated. The alternatives available to the banker vary as to their direct impact on local economic activity. Because the Federal Government does not spend in specific geographic areas in accordance with the volume of federal indebtedness marketed in the area, no local impact can be directly attributed to investment funds devoted to this alternative. Somewhat similarly, investment funds devoted to "Other Securities" find local market impact only incidentally. But, because most of the Loan and Discount business is found in a commercial bank's local market, it follows that if banks in one system tend to make more Loans and Discounts than banks in another system, given the same internal motivations for making Loans and Discounts, the first system would be making a more significant contribution to local economic activity than would the second. A system able to operate with less of the Total Assets devoted to satisfying liquidity needs would also aid economic activity as funds released from this employment are devoted to income-generating activity.

Assuming that bank loans contribute to economic activity as they facilitate income-generating spending, this

study measures the proportion of a banker's portfolio devoted to certain components of investment opportunity, given the motivations for placing investment funds in alternative components. It is assumed that bankers are profit maximizing businessmen who are motivated to invest available funds in their various portfolio components in accordance with the varying demand for those funds. Stated somewhat differently, it is proposed that the relative extent be investigated to which bankers in varying market structures allocate investment funds to the components of their portfolios given the internal motivations for doing so. Any differences observed would be revealing as to which system, given the internal motivations, devotes a larger proportion of its portfolio to investment opportunities which generate economic activity directly in the bank's local area and less to satisfying its liquidity demand--thus fulfilling the purpose and intent of the study.

Availability of Income Statistics

Consideration of the motivations influencing allocations to certain portfolio components leads one, within the profit maximizing assumption, to an examination of the extent to which bankers are motivated by profits or income--not only on the specific portfolio component under consideration but also on alternative sources available. The

recognition that bankers respond to changes in profit opportunities is examined in a recent study by Russell.[7]

The tests to be performed are limited by the fact that banks' income statistics are available only for (a) United States Government Bonds, (b) Other Securities, and (c) Loans and Discounts, Net. While income information is available on other activity (trust departments, etc.) of commercial banks, these income sources are not directly attributable to specific portfolio components and, therefore, are not related to the investment process. A significant part of the portfolio is one on which no income is earned and yet is important in the determination attempted. Should one banking system differ from another in the extent to which it devoted part of its investment funds to liquidity demand, it would also differ in the quantities of investment funds it allocated to income producing components. Accordingly, allowance was made for indicating the varying extent to which banks provided for liquidity needs.

Another portfolio component on which no income is directly earned is the portion of the Total Assets devoted to Bank Premises, Furniture and Fixtures, Real Estate, and Miscellaneous Assets. While these are worthy of investment because of their contribution to over-all efficiency of the banking operation, they do not represent a portfolio

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[7]Russell, op. cit., pp. 544-553.

component to which income can be directly attributed. This portion is excluded from the consideration.

The four portfolio components taken into consideration, therefore, are the following:

1. "Cash Items" or "Liquidity."
2. United States Government Securities.
3. Other Securities.
4. Loans and Discounts.

These four investment opportunities are considered to be substitutes to the banker. They are not perfect substitutes, however, because they vary as to (a) their capacity to satisfy liquidity needs, (b) as to term, (c) as to risk, and (d) as to costs the banker will undertake to service the component. The relative importance of these considerations is reflected in the income earned on each specific component.

The extent to which a banker provides for liquidity (in excess of his reserve requirements) is influenced by the income which is earned in the remaining components of his portfolio. As income on the remaining components rises, the banker is motivated to reduce his desire for liquidity; as income on alternative components falls, liquidity would not represent so great a sacrifice, resulting in his being more willing to place investment funds into this non-income generating component.

The isolation of the portfolio components which are applicable to the study allows a consideration of the

demand and supply framework in which the analysis can be accomplished. First, consider the demand curves which a banker faces for each of the portfolio components under consideration.

The Demand Curves

The Price Variable[8]

As to United States Government securities, the demand curve facing any individual bank in the country, irrespective of state branching restrictuions, can be assumed to be absolutely elastic. Each of the banks, regardless of its firm size or the extent to which it is branched, finds that demand for its investment funds exists at the prevailing price in quantities far beyond its capacity to buy. Each bank can supply investment funds to this demand up to its full capability without affecting market price. In effect, each bank is in the nature of a "purely competitive" seller in the market for United States Government Bonds. Here, in effect, is the classical case of a monopsonistic buyer (the United States Government) buying investment funds in a purely competitive factor market. All banks are in the same relative relationship to the demand for United States Government securities regardless of the particular market structure in which they are located.[9]

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[8] Robinson, op. cit., pp. 201-210.

[9] Ibid., pp. 376-393.

The classification of "Other Securities" includes (a) Obligations of States and Subdivisions, (b) Securities of Federal Agencies and Corporations, (c) Other bonds, notes, and debentures, and (d) Corporate Stocks (including Federal Reserve Bank Stock). The demand facing the individual bank for investment funds represented by "Obligations of States and Subdivisions" and "Securities of Federal Agencies and Corporations" is similar to that for United States Government Bonds. These securities are offered in a national market and, therefore, all banks in the country are in a purely competitive relationship to the demand.[10]

Some lessening of elasticity is introduced into the demand curve by the presence in this category of "Other Bonds, notes, and debentures" and "Corporate Securities." These securities are offered into the market on a more atomized basis. In each of these cases, the interest rate which must be paid on the security is the price for having borrowed the funds. The price is a restricting influence on the quantity of investment funds purchased. More investment funds would be borrowed and more investment expenditure made if the price at which these funds could be borrowed was lower. Consequently, the demand curve for this portion of this component of the portfolio is downward sloping. It does not, however, cause the demand curve for the entire component to deviate very far from being absolutely elastic

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[10] Ibid., pp. 394-412.

because the elastic components of this category are completely overwhelmed by the relative magnitude of "Obligations of States and Sub-divisions." There is no reason that the demand curve for this portfolio component would be significantly different whatever the structure of the banking market as to the geographical limits to which banks are allowed to branch. Size might be of importance in determining the extent to which a bank could affect market price so that such large banks might face a downward sloping market demand curve much as a monopolist does. Since there are unit banks as large or even larger than the largest of some branched banks, this possibility would not seem to be meaningful in a geographical delineation based on branching restrictions in state banking laws.

Constructing a balanced portfolio by evaluating relative risk, hedging against expectations, and balancing term and liquidity considerations precludes buying sufficient quantities of any one security to affect market price. The banker will buy relatively small quantities of many securities rather than specializing in one. Good portfolio management would induce a banker to act more as a purely competitive supplier than as a monopolist.[11]

In summary, it seems safe to assume that the demand curve facing banks in the country for investment funds represented by the "Other Securities" category would be

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[11] Ibid., pp. 133-144, 323-342.

similar regardless of the market structure as regards branching prescribed by the individual state law.

The "Loans and Discounts" component records the extent to which a bank services its local market. It is generally assumed that large business loans are serviced in a regional or national market making the larger banks competitors for these loans. But the bulk of the Loans and Discount business is found in a bank's local area.[12]

The demand curve for Loans and Discounts is assumed to be downward sloping. The price charged by bankers for a loan is a rationing device to limit the quantity of loans granted to the quantity of funds available for making loans as well as to satisfy the bank's profit objectives. Because banks practice price discrimination in granting loans based, at least in part, on relative risk, it must be assumed that loans of some given risk would not have been denied had the general structure of interest charges been lower. The general structure of interest charges might have been lower had there been a greater volume of investment funds available for the purpose of making loans. Loans are often denied because the investment cannot support the interest rate required to make the loan profitable enough for the bank to undertake the risk involved. Stated differently, it might be assumed that investment opportunities not undertaken because loan rates

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[12] Ibid., pp. 129-324.

are too high to make the investment profitable, would be undertaken if the cost of borrowed capital had been less. All of this implies a downward sloping demand curve for investment funds secured by Loans and Discounts.

There is reason to assume that bankers generally cooperate with each other through trade and professional associations. These practices are evidenced by the close similarity among competing banks, the establishment of similar and relatively inconvenient banking hours, and that "shopping" for price in a local market does not often yield advantage. It is recognized that exceptions to this generalization can be cited, but sufficient observations of these characteristics of the industry warrant the generalization. In summary, while there may be many banks in a single market, a truly competitive relationship does not exist among them.

According to Greenbaum[13] bank practices, in fact, preclude the establishment of a fully competitive market. This exists even in markets which appear to be very competitive on the basis of concentration statistics.[14] Because of these practices, branches of banks in metropolitan centers may be similar to unit banks in their relationship to their demanders. A branch of a bank in a one-bank market is no

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[13]Greenbaum, "Competition and Efficiency in the Banking Industry—Empirical Research and its Policy Implications," loc. cit., pp. 461-481.

[14]Edwards, op. cit.

more or less a monopolist in that market than is a unit bank. In fact, a monopoly bank which is a branch of a bank located in a large metropolitan center brings to its monopoly market a method of operation determined by competitive relationships as it brings to its local area the policies and practices of its home office.

In any event, both branches of banks and unit banks can be assumed to be facing a downward sloping demand curve for Loans and Discounts available from their local market. Accordingly, no difference is assumed to exist in the demand curve for Loans and Discounts facing banks in separate banking systems classified according to state restrictions on their opportunity to branch. It is assumed that the demand curve for Loans and Discounts is similar no matter what the market organization.

The Income Variable[15]

In addition to the price variable represented here by the income earned on the portfolio component under consideration, it could be expected that demand for Loans and Securities would be affected by the level of income in the market in which the bank is located. In the case of the demand for funds by the United States Government, the relationship of income to quantity demanded is somewhat unclear. It could be predicted that the influence of this variable would be very small and then only to the extent that local

[15] Robinson, op. cit., pp. 20-34, 201-210.

income per capita represented a similar income level used in determining fiscal policy at the national level. Should income be low, national policy might call for deficit financing to bring about economic growth. On the other hand, during certain periods of relative economic affluence, deficit financing has also taken place.

As to the "Other Securities" component, the influence of income is again quite unpredictable because this component is, for the most part, made up of "Obligations of States and Subdivisions." While it might be desirable that deficit spending by these subdivisions of government take place to a greater extent in time of declining or low national income than during inflationary periods, it is entirely possible that local governmental units are more expansion minded in times of economic prosperity than in times of recession. Of course, in the portion of this component more closely related to the private industrial stock and bond market, one would expect that changes in quantity demanded of investment funds would be positively related to changes in income in order to satisfy the increased demand for goods and services which accompanies higher income.

In the case of the Loans and Discounts component, the role of income is much more clear. As income rises, it can be expected that demand for loans and discounts also would rise. Businesses would demand investment capital in order to meet the increased demand for goods and services, and consumers, in attempting to satisfy their desire for goods

and services, would demand additional quantities of loans and discounts for consumption purposes (given their expectation of continued earnings and willingness to undertake increased indebtedness). However, a precise projection of the relationship of the income variable to the quantity of investment funds devoted to Loans and Discounts is not possible because one is unable to isolate whether the change in income brought about the change in demand for Loans and Discounts or if the increase in Loans and Discount demand acted as a causal factor to the change in income.

The demand curve for liquidity,[16] or "cash items," is difficult to define since it is a demand the banker faces as a result of market conditions and supervisory regulation. The shape of the demand curve becomes difficult to speculate about because it cannot be assumed to have a price variable comparable to that found in the demand curves already discussed. A banker will face an increase in quantity demanded of liquidity as his demand deposits increase as a proportion of total deposits. Some of this demand is created by supervisory authority in the imposition of reserve requirements which, because they are higher on Demand Deposits than on Time Deposits, would rise as this ratio rises.

Another determination of quantity of liquidity demanded is the level of personal income in the banker's market with the expectation that this indication of economic

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[16] Robinson, op. cit., pp. 51-68.

activity is expected to decrease the demand for liquidity as demand for loans increased. The elasticity of this demand curve is quite unpredictable because the relative magnitude of these influences in determining demand for liquidity is unknown. However, it might be assumed that the demand is positively sloping—reflecting that the influence of the Demand Deposits as a percent of Total Deposits ratio is the most important determinant of this relationship.

In summary, it is postulated that no difference exists in the demand curve facing banks in any of the portfolio components under consideration no matter what the market in which the bank is located as determined by state law.

Before giving consideration to the supply curves relevant to each of the demand curves already discussed, it is necessary to recognize that we assume that the principles of profit maximization are observed in that the total quantity of output of investment funds is determined by the intersection of the marginal revenue and marginal cost curves for each bank in the consideration. The demand curve for the bank's entire operation can be assumed to be the sum of the demand curves for each of the portfolio components discussed together with those not included in the study (Bank Premises, Furniture and Fixtures, and Miscellaneous Assets). The Supply Curve for the bank's entire operation can be

considered to be reflecting, in classical form, the marginal costs of producing the output and placing it into the market. Consequently, recognition is given to the determination of total quantity of output in light of the variable expense structure discussed in the literature reviewed in Chapter III. Should variable costs be lower in one system as compared to another, the marginal cost curve for that system would be expected to be lower. And the system having lower variable costs would, of course, experience a profit maximizing quantity of output which would be larger than a system with a higher variable cost structure. While this determination is important in understanding the working of this very inter-related and complicated market, it does not constitute the major purpose of this study. We are here concerned with a determination of which banking system, classified according to branching restrictions of various state laws, will allocate the available output in such a manner as to be more instrumental in generating economic activity in its local area than will some alternate system. Consequently, the quantity variable in this study is not an absolute quantity of dollars or a number of loans. It is, rather, a percent of the total portfolio which is offered in each of the four specific components under consideration. We are, therefore, concerned with the decision-making process which a banker faces not as regards the total quantity of investment funds to offer

into the market in light of the profit maximizing determination of his total marginal revenue and marginal cost curves, but the proportion of his total investment funds or output which would be devoted to each of the profit-making options open to him, given his need for liquidity.

The Supply Curves

The decisions on portfolio mix examined in this study are, of course, part of the decision-making process underlying profit-maximizing output determination. Several basic factors are instrumental in determining this allocation, all reflecting the motivations a banker takes into consideration in making the allocation to the four portfolio alternatives open to him. These four portfolio components are considered to be substitutes to the banker. They are not perfect substitutes because they vary as to (a) the income which they can produce, (b) the risk they represent, (c) the length of time they require that funds be so employed, and (d) the ready facility with which they can be converted to cash. If they were perfect substitutes, this study would not be possible since the entire output would be devoted to the option representing the most important consideration at any one time. It is expected that, if they were perfect substitutes, the banker would specialize.

The Price Variable[17]

One factor a banker considers in making a decision as to how much of his portfolio should be devoted to any one component of the existing demand is the income he expects to earn on the investment funds offered. The income or revenue expected on investment devoted to a specific component is, of course, the price variable. Since no income is available on investment funds devoted to liquidity, this component does not have a price variable in the same form as does each of the remaining components.

The Alternative Income Variable

Part of the price consideration for any one component is the income which can be earned on alternative options available. Consequently, each of the alternatives available to a banker must be weighed not only as regards the income which can be earned on that specific component, but also as regards the income which must be foregone when output is invested in one of the components in preference to another.

The Liquidity Restraint[18]

Another fact which the banker must take into consideration is the extent to which he is required to provide for his liquidity needs. Since reserve requirements are substantially higher on Demand Deposits than on Time Deposits,

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[17] Robinson, op. cit., pp. 201-210.

[18] Ibid., pp. 55-59.

and since a banker's reserve requirement will vary as these components of Total Deposits vary, his liquidity requirement is indicated by the percent of Total Deposits represented by Demand Deposits.

In the case of the three income-producing components of a banker's portfolio, we would expect that the quantity of funds supplied to a specific component would be (a) positively related to the price variable, (b) negatively related to the variable indicating the income which is sacrificed, and (c) negatively related to the variable speaking for the restraint imposed by liquidity requirements.

In the case of the Liquidity Component (herein entitled "Cash Items"), only two determinants are observed--the (Demand Deposits)/(Total Deposits) ratio and the variable indicating the income which is sacrificed by having to supply the liquidity demand. The first of these is expected to be positively related to the quantity of funds supplied while the second is expected to be negatively related to the quantity supplied.

The Reduced Form Regression Equations

The proportion of the portfolio observed from the aggregate figures of bankers' financial statements are equilibrium proportions, i.e., proportions determined in accordance with the principles outlined above. Consequently, reduced form equations are constructed which will recognize the factors instrumental in determining the

proportion of the total portfolio devoted to any one specific component from both the demand and supply sides of the decision. These equations are set forth in Table IV-1 in the classical form of $Y = f(X_1, X_2, X_3, X_4)$.

To eliminate the multicollinearity which exists between the last two variables in Equations (2), (3), and (4), these concepts will be combined. The price variable will be expressed as a ratio: (Income Earned, this Component)/(Income Earned, alternate Components).

As outlined above, there is no reason to believe that the decision to supply investment funds to any one of the components in view of the existing demand for the output is different in one banking system (according to branching restrictions) as against another.

The Hypothesis

It is hypothesized that no difference exists among the systems as to how they determine the proportionate share of their portfolio to devote to any one of the four components. Stated more specifically in terms of the statistical computation performed, it is not expected that the Statewide Banking System or the Limited Branching System is significantly different (as revealed by F tests) from the Unit Banking System in the proportion of its funds devoted to any one of the components analyzed given the same motivations for having made that determination. The regression equations are framed in such a fashion (using Dummy variables)

to indicate the difference, if any, which might exist among the banking systems in the extent to which either the State-wide or Limited Branching System might differ from the Unit Banking System through the differences in the alpha term (or constant) of the regression equation. The hypothesis can also be stated that the alphas (or constants) in each of the regression equations are not expected to be significantly different from each other.

