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THE UNIVERSITY OF OKLAHOMA

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AN EMPIRICAL TEST OF THE IMPACT OF POTENTIAL COMPETITION ON BANKING STRUCTURE

A DISSERTATION

SUBMITTED TO THE DOCTORAL COMMITTEE

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

By

JOHN EMILIO MARTINEZ

1984

AN EMPIRICAL TEST OF THE IMPACT OF POTENTIAL

COMPETITION ON BANKING STRUCTURE

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ABSTRACT

The application of the potential competition doctrine to the banking industry, a highly regulated industry, will, no doubt, differ in major respects from its application to non-regulated markets. This study seeks to establish a framework for empirically testing the major assumption of the doctrine when applied to a regulated industry such as banking.

In analyzing merger and acquisition proposals, regulatory agencies rely on two distinct theories of competition: the theory of existing competition and the theory of potential competition. The theory of existing competition applies only to mergers involving firms in the same market. When the regulatory authorities must assess the competitive impact of a merger involving firms in different markets--a market extension merger--they often employ the theory of potential competition. Unfortunately, the validity of applying the concept may be questioned because there is virtually no valid empirical research supporting its major assumption. The basic assumption of the potential competition theory,

particularly as it is applied to bank holding company acquisitions, is that foothold entry, as opposed to the acquisition of a leading bank, is more likely to yield less concentrated markets.

The specific purpose of this study is to test the hypothesis that markets which experience foothold acquisitions experience deconcentration, or less of an increase in concentration than markets which do not experience foothold entry. Since multibank holding companies are largely responsible for the increased merger activity in recent years, the analysis focuses on foothold acquisitions by these organizations during the period 1970-76. This study uses multiple regression analysis to test the relationship between foothold entry and changes in market structure. Some of the most widely used procedures for selecting variables for the regression model are forward selection, backward elimination, and stepwise regression. Each of these methods was utilized in this study. The results of this study do not give support to the contention that adherence to the potential competition hypothesis will yield more competitively structured banking markets. Markets which experienced foothold entry did not produce any statistically significant difference in deconcentration than markets which did not.

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AN EMPIRICAL TEST OF THE IMPACT OF POTENTIAL COMPETITION ON BANKING STRUCTURE

CHAPTER I

THE PROBLEM

Introduction

The theory of potential competition and its application to the banking industry has been a subject of continuing controversy since the 1960's, when banks and bank holding companies began to expand the geographic scope of their activities through mergers and acquisitions. If patterns of bank expansion continue to evolve along their present course, the frequency of such mergers and acquisitions (so-called market extension mergers), may well increase. The degree to which the Board of Governors of the Federal Reserve System directly influences changes in the structure of banking in the coming years may therefore depend on the manner in which it applies the potential competition doctrine.

The recent rising wave of conglomerate mergers has caused a re-evaluation of appropriate standards for their

analysis. In banking, the market extension type of conglomerate merger has been a major operational problem ever since banks and bank holding companies began expanding the geographic scope of their activities through mergers and acquisitions. Since horizontal extension mergers can be defined as combinations of two corporations (or banks) operating within the same relevant geographic market, market extension mergers can be defined in contrast as two corporations or more (or banks) operating in the same product market (same line of commerce) but not in the same geographic market. For this particular type of merger, there have been, and continue to be, practical analytical difficulties, based upon the current level of empirical research in the banking industry and our theoretical structure, as adapted to banking from conventional industrial organization theory. See Table 1 for a summary of the types of mergers in cases decided upon by the Federal Reserve Board during the 1970's.

Unlike horizontal mergers between two banks within the same geographic market, market extension mergers do not normally involve changes in structure that can be neatly analyzed through traditional industrial organization theory. The anticompetitive effects of a geographic market extension merger are less clearly evident than are those of a horizontal merger, since the acquisition by one bank of another in a separate market does not create an immediate change in

local market share, concentration ratio, or number of independent banking alternatives. Therefore, actual competitive standards exhibited by Section 7 of the Clayton Act,[1] as amended, are not applicable to market extension mergers. (See Appendix A for an interpretation of the Department of Justice's Merger Guidelines relating to market extension mergers and acquisitions in banking.) In most cases, including the bank cases to be discussed subsequently, market extension mergers take place between corporations in which there is no existing competition between them.

In analyzing merger and acquisition proposals, regulatory agencies rely on two distinct theories of competition: the theory of existing competition and the theory of potential competition. The theory of existing competition applies only to mergers involving firms in the same market. The theory focuses on the concentration of the market in which the firms compete and the market shares held by the combining firms. An acquisition or merger that produces a firm controlling an undue percentage share of the market and results in a significant increase in market concentration should in most cases be prohibited because it would eliminate substantial "existing" competition between the two firms. Although the validity of the theory has been accepted by the federal courts, its applicability is limited to cases or combinations of firms operating in the same market. When the regulatory

TABLE 1

TYPES OF MERGERS IN CASES DECIDED UPON BY THE FEDERAL RESERVE BOARD, 1970-79[1]

Year	Average number of banks in market	Type of Merger					
		Horizontal[2]		Market extension[3]		Partly horizontal	
		Number	Percent of all types	Number	Percent of all types	Number	Percent of all types
1970	10.9	5	2	149	74	48	24
1971	13.2	2	1	122	81	26	17
1972	19.2	4	2	134	80	29	17
1973	21.9	2	3	45	64	23	33
1974	23.8	0	0	22	65	12	35
1975	27.2	2	13	9	56	5	31
1976	27.4	2	5	23	61	13	34
1977	24.2	1	3	26	67	12	31
1978	17.1	1	4	17	68	7	28
1979	10.4	1	5	15	71	5	24
Average	19.5	2	4	56	69	18	27

[1]Percentages may not total 100 because of rounding.

[2]Involves firms that operate in the same market.

[3]Involves firms operating in different geographic markets.

SOURCE: Federal Reserve Bulletin, 1970-79, Board of Governors of the Federal Reserve System.

authorities must assess the competitive impact of a merger involving firms in different markets--a market extension merger--they often employ the theory of potential competition.

Clarification of Concepts

Unfortunately, serious confusion has arisen in the application of the potential competition doctrine in the area of banking. In large part, this difficulty stems from a failure of the regulatory authorities to apply consistent definitions when discussing potential competition as a factor in bank merger analysis.[2] Specifically the term "potential competition" has been applied interchangeably to two distinct theoretical subtheories: 1) the theory of "perceived" potential competition, and 2) the theory of "actual" potential competition, or what is often referred to as "probable future competition" by the banking authorities.

Undoubtedly, the fact that application of either concept requires the existence and identification of a potential entrant has led to both being referred to under the common terminology. The essential distinction between the two subtheories can be illustrated as follows. According to the "perceived" potential competition theory, the mere existence of a potential entrant posing a threat of entry to established sellers, may influence the present conduct

of firms in the market. In contrast, the concept of "actual" potential competition is based on the expectation of a change in market structure due to actual entry or expansion by the potential competitor. In short, the influence posited by the theory of "perceived" potential competition is manifested in present market conduct while the other subtheory is manifested in market structure at some future time.

The Supreme Court has held that elimination of "perceived" potential competition can constitute a violation of the Clayton Act.[3] It has also held that this theory applies to the banking industry. However, the Court has never found a banking organization to be guilty of a Clayton Act violation on the basis of "perceived" potential competition. More importantly, the Court has yet to rule, in either a banking or industrial context, on whether the elimination of "actual" potential competition constitutes a violation of the Clayton Act. (See Appendix B for an evaluation of the evolving legal status of the potential competition doctrine.)

Statement of the Problem

While market extension mergers do not have an immediate effect on market structure, the regulators have expressed concern over competitive developments which may arise subsequent to the merger. In particular, it has been argued that entry into a market through foothold acquisition,

i.e., acquisition of a small bank, or through de novo entry, i.e., the formation of a new bank, is likely to yield a more competitive market structure than acquisition of a dominant firm in the market. This argument is based on the hypothesis that an acquisition, by a large bank, of a leading bank in a market will, because of the size and diversification of the acquiring bank, stifle competition and solidify the oligopolistic structure. On the other hand, entry into a market through de novo or foothold entry is expected to produce deconcentration and other procompetitive effects on market structure. The expectation arises from the belief that the large organization, through economies of scale, sophisticated management, a full line of services, and aggressive growth orientation, will expand from its foothold position and challenge the dominant banks in the market.

Thus consummation of the merger would eliminate this opportunity for improvement and could also solidify the anticompetitive structure of the market. To the extent that the merger would lessen the probability that the outside firm would provide competition and foreclose the possibility that the market would be further deconcentrated, the theory of potential competition would support prohibition of the merger.

The Board of Governors has been at the forefront in the development and application of the concept of potential competition, particularly with respect to the banking

industry. (Appendix C analyzes specific issues in key Board decisions.) The Court has yet to rule, in either a banking or industrial context, on whether the elimination of potential competition constitutes a violation of the Clayton Act. While the Board has denied acquisitions which would eliminate future competition, it has not done so consistently. This vascillation is probably attributable to the lack of empirical evidence to support the theory. The Board has had a longstanding policy of denying acquisitions within the same market, but there is a large body of theoretical and empirical evidence demonstrating the anticompetitive consequences on these horizontal acquisitions. Since neither the Board nor the Courts have had the benefit of a theoretical and empirical consensus regarding potential competition, it is not surprising that the Board's use of the doctrine has been inconsistent, and that the Courts have been reluctant to address the issue at all.