Reasons for Rejecting the Hypothesis

No attempt will be made in this study to determine the specific causes for any differences which may be observed. The purpose of this study is to determine if some differences exist and to leave to others the isolation of the specific reasons for those differences. It is presumed that any differences observed are caused by the differing limitations on branching.

On the Demand Side

Should differences be observed, causing the hypothesis to be rejected, such differences can be speculated to have been caused by varying structural characteristics inherent in the different market organizations. These differences may be attributed to differences in concentration, to the presence of varying degrees of monopoly, to economies of scale brought by expansion through expanding the multi-plant operation of a branched system.

The system experiencing market conditions which more closely approximate those of pure competition would find that its demand curve for Loans and Discounts would be more elastic than that system which is more nearly monopolistic. Any deviation in the demand curve from being absolutely elastic would cause the quantity of output devoted to this specific component to be significantly reduced as the marginal revenue curve deviated from the average revenue curve. The further the market deviated from the purely competitive ideal, the further would be the equilibrium quantity reduced.

Deviation of the demand curve from being absolutely elastic can be caused by concentration as is argued by Edwards.[19] However, because of restriction on entry and on expansion and the fact that a branch of a bank can be as much a monopolist as a unit bank in a similar market situation, concentration in the banking industry is not analogous to concentration in other industries and such deviation of the demand curve could be caused by the presence of monopoly power regardless of the concentration statistics with similar allocative results.

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[19] Edwards, op. cit.

On the Supply Side

Another possible cause for difference might be found in the manner in which bankers in different branching structures respond to the motivations causing them to devote output to each specific component of their portfolios. For example, it can be argued that branched banks are able to operate with less potential investment capital tied up in liquidity requirements than are unit bankers.[20] Any such difference observed would allow a greater proportion to be devoted to the income-producing portion of the portfolio. Should it be observed that branched systems devote less of their output to liquidity needs, this argument will tend to be confirmed.

It is also argued that branch bankers will tend to devote a greater proportion of their portfolio to Loans and Discounts and, therefore, make a more significant contribution to the local economy than would bankers in alternative systems. Should it be determined that branched systems do actually devote a larger proportion of their output to Loans and Discounts given similar internally determined motivations as other systems, the argument would be strengthened. Such excesses of one system over another can be deemed to be throwing some light on a determination of the superiority of one system over another.

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[20]Chapman and Westerfield, op. cit., pp. 184-188.

Should one type of state banking system be observed to be devoting a larger proportion of its portfolio to the "United States Government Securities" component or to the "Other Securities" component, it could be concluded that this system was demonstrating a decidedly conservative investment policy because it would be electing to sacrifice income for purposes of taking little risk. In this connection, it should be noted that about half of the states allow their state-chartered banks to invest required reserves in government securities. Consequently, there exists some inter-relationship between the liquidity component and the United States Government Securities component. The states allowing this investment of reserve funds are quite evenly spread among the three systems. Because it was impossible to isolate the extent to which this was taking place, it was necessary to ignore it. In any event, it is not believed to be of significant importance because of the small proportion of the entire system (State banks which are not members of the Federal Reserve System) able to take advantage of this option. In 1966, for example, banks in this classification represented only 8.8 percent of the Total Assets of the entire Statewide Branching system, only 6.5 percent of the Limited Branching system, and only 9.9 percent of the Unit Banking system.

Anticipated Analyses for Policy Purposes

In addition to the above speculations on the causes for any differences which might be observed, it is expected that certain policy implications will be examined based upon an analysis of the measured responses of different state banking systems to the variables determining the allocation to the various portfolio components. This analysis will be based on the relative significance of the motivational variables in determining the percent of the total portfolio devoted to any one specific component.

If some light is cast on the variables which are most significant in motivating bankers to take certain specified action, regulatory authority would be assisted in deciding which policy action should be undertaken to accomplish certain ends.

TABLE IV-1: Reduced Form Regression Equations.

Y	X_1	X_2	X_3	X_4
		Equation (1): Cash Items		
Cash Items / Total Assets	Demand Deposits / Total Deposits	Real Income / Population	Not applicable	Income on Sec & Loans / Total Assets minus Cash Items
		Equation (2): United States Government Securities		
US Gov Sec / Total Assets	Demand Deposits / Total Deposits	Real Income / Population	Income US Gov Sec[1] / Total US Gov Sec	Income, Other Sec, Lns & Disc[1] / Total Assets minus Cash Items and US Gov Sec
		Equation (3): Other Securities		
Other Sec / Total Assets	Demand Deposits / Total Deposits	Real Income / Population	Income Other Sec[1] / Total Other Sec	Income, US Gov Sec, Lns & Disc[1] / Total Assets minus Cash items and Other Sec
		Equation (4): Loans and Discounts, Net		
Loans & Discount / Total Assets	Demand Deposits / Total Deposits	Real Income / Population	Income Lns & Disc[1] / Total Lns & Disc	Income, US Gov Sec, Other Sec[1] / Total Assets minus Cash Items and Loans and Discounts

Notes: [1]To eliminate multicollinearity between Variables X_3 and X_4, these variables are run as a ratio--Variable X_3 divided by Variable X_4. The resulting variable is designated Variable X_3.

Dummy variables are used to indicate the difference, if any, between the various banking systems. Two dummy variables are added to each equation carrying values as follows:

D_1 = 1 if State is classified Statewide Branching
D_1 = 0 if State is not classified Statewide Branching
D_2 = 1 if State is classified Limited Branching
D_2 = 0 if State is not classified Limited Branching

CHAPTER V

GATHERING THE DATA

It was evident early in the theory development that the objectives of the study would require an analysis of the investment portfolio of banks over a lengthy period of time in order to compare the relative performance of the three banking systems to each other.

Because different banking systems exist as a result of differing individual state laws, it was evident that the analysis should be approached from the basis of state totals with states classified according to the limitation placed on branching by those individual state laws. Unit banks do exist in states permitting branching. However, research has established that banks not operating branches but located in states which do permit branching actually operate differently from unit banks located in states which do not permit branching.[1] The study showed that unit banks located in branch banking states operate more nearly like branched banks than do unit banks located in unit banking states.

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[1]Shull and Horvitz, "The Impact of Branch Banking on Bank Performance," loc. cit., pp. 162-171.

Therefore, it was decided not to attempt to gather data on the basis of individual banks, branched or unit, but to find a source of data revealing detailed information on the composite of bankers' portfolios already summed to state totals.

Classifying the States

The Federal Reserve Bank had already classified states according to their individual state laws as regards branching[2] and this classification was revised by Shull and Horvitz[3] which reclassification was deemed to be applicable to the objectives of this study. Line maps setting forth the states which are classified as belonging to either of the three groups are included in Chapter II.

Period of the Study

The period selected for the study was the years following World War II--1946 to the present--a period of sufficient length with none of the distorting characteristics (World War II and the Great Depression) existing immediately prior to this interval.

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[2]"Changes in Commercial Banking Structure," op. cit., p. 1195.

[3]Shull and Horvitz, "Branch Banking and the Structure of Competition," loc. cit., pp. 341-342.

Sources of the Data

The Balance Sheet data selected for the study was obtained from the "Call Report" for the end of each year published by the Federal Deposit Insurance Corporation.[4] Bank income statistics were taken from the Annual Report of the Federal Deposit Insurance Corporation.[5] State Income and Population statistics were taken from the publications of the United States Department of Commerce.[6]

The data sources provide information in great detail for insured banks which group comprises the larger proportion of the entire national system. For example, in June, 1964, of the 14,189 Commercial Banks in the United States, 13,728 were insured. Insured banks constitute 97.6 percent of the Total Assets of all Commercial Banks. Consequently, it was decided to use the insured Commercial Banks' statistics to represent the entire banking system in the inter-system comparison being planned.

To strengthen the argument to use insured bank statistics to represent all banks, it was planned to accumulate

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[4] "Assets, Liabilities, and Capital Accounts; Commercial and Mutual Savings Banks," op. cit.

[5] "Annual Report," Federal Deposit Insurance Corporation, op. cit.

[6] "Statistical Abstract of the United States" (Washington, D. C.: United States Department of Commerce, various volumes providing most recent data, 1946 through 1966); "Survey of Current Business" (Washington, D. C.: United States Department of Commerce).

data for both insured and uninsured banks with the intention of correlating these groups to indicate the extent of their similarity. The results of the correlations will be reviewed later.

Certain problems presented themselves in the compilation of the data. For example, for many of the earlier years, the States of Alaska and Hawaii were not reported as separate entities because they were not, as yet, separate states. Figures for these areas were included with statistics for other territories. It was necessary to estimate the statistics for these areas from those figures which were given. This was done by assuming that all the banks in the group were of the same size. It meant, simply, that if Alaska had two banks out of a total of ten for the territories, Alaska received twenty percent of the total statistic reported. The same assumption was made for Hawaii.

For the earlier years of the study (1946 through 1949), statistics as to income were not available for Alaska. The Governor General of the Territory estimated that per capita income in Alaska was twenty-five percent greater than that in the United States continental area.[7] Based on this information, income for Alaska was computed by first determining the per capita income for the continental United States for a specific year, multiplying it by

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[7]Governor General, Alaska Territory, Postwar Alaska (Washington, D. C.: United States Department of the Interior, Division of Territories and Island Possessions, 1949).

125 percent, and then multiplying this figure by the population of the territory for that year.

No such problem existed for Hawaii as separate figures were available for each year for which they were desired.

Processing the Data

Completing the procedure outlined so far did not present the data in proper form. It was necessary to compute a set of data which would lead to the construction of the regression equations desired. This was accomplished by designing a computer program which would sum certain of the figures recognizing the various sub-divisions necessary to make the proper comparisons. The summed statistics were called "Regression Statistics" and were constructed as indicated below.

In the first of these regression statistics, the computer was instructed to compute the sum of the following items for each year of the study separately for each state and to punch into cards the information so computed:

Currency & Coin
Reserves with the Federal Reserve
United States Banks Demand Balances
United States Banks Other Balances
Balances with Foreign Banks
Cash in Process of Collection

This statistic was designated "Regression Statistic 400, Cash Items."

Similar regression statistics were prepared for each of the following concepts by combining the specific items indicated:

Regression Statistic	Items
401, US Gov Securities	US Gov Obligations
402, Other Securities	Obgl of Sts & Sub Sec of Fed Agen Other Bnds Nts Deb Corp Stock
403, Valuation Reserve	Val Res
404, Real Estate Loans	Real Est Lns
405, Lns to Fin Snsts	Lns to Fn Banks Lns Other Fin Inst
406, Lns to Brokers $ Dlrs	Lns Brokers Dlrs in Sec Other Lns P&C Sec
407, Loans to Farmers	CC Guaran Lns to Farm Other Lns to Farmers
408, Commercial & Ind Lns	Comm & Ind Lns
409, Pass Auto Loans	Pass Auto Lns
410, Other Retail Cons Lns	Other Ret Cons Lns
411, Res Repair & Modern Lns	Res Rep & Mod Lns
412, Personal Expenditure Lns	Prsl Exp Lns
413, Single Pmt Personal Lns	Single Pmt Prsl Lns
414, All Other Loans	All Other Loans
415, Other Assets	Fur Fixt Real Est Misc Assets
416, Demand Deposits, IPC	Ind Pt Corp Dem Dep

Regression Statistic	Items
417, Demand Deposits, Other	Cert & Off Checks US Gov Demand Deposits Sts & Sub Dem Deposits US Comm Bnks Dem Dep US Mut Sv Dem Dep Fn Govts Dem Dep Bnks Fn Cty Dem Dep
418, Time Deposits, IPC	Ind Pt Corp Time Dep
419, Time Deposits, Other	US Gov Time Dep Sts & Sub Time Dep US Comm Bnks Time Dep US Mut Sv Time Dep Postal Saving Fn Govts Time Dep Bnks Fn Cty Time Dep
420, Real Income (Actual dollar figures were converted to real income by dividing Personal Income by Consumer's Price Index.)	Personal Income
421, Population	Population
422, Income on US Gov Sec	Int US Gov Oblgns
423, Income on Other Sec	Int & Div Other Sec Profit Sec Sold or Redeemed Recoveries, Sec Trfs from Res, Sec Losses on Sec Sold Charge-offs, Sec Trfs to Res, Sec
424, Income on Lns & Disc	Int & Disc, Loans Sv Chg Fees Loans Recoveries, Loans Trfs fr Res, Loans Losses & Charge-offs, Loans Trf to Res, Loans

To provide totals of certain Regression Statistics established above, certain of them were summed and designated as follows:

Regression Statistic	Source
425, Total Lns & Disc, Net	Regression Statistic 403, 407, 408, 409, 410, 411, 412, 413, 414
426, Total Assets	Regression Statistic 400, 401, 402, 415, 425
427, Total Demand Deposits	Regression Statistic 416, 417
428, Total Time Deposits	Regression Statistic 418, 419
429, Total Deposits	Regression Statistic 427, 429
430, Income on US Gov Sec, Other Sec, Lns & Disc	Regression Statistic 422, 423, 424
431, Income on Other Sec & Lns & Disc Net	Regression Statistic 423, 424
432, Income on US Gov Sec & Lns & Disc Net	Regression Statistic 422, 424
433, Income on US Gov Sec & Other Securities	Regression Statistic 422, 423
434, Total Assets minus Cash Items	Regression Statistic 401, 402, 415, 425
435, Total Assets minus Cash Items and US Gov Sec	Regression Statistic 402, 415, 425
436, Total Assets minus Cash Items & Other Sec	Regression Statistic 401, 415, 425
437, Total Assets minus Cash Items minus Lns & Disc	Regression Statistic 401, 402, 415

Having reduced the basic data into sums, it was now possible to compute the specific elements of the regression

equations as outlined in Table IV-1, page 85. These computed statistics were recorded on punched cards which represent the body of data used as input to the computer for purposes of accomplishing the objectives of the study.

CHAPTER VI

THE REGRESSION RESULTS

In order to accomplish the purpose of this study as stated in Chapter IV, The Theoretical Structure, the following regression equation was designed:

$$Y_{ij} = f[X_{1_{oj}}, X_{2_{oj}}, X_{3_{ij}}, X_{4_{ij}}, D_1, D_1(X_{1_{oj}}), D_1(X_{2_{oj}}), D_1(X_{3_{ij}}), D_1(X_{4_{ij}}), D_2, D_2(X_{1_{oj}}), D_2(X_{2_{oj}}), D_2(X_{3_{ij}}), D_2(X_{4_{ij}})].$$

Subscript 'o' = Applicable to all components.

Subscript 'i' = Specific component as indicated below.

Subscript 'j' = Specific year--1946 through 1966.

D_1 = 1 if state is classified Statewide Branching.
0 if state is classified Limited Branching or Unit Banking.

D_2 = 1 if state is classified Limited Branching.
0 if state is classified Statewide Branching or Unit Banking

Equation (1): Cash Items

The variables are defined as follows:

Y_{1j} = (Cash Items)/(Total Assets).

$X_{1_{oj}}$ = (Demand Deposits)/(Total Deposits).

$X_{2_{oj}}$ = (Real Income)/(Population).

$X_{3_{ij}}$ = Not applicable.

$X_{4_{ij}} = \frac{\text{(Income, US Gov Sec, Other Sec, Lns \& Disc)}}{\text{(Total Assets minus Cash Items)}}$.

The expected signs are as follows:

$(\Delta Y_{1j})/(\Delta X_{1_{oj}}) > 0$.

$(\Delta Y_{1j})/(\Delta X_{2_{oj}}) \gtrless 0$.

$(\Delta Y_{1j})/(\Delta X_{4_{1j}}) < 0$.

Equation (2): US Gov Sec

The variables are defined as follows:

Y_{2j} = (US Gov Sec)/(Total Assets).

$X_{1_{oj}}$ = (Demand Deposits)/(Total Deposits).

$X_{2_{oj}}$ = (Real Income)/(Population).

$X_{3_{2j}} = \frac{\text{(Income US Gov Sec)/(Total US Gov Sec)}}{\text{(Income Other Sec \& Lns \& Disc)/(Total Assets minus Cash Items and US Gov Sec)}}$

$X_{4_{2j}}$ = Not applicable.

The expected signs are as follows:

$(\Delta Y_{2j})/(\Delta X_{1_{oj}}) < 0.$

$(\Delta Y_{2j})/(\Delta X_{2_{oj}}) \lesseqgtr 0.$

$(\Delta Y_{2j})/(\Delta X_{3_{2j}}) > 0.$

Equation (3): Other Sec

The variables are definded as follows:

Y_{3j} = (Other Sec)/(Total Assets).

$X_{1_{oj}}$ = (Demand Deposits)/(Total Deposits).

$X_{2_{oj}}$ = (Real Income)/(Population).

$$X_{3_{3j}} = \frac{\text{(Income Other Sec)/(Total Other Sec)}}{\text{(Income US Gov Sec \& Lns \& Disc)/(Total Assets minus Cash Items and Other Sec)}}$$

$X_{4_{3j}}$ = Not applicable.