Thus, a major factor contributing to the uncertain and inconsistent application of the potential competition theory has undoubtedly been the lack of solid empirical support for the theory and its major assumption. As postulated, the doctrine makes the implicit assumption that de novo or foothold entry will produce market deconcentration. It is difficult on a conceptual level to demonstrate the adverse economic effects to the banking public from

eliminating future competition. Potential competition introduces a speculative element involving conjecture rather than empirical evidence about future behavior of banks. In a sense, the Board has adopted a narrow view of potential competition that depends almost entirely on the method of entry into a banking market. If multibank holding company subsidiaries have competitive advantages over independent banks, then foothold or de novo entry would be expected to reduce local market concentration for a time as the acquired bank took away business from larger independent competitors. Acquisition of larger banks, on the other hand, would be expected to increase concentration.

Previous studies do not provide conclusive evidence that multibank companies systematically increase local market concentration. If acquisition confers advantages, we would expect local market concentration to increase if a large bank is acquired but to shrink if a small or de novo bank is acquired. Thus the manner of entry would be crucial to the impact of bank holding company acquisitions upon banking structure. Yet only a few of these studies considered that determinant, and those that did are inadequate in one way or another. The weakness of these studies in today's world relate to their treatment of all multibank companies as the same, their lack of coverage of recent years, their failure to account for long-run structural effects, and

their omission of important market control variables. Also, recent innovations in financial markets may have increased large companies' ability to help their subsidiaries gain competitive advantage.

The empirical research reviewed in this study appears inadequate in one respect or another as a basis for testing the basic assumption of the potential competition theory. One of the most serious limitations of these studies is that no effort was made to distinguish cases involving market entry from those involving market expansion.

It is important to make a distinction between market entry and market expansion since the theoretical concept of potential competition is relevant when the potential competitors are in separate geographic markets. Foothold expansion involves the acquisition of a small bank in a market in which the acquiring organization already exists. Acquisitions of this type, so-called horizontal acquisitions, are analyzed in terms of their effect on "existing," not "potential" competition. Most studies testing the structural implications of foothold acquisitions are based on samples involving both types of acquisitions. This study, and consequently this sample, are limited to markets experiencing foothold entry only.

Analysis of mergers and acquisitions, be they foothold or de novo, between banks in the same geographic market

involve predictions and conclusions relevant to market expansion (and not market entry). Since the theoretical concept of potential competition is relevant only when the potential competitiors are in separate geographic markets, a valid test of the deconcentration assumption would limit the study to only locally defined markets experiencing foothold or de novo entry (and not foothold or de novo expansion). Failure to limit the sample to entry cases only results in the structural effects of foothold and de novo entry being understated. Foothold or de novo expansion results in an immediate increase in concentration levels regardless of any probable future deconcentration effects.

From the perspective of this study, the most serious limitation of previous empirical research in this area is that no study has correctly formulated a valid test of the potential competition hypothesis. However, it should be noted that not all previous studies were constructed for the purpose of directly testing the applicability of this hypothesis. A major point of this study is that there are two separate competitive effects stemming from any market extension merger: an effect stemming from "actual" entry and one stemming from the loss of a "perceived" potential entrant. Frequently the two are discussed as a single result, but banking regulators must consider that there are important trade-offs between the competitive effects stemming from

changes in structure and from changes in conduct. Empirical studies to date have not controlled for the effect of conduct when testing the possible deconcentration effect of foothold or de novo entry.

Economists have identified several different variables which influence the level of competition in a market. In classifying these factors, a distinction has been made between elements of market structure and market conduct.[4] Market structure variables are represented by such factors as concentration, barriers to entry, and product differentiation. Market conduct consists of a firm's policies for operating in its market and toward the competitive moves by its rivals. The following discussion contrasts the competitive effect of potential competition on market conduct from its effect on market structure.

The total competitive effect of any market extension proposal is the combined result of two separate, but distinct aspects: the entry threat of a "perceived" potential entrant on the conduct of established firms, and the structure effect, with a change in market concentration associated with the actual entry of a potential entrant. Under some conditions, the two factors reinforce each other, while under others they work in opposite directions. Analysis of the combinations of directional change in the structure and conduct forces requires a useful framework for classifying

the various types of mergers and acquisitions and analyzing their probable net competitive effect.

Statement of Purpose

The application of the potential competition doctrine to the banking industry, a highly regulated industry, will, no doubt, differ in major respects from its application to non-regulated markets. This study seeks to establish a framework for empirically testing the major assumptions of the doctrine when applied to a regulated industry such as banking.

The Supreme Court has recently ruled that two preconditions must exist before it is possible to resolve whether the potential competition theory establishes a violation of Section 7. It must be determined that a potential entrant:

> (i) has available feasible means for entering the market other than by acquiring the (proposed bank) and (ii) that those means offer a substantial likelihood of ultimately producing a deconcentration of that market.[5]

The specific purpose of this study is to test the hypothesis that markets which experience foothold entry experience deconcentration, or less of an increase in concentration than markets which do not experience foothold entry. Since multibank holding companies are largely responsible for the increased merger activity in recent years, the analysis focuses on foothold acquisitions by these

organizations during the period 1970-76.

Assumptions of the Study

The theory of potential competition was developed as an extension of basic micro theory, and involves a unique analytical framework including barriers to entry and the concept of the limit price.[6] The limit price is the highest common price that sellers believe they can charge without inducing at least one additional increment of entry. The limit price is directly associated with the height of barriers to entry. The extent to which prices can be pushed above a competitive level without inducing entry depends on the height of the entry barriers which result from these factors. Two key requirements of the limit price model are: 1) potential entrants are primarily influenced by prices and profits of established firms, and 2) existing firms are aware of any threat to entry in their markets and will adjust to it in a way which will maximize their long-run profits. This study assumes that both requirements are invalid when applied to a highly regulated industry such as banking.

This study assumes that entry into banking markets is determined not so much by the pricing and profit policies of established banks, but rather by the regulator's attitude toward entry. It is more likely that banks will discourage entry by operating at less than maximum efficiency, keeping

profits at a level that will keep bank regulators, who are primarily concerned with maintaining a sound banking system, from allowing new entrants into the market.

This study also assumes that established firms do not have perfect information with respect to the general conditions of entry and are thus likely to err in their limit pricing. If prices are set higher than the limit price, "perceived" potential entrants may be induced to become "actual" potential entrants at some time in the future. Thus the distinction between "perceived" and "actual" potential entrants would not seem to be warranted. Both concepts deal with probable effects on a market's future structure. The only difference in the two subtheories is the timing of that structural change.

Significance of the Study

The national trend toward product and geographic deregulation in banking has brought questions about the concentration of financial resources to the center of a major policy debate. Recent legislative, judicial, and regulatory events, by encouraging the expansion objectives of banking organizations, have increased the concentration of financial resources and thus called into question the effectiveness of current antitrust tools (and in particular, the theory of potential competition) for controlling potential increases

in banking industry concentration.[7]

On the legislative front most states have adopted a more liberal attitude toward branch banking and multibank holding company activity and some states are even discussing how they may allow interstate banking at the regional level. An analysis of the six states that liberalized branching laws early in the 1970's indicates that, in four of the six, state concentration had increased by 1980. On the judicial front, recent decisions have made inter-market expansion easier by increasing the evidentiary requirements on regulators. On the regulatory front, federal banking agencies have adopted a more permissive stand on large bank consolidation as a means of dealing with potentially destablizing financial situations. The recent approval of BankAmerica's acquisition of the troubled Seafirst Corporation typifies this more lenient regulatory attitude.

These events have tended to increase the concentration of financial resources and brought into question the appropriate policy for dealing with this multibank expansion. Although there is currently no reason for alarm about banking concentration, a sound and consistent policy must emerge soon to deal with prospective developments in banking structure. On net, except for some increase in concentration on the statewide level in the statewide branching states, the concentration of commercial banking resources in the United

States has apparently decreased (see Table 2). If current patterns of bank expansion continue, the use of potential competition needs to be evaluated to determine whether it remains a valid economic concept that can be effectively applied. Hopefully, this study is a move in that direction.

TABLE 2

AVERAGE SMSA FIVE-FIRM CONCENTRATION RATIO, 1970 AND 1980

Branching Category	Percent 1970	Percent 1980
Statewide	88.1	82.1
Limited	85.9	83.7
Unit	81.8	76.7

SOURCE: Summary of deposits in all commercial and mutual savings banks, 1970 and 1980 (Federal Deposit Insurance Corporation).

Organization of the Study

This study consists of five chapters, the bibliography, and appendices. Chapter I includes the Introduction, Statement of the Problem, Statement of Purpose, Clarification of Concepts, Assumptions of the Study, Significance of the Study, and Organization of the Study. Chapter II reviews the Related Literature, Chapter III presents a detailed description of the procedures used in the research study.

Chapter IV presents the findings and policy implications.

Chapter V presents the summary and conclusions of the study.

ENDNOTES

[1]15 U.S.C. Section 18 (1950).

[2]See Stephen A. Rhoades, "A Clarification of the Potential Competition Doctrine in Bank Merger Analysis," Journal of Bank Research, Vol. 6 (Spring, 1975).

[3]U.S. v. Crocker-Anglo National Bank, 277 F.Supp. 133 (N.D. Calif. 1967).

[4]William G. Shepherd, "The Elements of Market Structure," Review of Economics and Statistics, Vol. 54 (February, 1972), pp. 25-37.

[5]U.S. v. Marine Bancorporation, 418 U.S. 602 (1973).

[6]Joe S. Bain, "A Note on Pricing in Monopoly and Oligopoly," The American Economic Review, Vol. 39 (March, 1949).

[7]Wilbur T. Billington, "Bank Deregulation and Concentration--What Policy for Mergers," Economic Review (November, 1983).

CHAPTER II

REVIEW OF THE EMPIRICAL LITERATURE

Introduction

Over the last decade, multibank holding companies have become an increasingly important element in the American banking structure. From 1970 to 1980 the number of all commercial banks owned by multibank holding companies increased from 723 to 2,426, and the share of aggregate bank deposits held by bank subsidiaries of these holding companies jumped from 16.2 to 34.4 percent. Whether multibank holding company expansion is in the public interest is a complex issue. This chapter focuses on only one aspect, the impact of multibank holding companies on concentration of banking resources in local banking markets.