The expected signs are as follows:

$(\Delta Y_{3j})/(\Delta X_{1_{oj}}) < 0.$

$(\Delta Y_{3j})/(\Delta X_{2_{oj}}) \lesseqgtr 0.$

$(\Delta Y_{3j})/(\Delta X_{3_{3j}}) > 0.$

Equation (4): Lns & Disc

The variables are defined as follows:

Y_{4j} = (Lns & Disc)/(Total Assets).

$X_{1_{oj}}$ = (Demand Deposits)/(Total Deposits).

$X_{2_{oj}}$ = (Real Income)/(Population).

$$X_{3_{4j}} = \frac{\text{(Income Lns \& Disc)/(Total Lns \& Disc)}}{\text{(Income US Gov Sec \& Other Sec)/(Total Assets minus Cash Items and Lns \& Disc).}}$$

$X_{4_{4j}}$ = Not applicable.

The expected signs are as follows:

$(\Delta Y_{4j})/(\Delta X_{1_{oj}}) < 0.$

$(\Delta Y_{4j})/(\Delta X_{2_{oj}}) \lesseqgtr 0.$

$(\Delta Y_{4j})/(\Delta X_{3_{4j}}) > 0.$

Cross Section Regressions

Cross section regressions were run for each of the twenty-one years of the study (1946 through 1966) and for the difference between the last year of the study (1966) and the first year (1946). The results of the regressions are set forth in tables as follows:

Table VI-1a: Regression Results, Equation (1): Cash Items.

Table VI-1b: Regression Results, Equation (2): US Gov Sec.

Table VI-1c: Regression Results, Equation (3): Other Sec.

Table VI-1d: Regression Results, Equation (4): Lns & Disc.

Each cross section regression was based on a total of fifty-one observations (the fifty states plus District of Columbia).

Time Series Regressions

Time series regressions were run for each of the basic equations for all years of the study (1946 through 1966). The results of the regressions are attached hereto as follows:

Table VI-2: Regression Results, All Equations, Time Series.

Each time series regression was based on a total of one thousand seventy-one observations (the fifty states plus District of Columbia for twenty-one years).

Time Trend Regressions

Time trend regressions on the Y variables were run for each of the basic equations for all the years of the study (1946 through 1966). The results of the regressions are attached hereto as follows:

Table VI-3: Y Variable Time Trends, All Equations.

Each of these time trend regressions was based on a total of one thousand and seventy-one observations (the fifty states plus District of Columbia for twenty-one years).

Correlation of Insured with Uninsured Banks, Table VI-4

In Chapter V, Gathering the Data, arguments were presented for using the insured group of banks to represent the entire banking system. In June, 1964, only 3.2 percent of the total number of commercial banks were not insured with

the Federal Deposit Insurance Corporation. These uninsured banks constituted 2.4 percent of the Total Assets of Commercial Banks. To strengthen the argument for using insured banks to represent all banks, it was planned to run correlations between these two groups for the years of the study on the dependent variable to be used in the study. Such correlations for the absolute dollar amounts in each of the four components under consideration were run. Please see Table VI-4 for the results of these correlations.

It is evident that these two groups are similar to each other as to changes in the quantity of dollars invested in Loans and Discounts only. In the case of this component, the coefficient of covariance is positive and high--0.9119. The two groups do not correlate well in the "cash items" component. In the other two components, the similarity is not strong.

That these two groups of banks did not correlate well did not strengthen the argument to use insured banks to represent all banks. However, because the main area of analysis in testing the hypothesis was expected to be in the Loans and Discounts component, it was decided to proceed with the original plan of using the insured group of banks to represent the entire banking system.

Intra-system Comparison, Table VI-5

The use of dummy variables in the regressions makes possible the determination of the extent, if any, to which

the Statewide Branching and Limited Branching systems are significantly different from the Unit Banking system.

As to Equation (1) Cash Items, in the cross-section regressions, (Table VI-5a), the Statewide Branching system (represented by Dummy 1) is revealed to be significantly different from the Unit Banking system in twelve out of the twenty-two separate cases--or in 54.5 percent of the examples tested. Because the hypothesis of this study stated that there was no difference between the three systems, in the case of the Statewide Branching system versus the Unit Banking system as regards the extent to which they devote investment funds to the liquidity component of their portfolios given the same motivation to do so, the hypothesis is rejected--there is a significant difference between these two systems in the manner in which they respond to similar motivations for devoting investment funds to the "Cash Items" component.

In the "US Gov Sec" and "Lns & Disc" components, the Statewide Branching systems is significantly different from the Unit Banking system only five (22.7%) and four (18.2%) times respectively out of a total of twenty-two examples. While this is still greater than would be expected within the limits of chance (1.1 times out of 22 if significant at 5.0 percent or 2.2 times out of 22 if significant at 10.0 percent), the argument that the Statewide Branching system

is different from the Unit Banking system is not overwhelmingly conclusive.

In the "Other Sec" component, there is no year in which the Statewide Branching system is significantly different from the Unit Banking system. Thus, in this category, the hypothesis of this study is accepted.

As to the Limited Branching system, no significant difference exists between this system and the Unit Banking system in any of the four categories under consideration. Any difference observed is due purely to chance.

In the time series regressions (Table VI-5b), the Statewide Branching system is significantly different from the Unit Banking system as to Equation (1), Cash Items, and as to Equation (3), Other Sec. It is not significantly different as to Equation (2), US Gov Sec, or as to Equation (4), Lns & Disc. The Limited Branching system is significantly different from the Unit Banking system as to Equation (1), Cash Items; Equation (3), Other Sec; and Equation (4), Lns & Disc. The Limited Branching system is not significantly different from the Unit Banking system as to Equation (2), US Gov Sec.

Significance of Regression Coefficients, Table VI-6

In Tables VI-6a and VI-6b is set forth an analysis of the significance of the regression coefficients in the cross section and time series regressions respectively. In the

cross section analysis, it is noted that, except in the case of Equation (1), Cash Items, very few of the regression coefficients are significant at the ten percent level a sufficient number of times to allow any serious analytical work to be done on the interpretation of the relative magnitude of those coefficients in their relationship to the determined variable.

1. In the case of Equation (1), Cash Items, variable X_1, (Demand Deposits)/(Total Deposits), is significant in determining the proportion of a unit banker's portfolio devoted to cash items twenty-one times out of twenty-two at the five percent level. The influence of variable X_2, (Real Income)/(Population), is not important in this respect as it was significant at the ten percent level in only two out of twenty-two regressions. Variable X_4, (Total Portfolio Income)/(Total Assets less Cash Items), was significant at the ten percent level nine out of the twenty-two times indicating that unit bankers are motivated by profit considerations in the proportion of their portfolios devoted to liquidity requirements.

In the Statewide Branching system, variable X_1, (Demand Deposits)/(Total Deposits), was significant at the ten percent level fourteen times out of twenty-two; variable X_2, (Real Income)/(Population), was significant five times out of twenty-two; and variable X_4, (Total Portfolio Income)/(Total Assets less Cash Items), was significant at the ten

percent level eight times out of twenty-two. In this category, it would appear that the Statewide Branching system is significantly motivated by the selected variables and that it is motivated significantly differently than is the Unit Banking system in the extent to which these variables determine the proportion of the portfolio devoted to liquidity considerations.

None of the variables is significant at the ten percent level in the case of the Limited Branching system indicating that this system is not significantly different from the Unit Banking system in the extent to which these variables determine the proportion of the portfolio devoted to this category.

2. In Equation (2), US Gov Sec, in the Unit Banking system, none of the variables is significant a sufficient number of times to indicate that these selected variables are instrumental in the determination of the proportion of the investment portfolio devoted to this component. In the case of the Statewide Branching system, only variable X_1, (Demand Deposits)/(Total Deposits), is significant at the ten percent level and it is significant at this level nine out of the twenty-two times. In the Limited Branching system, the profit variable X_3 is significant at the ten percent level four times out of twenty-two.

3. In Equation (3), Other Sec, the only variable which is at all significant in the determination of the

proportion of the portfolio devoted to Other Securities is in the Statewide Branching system and is the profit variable (X_3). It is significant at the ten percent level only three times out of twenty-two.

4. In Equation (4), Lns & Disc, in the Unit Banking system, only the profit variable (X_3) is significant in the determination of the proportion of the portfolio devoted to this component. It proved to be significant at the ten percent level only four times out of twenty-two. In the Statewide Branching system, only variable (X_1), (Demand Deposits) /(Total Deposits), proved to be significant a sufficient number of times to be considered meaningful. It was significant at the ten percent level only three times out of twenty-two. There were no variables in the Limited Branching system which proved to be significant determinators of the proportion of the portfolio devoted to Loans and Discounts.

5. The significance of the regression coefficients in the time series regressions (Table VI-6b) is somewhat more consistent. The only surprising elements are that the Unit Banking system is not significantly motivated by profit considerations (Variable X_4) in the determination of the proportion of its investment portfolio devoted to Cash Items, that the Statewide Branching system is not significantly motivated to the determination of the proportion of its portfolio devoted to United States Government Securities

or to Loans and Discounts by liquidity considerations (Variable X_1), and that the Limited Branching system is not motivated by liquidity considerations (Variable X_1) in Equation (2), US Gov Sec, nor by profit considerations (Variable X_4) in Equation (3), Other Sec, or in Equation (4), Lns & Disc. The variable providing for real income per capita (X_2) is erratic throughout the study.

The Signs of the Regression Coefficients, Table VI-7

Herein is set forth an analysis of the number of times that the signs of the regression coefficients appear as expected. In the case of variable X_2, (Real Income/(Population), a specific sign could not be anticipated. Therefore, both signs and the number of times they appear are given, Also, the percentage that each represents of a total of twenty-two examples is also given.

1. In the cross section regressions (Table VI-7a), it can be noted that the Unit Banking system responds consistently positively to changing reserve requirements (Variable X_1 in the proportion of its portfolio devoted to Cash Items. Neither the Statewide Branching nor the Limited Branching systems are similarly motivated. The relationship of changing real income per capita (Variable X_2) to changing liquidity needs is shown to be significantly positive in the case of the Unit Banking system and in the case of the Statewide Branching system. The Unit Banking system

responds positively to changes in real income per capita seventeen times out of twenty-two while the Statewide Branching system responds positively twenty-one times out of twenty-two. In contrast, the Limited Branching system responds negatively twenty-one times out of twenty-two to such forces in the proportion of its portfolio devoted to liquidity considerations.

Surprisingly, the Unit Banking system does not respond as expected (negatively) to changes in profit available on alternative components. In only two out of twenty-two examples did it indicate the expected relationship. In contrast, the Statewide Branching and Limited Branching systems respond as expected nineteen and twenty times, respectively, out of a total of twenty-two examples.

2. In Equation (2), the Unit Banking system adjusts the proportion of its portfolio devoted to United States Government Securities negatively as its reserve needs change in twenty-one out of twenty-two examples. The Statewide Branching system does not respond to such changes as expected--in fact, in only one example out of twenty-two is it indicated that these variables are negatively related. The Limited Branching system reacts somewhat more as expected in that it does respond negatively eight out of a possible twenty-two times.

All three systems indicated a preponderance of positive relationships as to variable (X_2), (Real Income)/

(Population). The Unit Banking system responded positively thirteen times out of twenty-two; the Statewide Branching system responded positively twenty times out of twenty-two; and the Limited Branching system responded positively fourteen times out of twenty-two.

Variable X_3, (Income this Component)/(Income alternative components), is most often negatively related in all three systems as regards the proportion of the portfolio devoted to United States Government Securities. This is not as expected in that, as the return on this component increases (the numerator), the value of this ratio increases and it is expected that the quantity of investment funds devoted to this component would increase. As the return on alternative components increases (the denominator), the value of this ratio decreases and it is expected that the quantity of investment funds devoted to this component would decrease. In other words, the Y variable is positively related to this profit variable.

3. As to Equation (3), Other Sec, the Unit Banking system and the Limited Branching system respond as expected (negatively) to variable X_1, (Demand Deposits)/(Total Deposits), thirteen and twenty-one times, respectively, out of a possible twenty-two. The Statewide Branching system indicates a negative relationship only nine times out of twenty-two.

The Statewide Branching system increases the proportion of its portfolio devoted to the "Other Securities" component as Real Income per capita increases in nineteen out of twenty-two examples while the Limited Branching system responds similarly in seven out of twenty-two examples. In contrast, the Unit Banking system responds in this manner only one time out of the twenty-two examples.

The response to the profit variable (X_3) is quite erratic in the case of Other Securities. As the Unit Banking system responds positively only thirteen times out of twenty-two, the Statewide Branching system responds positively only nine times out of twenty-two, and the Limited Branching system responds positively only ten times out of twenty-two. Only the Unit Banking system responds as expected a majority of times.

4. In Equation (4), Lns & Disc, the Unit Banking system and the Statewide Branching system respond as expected (negatively) to changes in liquidity needs (X_1). They respond negatively seventeen and nineteen times out of twenty-two, respectively. The Limited Branching system indicates such a negative relationship only three times out of twenty-two examples.

The real income per capita variable (X_2) reflects a positive relationship thirteen times in the case of the Unit Banking system and eleven times in the case of the Limited Branching system. This variable is positively

related only four times out of twenty-two in the case of the Statewide Branching system.

The profit variable (X_3) in the case of Equation (4), Lns & Disc, reflects the expected relationship (positive) only three times out of twenty-two in the case of the Unit Banking system. This variable is positive eleven times out of twenty-two in the case of the Statewide Branching system and seventeen times out of twenty-two in the case of the Limited Branching system.

5. In the time series regressions (Table VI-7b), the signs of all the coefficients in Equation (1), Cash Items, are as expected except for Variable X_1 (Demand Deposits)/(Total Deposits), in the cases of the Statewide and Limited Branching systems.

In Equation (2), US Gov Sec, the sign of variable (X_1), (Demand Deposits)/(Total Deposits), is not as expected in the case of the Unit Banking system and in the Statewide Branching system. As to the income variable (X_2), the Unit Banking system reflects a negative relationship while both branched systems reflect a positive relationship. Only the Limited Branching system reflects the expected sign (positive) as regards the profit variable.

The "Other Securities" component [Equation (3)] reflects somewhat the same erratic pattern as does Equation (2). The Statewide Branching system does not respond as expected (negatively) to the need for liquidity (Variable

X_1 while the Limited Branching system does respond negatively to changes in this variable. The income per capita variable (X_2) elicits a positive response in the case of the Unit Banking system and the Statewide Branching system while bringing forth a negative response in the Limited Branching system. Only the Limited Branching system responds positively to the profit variable (X_3).

In Equation (4), Lns & Disc, the Unit Banking system and the Statewide Branching system reflect the expected sign (negative) as to the relationship of the liquidity variable (X_1) to this component of the portfolio. The income variable (X_2) reflects a positive relationship in the case of the Unit Banking system and a negative relationship in the case of the Statewide Branching system and the Limited Branching system. The profit variable (X_3) has the expected sign (positive) in the case of the Statewide Branching system and the Limited Branching system while reflecting a negative sign in the case of the Unit Banking system.

It is evident that the regression equations, being reduced form equations, are reflecting problems of identification which give rise to the erratic nature of the signs and to the low number of variables which are found to be significant determinators of the dependent variable.

Estimated Values of the Y Variable, Tables VI-8

Tables VI-8a through 8e set forth estimated values of the Y variable for each of the Equations under consideration.

These are first computed for the cross section equations for each year of the study. They are then computed using the time series regressions as a basis for the estimation.

1. Table VI-8a sets forth the estimated values of Y, the proportion of the portfolio devoted to cash items, as computed from regression Equation (1), Cash Items. The estimated values of Y are computed at the mean values of the X variables. A significant consistency is revealed in this computation. The estimated value of the Y variable is less for the Statewide Branching system than it is for the Unit Banking system for each of the twenty-one years. The average of the estimated Y values for these twenty-one years for the Statewide Branching system is 0.1956 as compared with 0.2075 for the Unit Banking system or is 5.73 percent lower. The average for the Statewide Branching system (0.1956) is 7.30 percent lower than the average of the Limited Branching system (0.2110). The Limited Branching system had as estimated Y value higher than the Unit Banking system for all but four of the twenty-one years.

The fact that the Statewide Branching system is so consistently less than either of the other two systems, and especially less than the Unit Banking system, is strong evidence that the Statewide Branching system is significantly different from the Unit Banking system in the proportion of its portfolio it would devote to liquidity needs as a result of the motivations represented in the variables selected for

the study. Not only is the Statewide Branching system different from the Unit Banking system in this most significant manner, but it is different in a manner which enables it to make a more significant contribution to economic activity as it devotes the portion of its investment funds not committed to liquidity needs to the remaining components of its portfolio.

2. As to Equation (2), US Gov Sec, (Table VI-8b) the Statewide Branching system reflects a lower estimated Y value than the Unit Banking system in all years but one (1949). Similarly, the Limited Branching system reflects a lower estimated Y value than does the Unit Banking system in all years but one (1949). The average estimated Y value for the Statewide Branching system (0.3003) is 10.55 percent lower than the Unit Banking system's average estimated Y value (0.3357). The Limited Branching system reflects an average estimated Y value (0.3196) which is 4.80 percent lower than the Unit Banking system's average.

3. In the "Other Securities" component of the portfolio (Table VI-8c), the Statewide Branching system is experiencing an estimated Y value which is higher or equal to that of the Unit Banking system for fourteen of the twenty-one years. The Limited Branching system experienced a higher estimated Y value than did the Unit Banking system for thirteen of the twenty-one years. The average of the Y values for the Statewide Branching system (0.0807) was 3.86

percent higher than that of the Unit Banking system (0.0777). It was higher by 2.02 percent than the average Y value of the Limited Branching system (0.0791). The average of the Y values of the Limited Branching system was 1.80 percent higher than the average of the estimated Y values for the Unit Banking system.