This chapter is a two-part exploration of the influence of holding company entry on local market concentration. Evidence from early studies will be reviewed in the first part and the remainder of the chapter reviews more

recent studies. In contrast to much of earlier literature, which focused on changes in market structure due to the combined effects of both horizontal (or intramarket) and non-horizontal (or intermarket) market expansion of multi-bank holding companies, recent work has focused primarily on intermarket (or non-horizontal) expansion.

Relevance of Market Structure

Attention to market structure is based on the structure-conduct-performance hypothesis. This hypothesis holds that market structure affects the conduct of firms in the market and ultimately market performance in terms of prices and output. Economic theory implies that at least in the short run, higher market concentration results in higher prices and lower output, causing a misallocation of resources. Empirical research on concentration and performance in banking markets has found that the relationship between higher concentration and higher prices is statistically significant but is fairly small. (See Appendix D for a summary of structure-performance studies in banking.)

Early Studies of Multibank Company Entry

Previous studies do not provide conclusive evidence that multibank companies systematically increase local market concentration. These studies are of two types. The first group looks at changes in the share of market deposits held by banks acquired by multibank holding companies. The second measures concentration changes in markets entered by multibank holding companies.

It is often argued that banks acquired by multibank holding companies gain competitive advantages over independent banks. Proponents of holding company banking assert that a banking subsidiary of a multibank holding company may enjoy increased operating efficiencies, financial strength, the ability to offer a wider range of services, and improved management and management succession. These may help the subsidiary bank gain in deposits and market share at the expense of independent banks. To the extent that the acquired bank is a large dominant bank, these advantages would, it is assumed, increase the concentration of deposits in markets that multibank holding companies enter.

The first group of studies give little evidence of any systematic holding company impact on market share. In a study of 71 banks acquired between 1965 and 1970, Goldberg found no significant change in market shares.[1] His results

were confirmed in Burke's broader study of 227 banks acquired between 1962 and 1970.[2] Burke reported some tendency for larger banks to lose market share and smaller ones to gain share. In a study of banks acquired by two Florida companies, Hoffman found no significant increase in the market shares of acquired banks relative to a control group of independent banks in their markets.[3] Lawrence's study of a national sample of holding company banks found no significant difference in deposit growth rates of holding company subsidiaries and independent banks.[4] A study by Gilbert and Jianakoplus found some tendency for relatively large banks acquired by large, aggressive holding companies to increase their market share after acquisition.[5]

These studies find little evidence of holding company impact on market share. The studies are, however, inadequate in one way or another. Only Hoffman's study includes a control group and it covers a relatively short period and only two companies. The studies by Goldberg and Burke use no control group of independent banks to isolate bank holding company effects. Without a control group of independent banks, it is not possible to know whether bank holding companies or some other factor accounts for acquired bank's performance.

A second set of studies analyzes changes in concentration in markets entered by bank holding companies. These

studies attempt to determine whether banking business in markets entered by multibank holding companies becomes more concentrated in a few firms after entry. Schull studied concentration changes in metropolitan areas in New York between 1960 and 1971 and in Virginia between 1962 and 1971; concentration had increased in two of six areas in New York and in two of five areas in Virginia. Schull found no systematic relationship between holding company entry and changes in local market concentration.[6] A study of Alabama markets by Hooks and Martell found declining concentration after entry by multibank holding companies.[7] Ware studied concentration changes in Ohio areas where multibank holding companies had acquired subsidiaries between 1969 and 1974.[8] He found that concentration declined in a majority of SMSA's and in one half of non-SMSA counties.

The inconclusive results of these studies, no doubt, stem from the failure to explicitly account for the manner of entry into markets entered by bank holding companies. In addition to giving their subsidiaries competitive advantages, multibank holding companies may influence market concentration in other ways. .The type of holding company entry itself may have an important influence. Concentration would increase if a multibank company acquired more than one bank in the same market, though enforcement of federal holding company and antitrust laws discourage such acquisitions.

The relative size of an acquired bank could have a bearing on concentration changes. If multibank company subsidiaries have competitive advantages over independent banks, then acquisition of new or small banks would be expected to reduce local market concentration for a time as the acquired bank took business away from larger independent competitors; acquisition of larger banks, on the other hand, would be expected to increase concentration. If independent banks increase their competitive edge, the opposite would be expected. Thus, the ultimate effect of multibank company acquisition depends on whether (and by how much) banks gain or lose competitive advantages when acquired by multibank companies and on the number and relative size of the banks acquired.

From the standpoint of this study the most serious limitation of these early studies results from combining both horizontal and market extension acquisitions within the same analysis. Only market extension acquisitions are of relevance to an evaluation of the potential competition thesis.

Recent Studies of Multibank Company Entry

In contrast to much of the earlier literature, which focused on changes in market structure due to the combined effects of both horizontal and non-horizontal market expansion, recent work by focusing primarily on intermarket (or

non-horizontal) expansion is much more relevant for issues relating to potential competition.

One study examined the impact on market concentration of de novo entry by bank holding companies from 1973 to 1975 into 28 rural and smaller metropolitan markets.[9] Changes in market concentration were measured over the three years following de novo entry. Multiple regression analysis confirmed a highly significant deconcentration effect resulting from de novo entry by bank holding companies. Earlier studies had not focused on the effect of de novo expansion by holding companies and few had looked specifically at market extension type of entry. A deficiency of this study is that no control group of independent banks was used to measure the relative deconcentration from de novo entry by bank holding companies. In another paper, however, the same authors compared the market shares of 11 holding company banks organized de novo as entry vehicles into rural and smaller metropolitan markets between 1973 and 1976 with those of an equal number of independent banks opened in the same markets during this period. Using multiple regression analysis the authors found the market share accumulated by bank holding company de novo banks to be positively related to market concentration, while the market share accumulated by new, independent banks tended to be negatively related. Thus de novo banks of holding companies appear to achieve

greater success (relative to new, independent banks) in concentrated markets. This conclusion implies a greater deconcentrating effect from de novo entry by holding companies into relatively concentrated markets than from entry by new, independent banks. It was also concluded that independents had a large edge in market share in less concentrated markets:

> The fact that market share accumulation by independent banks was negatively slanted to market concentration is consistent with the argument that collusive behavior by existing firms in highly concentrated markets makes it difficult for independent entrants to gain a foothold position in the market. However, the fact that market share accumulation by holding company banks was positively related to market concentration suggests that any such collusive behavior is generally ineffective where there is an established banking organization supporting the new bank. This is important because it suggests that a public policy of encouraging established banking organizations to enter highly concentrated markets on a de novo basis is not only appropriate idealistically as a means of deconcentrating the market but also is practicable and indeed may represent the only feasible means of deconcentrating these markets.[10]

In an extension of an earlier study,[11] Rhoades and Schweitzer looked at the impact of foothold entry by bank holding companies between 1966 and 1972 on changes in market structure through 1976.[12] Changes in market structure were measured over two periods, 1966 to 1972 and 1966 to 1976, by changes in the three-firm concentration ratio and also by changes in the Herfindahl index. The sample included 70 metropolitan banking markets divided into two groups: those which failed to experience foothold entry and those which

did experience such entry, defined as an acquisition of a bank with less than $10 million in deposits. Multiple regression analysis indicated no statistically significant impact of foothold entry by bank holding companies on banking market structure.

In a similar study, Schweitzer and Greene analyzed the effect of foothold acquisitions by bank holding companies on the structure of two banking markets in Wisconsin.[13] The authors reported a sizable deconcentration of the market experiencing foothold entry but no deconcentration of the other market. The results of this study, however, are seriously biased. The market experiencing foothold entry did record greater deconcentration than the other market (only two markets were included in the study) between 1970 and 1976; it also recorded substantial deconcentration during the several years before foothold entry. By contrast, the market without foothold entry experienced a slight increase in concentration during the pre-1970 years. Thus the difference in structural change observed in the two markets from 1970 to 1976 may be attributable largely to different structural trends in these two markets rather than to foothold entry by bank holding companies into one of the markets.

A recent study by Rose examines the impact of multibank holding company affiliation on the market shares of individual banks. Rose's study differs from previous works

in two respects.[14] First, it uses a control group of independent banks for comparison purposes. Of the entire sample of 670 metropolitan banks from 10 states, 156 are multibank holding company banks and the remainder are independent banks. Second, the analysis focuses primarily on banks acquired by bank holding companies in markets where the parent holding company has no other bank subsidiary in order to capture the effect of affiliation, unbiased by any changes in market structure resulting from multiple bank acquisitions by the parent company in the same market. Multiple regression analysis yielded important differences in results for holding company banks depending on whether the parent company has other bank subsidiaries in the market. Among banks acquired in markets in which the parent company has other subsidiaries, bank holding company affiliation produced no impact on market share. By contrast, among banks acquired in markets in which the parent company is not otherwise represented, affiliation appears to have increased the market shares of foothold banks but to have reduced the market shares of large banks. In both cases, however, the effect of holding company affiliation, while statistically significant, is estimated to be very small. These results indicate that entry by bank holding companies through acquisition has little effect on the market shares of acquired banks--at least during the first few years following acquisition.

The Relevance of Traditional Structure-Conduct-Performance Models for Analyzing the Competitive Effects of Market Extension Combinations

Conventional antitrust analysis is based on a traditional theoretical model that assumes a firm's primary goal is to maximize profits. Given profit maximization as the firm's objective, it is then possible to predict the firm's conduct based on the existing market structure. Market conduct then determines market performance. Knowledge of the market's structure (number and size distribution of firms in the market) makes it possible to predict the market's competitive performance. Markets with high concentration are presumed to be less competitive than those with low levels of concentration. This rather simple structure-conduct-performance relationship forms the basis for theories that use a market's structure to project its performance.

The deconcentration rationale of the potential competition doctrine involves a direct application of this structure-conduct-performance model. Specifically, the emphasis on market concentration (as a proxy for market structure) is because of its presumed effect on conduct and performance. Inasmuch as this framework suggests that increasing the number of firms or reducing concentration in a market results in more competitive performance, it would

appear that there is sound economic logic for applying the potential competition doctrine in merger analysis.

The predictability of a relationship between a market's structure and its competitive performance largely depends on the objectives of firms in that market. The structure-performance relationship in banking has proved statistically significant, but quantitatively weak.[15] In other words, the level of market concentration (a structural measure of how much of the market is controlled by the largest firms) matters, but only very large changes in market concentration are associated with very small changes in price, profits or other performance indicators. One probable reason for finding this relationship quantitatively weak is that all firms in a market do not operate with the same objective.

Numerous studies testing various explanations (for example, the expense preference hypothesis, or the conglomerate power hypothesis, or the linked oligopoly hypothesis) bear out the fact that the behavioral element, especially of the banking firms, is a highly complex phenomena.[16] Some noted economists insist that there is no substantial convincing support--empirical or theoretical--for the theory that market performance is associated with the degree to which an industry's output is concentrated.[17] The Supreme Court has recently emphasized that market structure data are not

"conclusive indicators of anticompetitive effects."[18] Concentration ratios, as the Supreme Court noted, "can be unreliable indicators of actual market behavior."[19]

Antitrust laws are based on the notion that business behavior is motivated by profits. As long as horizontal mergers are the primary form of merger activity, the belief that business behavior is motivated by profits does not seem implausible. Horizontal mergers hold out the prospect of monopoly profits through elimination of a competitor and the possibility of higher profits from increased efficiency. However, the prospect of increasing profits by gaining monopoly or increased efficiency is generally unlikely from market extension type mergers. Consequently, the assumption of profit maximization in connection with this type of merger does not appear realistic. Empirical investigation of recent market extension merger activity provides support for such skepticism.

One of the papers in a study done at the Federal Reserve Board concluded that from all available evidence the banks acquired by bank holding companies do not experience an increase in profitability subsequent to acquisition.[20] Another paper reported that available research evidence provides no general indication that banks acquired by bank holding companies become more cost-efficient.[21] Thus, the evidence on market extension mergers in banking provides

little indication that increased profits motivate these mergers. Consequently, traditional structure-performance relationships do not provide tools that are adequate to the task of analyzing the competitive effects of market extension mergers. As part of the assessment of the multi-bank holding company movement by the staff of the Federal Reserve Board in 1978, Rhoades suggested some new approaches for research concerning the effect of such organizations on competitors.[22] One approach would abandon the traditional structure-conduct-performance model and focus on the potential anticompetitive effect uniquely associated with the geographically diversified firm.

The growing number of important bank combinations which do not fit neatly into the usual potential competition analysis has led banking economists and officials to search for some broader and more generalized basis for their analysis. The potential competition cases brought by the anti-trust authorities have involved entry by merger or acquisition into a local market by one of the largest banks eligible to enter the market in circumstances where the acquired bank was one of the largest banks in terms of operations in the local market. In other instances, where the proposed combination was not attacked, de novo entry was not legally possible because of "home office" protection which prohibits de novo branching into communities where a head office of a

bank is already located. Potential competition may also be an awkward method of analysis in the more frequent situation where de novo entry is legally possible, but there exists a history or pattern of regulatory barriers to entry.

Finally, even where none of these restrictive, legal or regulatory entry barriers are present, potential competition analysis often raises serious practical problems involving the availability of objective evidence of probable entry de novo. It may often be difficult to demonstrate that the acquiring bank was in fact a likely potential entrant into the market of the acquired bank.

The analysis of market extension combinations should not be strictly confined to the probable effects upon present or potential competition within the local market of the acquired bank. A consideration and adaptation of newer theories of industrial organization would seem useful here, as postulated and developed by Alexander Henderson, Almarin Phillips, and Oliver Williamson.[23] These theories, I believe, extend and clarify traditional economic theory within a broadened and more generalized analytical framework. These theories begin with the premise, which is not inconsistent from conventional theory, that performance is a function of interbank rivalry. Interbank rivalry is in turn dependent upon traditional variables such as market concentration, numbers of banks, and the threat of entry by external forces.

But, in addition, other variables which can be treated only indirectly under the premises of conventional antitrust theory, may also affect interbank rivalry and, presumably, performance within markets. One of the most important factors affecting interbank rivalry is the degree of linkage of adjacent banking markets. The concept of linkage (or linked oligopoly as the courts have referred to it) suggests that an intermeshing of the same banks in increasing numbers of local markets within a state, may serve to strengthen the lines of communication between them and increase the adherence to any pre-existing competitive standard.[24]

According to this concept, as business firms become increasingly diversified into different geographic markets there is likely to be an increase in the number of markets in which any given pair of firms meet each other as competitors. The existence of these multiple contacts provides the foundation for the same type of mutual interdependence between firms that is found in the traditional, single market oligopoly models. In particular, it is held that as firms come in contact in a large number of markets, they tend to become aware of the possibility that aggressive action in any one market may result in retaliatory action in some other market where they may be more vulnerable. Moreover, since the firms that tend to be most diversified are typically large and influential, their presence even in relatively

unconcentrated markets can lead to a reduction in the vigor of competition.

When a bank which already holds a large share of the states' deposits secures a new controlling primary market position through elimination of a local bank, its ability to extend its domination to still other markets throughout the state seems likely to be enhanced. Purely conventional analysis, with its emphasis on market concentration and on discerning the degree of potential competition in the primary market of the acquired bank, may permit such expansion, which the recognition of market linkages throughout the broader secondary market area would stop. Hence, even if no change is observed in local market structure (or in local market concentration), the geographic expansion by multibank holding companies throughout the state may affect market conduct and performance, depending on the degree of mutual restraint and mutual interdependence between banks in the local market.

It is beyond the scope of this study to determine what proportion of intermarket control, or what pattern of control should presume anticompetitive behavior and thus constitute a violation of antitrust standards. However, once concentration over a cluster of interlinked markcts within a state in which de novo branching is legally barred has reached a certain specified level, any further bank

bank acquisitions of controlling positions in adjacent markets might be prohibited outright, irrespective of the state law with respect to de novo branching and chartering.

The concept of linked oligopoly has only recently been a significant element in an antitrust case. In 1973, it was struck down by the Supreme Court as amounting to little more than "ephemeral possibilities."[25] This is not surprising because there was no empirical evidence on the concept of linked oligopoly. Recently, two studies abandoned the traditional structure-conduct-performance model and focused instead on the potential anticompetitive effects uniquely associated with the diversified firm, in particular, the multibank holding company. Results from one study provide no support for the argument that the presence of geographically diversified multibank holding companies in a market will impede new entry into that market.[26] Evidence from the other study, however, indicates that as participation by the states' dominant banking firms in a market increases, interfirm rivalry deteriorates and price performance worsens in some cases.[27] Again, evidence is limited and more work is needed to clarify the significance of large, geographically diversified banking organizations for local market competition and performance.

Summary and Conclusions

The studies examined in this chapter focused on the impact of multibank holding companies on local market structure. The evidence of recent studies clearly indicates a deconcentrating effect from de novo entry by bank holding companies. Indeed, evidence suggests that de novo banks established by holding companies may be more successful than new, independent banks at breaking down high market concentration. On the other hand, findings from both earlier and more recent works generally point to little or no structural effects from acquisition entry by bank holding companies. Specifically, the evidence indicates little, if any, impact of multibank holding company affiliation on market shares of banks acquired as entry vehicles into new markets. However, only limited testing of the impact of acquisition entry by bank holding companies on overall banking market structure has been performed.

The empirical research reviewed in this study appears inadequate in one respect or another as basis for testing the assumptions of the potential competition theory. Perhaps the most serious limitation of these studies is that no effort was made to distinguish cases involving market entry from those involving market expansion.

It is important to make a distinction between market entry and market expansion since the theoretical concept of

potential competition is relevant only when the proposed acquisition involves organizations presently operating in separate geographic markets. Foothold expansion involves the acquisition of a small bank in a market in which the acquiring organization already exists. Acquisitions of this type, so-called horizontal acquisitions, are analyzed in terms of their effect on "existing," not "potential" competition. Most studies testing the structural implications of foothold acquisitions are based on samples involving both types of acquisitions. This study, and consequently this sample, are limited to markets experiencing foothold entry only.

Analysis of mergers and acquisitions, be they foothold or de novo, between banks in the same geographic market involve predictions and conclusions relevant to market expansion (and not market entry) only. Since the theoretical concept of potential competition is relevant only when the potential competitors are in separate geographic markets, a valid test of the deconcentration assumption would limit the study to only locally defined markets experiencing foothold or de novo entry (and not foothold or de novo expansion). Failure to limit the sample to entry cases only, results in the structural effects of foothold and de novo entry being understated. Foothold and de novo expansion result in an immediate increase in concentration levels regardless of any

probable future deconcentration effects.

From the perspective of this study, the most serious limitation of previous empirical research in this area is that no study has correctly formulated a valid test of the potential competition hypothesis. However, it should be noted that not all previous studies were constructed for the purpose of directly testing the applicability of this hypothesis. A major point of this study is that there are two separate competitive effects stemming from any market extension merger or acquisition: a structure aspect stemming from the effects of an "actual" potential entrant and an effect on market conduct stemming from the loss of a "perceived" potential entrant. Frequently the two are discussed as a single result, but banking regulators must consider that there are important trade-offs between the competitive effects stemming from changes in structure and from changes in conduct. Empirical studies to date have not controlled for the effect of conduct when testing the possible deconcentration effect of foothold or de novo entry.