4. In the most significant component of the portfolio in terms of the intent and purpose of this study, Equation (4), Loans and Discounts, the Statewide Branching system reflects a higher estimated Y value than the Unit Banking system for each of the twenty-one years of the study. Its average estimated Y value (0.4064) was 12.1 percent higher than the average estimated Y value of the Unit Banking system (0.3625) and was 7.88 percent higher than the average estimated Y value for the Limited Branching system (0.3767).

5. Table VI-8e presents the estimated Y values for all equations based on the time series regressions. Surprisingly, both of the Branched systems reflect a lower estimated Y value than does the Unit Banking system in Equation (3), Other Sec, and (4), Lns & Disc. The differences, however, are very slight.

Y Variable Time Trends, Table VI-9

Time trend regressions were run for the Y variable of each of the four equations for the twenty-one years of the study. The regression coefficients, standard errors, and significances are presented in Table VI-3 above.

A most revealing way of presenting the relative relationship of each of the banking systems to each of the other systems is to compute separate or isolated intercepts and slopes for these time trend lines. The isolate intercepts and slopes are presented in Table VI-9.

1. As to Equation (1), Cash Items, it is revealed that the time trend line for the Statewide Branching system lies significantly lower on the Y axis (Proportion of portfolio devoted to Cash Items) than does either of the other two systems. The slopes of all three time trend lines are negative with the Unit Banking system having the steepest slope. The estimated values of the Y variable at the mean of the T variable are as follows:

Statewide Branching system:	0.1856
Limited Branching system:	0.2144
Unit Banking system:	0.2235

2. As to Equation (2), US Gov Sec, the intercept for the Statewide Branching system is only slightly higher than that for the Unit Banking system. The Statewide Branching system's time trend line is declining with a steeper slope than is that of the Unit Banking system. The Limited Branching system has a lower intercept than the other two systems and its slope is declining at a rate only slightly less than that of the Unit Banking system. The estimated values of the Y variable at the mean of the T variable are as follows:

Statewide Branching system: 0.3002

Limited Branching system: 0.3125

Unit Banking system: 0.3245

3. Equation (3), Other Sec, shows intercepts and slopes very similar in all systems. The slopes are positive in all cases with the Limited Branching system having the highest intercept and a slope less steep than the Unit Banking system. The slopes of the Statewide Branching system and the Unit Banking system are so similar as to make the time trend lines, to all practical purposes, parallel. The estimated values of the Y variable at the mean of the T variable are as follows:

Statewide Branching system: 0.0820

Limited Branching system: 0.0814

Unit Banking system: 0.0804

4. In Equation (4), Lns & Disc, the Statewide Branching system has the highest intercept of the three systems with the Unit Banking system having the lowest intercept . The slope of the time trend line is largest in the case of the Statewide Branching system and is lowest in the case of the Limited Branching system. It would appear, in accordance with these time trend lines that the Statewide Branching system is devoting a larger proportion of its portfolio to the Loans and Discount component and that the proportion of its portfolio so allocated is increasing at a faster rate

over time than is that proportion increasing in the other two systems. The estimated values of the Y variable at the mean of the T variable are as follows:

Statewide Branching system:	0.4146
Limited Branching system:	0.3771
Unit Banking system:	0.3595

TABLE VI-1a: Regression Results, Equation (1): Cash Items, Cross Section

Period	Variables					
	Constant	X_1	X_2	X_4	(D_1)	$(D_1)(X_1)$
1946	-0.18163161	0.42406894[a]	0.00001690	3.42024445	0.54569804[a]	-0.42699859[a]
	(0.15328637)	(0.10741420)	(0.00003237)	(2.50057785)	(0.22283779)	(0.14624465)
1947	-0.15818309	0.37208616[a]	0.00000325	5.29513511[a]	0.54342203[a]	-0.34523355[a]
	(0.14934675)	(0.09671117)	(0.00003394)	(2.52853507)	(0.23838282)	(0.14228144)
1948	-0.20540283	0.35299888[a]	0.00002195	6.50152753[a]	0.43474390[a]	-0.25984855[a]
	(0.15329397)	(0.09402058)	(0.00003311)	(2.83894471)	(0.19618807)	(0.12051215)
1949	-0.35065311[a]	0.39675849[a]	0.00004656	8.32742723[a]	0.69953161[a]	-0.36311379[a]
	(0.09430291)	(0.08985005)	(0.00002842)	(1.27605593)	(0.17902944)	(0.11898955)
1950	-0.19946321	0.37413290[a]	0.00001488	4.98839863[b]	0.20402948	-0.15853119
	(0.14093728)	(0.08867699)	(0.00003179)	(2.87821964)	(0.15909333)	(0.10110608)
1951	-0.26460544	0.40095827[a]	0.00002138	6.23161505[a]	0.33090477[b]	-0.20798857
	(0.15824063)	(0.10906230)	(0.00002960)	(3.01887475)	(0.18375695)	(0.12487490)
1952	-0.22598580[b]	0.41549816[a]	0.00000868	4.36458601[b]	0.28739243[b]	-0.22983729[a]
	(0.12119021)	(0.08600484)	(0.00002324)	(2.44651316)	(0.14483046)	(0.10089842)
1953	-0.44937825[a]	0.47148091[a]	0.00004193[b]	8.09834884[a]	0.67915757[a]	-0.34251560[a]
	(0.15175300)	(0.09027186)	(0.00002464)	(2.95938848)	(0.16691696)	(0.10429677)
1954	-0.23526610	0.38289295[a]	0.00001065	4.53453482	0.44660151[a]	-0.22810759[a]
	(0.15886027)	(0.09190906)	(0.00002540)	(2.86539367)	(0.17324807)	(0.10588498)
1955	-0.26771505	0.42014516[a]	0.00002761	3.75481994	0.41461538[b]	-0.27043469[a]
	(0.18148297)	(0.11051353)	(0.00002936)	(3.25296992)	(0.20844261)	(0.12802285)
1956	-0.36123377[a]	0.44406877[a]	0.00003991[b]	5.29669107[a]	0.57331985[a]	-0.27282679[a]
	(0.14521644)	(0.09652378)	(0.00002334)	(2.51859953)	(0.17348202)	(0.11159213)
1957	-0.30043878[a]	0.39109201[a]	0.00002067	5.24245354[a]	0.44806534[a]	-0.23629292[a]
	(0.14098644)	(0.09055765)	(0.00002206)	(2.56366738)	(0.15900347)	(0.10461220)
1958	-0.18860611	0.36185856[a]	-0.00000334	1.81061443	0.27573051	-0.17619356
	(0.17637915)	(0.10168270)	(0.00002192)	(2.75002719)	(0.19313002)	(0.11310337)
1959	-0.04668583	0.35967473[a]	-0.00000459	-0.01014076	0.12681856	-0.15968266
	(0.13091995)	(0.08074739)	(0.00002052)	(2.39153434)	(0.15756215)	(0.09505082)
1960	-0.11121818	0.39225880[a]	-0.00000447	1.08894849	0.14415676	-0.17081417
	(0.16022078)	(0.09079677)	(0.00002055)	(2.58107596)	(0.18452332)	(0.10358214)
1961	0.12548953	0.28894522[a]	0.00000388	-2.97794448	0.03666317	-0.11275723
	(0.24870014)	(0.11650221)	(0.00002064)	(4.01597923)	(0.27679906)	(0.13046243)
1962	-0.05406051	0.31008517[a]	-0.00001346	1.30242180	0.04950762	-0.16667708
	(0.16534789)	(0.10445935)	(0.00002147)	(2.67529435)	(0.19625550)	(0.11821298)
1963	-0.20271872	0.36566910[a]	0.00001416	2.41973293	0.36264789[a]	-0.18557792[b]
	(0.13807424)	(0.09171556)	(0.00001853)	(2.43360291)	(0.16452190)	(0.10324085)
1964	-0.08517725	0.40173385[a]	0.00000505	0.05321941	0.15913045	-0.21260317[b]
	(0.15821574)	(0.10172213)	(0.00002152)	(2.22354343)	(0.18818094)	(0.11291349)
1965	-0.06923179	0.38143502[a]	-0.00000296	0.38355635	0.21369548	-0.22856374[a]
	(0.14232214)	(0.08921120)	(0.00001600)	(2.19884141)	(0.16096009)	(0.09971643)
1966	-0.19253795	0.40744273[a]	0.00000362	2.40599401	0.26520755	-0.21119309[b]
	(0.17869235)	(0.10111414)	(0.00001534)	(2.66420356)	(0.20146048)	(0.11199718)
66 less 46	-0.07639536	0.23569000	0.00002935	0.24063792	0.09052196	-0.23694459
	(0.07349387)	(0.15814753)	(0.00004317)	(2.12218275)	(0.09461201)	(0.17483894)

Note: Superscript 'a' indicates variable is significant at 5.0 per cent.
Superscript 'b' indicates variable is significant at 10.0 per cent.
Standard errors of coefficients are indicated in brackets.

Variables						Regression Advice:	
$(D_1)(X_2)$	$(D_1)(X_4)$	(D_2)	$(D_2)(X_1)$	$(D_2)(X_2)$	$(D_2)(X_4)$	R BAR 2	Std Error
-0.00001967	-9.448384812[a]	0.32807319	-0.22344463[b]	-0.00005379	-3.21316102	0.5438	0.02863746
(0.00003435)	(4.49024799)	(0.19838966)	(0.12900611)	(0.00003638)	(4.49812452)		
-0.00001639	-11.73583490[a]	0.21171279	-0.15464699	-0.00003010	-2.21520817	0.6027	0.02566933
(0.00003818)	(4.93121657)	(0.18617743)	(0.11567948)	(0.00004001)	(3.73504119)		
-0.00002506	-8.892864445[a]	0.20921967	-0.11149302	-0.00003762	-2.47617564	0.5725	0.02615632
(0.00003665)	(3.99522326)	(0.19871195)	(0.11372238)	(0.00003967)	(4.39773986)		
-0.00007171[a]	-12.84470904[a]	0.13682340	-0.14248743	-0.00001597	-0.09491536	0.7573	0.02658168
(0.00003436)	(3.49443290)	(0.11585178)	(0.11124369)	(0.00003247)	(1.63011376)		
-0.00002139	-2.60438401	0.18796027	-0.13638459	-0.00002496	-1.61588613	0.6690	0.02443268
(0.00003483)	(3.34858106)	(0.17765663)	(0.11095368)	(0.00003757)	(3.76652066)		
-0.00001163	-5.87068869	0.25304987	-0.12287943	-0.00003519	-3.38427109	0.5548	0.02776040
(0.00003311)	(3.71565326)	(0.20179773)	(0.13426148)	(0.00003642)	(4.08931285)		
-0.00001343	-3.43170410	0.16102875	-0.17627282	-0.00000677	-0.12583204	0.6390	0.02287264
(0.00002664)	(3.02465792)	(0.16314381)	(0.10950197)	(0.00002906)	(3.49405882)		
-0.00006397[a]	-10.24326883[a]	0.43313389[a]	-0.22660228[b]	-0.00004977	-5.40016617	0.6479	0.02276208
(0.00002764)	(3.26410490)	(0.19014791)	(0.11395502)	(0.00003002)	(3.81629366)		
-0.00004724	-6.10505008[b]	0.20587087	-0.10927196	-0.00002891	-1.97694596	0.6422	0.02307840
(0.00002881)	(3.12864039)	(0.21201579)	(0.11833774)	(0.00003106)	(3.86561915)		
-0.00005855[b]	-3.74867484	0.15727588	-0.11600731	-0.00002791	-0.22525461	0.5588	0.02619269
(0.00003285)	(3.87289106)	(0.23864680)	(0.13839110)	(0.00003482)	(4.56367646)		
-0.00006756[a]	-7.40842243[a]	0.36114846[b]	-0.18794683	-0.00004958[b]	-3.60339840	0.6185	0.02162314
(0.00002603)	(3.20491498)	(0.19460606)	(0.11699088)	(0.00002756)	(3.75956739)		
-0.00004708[b]	-5.45409287[b]	0.27276441	-0.14158045	-0.00003143	-2.91257212	0.6185	0.02123604
(0.00002502)	(2.92265504)	(0.18368049)	(0.11036806)	(0.00002592)	(3.49990779)		
-0.00002413	-2.89360163	0.10947946	-0.11476312	-0.00000985	-0.15193965	0.6000	0.02145069
(0.00002537)	(3.20697478)	(0.21185877)	(0.11919824)	(0.00002568)	(3.58813357)		
-0.00001864	0.41423293	0.08901200	-0.10983649	-0.00001000)	0.34002543	0.6025	0.02089203
(0.00002375)	(2.91392275)	(0.17308640)	(0.09993620)	(0.00002371)	(3.41236671)		
-0.00001064	-0.39175813	0.14200255	-0.12805666	-0.00000948	-0.73600115	0.6216	0.02194399
(0.00002386)	(3.04440011)	(0.19242944)	(0.11063965)	(0.00002448)	(3.25033811)		
-0.00001209	1.11562383	-0.15334383	0.00332220	-0.00000239	3.65082958	0.5879	0.02243227
(0.00002307)	(4.54359846)	(0.30588856)	(0.14153334)	(0.00002517)	(4.95865359)		
0.00000160	0.80229957	0.17748934	-0.04898808	-0.00000238	-3.11630553	0.4952	0.02184145
(0.00002467)	(3.18111015)	(0.21036037)	(0.12265465)	(0.00002474)	(3.77156342)		
-0.00002286	-4.61843013	0.26617666	-0.14791534	-0.00002661	-2.59890108	0.5864	0.01903955
(0.00002119)	(2.85460288)	(0.20076765)	(0.10716787)	(0.00002189)	(3.70359991)		
-0.00000010	-0.83649122	0.23069230	-0.14014395	-0.00001482	-2.52567589	0.5210	0.02014691
(0.00002407)	(2.93676090)	(0.19629086)	(0.11838576)	(0.00002385)	(3.19045166)		
-0.00000502	-1.74029174	0.28343662	-0.13874743	-0.00001143	-3.87175200	0.6162	0.01787190
(0.00001860)	(2.55473350)	(0.18959733)	(0.10532522)	(0.00001879)	(3.08735165)		
-0.00000386	-2.97920751	0.28101631	-0.12942956	-0.00000062	-4.18531590	0.5573	0.01846202
(0.00001810)	(3.17195517)	(0.21390224)	(0.11686671)	(0.00001742)	(3.36280320)		
-0.00001868	-3.55767985	0.13921713	-0.06595577	0.00000315	-5.51802835	0.3439	0.02454165
(0.00004650)	(2.86493338)	(0.11197865)	(0.20804262)	(0.00006569)	(3.95456725)		