ENDNOTES

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CHAPTER III

PROCEDURES FOR TESTING

Introduction

Eventual deconcentration is a major objective of the banking potential competition cases filed by the Antitrust Division. Banking regulators believe that foothold entry is preferred to the acquisition of a leading bank in a market because it is likely to cause deconcentration, or at least less of an increase, in market concentration. The validity of applying the concept may be questioned because there is virtually no valid empirical research supporting the major assumption.

This chapter presents a framework for evaluating the potential competition hypothesis and explains the methodology used for testing. Multiple regression analysis has been adopted to test for the impact of foothold acquisition on changes in market concentration. The method of sample selection, the procedure for testing and selecting variables, and

the source of information for the variables investigated in this study are discussed in this section.

Competitive Effects of Market Extension Mergers

Economists have identified several different variables which influence the level of competition in a market. In classifying these factors, a distinction has been made between elements of market structure and market conduct.[1] Market structure variables are represented by such factors as concentration, barriers to entry, and product differentiation. Market conduct consists of a firm's policies for operating in its market and toward the competitive moves by its rivals. The following discussion contrasts the competitive effect of potential competition on market conduct with that of market structure.

As noted earlier, the term potential competition has been applied interchangeably to two distinct phenomena: the "actual" potential entrant theory and the "perceived" potential entrant theory. The concept of "actual" potential competition (or probable future competition) is based on the expectation of a change in market structure due to actual entry or expansion by the potential competitor. In contrast, the theory of "perceived" potential competition postulates that the mere existence of a potential entrant, posing a

threat of entry to established firms, influences the present conduct of firms in the market. In short, the influence posited by the theory of "perceived" potential competition is manifested in present market conduct while the other concept is manifested in market structure at some future time.

The theory of "perceived" potential competition holds that firms in an oligopoly market may not set their prices as high as their concentrated market structure would seem to indicate because they perceive a threat of entry by a firm "waiting in the wings." Specifically they may charge what Bain refers to as the "limit price," the highest common price sellers believe they can charge without inducing at least one additional increment to entry.[2] In turn, the importance of limit pricing depends on the significance of barriers to entry, which are those characteristics of a market which make it difficult for new firms to enter. Bain concluded that the major barriers to entry are (1) product differentiation; (2) absolute cost advantages; and (3) scale economies.[3] It is hypothesized that firms in industries characterized by high barriers to entry can charge relatively higher prices and earn higher profits than firms in other industries without attracting new entry. Thus higher barriers to entry imply a higher limit price.

If a limit price policy produces larger long-run profits than a higher price (which would likely produce

entry and thus depress long-run profits), the former will be adopted. In this situation the threat of entry from a "perceived" potential entrant exerts a procompetitive external influence on the conduct of established firms. Because of the existence of potential entrants, prices and profits are held at more competitive levels.

In addition to the competitive effect associated with the threat of entry, there are other factors which influence the overall effect of any merger or acquisition on competition. Specifically, there is the structural effect of the proposed merger or acquisition on concentration in the market. The rationale for considering the structural effect is that economic theory suggests that the degree of competition is directly related to the number and size distribution of firms operating in the same market. Economists have empirically examined this theoretical hypothesis for a number of industrial sectors using profit performance as an indicator of the degree of competition and the concentration ratio as a proxy for the size distribution of firms. These studies have generally found a significant positive relationship between profits and concentration. Banking market studies on the effect of structure on prices and profits are somewhat weaker, but they also reveal a significant inverse association between concentration and performance. (See Appendix D for a review of these studies.) The regulatory

implication of these results is that a bank merger or acquisition which produces market deconcentration, or at least a decrease in concentration, will normally yield improved competitive performance.

Framework for Evaluating Competitive Effects of Potential Competition

The preceding discussion indicated that there are two separate determinants of the level of competition associated with any market extension merger or acquisition: the effect on present market conduct and the effect on future market structure. The following framework provides a basis for analyzing the competitive effects of any market extension merger or acquisition:

CHANGE IN COMPETITIVE CONDITIONS	= -	Effect Stemming From Change in Market Conduct	$\pm$	Effect Stemming From Change in Market Structure

This formulation shows that the total competitive effect of any market extension proposal is the combined result of two separate, but distinct aspects: the entry threat of a "perceived" potential entrant on the conduct of established firms, and the structure effect, with a change in market concentration associated with the actual entry of a potential entrant. Under some conditions, the two factors reinforce each other, while under others they work in opposite directions. Analysis of the combinations of directional

change in the structure and conduct forces provides a useful framework for classifying the various types of mergers and acquisitions and analyzing their probable net competitive effect.

In this formulation, the loss of a perceived potential entrant is given a negative sign to indicate that the loss of the entry threat has an adverse effect on competitive conditions in the market. The effect associated with a change in structure is assigned either a positive or negative sign. The implication here is that a merger or acquisition which leads to a decrease in concentration should be assigned a plus value, while any merger or acquisition which leads to an increase in concentration will be assigned a negative value, due to its adverse competitive effect.

For example, a horizontal merger, involving firms in the same market would experience no competitive loss from the threat factor, but the structural impact of such mergers would yield adverse competitive effects. Market-extension mergers, on the other hand, would produce an adverse competitive effect from a union of firms in different markets, due to the loss of the entry threat. This type of merger would involve the loss of the threat entry with the possibility of a procompetitive effect resulting from market deconcentration. The net effect of a merger of this type could only be determined by carefully weighing the relative magnitude of

opposing competitive factors. If the probability of entry is small, then any procompetitive effect stemming from the threat factor would be minimal. Thus the procompetitive effect of market deconcentration, particularly those involving foothold entry, would outweigh the adverse competitive effect associated with a loss of an entry threat. Typically the cases challenged by the regulatory authorities on the basis of the potential competition argument have been where both the loss of the entry threat and a probable tendency toward increased concentration indicate adverse competitive developments from the merger or acquisition.

While the preceding discussion has indicated that the net competitive effect of any merger is the result of at least two distinct forces, no indication has been given as to how the magnitude of the respective forces can be assessed. This problem of measurement is particularly difficult for the threat element, where there is limited empirical evidence relating to the importance of a "perceived" entry threat as a competitive factor.[4]

In deciding cases involving potential competition, the banking authorities must assess the likely competitive consequences of the proposed transaction. This study is limited to only those market extension cases where approval was granted on the basis that the proposed transaction was likely to yield a more competitive banking structure and the loss of

the "perceived" entry threat was assessed to be minimal, having no significant adverse competitive effects. An assumption of the potential competition theory, at least as it is currently applied, is that the manner of entry in a market will have highly significant competition effects on a market's future structure. Specifically it assumes that foothold or de novo entry is likely to yield a more competitive banking structure than would entry through acquisition of a large, established bank in that market. Consequently, this study tests the hypothesis that markets which experience foothold acquisitions experience a decline in concentration, or less of an increase than markets which do not experience foothold entry. Once again, the study is limited to those proposed transactions where the competitive effects stemming from the loss of the entry threat, as viewed by the banking authorities, is not significantly adverse.

Model Tested

To test the hypothesis that foothold acquisitions have an inverse affect on changes in market structure, the following relationship is tested:

CONCHG = f FTHDAQ, INTCON, TD/OFF, ORGCHG, DEPCHG, MRKSZE, YR(i)

The model is tested with 72 observations, where:

CONCHG = Change in three-firm deposit concentration ratio, (1978-1972)

FTHDAQ = 1, if a foothold acquisition occurred
0, if otherwise

INTCON = Initial level of concentration (1972)

MRKSZE = Market size in terms of total deposits (1972)

TD/OFF = Deposits per banking office (1972)

ORGCHG = Percentage change in the number of banking organizations (1978-1972)

DEPCHG = Percentage growth in total deposits (1978-1972)

YR(1&2)= 1, for 1971-72
0, for other years

YR(3&4)= 1, for 1973-74
0, for other years

YR(5&6)= 1, for 1975-76
0, for other years

Explanation of Variables

The basic explanatory variable in the analysis is foothold acquisitions. A simple dummy variable is used to distinguish between those markets which experienced foothold acquisitions and those which did not. The two catagories are assigned values of one (1) and zero (0) respectively. In view of the hypothesis being tested, it is anticipated that the dummy variable will exhibit a negative coefficient, meaning that markets with foothold acquisitions had a lower percentage change in concentration than other markets.

This study uses the change in the three-firm, deposit concentration ratio (1978-1972) as a proxy for changes in market structure, which is the dependent variable in the analysis. The concentration ratio is a widely used measure of banking structure. A survey of 29 recent studies on structure-performance relationships in banking revealed that the concentration ratio was the most frequently used, as well as the most successful measure of market structure.[5] It was used in eighteen studies and was statistically significant in all eighteen studies in which it was used. The Herfindahl index did not perform so well. It was significant in only six of the nine studies in which it was used. In four studies in which both measures were used, both were statistically significant in all four studies. (See Appendix E for an analysis of how these two measures are constructed.)

Thus, the concentration ratio appears to be an attractive measure. It is simple to calculate; it is intuitively appealing because it reflects the dominance of the largest firms; and it generally yields results that are consistent with theory. While the Herfindahl index reflects dispersion of firms not captured by the concentration ratio, it does not appear to be as successful as the concentration ratio in explaining performance.

The initial level of market concentration is included as an independent variable to account for barriers to entry.

High concentration is usually associated with high natural barriers to entry and thus should be positively related to the dependent variable. However, high concentration in a regulated industry may reflect regulatory barriers to entry such as strict branching or chartering laws. To the extent that regulators may seek to reverse an existing trend toward high concentration, it is also possible that new charters may be more easily secured thus reducing regulatory barriers to entry in highly concentrated markets.

There is a further complication assiciated with the concentration variable. A concentrated market implies monopoly profits which should make the market attractive for new entry. On the other hand, some studies have in fact found evidence suggesting that relatively low concentration is an indicator of market attractiveness.[6] Since high market concentration is a necessary condition for potential competition to exist, a finding that attractive markets are those which are relatively unconcentrated would necessarily weaken the practicality of potential competition as a working hypothesis. This follows since the markets which are most subject to this policy (those which are most concentrated) would be least attractive for de novo or foothold entry and thus least susceptible to the enhanced conpetitive benefits arising from potential competitors, "actual" or "perceived."

Deposits per banking office is incorporated in the analysis to account for the relative demand for bank deposit services. Markets characterized by a high ratio of deposits per banking office should be attractive for new entry and new entry is more easily justified to bank regulators than in intensely banked markets. Consequently, markets with high deposits per banking office have lower barriers to entry and, therefore, are expected to experience a smaller percentage change in concentration than other markets. It is possible, however, that a high ratio of deposits per banking office may be accompanied by a high concentration ratio. Since high market concentration may indicate an attractive market, high ratios of deposits per banking office resulting from such concentration may be invalid as measures of relative market attractiveness.

Another important market variable included, the change in the number of banking organizations, reflects the net effect of any bank mergers and acquisitions, bank failures, and other new banks opened within the market during the period examined. To the extent that the number of banking offices increases, there should be an associated decrease in market concentration.

The percentage growth in total deposits is included as an independent variable because of its potential effect on market structure through barriers to entry. In particular,

rapidly growing markets permit new firms to enter without taking customers from existing firms and, in addition, new charters are more easily justified in these markets. Thus, rapid growth markets, because of low barriers to entry, should experience a smaller percentage change in market concentration than slow growth markets. Growth is measured solely in terms of total deposits since reliable population and income figures for individual counties are not available on an annual basis prior to 1972.

The last market variable included is market size, measured as total deposits. Clearly market share accumulation by a new entrant is restricted in large markets by the absolute deposit growth required. Thus it is expected that changes in market concentration are inversely related to market size. Market size is also included as a measure of market attractiveness in recognition of the argument that a firm can most easily enter a market at an optimum scale if the market is sufficiently large that the new entrants output will have no perceptible effect on going prices in the market. On that basis, one may expect larger banking markets to be more attractive for de novo or foothold entry than their smaller counterparts, other things being equal.

Finally, a series of dummy variables is included to control for differences among markets as to the year in which the first foothold acquisition occurred. If, for

example, one market experienced a foothold acquisition in 1972 and another market in 1976, it seems clear that there is a greater opportunity for the 1972 foothold acquisition to influence market structure by 1978 than the 1976 acquisition. Each market is assigned a value of 1 for the year in which it experienced its first foothold acquisition and 0 for all other years. Since the year 1970 is the excluded variable, it is anticipated that the dummy variables representing earlier years will exhibit a positive sign indicating a lower percentage change in concentration in markets that experienced foothold acquisitions prior to 1976.

Sample Selection

The process of sample selection involves a two-step procedure. The first step involves the selection of a sub-sample of local banking markets experiencing foothold entry. The second stage involves selecting an appropriate sub-sample of banking markets not experiencing foothold entry. Foothold entry involves the acquisition of a small existing bank in markets in which the acquiring bank does not presently operate. The $10 million deposit size cut-off is the definition of foothold acquisition used in this study. The under-$10 million category is of significance because these banks are almost always regarded as foothold acquisitions by the regulatory authorities. Denials of such acquisitions are

extremely rare; however, most such small banks remain unaffiliated since holding companies regard them as relatively unattractive avenues of entry, especially in markets where other organizations control large banks.

The number of banking markets included in the sample is restricted in several important ways. Because the Federal Reserve Board is the banking authority with sole responsibility for regulating bank holding companies, and because the bank holding company form of organization has been the prime mover in the recent merger movement in banking, use of Board merger policy to narrow the scope of the sample seems reasonable. Merger cases decided by the Federal Deposit Insurance Corporation or the Comptroller of the Currency are excluded. When a bank is acquired by a holding company, the holding company must keep and report separate records for the acquired bank. However, if a bank is merged into another bank, the acquiring bank need not report the separate status of the merged bank since it becomes a branch of the organization.

Over the last decade the multibank holding company has become the dominant form of banking organization. By and large, the expansion has involved holding company acquisitions of on-going banks rather than de novo chartering. Of the total increase of just over 1,700 multibank holding company acquisitions between 1969 and 1980, approximately

80 percent were acquired as operating banks. (See Table 3 for characteristics of applicant and acquired banks in merger and acquisition decisions by the Federal Reserve Board during the 1970's.) This increase in the number of subsidiary banks was concentrated in a relatively small number of unit banking or limited branching states. More than two-thirds of the increase was accounted for by Texas, Florida, Missouri, Michigan, Ohio, Colorado, Wisconsin and Alabama. The sample is thus limited to banking markets in those states. (See Table 4 for the number of acquisitions in each state during the 1970's.)

It is important to make a distinction between market entry and market expansion since the theoretical concept of potential competition is relevant when the potential competitors are in separate geographic markets. Foothold expansion involves the acquisition of a small bank in a market in which the acquiring organization already exists. Acquisitions of this type, so-called horizontal acquisitions, are analyzed in terms of their effect on "existing," not "potential" competition. Most studies testing the structural implications of foothold acquisitions are based on samples involving both types of acquisitions. This study, and consequently this sample, are limited to markets experiencing foothold entry only.

The sample is limited in another important respect.

TABLE 3

CHARACTERISTICS OF APPLICANT AND ACQUIRED BANK IN MERGER AND ACQUISITION DECISIONS BY THE FEDERAL RESERVE BOARD, 1970-79

Year	Number of observations[1]	Applicant (average)				Acquired Bank (average)				
		Deposit size (millions of dollars)	State rank	State share (percent)	Number of bank subsidiaries	Deposit size (millions of dollars)	Market rank	Market share (percent)	State rank	State share (percent)
1970	163	539	5.1	6.3	6.8	39	5.5	14.2	10.9	2.2
1971	137	698	5.1	5.3	9.5	54	5.7	16.0	9.9	1.7
1972	153	1,089	4.9	5.7	8.0	54	6.2	16.4	8.7	1.4
1973	62	1,476	4.7	8.6	8.3	69	7.0	18.8	11.7	1.9
1974	41	1,111	4.8	6.2	16.6	56	10.0	16.6	10.0	2.2
1975	28	1,986	3.7	7.8	12.1	116	9.4	18.4	14.7	1.3
1976	39	1,470	9.6	6.6	7.4	70	12.5	18.4	40.8	1.4
1977	44	1,341	9.9	6.8	13.1	62	9.5	15.2	45.2	1.0
1978	30	1,529	21.2	5.1	13.5	72	9.5	15.0	67.7	1.2
1979	27	1,598	27.1	5.8	9.1	125	6.9	23.4	77.2	1.6
Average	72	1,284	9.6	6.4	10.4	72	8.2	17.2	29.7	1.6

[1]Each case does not necessarily contain information on all of the data items. The number of observations shown here reflects the number of orders published in the Bulletin rather than the number of applications considered by the Board. Beginning in 1973, the Board published only the relatively important orders.

SOURCE: Federal Reserve Bulletin, 1970-79 (Board of Governors of the Federal Reserve System).

TABLE 4

NUMBER OF ACQUISITIONS IN EACH STATE, 1970-79

State	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Total
Alabama		5	7	22	13	8	2	1	3	2	67
Colorado	7	3	11	18	6	1	2	1			81
Florida	42	43	33	60	36	8	18	7	5	7	318
Michigan	3	2	6	20	20	10	5	10	11	3	153
Missouri	14	27	21	22	27	19	16	10	4	4	180
Ohio	24	23	22	22	14	10	14	13	5	16	251
Texas	9	10	27	48	38	19	14	22	14	11	227
Wisconsin	15	10	12	1	6	1	5	11	2	8	116

SOURCE: Federal Reserve Bulletin, 1970-79 (Board of Governors of the Federal Reserve System).

Only secondary, as opposed to primary SMSA markets are included. This study uses a $250 million deposit cut-off to distinguish between smaller (secondary) and larger (primary) SMSA markets. This limitation is important for several reasons. The Department of Justice's Merger Guidelines indicate that the concept of potential competition may be applied where there are few potential entrants for the market and concentration in the relevant market is high. These guidelines are more relevant to secondary SMSA banking markets where concentration is higher and potential entrants are fewer than in primary SMSA banking markets.

The final limitation in the sampling process involves a review of all Federal Reserve Board Orders approving bank holding company acquisitions from 1970 to 1976. Statutory power given to the Board of Governors for determining whether bank holding cmopany acquisitions should be approved comes from a section of the Bank Holding Company Act of 1956, as amended.[7] Briefly stated, the Board when looking at proposed bank holding company acquisitions, must examine the anticompetitive aspects of the proposed transaction, and, if they are not clearly outweighed by the public interest, the acquisition will be denied. Markets experiencing foothold entry where approval was granted despite potentially adverse competitive effects on market conduct were excluded from the sample. (See Table 5 for a summary of the primary

arguments and number of denials in cases decided upon by the Federal Reserve Board during the 1970's.)

A detailed review of all Board Orders was made to determine which banking markets experienced foothold entry. Only those markets in which future deconcentration was the primary factor in approving the entry proposal were included in the sample. This reduced to 32 the number of secondary SMSA banking markets, in the states mentioned earlier, experiencing foothold acquisition. Of the markets experiencing foothold entry, six were in 1970, 10 in 1971 and 1972, eight in 1973 and 1974, and eight in 1975 and 1976. Finally, all secondary SMSA's (in these same states) which did not experience foothold entry were included, bringing to 72 the number of banking markets for testing purposes.