TABLE VI-1b: Regression Results, Equation (2): US Gov Sec, Cross Section

Period	Variables					
	Constant	X_1	X_2	X_3	(D_1)	$(D_1)(X_1)$
1946	0.75535386[a]	-0.30046408	0.00005803	-0.22457899	-0.43559367[b]	0.48738878[a]
	(0.19766675)	(0.18186547)	(0.00006047)	(0.18748091)	(0.24653496)	(0.21051720)
1947	0.52887401[a]	-0.18479224	0.00014744[a]	-0.28861510	-0.37206840	0.37654214
	(0.24438784)	(0.21609392)	(0.00005976)	(0.18631358)	(0.30399918)	(0.24522513)
1948	0.38804054[a]	-0.14730321	0.00005106	0.13426736	-0.27723123	0.29401560
	(0.19071709)	(0.17674317)	(0.00005622)	(0.13790727)	(0.22578865)	(0.20504969)
1949	0.51014301[a]	-0.20501467	0.00006525	-0.06052243[a]	-0.32170193	0.31609869
	(0.18257347)	(0.17569222)	(0.00005535)	(0.01453949)	(0.22650905)	(0.20472093)
1950	0.60234037[a]	-0.28875973	0.00003453	-0.07375373	-0.34847293	0.34213419
	(0.21200752)	(0.19904629)	(0.00006066)	(0.21589271)	(0.25038570)	(0.22148137)
1951	0.49996623[a]	-0.19409711	-0.00001258	0.01363454	-0.19637580	0.24842423
	(0.20615956)	(0.19105449)	(0.00004451)	(0.16677986)	(0.24283853)	(0.21654556)
1952	0.63658265[a]	-0.32943085[b]	0.00002083	0.07548137	-0.29984113	0.39933660[b]
	(0.18235150)	(0.16909112)	(0.00004501)	(0.22026162)	(0.22236415)	(0.19865047)
1953	0.44773359[a]	-0.22429443	0.00003017	0.07180367	-0.15888217	0.32592800
	(0.19276577)	(0.16784623)	(0.00004214)	(0.17022778)	(0.22835915)	(0.19463707)
1954	0.54935671[a]	-0.25635272	0.00002918	-0.09339666	-0.19886355	0.28425436
	(0.16506164)	(0.16754933)	(0.00004258)	(0.19939814	(0.19395648)	(0.19454866)
1955	0.50669021[a]	-0.25106605	0.00001360	-0.02329089	-0.15163688	0.31162491
	(0.18773840)	(0.18210834)	(0.00004671)	(0.14186618)	(0.21968182)	(0.20981515)
1956	0.47867324[a]	-0.19122540	0.00000635	-0.05398459	-0.14658310	0.26050265
	(0.22647780)	(0.20656734)	(0.00004848)	(0.16809691)	(0.26819703)	(0.23668172)
1957	0.48034694[a]	-0.20487443	0.00000232	-0.04467248	-0.16528654	0.27576404
	(0.21351605)	(0.19413718)	(0.00004487)	(0.20723631)	(0.24180001)	(0.22373636)
1958	0.42153592[a]	-0.22525877	0.00002740	0.00415963	-0.09493027	0.26035085
	(0.17082803)	(0.17611821)	(0.00004213)	(0.19833387)	(0.20004310)	(0.20050936)
1959	0.47783849[a]	-0.21930744	-0.00001552	-0.00349963	-0.20781006	0.27779407
	(0.17044650)	(0.16503853)	(0.00004175)	(0.14113829)	(0.20338199)	(0.19492558)
1960	0.42283002[a]	-0.22454024	0.00000534	-0.00620343	-0.19586941	0.30694109[b]
	(0.14994766)	(0.15131331)	(0.00003659)	(0.11042472)	(0.18091273)	(0.17415347)
1961	0.55755939[a]	-0.28239403	-0.00001863	-0.09191868	-0.36610318[a]	0.35091035[b]
	(0.12701582)	(0.17234059)	(0.00003011)	(0.15682884)	(0.16792519)	(0.19261597)
1962	0.49559517[a]	-0.29174707	-0.00001073	-0.03079371	-0.23008017	0.41843899[a]
	(0.15254794)	(0.17400513)	(0.00003547)	(0.11903344)	(0.17566631)	(0.19293505)
1963	0.51039291[a]	-0.27314294	-0.00002772	-0.05148763	-0.31717011[b]	0.40931741[b]
	(0.16693654)	(0.18320635)	(0.00003695)	(0.14002454)	(0.18598990)	(0.20697540)
1964	0.45104414[a]	-0.23747117	-0.00001808	-0.05703304	-0.11953714	0.44434878[a]
	(0.17696677)	(0.18114069)	(0.00003684)	(0.13010588)	(0.22494107)	(0.20491194)
1965	0.41552640[a]	-0.27059389	-0.00002822	0.01857754	-0.32051796[b]	0.39034449[b]
	(0.14928965)	(0.18425248)	(0.00003449)	(0.16634436)	(0.17506939)	(0.21387998)
1966	0.41422721[a]	-0.27479372	-0.00003126	0.01156394	-0.31633001[b]	0.36140004[b]
	(0.15019537)	(0.18544931)	(0.00002927)	(0.12206252)	(0.16654806)	(0.21192473)
66 less 46	-0.30752407[a]	0.07266525	-0.00000118	0.00758556	-0.02702805	0.10526850
	(0.14253380)	(0.32712464)	(0.00010010)	(0.18398275)	(0.14756954)	(0.37010644)

Note: Superscript 'a' indicates variable is significant at 5.0 per cent.
Superscript 'b' indicates variable is significant at 10.0 per cent.

Standard errors of coefficients are indicated in brackets.

Variables						Regression Advice:	
$(D_1)(X_2)$	$(D_1)(X_4)$	(D_2)	$(D_2)(X_1)$	$(D_2)(X_2)$	$(D_2)(X_4)$	R BAR 2	Std Error
-0.00003158	0.25130042	-0.11119556	0.09317989	0.00001945	-0.03529622	0.2404	0.05141405
(0.00006314)	(0.27011358)	(0.24077132)	(0.22081696)	(0.00006723)	(0.26577732)		
-0.00008458	0.41912687	-0.00347876	0.02405148	-0.00002831	0.01965900	0.2330	0.05664285
(0.00006971)	(0.30196900)	(0.28265320)	(0.25465285)	(0.00007562)	(0.25110945)		
0.00000864	0.05568876	0.11156343	-0.07465218	0.00003915	-0.26392915	0.2515	0.05026243
(0.00006395)	(0.19799613)	(0.23246366)	(0.21398635)	(0.00006869)	(0.23502911)		
0.00000315	0.16627905	0.00059414	-0.02989780	-0.00000070	0.03704553[a]	0.6315	0.05084522
(0.00006431)	(0.22185672)	(0.21739693)	(0.21574922)	(0.00006406)	(0.01509623)		
0.00004345	-0.03623555	-0.08778959	0.05861035	0.00004002	-0.09128157	0.2240	0.05016131
(0.00006833)	(0.27581786	(0.25067431)	(0.24201775)	(0.00006954)	(0.26544926)		
0.00003579	-0.20429968	0.03727173	-0.03459978	0.00004639	-0.23910575	0.1176	0.04596832
(0.00005053)	(0.24849047)	(0.24532206)	(0.23092150)	(0.00005537)	(0.23181392)		
0.00006526	-0.34384076	-0.01247073	0.07353288	0.00006685	-0.40502628	0.1748	0.04488536
(0.00005137)	(0.28560938)	(0.22526350)	(0.21559341)	(0.00005600)	(0.27996130)		
0.00000593	-0.26753805	0.13370833	-0.03743390	-0.00000478	-0.24638953	0.1302	0.04304310
(0.00004833)	(0.23067873)	(0.24641178)	(0.21376491)	(0.00005118)	(0.25945186)		
0.00001693	-0.18157627	0.01522651	0.04756969	0.00000503	-0.18300589	0.1794	0.04306827
(0.00004901)	(0.22901663)	(0.21705183)	(0.21342955)	(0.00005177)	(0.30761779)		
0.00001721	-0.25134705	0.12778484	-0.01149914	0.00002516	-0.32770363	0.1423	0.04450518
(0.00005304)	(0.19536790)	(0.22944471)	(0.23095234)	(0.00005944)	(0.23520338)		
0.00001292	-0.18726020	0.17950497	-0.09163181	-0.00000915	-0.19675760	0.0684	0.04658767
(0.00005494)	(0.23070669)	(0.27055402)	(0.25038152)	(0.00006644)	(0.24283338)		
0.00002002	-0.19306982	0.12476151	-0.01689597	-0.00000875	-0.21378245	0.0705	0.04558852
(0.00005164)	(0.24555769)	(0.26477421)	(0.23810140)	(0.00005181)	(0.31742979)		
0.00000754	-0.29919104	0.11533043	0.07706854	-0.00002139	-0.30329502	0.1139	0.04137753
(0.00004867)	(0.24049374)	(0.21724221)	(0.21402513)	(0.00004826)	(0.30770697)		
0.00003295	-0.14156834	0.05675161	0.09882225	0.00002034	-0.27121000	0.1295	0.04250323
(0.00004848)	(0.19916346)	(0.20256999)	(0.20493088)	(0.00004837)	(0.18339875)		
0.00000921	-0.11718126	-0.04503998	0.08398943	-0.00001051	-0.01597795	-0.0000	0.03825119
(0.00004291)	(0.15828005)	(0.19914562)	(0.18614636)	(0.00004175)	(0.17831503)		
0.00004359	0.01192413	-0.03977460	0.23251944	0.00003369	-0.34428266	0.1842	0.03469238
(0.00003448)	(0.23112620)	(0.17773381)	(0.20665770)	(0.00003487)	(0.23068670)		
0.00002689	-0.21808645	0.06620824	0.16820877	0.00002260	-0.36548925[b]	0.2598	0.03594091
(0.00004047)	(0.15718522)	(0.19996090)	(0.20316103)	(0.00004044)	(0.20477315)		
0.00004502	-0.12048767	0.09481162	0.14295131	0.00004402	-0.41171326[b]	0.2645	0.03742507
(0.00004332)	(0.19418406)	(0.23093409)	(0.21606629)	(0.00004300)	(0.23844721)		
0.00003688	-0.40669882	0.01917882	0.10937678	0.00000751	-0.15557253	0.2498	0.03691517
(0.00004174)	(0.25194007)	(0.23404848)	(0.21389337)	(0.00004101)	(0.20992986)		
0.00004041	-0.07430844	0.25501727	0.11590189	0.00002709	-0.51680595[b]	0.2737	0.03522045
(0.00003920)	(0.21963848)	(0.23597998)	(0.21630577)	(0.00003866)	(0.26327000)		
0.00003573	-0.03607204	-0.38551341	0.12945338	0.00001601	-0.25782315	0.2183	0.03563432
(0.00003468)	(0.12984326)	(0.27838492)	(0.21700086)	(0.00003345)	(0.26838227)		
0.00000292	-0.06591350	-0.11178433	-0.40344445	-0.00003724	0.20591702	0.1600	0.05777573
(0.00010574)	(0.19380863)	(0.21804579)	(0.42988586)	(0.00014038)	(0.27695372)		

TABLE VI-1c: Regression Results, Equation (3): Other Sec, Cross Section

Period	Variables					
	Constant	X_1	X_2	X_4	(D_1)	$(D_1)(X_1)$
1946	0.03584611	0.02550832	-0.00000951	0.00631892	0.05929048	-0.08093543
	(0.07427446)	(0.06723828)	(0.00001865)	(0.00532275)	(0.08090957)	(0.07619739)
1947	0.07575586	0.00309247	-0.00001788	0.00550211	0.03139223	-0.06059085
	(0.07866794)	(0.07142602)	(0.00002187)	(0.01165889)	(0.08772323)	(0.08157099)
1948	0.07180602	-0.00249675	-0.00000919	0.00422817	-0.00689145	-0.00957943
	(0.07485696)	(0.06748543)	(0.00001926)	(0.01990763)	(0.08380257)	(0.07845357)
1949	0.07647894	0.00751111	-0.00000902	-0.01157642	-0.00321998	0.00961689
	(0.06663367)	(0.06408169)	(0.00001987)	(0.00884135)	(0.07637409)	(0.07455389)
1950	0.07628798	0.00026623	-0.00000919	0.00324681	0.09649418	-0.06395018
	(0.08789511)	(0.08790520)	(0.00002443)	(0.01630296)	(0.09671282)	(0.10010141)
1951	0.09167447	-0.01366427	-0.00001544	0.02594957	-0.00425443	0.00680003
	(0.08888777)	(0.08671575)	(0.00002153)	(0.03803446)	(0.09883030)	(0.09877948)
1952	0.07897826	0.01002010	-0.00001505	0.01550119	-0.01209484	0.00316067
	(0.07817016)	(0.08082945	(0.00002095)	(0.03002749)	(0.08959157)	(0.09469784)
1953	0.05412507	0.03171554	-0.00001017	0.02046880	0.04316079	-0.05347125
	(0.09630208)	(0.09798612)	(0.00002487)	(0.03995352)	(0.10708237)	(0.11325643)
1954	0.05883947	0.05135613	0.00000264	-0.02438942[b]	0.05194465	-0.02906518
	(0.07108365)	(0.07454917)	(0.00001846)	(0.01275289)	(0.08004723	(0.08664944)
1955	0.05746340	0.04857730	-0.00001283	0.01429521	0.05771015	-0.04309088
	(0.08701979)	(0.08566558)	(0.00002146)	(0.05302260)	(0.09598790)	(0.09864141)
1956	0.06825989	0.07416039	-0.00002631	-0.01959846	0.03778990	-0.06081131
	(0.09827370)	(0.10323833)	(0.00002190)	(0.03265302)	(0.10662964)	(0.11604815)
1957	0.20535422[a]	-0.10129452	-0.00003583	0.08093282	-0.10203694	0.11702128
	(0.09569946)	(0.11369741)	(0.00002347)	(0.06349495)	(0.10514235)	(0.12735789)
1958	0.16161689	-0.00979537	-0.00003252	-0.00505243	-0.04011022	0.03853742
	(0.09782388)	(0.10691443)	(0.00002757)	(0.02898371)	(0.10658752)	(0.11986692)
1959	0.15720471[b]	-0.02372162	-0.00002777	-0.03373000	-0.06915538	0.06217111
	(0.08022371)	(0.08263069)	(0.00002446)	(0.03225870)	(0.08985500)	(0.09601487)
1960	0.22601854[a]	-0.06916650	-0.00003193[b]	-0.04300585	-0.13180882	0.12350706
	(0.07375556)	(0.07799986)	(0.00001666)	(0.02793198)	(0.08062033)	(0.08822396)
1961	0.19408200[a]	-0.03270815	-0.00001563	-0.06422931	-0.09070156	0.02787753
	(0.08759587)	(0.10119495)	(0.00002381)	(0.04800933)	(0.09871526)	(0.11555459)
1962	0.18762346	-0.04221708	-0.00000511	-0.07314177	-0.08800679	0.11556002
	(0.12668419)	(0.12172522)	(0.00001983)	(0.06784606)	(0.13436275)	(0.13069064)
1963	0.20054111	-0.03119641	-0.00001614	-0.07061274	-0.05853834	0.06893310
	(0.12665970)	(0.13114978)	(0.00002622)	(0.07746561)	(0.14320355)	(0.14590131)
1964	0.13864165	-0.00836023	-0.00001440	0.00016031	-0.03827063	0.05489905
	(0.14016256)	(0.14087343)	(0.00002665)	(0.10067000)	(0.14915726)	(0.15734539)
1965	0.20039740[b]	-0.02880207	-0.00000063	-0.11515244	-0.11544840	0.07654916
	(0.10162563)	(0.11710781)	(0.00002363)	(0.10518202)	(0.11299707)	(0.12996866)
1966	0.13250659	-0.04935486	-0.00000929	0.10429066	0.01413025	0.10731037
	(0.10730317)	(0.10926896)	(0.00001942)	(0.12489353)	(0.11955924)	(0.12296511)
66 less 46	0.10017155[b]	-0.05130234	-0.00003451	0.00234555	-0.05851453	-0.09962989
	(0.05669042)	(0.15002107)	(0.00003984)	(0.00822605)	(0.05356240)	(0.16368600)

Note: Superscript 'a' indicates variable is significant at 5.0 percent.
Superscript 'b' indicates variable is significant at 10.0 percent.

Standard errors of coefficients are indicated in brackets.

Variables						Regression Advice:	
$(D_1)(X_2)$	$(D_1)(X_3)$	(D_2)	$(D_2)(X_1)$	$(D_2)(X_2)$	$(D_2)(X_3)$	R BAR 2	Std Error
0.00001504	-0.01592181[a]	0.11322103	-0.09092775	-0.00001213	-0.00968403	0.1724	0.01707164
(0.00001964)	(0.00707826)	(0.08558696)	(0.08031801)	(0.00002333)	(0.00965850)		
0.00001160	-0.00928339	0.08871800	-0.07802399	-0.00000216	-0.02343500	0.0257	0.01969687
(0.00002498)	(0.01477348)	(0.09145752)	(0.08597355)	(0.00002720)	(0.01982199)		
0.00000592	0.00678224	0.09767870	-0.07905832	-0.00001194	-0.01895901	0.0183	0.01926554
(0.00002246)	(0.02111930)	(0.08960367)	(0.08628063)	(0.00002477)	(0.02819823)		
0.00000523	-0.00820632	0.07925500	-0.11215998	0.00000098	0.00740952	0.0881	0.01859581
(0.00002291)	(0.01828535)	(0.07936136)	(0.07879993)	(0.00002300)	(0.00903372)		
0.00000068	-0.05280764[a]	0.09301905	-0.11683869	-0.00002204	0.04270769	0.2440	0.02424724
(0.00002819)	(0.02122280)	(0.10776559)	(0.11036482)	(0.00002926)	(0.03122764)		
0.00000407	-0.00203818	0.11084349	-0.13544272	-0.00000937	0.01663357	0.0465	0.02222234
(0.00002461)	(0.04303731)	(0.10778382)	(0.10753158)	(0.00002525)	(0.04478681)		
0.00000460	0.02959217	0.16199473	-0.21807547[b]	-0.00001282	0.05802461	0.0358	0.02151245
(0.00002408)	(0.03805210)	(0.10292196)	(0.11469123)	(0.00002502)	(0.05084092)		
0.00000589	-0.01071242	0.14206841	-0.15986444	-0.00000809	-0.01081234	-0.1560	0.02500493
(0.00002839)	(0.04468827)	(0.12333358)	(0.13293470)	(0.00002913)	(0.05646381)		
-0.00001395	0.00295138	0.15509839[b]	-0.15724136	-0.00000396	-0.01994980	0.2545	0.01924226
(0.00002140)	(0.01434543)	(0.09058951)	(0.09504990)	(0.00002223)	(0.02014715)		
-0.00000834	0.00346843	0.13302450	-0.17204193	-0.00000675	0.02364782	-0.0025	0.02093925
(0.00002488)	(0.05380087)	(0.10648227)	(0.10962388)	(0.00002457)	(0.05879576)		
0.00000731	0.04179289	0.12607515	-0.18556698	0.00000541	0.05656827	0.0883	0.02143572
(0.00002490)	(0.03507513)	(0.11465021)	(0.12204525)	(0.00002471)	(0.03783719)		
0.00002012	-0.06202342	0.07161543	-0.06413573	0.00000180	-0.12199405	0.0636	0.02351407
(0.00002725)	(0.06749014)	(0.12533502)	(0.13838178)	(0.00002769)	(0.07387661)		
0.00002407	-0.02493764	0.07250291	-0.08188882	0.00002185	-0.05173674	0.2233	0.02310386
(0.00003074)	(0.03091025)	(0.11304934)	(0.12775011)	(0.00003088)	(0.03656643)		
0.00001355	-0.02834341	-0.00461605	-0.03973307	0.00001864	0.00875203	0.1953	0.02142271
(0.00002741)	(0.03329529)	(0.09949115)	(0.10752866)	(0.00002739)	(0.03662113)		
0.00001912	0.01531227	0.03115047	-0.00541805	-0.00000175	-0.03519457	0.3900	0.01773435
(0.00001931)	(0.02953719)	(0.08497842)	(0.09486656)	(0.00001917)	(0.03603383)		
0.00000668	0.06753136	0.07964930	-0.16309077	-0.00000072	0.03391495	0.0533	0.02281369
(0.00002639)	(0.05785449)	(0.10997373)	(0.12557391)	(0.00002646)	(0.05843081)		
-0.00000227	0.01505050	0.08760865	-0.04663518	-0.00000511	-0.06410977	0.2127	0.02033419
(0.00002288)	(0.07620148)	(0.13517788)	(0.14122325)	(0.00002281)	(0.09103333)		
0.00001171	-0.02367938	0.09894888	-0.15241088	0.00000014	-0.00412091	-0.0002	0.02712552
(0.00003011)	(0.10186001)	(0.15582175)	(0.15463600)	(0.00002961)	(0.14905350)		
0.00001702	-0.05578211	0.09738710	-0.19781674	-0.00000246	0.05153201	-0.0673	0.02635499
(0.00003012)	(0.12278218)	(0.15214773)	(0.16489868)	(0.00002934)	(0.11277633)		
0.00000357	0.12793519	-0.02942790	-0.09587347	-0.00001749	0.23768964[b]	-0.0000	0.02380093
(0.00002702)	(0.11564397)	(0.13009955)	(0.13927676)	(0.00002594)	(0.13789511)		
0.00000754	-0.20429821	-0.11222030	-0.09444942	-0.00000716	-0.09655543	0.1102	0.02101346
(0.00002229)	(0.13425213)	(0.12402520)	(0.12870732)	(0.00002148)	(0.13769204)		
0.00002079	-0.01898042[b]	-0.03000814	0.07849522	0.00002659	-0.00872869	0.1839	0.02258746
(0.00004169)	(0.01004422)	(0.08074403)	(0.18691769)	(0.00005884)	(0.01133609)		