Although the use of counties or SMSA's as geographic markets is admittedly somewhat of a simplification, it is very common in structure-performance research. Actually, federal regulatory agencies, in the absence of clearly defined criteria for market identification, frequently employ counties or SMSA's as market approximations in merger analysis. This approximation is particularly useful for states with county or SMSA branching limitations. Moreover, the use of counties and SMSA's in defining the relevant market for banking services is supported by empirical research.[8]

TABLE 5

PRIMARY ARGUMENTS IN CASES DENIED BY THE FEDERAL RESERVE BOARD, 1970-79[1]

Year	Primary Arguments in the Case: Horizontal effects — Number	Horizontal effects — Percent of all arguments	Potential competition — Number	Potential competition — Percent of all arguments	Probable future competition — Number	Probable future competition — Percent of all arguments	State structure — Number	State structure — Percent of all arguments	Number of denials[2]
1970	8	53	3	20	3	20	1	7	10
1971	10	36	7	25	9	32	2	7	12
1972	5	45	0	0	6	55	0	0	12
1973	9	56	2	13	3	19	2	13	11
1974	10	37	2	7	9	33	6	22	17
1975	7	70	0	0	2	20	1	10	13
1976	6	86	0	0	0	0	1	14	8
1977	5	71	0	0	2	29	0	0	9
1978	6	86	1	14	0	0	0	0	6
1979	6	50	2	17	2	17	2	17	8
Annual Average 1970-79	7	59	2	10	4	23	2	9	11

[1]Percentages may not add to 100 because of rounding.

[2]Includes all denials of applications by the Board.

SOURCE: Federal Reserve Bulletin, 1970-79 (Board of Governors of the Federal Reserve System).

Source of Information

The source of information for market deposits, deposit concentrations, and number of banks and banking offices is the Summary of Deposit publication of the Federal Deposit Insurance Corporation. This publication provides the volume of total deposits in each county and SMSA as of the end of June of the survey year. It is an especially significant source of information for branch banking states in which a single organization may encompass more than one county or SMSA. In this instance, the deposits are provided by location (county or SMSA) rather than by organization.

A detailed description of Federal Reserve Board orders on mergers and acquisitions are published monthly in the Federal Reserve Bulletin. The focus on orders published in the Bulletin restricts the size of the sample, while it assures that the important cases are included. "Delegated authority" cases are excluded. Beginning in the early 1970's, the Board delegated authority to decide certain merger and acquisition cases to the Reserve District Banks. These tend to be relatively straightforward cases in which no major issues are raised. The Board considers all of the more important cases including all applications that are denied.

Procedure for Selecting Variables

A variety of regression models can be constructed from the same set of variables. Some of the most widely used procedures for selecting variables are forward selection, backward elimination, and stepwise regression. Each of those models are utilized in this study.

In "forward selection," the first variable entered into the equation is the one with the largest positive or negative correlation with the dependent variable. The "F" test for the hypothesis that the coefficient of the entered variable is zero is then calculated. In order to judge whether this variable (and each succeeding variable) is important, a criterion must be established. The criterion used in this study is that a variable enters into the equation only if the probability associated with the "F" test is less than or equal to .05 (5%).

If the first variable selected for entry meets the criterion for inclusion, forward selection continues. Otherwise, the procedure terminates with no variables in the equation. Once one variable is entered, the statistics for variables not in the equation are used to select the next one. The partial correlations between the dependent variable and each of the independent variables not in the equation, adjusted for the independent variables in the equation, are examined. The variable with the largest

partial correlation in absolute value is equivalent to selecting the variable with the largest "F" value.

If the criterion is met, the variable is entered into the equation and the procedure is repeated. If not, the procedure stops when there are no other variables that meet the entry criterion.

While "forward selection" starts with no independent variables in the equation and enters variables sequentially, "backward elimination" starts with all variables in the equation and sequentially removes them. Instead of entry criteria, removal criteria are specified. In this study a variable remains in the equation only if the probability associated with its "F" test is less than or equal to .10 (10%).

"Stepwise selection" of independent variables is probably the most commonly used procedure in regression. It is really a combination of backward and forward procedures. The first variable is selected in the same manner as in forward selection. If the variable fails to meet entry requirements, the procedure terminates with no independent variables in the equation. If it passes the criterion, the second variable is selected based on the highest partial correlation and if it also passes entry criteria, it enters the equation. From this point, stepwise selection differs from forward selection since the "F" value of the

first variable is examined to see whether it is small enough for the variable to be removed according to the removal criteria as in backward elimination.

The next step is to examine the variables not in the equation for entry, followed by examination of the variables in the equation for removal. Variables are removed until none remain that meet the removal criterion. Variable selection terminates when no more variables meet entry and removal criteria.

Summary

This chapter presents a framework for evaluating and testing the potential competition hypothesis. As applied to the hypothesis under investigation, the framework developed in this study demonstrates that the total competitive effect of any market extension proposal is the combined result of two separate, but distinct aspects: the entry threat of a perceived potential entrant on the conduct of established firms, and the hypothesized structure effect, associated with the actual entry of a potential entrant. Under some conditions, the two factors reinforce each other, while under others they work in opposite directions. Market extension type mergers and acquisitions involve the loss of the entry threat with the possibility of a procompetitive effect of actual entry producing market deconcentration.

Because the problem of measurement is particularly difficult for the threat entry, the sample of this study is limited to only those cases where approval was granted on the basis that the proposed transaction was likely, according to the banking authorities, to yield a more competitive banking structure and the loss of the "perceived" entry threat was assessed to be minimal, having no significant adverse competitive effects. A multiple regression model was formulated to test the hypothesis that foothold entry produces market deconcentration.

ENDNOTES

[1]William G. Shepherd, "The Elements of Market Structure," Review of Economics and Statistics, Vol. 54 (February 1972), pp. 25-37.

[2]Joe Bain, "A Note on Pricing in Monopoly and Oligopoly," The American Economic Review, Vol. 39 (March 1949), pp. 448-464.

[3]Joe Bain, "Economies of Scale, Concentration and the Condition of Entry in Twenty Manufacturing Industries," American Economic Review, Vol. 44 (January 1964), pp. 15-39.

[4]Dale K. Osborne, "The Role of Entry in Oligopoly Theory," Journal of Political Economy (August 1964), pp. 396-402.

[5]Stephen A. Rhoades, "Structure-Performance Studies in Banking: An Updated Summary and Evaluation," Staff Economic Studies 119 (Board of Governors of the Federal Reserve System, 1982).

[6]Peter Rose, "The Attractiveness of Banking Markets for De Novo Entry: The Evidence from Texas," Journal of Bank Research, Vol. 7 (Winter 1977), pp. 284-293.

[7]12 U.S.C. Section 1842.

[8]George G. Kaufman, "Bank Market Structure and Performance," Southern Economic Journal, Vol. 32 (April 1966), pp. 429-39.

CHAPTER IV

FINDINGS AND POLICY IMPLICATIONS

Introduction

A basic assumption of the potential competition theory, particularly as it is applied to bank holding company acquisitions, is that foothold entry, as opposed to the acquisition of a leading bank, is more likely to yield less concentrated markets. This study used multiple regression analysis to test the relationship between foothold entry and changes in market structure. Some of the most widely used procedures for selecting variables for the regression model are forward selection, backward elimination, and stepwise regression. Each of these methods was utilized in this study. The final regression results were the same in each case. The results of this study are presented in this chapter. (See Appendix E for a detailed review of the regression results.)

Statistical Results

To test the hypothesis that foothold entry has an inverse effect on market structure, the following relationship was tested:

CONCHG = f FTHDAQ, INTCON, TD/OFF, ORGCHG, DEPCHG, MRKSZE, YR(i)

The results of the test are presented in Table 6.

The basic explanatory variable (FTHDAQ) is represented as a simple dummy variable to distinguish between those markets which have and those markets which have not experienced foothold acquisitions by outside firms. In view of the hypothesis being tested, it was anticipated that the dummy variable would exhibit a negative relationship, meaning that markets which experienced foothold entry had less of an increase in concentration than other markets. The regression results of this study do not support this hypothesis. Indeed, the results indicate that there is no significant, systematic relationship between foothold acquisitions (FTHDAQ) and changes in market structure (CONCHG). Thus, the evidence suggests that encouraging foothold acquisitions by outside banking organizations does not, in the short run, lead to more competitively structured markets. The results of this study appear to be consistent with other studies which have tested this same relationship.

The findings that acquisitions of small banks by

TABLE 6

RELATIONSHIP BETWEEN CHANGES IN MARKET CONCENTRATION RATIOS AND FOOTHOLD ACQUISITIONS: 1970-1976[1]

Dependent Variable	Independent Variables						Year of First Foothold Entry			R^2
CONCHG	INTCON	FIRMQ	TD/OFF	ORGCHG	DEPCHG	MKSIZE	1971-72 YR(71-72)	1973-74 YR(73-74)	1975-76 YR(75-76)	ADJUSTED
CONCHG[2]	-0.155	2.326	0.070	-8.893	-10.537	0.002	-0.076	-3.019	-2.587	0.55
	(4.268)	(0.710)	(1.980)	(2.894)	(2.485)	(0.927)	(0.022)	(0.846)	(0.522)	
	(0.000)	(0.480)	(0.052)	(0.005)	(0.015)	(0.357)	(0.982)	(0.400)	(0.603)	
CONCHG[3]	-0.174		0.087	-10.006	-12.454					0.56
	(5.497)		(2.639)	(3.744)	(3.208)					
	(0.000)		(0.010)	(0.000)	(0.002)					

[1]Regression coefficients of independent variables (absolute "T" values and levels of significance in parenthesis).

[2]Initial regression equation.

[3]Final regression equation (backward elimination).

outside bank holding companies do not reduce local market concentration casts serious doubts on the regulatory encouragement of foothold entry. Given that the extent of deconcentration attributable to de novo entry appears relatively sizable (see Chapter II, on the survey of the literature), the type of entry that should be encouraged is de novo entry.