TABLE VI-1d: Regression Results, Equation (4): Loan & Discounts, Cross Section

Period	Variables					
	Constant	X_1	X_2	X_3	(D_1)	$(D_1)(X_1)$
1946	0.26656055[a]	0.05233676	-0.00001205	-0.04690942[a]	0.20408054	-0.29385752[a]
	(0.12375805)	(0.12293872)	(0.00003388)	(0.01217352)	(0.13969919)	(0.14286000)
1947	0.41957931[a]	-0.00949524	-0.00004120	-0.05110756[a]	0.16466224	-0.26078824
	(0.15439663)	(0.16672302)	(0.00004533)	(0.01694186)	(0.18031119)	(0.18850780)
1948	0.40499466[a]	-0.09671133	-0.00004099	-0.00506092	0.11595506	-0.18071314
	(0.16723565)	(0.15364691)	(0.00004501)	(0.02195683)	(0.19988514)	(0.17783859)
1949	0.74670325[a]	(0.07033213	-0.00010418	-0.14140254[a]	-0.14158981	-0.32560667
	(0.24028502)	(0.25484852)	(0.00007538)	(0.02581179)	(0.28145214)	(0.29331781)
1950	0.39226796[a]	-0.06208686	-0.00000435	-0.02043853	0.25869896	-0.15540767
	(0.15780878)	(0.15976687)	(0.00004504)	(0.02413102)	(0.18147247)	(0.18160545)
1951	0.42339769[a]	-0.10091132	0.00001101	-0.02290100	0.22160864	-0.11877259
	(0.15542894)	(0.16580384)	(0.00003761)	(0.02010912)	(0.17313612)	(0.18794836)
1952	0.38756147[a]	-0.07621605	0.00002409	-0.02152563	0.26463622	-0.16104790
	(0.17900265)	(0.15748758)	(0.00004241)	(0.02919672)	(0.20086783)	(0.18701542)
1953	0.60711594[a]	-0.23577023	-0.00003222	-0.01770505	0.09230183	0.01439353
	(0.16379450)	(0.15047273)	(0.00003760)	(0.02742502)	(0.18361512)	(0.17410662)
1954	0.58533052[a]	-0.16547159	-0.00001919	-0.04482829	0.05575674	-0.04748633
	(0.17153753)	(0.15247375)	(0.00003803)	(0.03253046)	(0.19045630)	(0.17659804)
1955	0.59462659[a]	-0.18170980	-0.00001677	-0.02629142	-0.00034083	0.00072367
	(0.18462574)	(0.17022832)	(0.00004309)	(0.03165755)	(0.20905994)	(0.19590607)
1956	0.58894356[a]	-0.28989797	0.00000087	0.00078326	0.14327238	0.04620652)
	(0.20690083)	(0.1733900)	(0.00004206)	(0.03230939)	(0.22753587)	(0.19912000)
1957	0.44000155[b]	-0.15487109	0.00003668	-0.00772288	-0.02835567	-0.07819127
	(0.22030561)	(0.16691633)	(0.00003856)	(0.04214976)	(0.25359961)	(0.19053168)
1958	0.44895763[a]	-0.09234072	0.00001496	-0.01651731	0.23922816	-0.17256883
	(0.16662658)	(0.14328210)	(0.00003701)	(0.04651768)	(0.18262664)	(0.16507268)
1959	0.45844602[a]	-0.07392346	0.00006298[b]	-0.04697912	0.15887018	-0.18012946
	(0.15137281)	(0.14171244)	(0.00003368)	(0.04186057)	(0.16691623)	(0.16353986)
1960	0.54115216[a]	-0.10310330	0.00004248	-0.06783921	0.15736570	-0.21899729
	(0.13320505)	(0.13068832)	(0.00003084)	(0.04649751)	(0.15607432)	(0.15245026)
1961	0.32341765	0.01244300	0.00004463	0.00092675	0.42650073	-0.28503291
	(0.20629131)	(0.16662043)	(0.00003187)	(0.04853168)	(0.22816382)	(0.18726631)
1962	0.43305817[a]	-0.01802915	0.00003562	-0.02520590	0.52469009[a]	-0.32192404[b]
	(0.20044722)	(0.16617959)	(0.00003634)	(0.05320854)	(0.23172746)	(0.18629902)
1963	0.54365639[a]	-0.07348683	0.00003191	-0.05219175	0.17128823	-0.24450451
	(0.20236629)	(0.17006841)	(0.00003405)	(0.05582220)	(0.23368173)	(0.18938005)
1964	0.49992773[a]	-0.12288569	0.00002906	-0.00391678	0.45400268[a]	-0.27297170
	(0.18543938)	(0.17059765)	(0.00003501)	(0.06335810)	(0.21192948)	(0.19224137)
1965	0.84406047[a]	-0.17679487	-0.00000185	-0.13782801	-0.13772137	-0.10333150
	(0.33932970)	(0.18407901)	(0.00004524)	(0.10223496)	(0.36011869)	(0.20271652)
1966	0.28267031	0.00529259	0.00005063[b]	0.04664391	0.55919732[a]	-0.35299271[b]
	(0.18709628)	(0.18032708)	(0.00002683)	(0.05339481)	(0.20617364)	(0.20143423)
66 less 46	0.27325949[a]	0.20008454	0.00008167	-0.04606124[b]	0.07588510	-0.30351608
	(0.11047003)	(0.32119476)	(0.00008747)	(0.02378965)	(0.11342525)	(0.34991376)

Note: Superscript 'a' indicates variable is significant at 5.0 per cent.
Superscript 'b' indicates variable is significant at 10.0 per cent.

Standard errors of coefficients are indicated in brackets.

Variables						Regression Advice:	
$(D_1)(X_2)$	$(D_1)(X_3)$	(D_2)	$(D_2)(X_1)$	$(D_2)(X_2)$	$(D_2)(X_3)$	R BAR 2	Std Error
-0.00002450	0.03727747	-0.03393238	0.06452739	-0.00001438	0.01073790	0.4562	0.03351011
(0.00003578)	(0.02812898)	(0.15109364)	(0.14764567)	(0.00003941)	(0.01987247)		
-0.00000348	0.02450324	-0.09421005	0.08367565	-0.00000039	0.01579429	0.4067	0.04331417
(0.00005272)	(0.03082997)	(0.19106611)	(0.19660424)	(0.00005576)	(0.02382807)		
-0.00001493	0.03115472	-0.09853903	0.17636522	0.00000820	-0.01680904	0.2383	0.04358275
(0.00005232)	(0.03943053)	(0.23343295)	(0.18703640)	(0.00005723)	(0.04031126)		
0.00006732	0.11632077[a]	0.08252469	0.07147679	-0.00005934	-0.01891051	0.6668	0.07054558
(0.00008938)	(0.04258836)	(0.29550401)	(0.30828949)	(0.00008614)	(0.03479059)		
-0.00002818	-0.02205078	-0.08554554	0.16575460	-0.00001988	0.00040623	0.2795	0.04204716
(0.00005214)	(0.03186759)	(0.20270550)	(0.19662701)	(0.00005272)	(0.03150676)		
-0.00004648	-0.00542034	-0.12047576	0.15771935	-0.00001052	0.00657028	0.3082	0.04002861
(0.00004328)	(0.02480460)	(0.20366312)	(0.20060775)	(0.00004630)	(0.02608900)		
-0.00004845	-0.00729021	-0.05123056	0.15966269	-0.00002371	-0.00846647	0.2767	0.04161399
(0.00004823)	(0.03762725)	(0.25489628)	(0.20514664)	(0.00005262)	(0.03841674)		
0.00002485	-0.03710270	-0.38969997	0.33731272[b]	0.00005165	0.01977912	0.3464	0.03861986
(0.00004330)	(0.03301976)	(0.23676255)	(0.19492439)	(0.00004551)	(0.04028410)		
0.00002118	-0.01024751	-0.25546281	0.23926333	0.00002983	0.01383590	0.2973	0.03922739
(0.00004448)	(0.03973630)	(0.22871052)	(0.19392242)	(0.00004654)	(0.04899667)		
0.00000697	0.01071618	-0.33515607	0.28562224	0.00004751	0.01820319	0.1612	0.04147743
(0.00004932)	(0.03550024)	(0.27371349)	(0.21866058)	(0.00005437)	(0.04698861)		
-0.00000265	-0.04903273	-0.54504045[a]	0.42601605[a]	0.00007275	0.03922673	0.4066	0.03931924
(0.00004694)	(0.03856303)	(0.25024584)	(0.21061996)	(0.00004820)	(0.04015170)		
-0.00001643	-0.05728326	-0.35523733	0.18017133	0.00001001	0.09382124	0.4112	0.03765406
(0.00004475)	(0.05374642)	(0.24973885)	(0.20373849)	(0.00004363)	(0.05804683)		
-0.00000753	-0.02972587	-0.10384212	0.13460759	0.00002001	-0.00626919	0.3918	0.03544628
(0.00004261	(0.04949506)	(0.25607792)	(0.17989046)	(0.00004439)	(0.07689396)		
-0.00005185	0.04601891	-0.21517593	0.01514918	-0.00001496	0.09428371[a]	0.5235	0.03577058
(0.00003963)	(0.04195442)	(0.17433410)	(0.17807132)	(0.00003843)	(0.04561681)		
-0.00003472	0.05430391	-0.23386955	0.10804556	-0.00001115	0.10505539	0.4950	0.03307613
(0.00003689)	(0.05341304)	(0.18957755)	(0.16291354)	(0.00003638)	(0.07514339)		
-0.00005741	-0.03507578	0.08633886	-0.04104213	-0.00003382	0.01219688	0.3849	0.03488754
(0.00003568)	(0.05543412)	(0.24806726)	(0.20151547)	(0.00003636)	(0.06904581)		
-0.00001509	-0.12068169	-0.19319132	0.02470817	0.00000669	0.09680907	0.5085	0.03498813
(0.00004166)	(0.07394006)	(0.29164088)	(0.19533401)	(0.00004150)	(0.10687428)		
-0.00003202	0.05788197	-0.28147648	0.05294394	0.00001068	0.13725899	0.5274	0.03420213
(0.00003878)	(0.06931220)	(0.26637182)	(0.19791707)	(0.00003897)	(0.10303492)		
-0.00005084	-0.06408416	-0.26634032	-0.13563970	0.00001198	0.09864439	0.4905	0.03463753
(0.00003953)	(0.07076184)	(0.26416331)	(0.20077865)	(0.00003898)	(0.10518098)		
-0.00000647	0.15075635	-0.59030496	0.05292865	0.00004873	0.25762527[a]	0.4992	0.03355054
(0.00004875)	(0.10903424)	(0.37035380)	(0.21506780)	(0.00004799)	(0.12743108)		
-0.00005473[b]	-0.08692590	0.14940772	-0.11980933	-0.00002571	-0.00040902	0.4540	0.03388280
(0.00003204)	(0.05802836)	(0.20673421)	(0.21163777)	(0.00003076)	(0.06297868)		
-0.00010275	0.04329908	-0.00233192	-0.08694710	-0.00001340	0.03682573	-0.0011	0.04656197
(0.00009102)	(0.03318767)	(0.16144797)	(0.30406199)	(0.00012503)	(0.03000775)		

TABLE VI-2: Regression Results, All Equations, Time Series

Period	Constant	X_1	X_2	X_3-X_4*	(D_1)	$(D_1)(X_1)$
			Equation (1): Cash Items			
All Years	-0.05804289[a]	0.39231693[a]	-0.00000301	-0.09591747	0.23607597[a]	-0.24104788[a]
	(0.02447354)	(0.02105692)	(0.00000478)	(0.22122969)	(0.02772632)	(0.02465397)
			Equation (2): US Gov Sec			
All Years	0.36178175[a]	0.20145456[a]	-0.00006804[a]	-0.10577285[a]	0.03595331	0.02536293
	(0.06436974)	(0.05701426)	(0.00001474)	(0.01973231)	(0.07394917)	(0.06807611)
			Equation (3): Other Sec			
All Years	0.16800918[a]	-0.12367281[a]	0.00000460	-0.00738402[a]	-0.06995646[a]	0.07314740[a]
	(0.02029448)	(0.01790597)	(0.00000473)	(0.00316363)	(0.02278644)	(0.02141515)
			Equation (4): Loans & Discounts			
All Years	0.66951405[a]	-0.38260194[a]	0.00005558[a]	-0.05611021[a]	-0.00286997	-0.07513424
	(0.06346934)	(0.06052508)	(0.00001510)	(0.00942677)	(0.07210932)	(0.07095114)

Note: Superscript 'a' indicates variable is significant at 5.0 per cent.
Superscript 'b' indicates variable is significant at 10.0 per cent.

Standard errors of coefficients are indicated in brackets.

(*) In Equation (1), this variable is X_4.
In Equations (2), (3), and (4), this variable is $(X_3)/(X_4)$, and is designated X_3.

Regression Coefficients, Standard Errors, Significance:						Regression Advice:	
$(D_1)(X_2)$	$(D_1)(X_3-X_4)$*	(D_2)	$(D_2)(X_1)$	$(D_2)(X_2)$	$(D_2)(X_3-X_4)$	R BAR 2	Std Error
		Equation (1): Cash Items					
-0.00000872	-1.65829300[a]	0.13504119[a]	-0.12333180[a]	-0.00001334[a]	-0.51692462[b]	0.7108	0.02590105
(0.00000549)	(0.27751281)	(0.02934467)	(0.02596159)	(0.00000554)	(0.27840914)		
		Equation (2): US Gov Sec					
0.00006881[a]	-0.34393366[a]	-0.00587700	-0.11170001	0.00002213	0.07054252[a]	0.3582	0.08090249
(0.00001698)	(0.03737876)	(0.07700246)	(0.07225201)	(0.00001712)	(0.02054432)		
		Equation (3): Other Sec					
0.00000620	-0.102665778	0.05974517[a]	-0.05046277[a]	-0.00001479[a]	0.00047152	0.2423	0.02603649
(0.00000540)	(0.00378926)	(0.02440189)	(0.02290947)	(0.00000550)	(0.00362791)		
		Equation (4): Loans & Discounts					
-0.00002080	0.04364846[a]	-0.18229685[a]	0.21977010[a]	-0.00000102	0.01287982	0.4252	0.08189994
(0.00001720)	(0.01042621)	(0.07791255)	(0.07605142)	(0.00001762)	(0.01256912)		

TABLE VI-3: Y Variable Time Trends, All Equations

	Regression Coefficients, Standard Errors, Significance:						Regression Advice:	
	Constant	Time	(D_1)	$(D_1)(T)$	(D_2)	$(D_2)(T)$	R BAR 2	Std Error
Equation Cash Items:	0.28222897[a]	-0.00010970[a]	-0.04995975[a]	0.00002250[a]	-0.01861386	0.00001762[a]	0.4906	0.03437696
	(0.00375439)	(0.00000607)	(0.00522350)	(0.00000845)	(0.00516493)	(0.00000834)		
Equation US Gov Sec:	0.46364042[a]	-0.00564865[a]	0.00564865[a]	-0.00005572[a]	-0.01086849	-0.00005572[a]	0.7441	0.05108653
	(0.00557929)	(0.00776248)	(0.00776248)	(0.00001256)	(0.00767544)	(0.00001239)		
Equation Other Sec:	0.84791117[a]	0.00006061[a]	0.00145955	0.00000018	0.00430995	-0.00000608	0.3647	0.02383942
	(0.00260356)	(0.00000421)	(0.00362234)	(0.00000586)	(0.00358173)	(0.00000578)		
Equation Lns & Disc:	0.20221673[a]	0.00029342[a]	0.03984743[a]	0.00002847[a]	0.02108328[a]	-0.00000655	0.7850	0.05009073
	(0.00547053)	(0.00000884)	(0.00761117)	(0.00001231)	(0.00752583)	(0.00001215)		

Note: Superscript 'a' indicates variable is significant at 5.0 percent.
Superscript 'b' indicates variable is significant at 10.0 percent.

Standard errors of coefficients are indicated in brackets.

TABLE VI-4: Correlation of Insured and Uninsured Banks, 1950-1966

Equation	Coefficient of Covariance - R	Coefficient of Determination - R^2
Equation (1), Cash Items:	-0.0703	0.0049
Equation (2), US Gov Sec:	0.3641	0.1296
Equation (3), Other Sec:		
State & Mun. Bonds	-0.1510	0.0225
Other Sec.	-0.5814	0.3364
Equation (4), Lns & Disc:	0.9119	0.8281

TABLE VI-5a: Intra-system Comparison, Cross Section

Variables	Equation (1): Cash Items:			Equation (2): US Gov. Sec.:			Equation (3): Other Sec.:			Equation (4): Lns & Disc.:		
	No. times sig:		Per Cent of Total*	No. times sig:		Per Cent of Total*	No. times sig:		Per Cent of Total*	No. times sig:		Per Cent of Total*
	At 5%	At 10%		At 5%	At 10%		At 5%	At 10%		At 5%	At 10%	
Constant	4	5	22.7	22	22	100.0	3	6	27.3	19	20	90.9
D1	9	12	54.5	1	5	22.7	0	0	0.0	3	4	18.2
D2	1	2	9.1	0	0	0.0	0	1	4.5	1	1	4.5

(*) Significant at 10.0 per cent of a total of 22.

TABLE VI-5b: Intra-system Comparison, Time Series

Variables	Equation							
	(1): Cash Items Significant at:		(2): US Gov. Sec. Significant at:		(3): Other Sec. Significant at:		(4): Lns & Disc. Significant at:	
	5%	10%	5%	10%	5%	10%	5%	10%
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D1	Yes	Yes	No	No	Yes	Yes	No	No
D2	Yes	Yes	No	No	Yes	Yes	Yes	Yes

TABLE VI-6a: Significance of Regression Coefficients, Cross Section

Variables	Equation (1): Cash Items:			Equation (2): US Gov. Sec.:			Equation (3): Other Sec.:			Equation (4): Lns & Disc.:		
	No. times sig:		Per Cent	No. times sig:		Per Cent	No. times sig:		Per Cent	No. times sig:		Per Cent
	At 5%	At 10%	of Total*	At 5%	At 10%	of Total*	At 5%	At 10%	of Total*	At 5%	At 10%	of Total*
(X_1)	21	21	95.5	0	1	4.5	0	0	0.0	0	0	0.0
(X_2)	0	2	9.1	1	1	4.5	0	1	4.5	0	2	9.1
(X_3)	Not applicable			1	1	4.5	0	1	4.5	3	4	18.2
(X_4)	7	9	40.9	Not applicable			Not applicable			Not applicable		
$(D_1)(X_1)$	11	14	63.6	3	9	40.9	0	0	0.0	1	3	13.6
$(D_1)(X_2)$	3	5	22.7	0	0	0.0	0	0	0.0	0	1	4.5
$(D_1)(X_3)$	Not applicable			0	0	0.0	2	3	13.6	1	1	4.5
$(D_1)(X_4)$	6	8	36.4	Not applicable			Not applicable			Not applicable		
$(D_2)(X_1)$	0	2	9.1	0	0	0.0	0	1	4.5	1	2	9.1
$(D_2)(X_2)$	0	1	4.5	0	0	0.0	0	0	0.0	0	0	0.0
$(D_2)(X_3)$	Not applicable			1	4	18.2	0	1	4.5	2	2	9.1
$(D_2)(X_4)$	0	0	0.0	Not applicable			Not applicable			Not applicable		

(*) Significant at 10.0 per cent of a total of 22.

TABLE VI-6b: Significance of Regression Coefficients, Time Series

Variables	Equation (1): Cash Items Significant at:		(2): US Gov. Sec. Significant at:		(3): Other Sec. Significant at:		(4): Lns & Disc. Significant at:	
	5%	10%	5%	10%	5%	10%	5%	10%
(X_1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(X_2)	No	No	Yes	Yes	No	No	Yes	Yes
(X_3)	Not applicable		Yes	Yes	Yes	Yes	Yes	Yes
(X_4)	No	No	Not applicable		Not applicable		Not applicable	
$(D_1)(X_1)$	Yes	Yes	No	No	Yes	Yes	No	No
$(D_1)(X_2)$	No	No	Yes	Yes	No	No	No	No
$(D_1)(X_3)$	Not applicable		Yes	Yes	No	No	Yes	Yes
$(D_1)(X_4)$	Yes	Yes	Not applicable		Not applicable		Not applicable	
$(D_2)(X_1)$	Yes	Yes	No	No	Yes	Yes	Yes	Yes
$(D_2)(X_2)$	Yes	Yes	No	No	Yes	Yes	No	No
$(D_2)(X_3)$	Not applicable		Yes	Yes	No	No	No	No
$(D_2)(X_4)$	No	Yes	Not applicable		Not applicable		Not applicable	

TABLE VI -7a: Analysis of Signs, Cross Section, Regression Coefficients

Variables	Equation (1): Cash Items: Exptd Sign	Number Correct*	Per Cent of Total	Equation (2): US Gov. Sec.: Exptd Sign	Number Correct*	Per Cent of Total	Equation (3): Other Sec: Exptd Sign	Number Correct*	Per Cent of Total	Equation (4): Lns & Disc.: Exptd Sign	Number Correct*	Per Cent of Total
(X_1)	+	22	100.0	-	21	95.5	-	13	59.1	-	17	77.3
(X_2)	+/-	+17 - 5	77.3 22.7	+/-	+13 - 9	59.1 40.9	+/-	+ 1 -21	4.5 95.5	+/-	+13 - 9	59.1 40.9
(X_3)	Not applicable			+	8	46.4	+	13	59.1	+	3	13.6
(X_4)	-	2	9.1	Not applicable			Not applicable			Not applicable		
$(D_1)(X_1)$	+	0	0.0	-	1	4.5	-	9	40.9	-	19	86.4
$(D_1)(X_2)$	+/-	+21 - 1	95.5 4.5	+/-	+20 - 2	90.9 9.1	+/-	+19 - 3	86.4 13.6	+/-	+ 4 -18	18.2 81.8
$(D_1)(X_3)$	Not applicable			+	5	22.7	+	9	40.9	+	11	50.0
$(D_1)(X_4)$	-	19	86.4	Not applicable			Not applicable			Not applicable		
$(D_2)(X_1)$	+	1	4.5	-	8	36.4	-	21	95.5	-	3	13.6
$(D_2)(X_2)$	+/-	+ 1 -21	4.5 95.5	+/-	+14 - 8	63.6 36.4	+/-	+ 7 -15	31.8 68.2	+/-	+11 -11	50.0 50.0
$(D_2)(X_3)$	Not applicable			+	5	22.7	+	10	45.5	+	17	77.3
$(D_2)(X_4)$	-	20	90.0	Not applicable			Not applicable			Not applicable		

(*) Of a total of 22.

TABLE VI-7b: Analysis of Signs, Time Series, Regression Coefficients

Variables	Equation (1): Cash Items		(2): US Gov Sec.		(3): Other Sec.		(4): Lns & Disc.	
	Expected Sign	Actual Sign	Expected Sign	Actual Sign	Expected Sign	Actual Sign	Expected Sign	Actual Sign
(X_1)	+	+	-	+	-	-	-	-
(X_2)	+/-	-	+/-	-	+/-	+	+/-	+
(X_3)	Not applicable		+	-	+	-	+	-
(X_4)	-	-	Not applicable		Not applicable		Not applicable	
$(D_1)(X_1)$	+	-	-	+	-	+	-	-
$(D_1)(X_2)$	+/-	-	+/-	+	+/-	+	+/-	-
$(D_1)(X_3)$	Not applicable		+	-	+	-	+	+
$(D_1)(X_4)$	-	-	Not applicable		Not applicable		Not applicable	
$(D_2)(X_1)$	+	-	-	-	-	-	-	+
$(D_2)(X_2)$	+/-	-	+/-	+	+/-	-	+/-	-
$(D_2)(X_3)$	Not applicable		+	+	+	+	+	+
$(D_2)(X_4)$	-	-	Not applicable		Not applicable		Not applicable	

TABLE VI-8a: Estimated Values of Y*, Equation (1): Cash Items (Cross Section)

Year	Statewide Branching States	Limited Branching States	Unit Banking States
1946	0.2206	0.2330	0.2420
1947	0.2349	0.2460	0.2467
1948	0.2360	0.2545	0.2498
1949	0.2214	0.2289	0.2255
1950	0.2215	0.2433	0.2414
1951	0.2396	0.2552	0.2501
1952	0.2204	0.2433	0.2309
1953	0.2182	0.2364	0.2310
1954	0.1865	0.2264	0.2172
1955	0.1999	0.2264	0.2133
1956	0.2134	0.2267	0.2193
1957	0.1989	0.2169	0.2147
1958	0.1894	0.2023	0.1972
1959	0.1871	0.1975	0.1901
1960	0.1833	0.1966	0.1928
1961	0.1737	0.1895	0.1844
1962	0.1505	0.1680	0.1631
1963	0.1505	0.1609	0.1601
1964	0.1614	0.1657	0.1679
1965	0.1482	0.1532	0.1593
1966	0.1515	0.1611	0.1608
Mean of 21 Years	0.1956	0.2110	0.2075
66 less 46	0.0170	0.1087	0.1387

(*) At the means of the X variables.

TABLE VI-8b: Estimated Values of Y*, Equation (2): US Gov Sec (Cross Section)

Year	Statewide Branching States	Limited Branching States	Unit Banking States
1946	0.5197	0.5100	0.5329
1947	0.4562	0.4610	0.4805
1948	0.4150	0.4174	0.4309
1949	0.4607	0.4201	0.4143
1950	0.3668	0.3828	0.4050
1951	0.3476	0.3698	0.3798
1952	0.3482	0.3653	0.3850
1953	0.3345	0.3493	0.3702
1954	0.3420	0.3538	0.3733
1955	0.3056	0.3202	0.3345
1956	0.2798	0.3010	0.3195
1957	0.2696	0.2896	0.3145
1958	0.2761	0.3021	0.3206
1959	0.2479	0.2689	0.2948
1960	0.2385	0.2606	0.2790
1961	0.2409	0.2689	0.2822
1962	0.2208	0.2560	0.2692
1963	0.1937	0.2395	0.2492
1964	0.1588	0.2155	0.2276
1965	0.1486	0.1923	0.2016
1966	0.1344	0.1681	0.1858
Mean of 21 Years	0.3003	0.3196	0.3357
66 less 46	-0.3754	-0.6100	-0.3291

(*) At the means of the X variables.

TABLE VI-8c: Estimated Values of Y*, Equation (3): Other Sec (Cross Section)

Year	Statewide Branching States	Limited Branching States	Unit Banking States
1946	0.0096	0.0174	0.0099
1947	0.0516	0.0629	0.0555
1948	0.0581	0.0638	0.0577
1949	0.0576	0.0609	0.0547
1950	0.0561	0.0675	0.0645
1951	0.0733	0.0656	0.0663
1952	0.0770	0.0653	0.0664
1953	0.0768	0.0717	0.0664
1954	0.0790	0.0761	0.0696
1955	0.0772	0.0536	0.0657
1956	0.0807	0.0747	0.0722
1957	0.0904	0.0827	0.0904
1958	0.1105	0.0913	0.0959
1959	0.0855	0.0841	0.0807
1960	0.0839	0.0797	0.0829
1961	0.0852	0.0874	0.0835
1962	0.0875	0.0964	0.0963
1963	0.0956	0.1069	0.1022
1964	0.1014	0.1051	0.1029
1965	0.1268	0.1227	0.1179
1966	0.1313	0.1245	0.1246
Mean of 21 Years	0.0807	0.0791	0.0777
66 less 46	-0.0861	-0.0147	-0.2116

(*) At the means of the X variables.

TABLE VI-8d: Estimated Values of Y*, Equation (4): Lns & Disc (Cross Section)

Year	Statewide Branching States	Limited Branching States	Unit Banking States
1946	0.3032	0.1984	0.1812
1947	0.3478	0.2074	0.2139
1948	0.3548	0.2607	0.2575
1949	0.3928	0.2643	0.2716
1950	0.3204	0.2763	0.2861
1951	0.3303	0.2967	0.2952
1952	0.3468	0.3130	0.3102
1953	0.3633	0.3334	0.3250
1954	0.3670	0.3341	0.3307
1955	0.4025	0.3716	0.3615
1956	0.4167	0.3934	0.3895
1957	0.4104	0.4587	0.3907
1958	0.4246	0.3647	0.3851
1959	0.4623	0.4383	0.3918
1960	0.4709	0.4461	0.4077
1961	0.4769	0.4581	0.4214
1962	0.5179	0.4647	0.4564
1963	0.5318	0.4961	0.4723
1964	0.5456	0.5355	0.4954
1965	0.5486	0.5171	0.4974
1966	0.5697	0.5243	0.5146
Mean of 21 Years	0.4064	0.3767	0.3625
66 less 46	0.1470	0.1926	1.0286

(*) At the means of the X variables.

TABLE VI-8e: Estimated Values of Y*, All Equations
(Time Series)

Equation	Statewide Branching States	Limited Branching States	Unit Banking States
Equation (1): Cash Items:	0.1977	0.2102	0.2048
Equation (2): US Gov Sec:	0.2971	0.3095	0.3096
Equation (3): Other Sec:	0.0773	0.0830	0.0863
Equation (4): Lns & Disc:	0.3707	0.3772	0.3787

(*) At the means of the X variables.

TABLE VI-9: Isolated Intercepts and Slopes, Y Variable Time Trends, All Equations

	Statewide Branching States:		Limited Branching States:		Unit Banking States:	
	Intercept:	Slope:	Intercept:	Slope:	Intercept:	Slope:
Equation	Constant + (D_1)	$(D_1)(T)$	Constant + (D_2)	$(D_2)(T)$	Constant	(T)
Equation (1), Cash Items:	0.23226922	-0.00008720	0.26361511	-0.00009208	0.28222897	-0.00010970
Equation (2), US Gov Sec.:	0.46928907	-0.00031540	0.45277193	-0.00026177	0.46364042	-0.00025968
Equation (3), Other Sec.:	0.04937072	0.00006079	0.05222112	0.00005453	0.04791117	0.00006061
Equation (4), Lns & Disc:	0.24206416	0.00032189	0.22330001	0.00028687	0.20221673	0.00029342

CHAPTER VII

EVALUATION AND CONCLUSIONS

A Restatement of the Intent and Purpose of the Study

Chapter IV, The Theoretical Structure, opened with the following statement:

> The basic purpose of this study is to determine the difference, if any, which exists among the various banking systems as to restrictions on branching and its impact on the economic level of the state in which they are located.

The chapter goes on to state that "an attempt is made to determine the extent to which the economic activity in a state is influenced by the bank market structure specified by state law." Recognizing that the major income-producing activity of banks is making loans--loans which generate economic activity--it follows that an analysis of the relative extent to which bankers allocate investment funds to the various components of their portfolios, given the same motivations for making such an allocation, would reveal if any difference exists among the systems of banking delineated by their individual state laws as regards the limits to which they are permitted to branch. Of course, it is necessary that assumptions be made regarding the relative

impact on the local economy of the alternative opportunities available to the banker in the allocation of his investment funds.

Limits on availability of income statistics, considered to be a major determinant of the quantity of investment funds devoted to each of the portfolio components, required that the portfolio be divided into three major parts:

(1) United States Government Securities.

(2) Other Securities.

(3) Loans and Discounts.

It was also recognized that the need for being liquid presented a restriction on the quantity of investment a banker could make in the income-producing components of his portfolio so it was decided to include a component entitled "Cash Items" as one of the alternatives available to him.

These four components represented substitutes available to the individual banker for the investment of his capital. The motivations influencing the banker's decision in making an allocation of investment funds among the four substitute components were prescribed to be the following:

(1) The need for liquidity represented by the ratio of Demand Deposits to Total Deposits.

(2) The real income per capita in the state in which the bank is located.

(3) The rate of income earned on the funds invested in a specific component. Of course, no income is earned on the cash component.

(4) The rate of income earned on funds invested in alternative components.

These four motivations were designated the independent variables leading to determination of the proportion of the Total Portfolio invested in each of the substitute components. After a somewhat detailed analysis of each determinant in its relationship to the Y variable (Total, this Component)/(Total Portfolio), reduced form equations were constructed reflecting the considerations outlined above. In order to eliminate multi-collinearity between the last two X variables, they were included in the regression equations as a ratio: (Rate of return, This Component)/(Rate of return, Alternate Components).

The theoretical considerations reviewed in Chapter IV led to a statement of the hypothesis as follows:

> It is hypothesized that no difference exists among the systems as to how they determine the proportionate share of their portfolio to devote to any one of the four components. Stated more specifically in terms of the statistical computation performed, it is not expected that the Statewide Branching system or the Limited Branching system is significantly different (as revealed by F tests) from the Unit Banking system in the proportion of its funds devoted to any one of the components analyzed given the same motivations for having made that

> determination . . . The hypothesis can also be stated that the alphas (or constants) in each of the regression equations are not expected to be significantly different from each other.

Also, as stated in Chapter IV, no attempt will be made to determine the specific causes for any difference which may be observed. The purpose of the study is to determine if such differences exist and to leave to future research the isolation of the specific reasons for those differences. The study, as it is structured, will suggest that any differences which might be observed will be due to the varying market structure. Possibilities for such differences in banking markets of varying branch structure are reviewed in Chapter IV.

The Statistical Test

As outlined in Chapter VI, The Regression Results, the statistical test was formulated in such a way as to make possible a comparison of Statewide Branching or of Limited Branching with the Unit Banking systems. Having eliminated the variance attributable to the Statewide Branching system and to the Limited Branching system from the entire banking system, only the variance attributable to the Unit Banking system remains. Consequently, the comparison can be made on the basis of the extent to which either of the branched systems is different from the Unit Banking system.

The Statewide Branching System

It can be confidently concluded that the Statewide Branching system is significantly different from the Unit Banking system in certain specific areas of the study as follows:

As to Equation (1), Cash Items

The Cross Section Regressions

The Statewide Branching system is revealed to be signigicantly different from the Unit Banking system at the ten percent level of significance in twelve out of twenty-two separate cross section regressions (Table VI-5a). It was significantly different from the Unit Banking system in 54.5 percent of the examples tested.

The average of the twelve regression coefficients for the D_1 variable which were significant at the ten percent level is 0.48050836 (Statewide Branching system) in contrast with the average value of the Constant for the same years of -0.26693438 (Unit Banking system).

The Time Series Regressions

The time series regressions (Table VI-5b) indicate that the Statewide Branching system is significantly different from the Unit Banking system with a significance greater than 0.0005. It is recognized that the presence of time bias in this regression weakens

its argument. It is presented here for purposes of confirming the more convincing argument appearing immediately above.

The Estimated Y Values

A most convincing argument for the difference between the Statewide Branching system and the Unit Banking system is presented in Table VI-8a. Herein are presented estimates of the Y values for each year of the study based on the cross section regressions. They are computed at the means of the X variables. Every year for the twenty-one years of the study (1946 through 1966) the estimated Y values for the Statewide Branching system are lower than those of the Unit Banking system; in fact, the average for the Statewide Branching system is 0.1956 as compared with the average for the Unit Banking system of 0.2075. The Statewide Branching system is 5.73 percent lower. This consistent pattern presents a very strong confirming argument for the difference between the Statewide Branching system, given the motivations assumed to be relevant to all three systems, and the Unit Banking system. The direction of difference indicates that the Statewide Branching system consistently operates with a lesser proportion of its portfolio devoted to the liquidity component thus releasing investment funds for use in the economic-activity generating components.

Y Variable Time Trends

An analysis of the twenty-one observations of the Y variable over time removes the influence of the selected independent variables. This analysis, as set forth in Table VI-9, reveals that the Statewide Branching system has consistently over the twenty-one year period operated with a smaller proportion of its Total Assets devoted to the Cash component than has the Unit Banking system. Its time-trend line lies significantly lower on the Y axis than does that of the Unit Banking system. The estimated Y value based on the time-trend regression and computed at the mean of the time variable for the Statewide Branching system is 0.1856 as compared with the estimated Y value for the Unit Banking system of 0.2235. The estimated Y value for the Statewide Branching system is 16.9 percent lower than that of the Unit Banking system. It would seem that the study has conclusively stated that the Statewide Branching system is significantly different from the Unit Banking system as regards the manner in which it responds to the stipulated motivations for devoting a certain proportion of its investment funds to the "Cash Items" component. Furthermore, it is indicated that the Statewide Branching system is capable of and has actually operated with a lesser proportion of its investment funds devoted to liquidity needs than has the Unit Banking system.

This is deemed tremendously significant as the investment funds not devoted to liquidity needs may be devoted to alternate components some of which are more directly concerned with the generation of economic activity in the economy of the state in which the bank is located. To counter those who would argue that the proportion of the investment portfolio not devoted to liquidity needs is, in the case of the Statewide Branching system, actually invested in Other Assets such as Real Estate, Furniture and Fixtures, etc., it is pointed out that, while the Statewide Branching system does indeed invest more of its Total Assets in this alternative, there is not a sufficient quantity of investment funds so invested to obviate the advantage which is indicated. For example, in 1946, the Statewide Branching system invested 0.0102 of its Total Assets in the "Other Assets" component as compared with 0.0068 so invested in the Unit Banking system. By 1966, the proportion so invested in the Statewide Branching system had increased to 0.0346 while the Unit Banking system had increased its proportion so invested to 0.0231. The average proportion of the portfolio so invested over the twenty-one year period of the study was, for the Statewide Branching system, 0.0222 and, for the Unit Banking system, 0.0150. While the Statewide Branching system devoted half again as much more (48.0%) to this component than did the Unit Banking system, the magnitude of difference is not

sufficient to absorb the quantities of investment funds released from unproductive employment as outlined above.

As to Equation (2), US Gov Sec

The argument for the significance of the difference existing between the Statewide Branching system and the Unit Banking system is not so strong in the case of this component.

The Cross Section Regressions

The Statewide branching system is significantly different from the Unit Banking system five out of twenty-two examples, or 22.7 percent. While this is still greater than would be expected within the limits of chance, the difference was not overwhelmingly conclusive. See Table VI-5a.

The Time Series Regressions

The Statewide Branching system was not indicated to be significantly different from the Unit Banking system as regards the United States Government Securities component in the time series regressions (Table VI-5b).

The Estimated Y Values: Table VI-8b

In this analysis, the argument for the difference between the Statewide Branching system and the Unit Banking system is very strong. In all years except one (1949) a lower estimated Y value is indicated for the Statewide Branching system (0.3003) than is

indicated for the Unit Banking system (0.3357). It is, in fact, 10.55 percent lower.

The Y-Variable Time Trends

An evaluation of the actual proportion of the portfolio devoted to United States Government Securities over time indicates that, while the intercept for the Statewide Branching system is only slightly higher than the Unit Banking system--0.46928907 (Statewide); 0.46364042 (Unit)--the time trend line is declining somewhat more steeply. The estimated Y values at the mean of the time variable indicates more significantly the extent of the difference between these two systems: Statewide Branching system, 0.3002; Unit Banking system, 0.3245. See Table VI-9.

While not as strongly indicated as in the "Cash Items" component, the study, nevertheless, indicates that the Statewide Branching system is significantly different from the Unit Banking system as regards the manner in which it reacts to similar motivations in allocating a proportionate share of its investment funds to the United States Government Securities component. Even more important, because Government Securities Investment does not represent, necessarily, a generation of economic activity in the local market of the bank, the difference reflected is in the

direction of the Statewide Branching system consistently investing less in this component than has the Unit Banking system, thereby releasing yet more quantities of investment funds to the portfolio components which are more local market oriented.

As to Equation (3), Other Securities

The Cross Section Regressions: Table VI-5a

In this portfolio component, there was no indication in the cross section regressions that the Statewide Branching system was different from the Unit Banking system in the manner in which it makes allocation to Other Securities as a result of the motivations presented.

The Time Series Regressions: Table VI-5b

Strangely, the Statewide Branching system was found to be significantly different from the Unit Banking system in this regression when the bias of time was present. It was significantly different at the five percent level.

The Estimated Y Values: Table VI-8c

In fourteen of the twenty-one years, the Statewide Branching system reflected an estimated Y value which was higher than that of the Unit Banking system. The average of the Y values for the twenty-one years computed at the mean of the X variables indicates that

the Statewide Branching system (0.0807) was 3.86 percent higher than the Unit Banking system (0.0777).

The Y-Variable Time Trends: Table VI-9

The estimated Y values reflect the similarity of the two systems as regards the "Other Securities" component. The Statewide Branching system has an estimated Y value, computed at the mean of the Time variable, of 0.0820 as compared with the estimated Y value for the Unit Banking system of 0.0804.

It can be concluded that the Statewide Branching system is not significantly different from the Unit Banking system as regards its response to the selected variables in determining the proportion of its investment funds devoted to the "Other Securities" component. In addition, it has not actually performed significantly differently from the Unit Banking system over the last twenty-one year period.

As to Equation (4), Loans & Discounts

The Cross Section Regressions: Table VI-5a

The Statewide Branching system is significantly different from the Unit Banking system only four times out of twenty-two in the Cross Section regressions. While this is greater than would be expected within the limits of chance, the argument as presented by the cross section regressions is not overwhelmingly conclusive.

The Time Series Regressions: Table VI-5b

The Time Series regressions did not indicate that the Statewide Branching system was significantly different from the Unit Banking system in the manner in which it responded to the selected variables in determining the proportion of its investment funds devoted to Loans and Discounts.

The Estimated Y Values: Table VI-8d

In contrast to the above findings and most important for purposes of this study, the estimated Y values computed at means of the X variables indicates that the Statewide Branching system reflects a higher estimated Y value for each of the twenty-one years of the study than does the Unit Banking system. The average estimated Y value for this twenty-one year period for the Statewide Branching system (0.4064) is 12.1 percent higher than the Unit Banking system (0.3625).

Y Variable Time Trends: Table VI-9

When the influence of the determining variables is removed and the trend over time of changes in the Y variables is analyzed, it is evident that the Statewide Branching system is consistently able and actually does devote a larger proportion of its portfolio to Loans and Discounts than does the Unit Banking system. Moreover, it is increasing the proportion of

its portfolio devoted to this very important component at a faster rate than is the Unit Banking system. The estimated Y values computed at the mean of the time variable are consistent with those estimated in the cross section regressions in that the Statewide Branching system is devoting a significantly larger proportion of its portfolio (0.4146) to the Loans and Discounts component than is the Unit Banking system (0.3595). The estimated Y value was, in fact, 15.3 percent higher.

The Limited Branching System

As might be expected, the Limited Branching system, being somewhat of a composite of both the Statewide Branching system and the Unit Banking system as it allows branching only within some specifically designated limitation, is not so consistently different from the Unit Banking system as is the Statewide Branching system. It is indicated to be different in some specific areas of the study as follows:

As to Equation (1), Cash Items

The Cross Section Regressions: Table VI-5a

There is no significant difference between the Limited Branching system and the Unit Banking system in this category.

The Time Series Regressions: Table VI-5b

The time series regressions indicated that the Limited Branching system was significantly different from the Unit Banking system as regards the "Cash Items" component.

The Estimated Y Values: Table VI-8a

The estimated Y vlaues computed at the mean of the X variables indicates that the Limited Branching system has estimated Y values which are higher than those of the Unit Banking system for all but four of the twenty-one years. The average of the estimated Y values over the twenty-one year period for the Limited Branching system was 0.2110 as compared with the average for the Unit Banking system of 0.2075. This indicates that the Limited Branching system finds it necessary to operate consistently with a larger proportion of its total portfolio devoted to satisfying liquidity needs than does the Unit Banking system. In this respect, the Limited Branching system is the least desirable system of the three in that it finds it necessary to devote the largest proportion of its portfolio to this unproductive employment.

Y Variable Time Trends: Table VI-9

The Y variable time trends indicate that the Limited Branching system has an intercept lying closer to that of the Unit Banking system than does the Statewide

Branching system. While the slope of this time trend line is negative, the steepness of its slope is very similar to that of the Unit Banking system. The estimated Y values computed at the mean of the time variable indicate that the Limited Branching system has actually operated with a slightly lesser quantity of investment funds devoted to liquidity needs than has the Unit Banking system. The estimated Y value for the Limited Branching system is 0.2144 in contrast to that of the Unit Banking system of 0.2235.

As to Equation (2), United States Government Securities

The Cross Section Regressions: Table VI-5a

The Limited Branching system was found to be not significantly different from the Unit Banking system as regards this component.

The Time Series Regressions: Table VI-5b

The Limited Branching system was not found to be significantly different from the Unit Banking system in this regard.

The Estimated Y Values: Table VI-8b

In all years but one (1949), the Limited Branching system is indicated as devoting a lesser proportion of its investment funds to the purchase of United States Government Securities (0.3196) than did the Unit Banking system (0.3357).

Y Variable Time Trends: Table VI-9

In this component, the Limited Branching system has the lowest intercept of all three systems. The time trend line is declining with a steepness just slightly greater than that of the Unit Banking system. The estimated Y value computed at the mean of the time variable indicates that this system has actually operated with a proportion of its portfolio devoted to United States Government Securities at the mid-point between the other two systems. It, nevertheless, is operating more efficiently in respect to its local market than is the Unit Banking system.

As to Equation (3), Other Securities

The Cross Section Regressions: Table VI-5a

The Limited Branching system was not found to be significantly different from the Unit Banking system as regards this component.

The Time Series Regressions: Table VI-5b

The Limited Branching system was found to be significantly different from the Unit Banking system in this regression over time.

Estimated Values of the Y Variable: Table VI-8c

For thirteen of the twenty-one years, the Limited Branching system reflected a higher estimated Y value than did the Unit Banking system. The average

estimated Y value for the twenty-one year period for the Limited Branching system was 0.0791 as compared with 0.0777 for the Unit Banking system. The difference was only 1.8 percent higher.

Y Variable Time Trends: Table VI-9

Removing the determining influence of the X variables and evaluating the proportion of the portfolio devoted to "Other Securities" over time indicates that the Limited Branching system has the highest intercept of the three systems. However, the slope of the time trend line is less steep than either of the three systems while all three are increasing. The estimated Y values computed at the mean of the time variable again places the Limited Branching system at the mid-point between the two other systems. It is operating somewhat more efficiently as regards its local state economy than does the Unit Banking system.

As to Equation (4), Loans and Discounts

The Cross Section Regressions: Table VI-5a

No significant difference is observed between the Limited Branching system and the Unit Banking system in this component.

The Time Series Regressions: Table VI-5b

The Limited Branching system is indicated as being significantly different from the Unit Banking system in this time series regression.

The Estimated Y Values: Table VI-8d

The average of the estimated Y values computed at the mean of the X variables for the Limited Branching system was slightly higher (0.3767) than for the Unit Banking system (0.3625) and proved to be higher for nineteen of the twenty-one years of the study. However, the estimated Y values for the two systems are very similar and cannot be deemed to be importantly different.

The Y Value Time Trends: Table VI-9

The Limited Branching system depicts an intercept lying about mid-point between the other two systems. However, the trend line is increasing less rapidly than the other two systems. The estimated Y values computed at the mean of the time variable is indicated to be very similar to that of the Unit Banking system.

Analysis of Signs and Relative Regression Coefficients: Tables VI-6 & VI-7

Because identification problems exist in the regressions, analysis of signs and relative magnitude of regression coefficients is precluded. It was hoped that such analysis could have been performed to indicate the relative response of one system in contrast with another as a result of policy changes which might affect the X variables. There are evidently variables which are not included in the regressions which, had they been present, would have made

such analysis possible. It must be remembered that this type of analysis was not within the stated intent and purpose of the study so it is not believed that such intent and purpose is violated by this difficulty. The determination of the additional variables necessary to the consideration which would provide a more consistent pattern of signs and levels of significance is beyond the limits of this study as they were defined in the hypothesis.

Estimated Values of Y Variable (Time Series): Table VI-8e

Because of the wide differences in relative values between the various systems as revealed by the Time Series equations in comparison with the Cross Section equations, little or no importance is given to the estimated values indicated on this table.

Summary

In summary, it can be stated that the study, in view of the hypothesis posed, indicates the following:

(1) The Statewide Branching system is significantly different from the Unit Banking system in the manner in which it responds to similar motivations as regards the following:

   (a) The proportion of its portfolio devoted to liquidity needs.

   (b) The proportion of its portfolio devoted to United States Government Securities.

(c) The proportion of its portfolio devoted to Loans and Discounts.

Therefore, as regards these specific components of the banker's portfolio, the hypothesis of the study is disproved and, therefore, is rejected.

(2) The Statewide Branching system is not indicated to be significantly different from the Unit Banking system as regards the proportion of its portfolio devoted to Other Securities. Any differences indicated in analytical techniques other than the regressions were small in magnitude and are, therefore, not considered to be significant. The hypothesis of the study, therefore, in this component is proved and is accepted.

(3) The Limited Branching system is found to be very similar to the Unit Banking system. While analysis indicated some differences, they were generally of a minor nature and are not deemed to be significant. Therefore, the hypothesis of the study is proved in this regard and is accepted.

The direction of the differences, when noted, were differences which would lead to the conclusion that the Statewide Branching system is, indeed, more beneficial for the generation of economic activity in the state in which it is located than is the Unit Banking system. The study

revealed that the Statewide Branching system can and does generally operate with a lesser proportion of its investment portfolio devoted to satisfying liquidity needs and that it devotes a significantly larger proportion of its investment portfolio to Loans and Discounts--a type of investment activity local in orientation and capable of making more significant contributions to the generation of local economic activity than would the Unit Banking system or the Limited Branching system.

The study is unique in its approach to the evaluation of a banker's decision-making process and its conclusions are significant in the often-debated question as to how much and how far branching privileges should be extended in order to benefit the economy of the state in which the market structure is located.

It is felt that the study has substantiated the thesis proposed by Professor Weston.

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