The single most important variable in the analysis was the initial level of concentration (INTCON). While the results of this study indicate that this variable is significant, there is a complication associated with the resulting inverse relationship between this variable and the dependent variable. High levels of concentration would imply significant barriers to entry (and thus less of a deconcentration effect) implying an expected positive relationship. (The percentage change in concentration is lower in markets experiencing greater deconcentration.) Since high market concentration is a necessary condition for potential competition to exist, regulatory barriers to entry could be less stringent, encouraging more entry, in high concentration markets. Highly concentrated markets would thus be those more susceptible to the deconcentration effect associated with additional entry. In addition, a concentrated market implies monopoly profits which should make the market relatively more attractive for new entry--thus

explaining the resulting inverse relationship between the concentration variable (INTCON) and the dependent variable (CONCHG).

The growth in total market deposits (DEPCHG) and the change in number of banking organizations (ORGCHG) were both significant and carried the expected signs. The growth in deposits variable was included in the analysis as an independent variable on grounds that high growth in a market would encourage new entry, thereby reducing market concentration. To the extent that the number of banking organizations increases, there should be an associated decrease in market concentration and the results of this study indicate that this is indeed the case.

The total deposits per banking office variable (TD/OFF), while significant, did not carry the expected sign. This variable was included as an indicator of the relative demand for bank services in the market. Where this ratio is high, the market may generally be regarded as attractive for de novo entry. Alternatively, a high ratio (TD/OFF) may imply an absolutely small number of banks (and offices) in the market and a high concentration ratio. Since high market concentration may indicate an unattractive market, high ratios of TD/OFF resulting from such concentration may be invalid as a measure of market attractiveness.

The market size variable (MRKSZE), expected to be

inversely related to changes in market concentration, did not yield statistically significant results. Clearly changes in market concentration are restricted in large markets by the absolute deposit growth required. The insignificance of this variable may have been understated, however, as there appears to have been some multicollinearity in this model due to the fact that smaller markets tend to be more concentrated and rapidly growing than their larger counterparts. Statistical results performed in this study seem to indicate that the model is quite sensitive to deleting market growth and concentration, but not market size. It is concluded that although market size may have had some effect on market structure as hypothesized, this effect is well captured in the measures of market concentration and market growth. Thus market size can be effectively deleted from the model with little or no adverse effect on the model's performance.

Like the foothold acquisition variable, the series of dummy variables included to account for the year in which the first foothold acquisition occurred in each market failed to meet entry criteria, and thus were eliminated from the final equation. It had been expected that in markets which experienced foothold entry in the early part of the period, there would be greater possibility for concentration to decline. Thus, while this finding is inconsistent with

the initial hypothesis, it would appear to be consistent with other results which suggest that foothold acquisitions have no systematic effect on market structure.

A possible problem with this study relates to the fact that the regression model includes both a single dummy variable indicating whether foothold entry by bank holding companies occurred during 1970-76 and a series of dummy variables representing the year in which the market first experienced such entry. To the extent that the variable for foothold entry is collinear with the series of variables for date of first entry, the statistical significance of the foothold-entry variable may be lessened, thereby obscuring the effect of such entry on market structure. However, in the exploratory stages of this study, the regression model was tested while excluding the series of dummy variables for date of entry, yet the effect on the foothold-entry variable was statistically insignificant.

Summary of Findings

The results of this study do not support the hypothesis that markets which experience foothold entry become more competitively structured through a decrease in concentration levels. Indeed, the results indicate that there is no significant systematic relationship between foothold acquisitions and changes in market structure. The most

significant variable affecting changes in market structure was the initial level of concentration. Other variables which proved to be statistically significant were the variables representing market attractiveness and organizational change.

Limitations of Potential Competition as a Basis for Antitrust Policy

The argument that elimination of a substantial potential entrant "adversely affects the basic structure and organization of the market," assumes that the chartering authority would readily grant permission to enter. Otherwise, competitive behavior could not previously have been influenced by the "wings effect"--the procompetitive premerger or preacquisition impact of "perceived" potential entry.[1] Thus, the removal of the potential entrant by actual entry would not alter adversely the local market structure. Ease of entry, "a central premise of the potential competition doctrine" as the Supreme Court noted,[2] has not been the prevailing situation in banking for at least forty years. De novo entry depends on the uncertain approval of regulatory agencies opposed to overbanking.[3]

A foothold acquisition, even one located favorably, may not be available on terms the buyer considers reasonable. The process of securing a U.S. banking charter is

expensive, time-consuming, and often bitterly fought by banks established in the local market. The elaborate rules for securing a commercial bank charter are justified on the grounds that: (1) the public is more conveniently served; and (2) the constraints result in more solvent banks because "ruinous" competition is avoided. The benefits of competition are subordinated to an undetermined extent in order to achieve a more stable banking system, while insuring a reasonable volume and quality of banking services. Restrictions on new bank entry substitute the judgment of chartering agencies for "the judgment of private entrepreneurs who desire to risk their capital in a banking venture."[4] The potential competition theory that a bank blocked from entering a new market by a substantial acquisition may enter de novo or foothold overlooks these practical problems.

The threat that a regulator may allow entry is a factor tending to restrain those already in the market, according to the theory of "perceived" potential competition. But such a threat of entry is rarely, if ever, announced by the chartering agencies; in many market situations, therefore, existing banks may reasonably doubt that new entry would be authorized. Under existing law, entry--as the Supreme Court recognized in Philadelphia National Bank--is "wholly a matter of governmental grace."[5]

Regulatory barriers appear to be the only real

barrier to entry in banking. Economic barriers to entry in commercial banking do not appear to be especially significant. The technology of banking is well known and readily transferable. The plant and equipment needed to begin operations are flexible, thus facilitating entry on even a very small scale. Numerous studies on economies of scale in banking show that significant reductions in average cost are experienced only up to approximately $50 million in deposits.[6] None of the resources required for the establishment of a bank is so unique or scarce that the cost of de novo banks would differ substantially from those of an established bank.

Since regulation is the only effective barrier to entry in banking, it is meaningless to talk about the loss of one fringe bank as a lowering of the degree of potential competition. Existing bank managements do not look at the behavior of a fringe bank as representing the degree of potential competition in their market. Bank regulators establish the degree of potential competition in a bank market by their policies toward bank entry, which is implanted in the minds of existing bank managements.[7] If one accepts that the degree of potential competition in banking is the same as the regulator's attitude toward entry, then it follows that the competitive impact stemming from the loss of a "perceived" entrant should not be an issue in

any specific bank structural case.

The theory of potential competition, and its application to the banking industry, appears to be limited in another important respect. The theory of potential competition requires that limit pricing develops in the market. The limit price is held to be the highest price the firms in a concentrated industry can charge without attracting new entry. The decision as to whether to adopt such a pricing strategy will depend on whether this strategy will yield a larger long run profit stream than would a higher price, which would yield higher profits in the short run but would presumably attract new entrants eventually leading to lower prices and profits in the long run. However, this study concludes that application of the limit price theorem to the banking industry is inappropriate since entry in banking is controlled completely by regulators unconcerned by price alone.

In the banking industry, where regulators are primarily concerned with bank safety, it is much more likely that banks will discourage entry by operating at less than maximum efficiency rather than by adhering to limit pricing as a means of deterring entry.[8] When barriers to entry are "natural" (nonregulatory), it would be irrational for an established firm to give up its natural cost advantage by reducing profits through excessive costs. However,

hiding profits in excessive cost is reasonable behavior for a firm in an industry in which the entry barriers are "artificially" established by a regulatory authority. Alchian and Kessel describe this state of affairs in the following manner:

> (Regulated firms) so created are beholden to the state for their existence--the state giveth, the state taketh away. Accordingly, they constrain their business policies by satisfying the requirements that they shall do what is necessary to maintain the (regulated) status...the cardinal sin of a (regulated firm), to repeat, is to be too profitable.[9]

These authors also conclude that this type of behavior stems not only from the limited perspective of regulators, but also from management's desire to maximize personal preference:

> But (managers) do have relatively strong incentives to use the resources of the (protected firm) for their own personal interest, but in ways that will count as company costs. Nor does the public regulatory body readily detect such activities, because its incentives to do so are even weaker than those of stockholders. The regulatory body's survival function is the elimination of publicly detectable inefficiencies. Furthermore, (regulatory agencies) have a poor criteria of efficiency because it lacks competitive standards ....
>
> Management will be rational if it uses company funds to hire pleasant and congenial employees... office furniture and equipment will be of higher quality. Fringe benefits will be greater and working conditions more pleasant.... They cost more, of course, but how does the regulatory agency decide that these are unjustifiable expenditures.[10]

Thus it is more likely that "perceived" potential entrants

will influence the operating cost of established banks and not so much their pricing strategy as the potential competition theory suggests. This is not to imply that it is any less an important an issue. But it does suggest that the regulator's concern for nonexcessive profits calls into question the premise that all banks are profit maximizers.

Policy Implications

This study tested the hypothesis that markets which realized foothold entry experienced a decline in concentration, or less of an increase, than markets which do not experience foothold entry. Even limiting the sample of markets to those experiencing foothold entry, as opposed to foothold expansion, the results of this study do not give support to the contention that adherence to the potential competition hypothesis will yield more competitively structured banking markets. Markets which experienced foothold entry did not produce any statistically significant differences in deconcentration than markets which did not.

The results of the study indicate that entrenchment should probably be dropped as an argument for denying the acquisition of a leading bank where no direct competition is eliminated. It would still be possible to deny an acquisition of this sort on potential competition grounds if it could be shown that the elimination of the holding

company as a potential entrant into the market would seriously restrict the number of firms that could start new banks. If foothold entry does not produce market deconcentration, then an acquisition of this nature would not likely yield more competitive banking markets. Given the strong empirical evidence in support of de novo entry as a means of promoting more competitive banking markets, it seems appropriate that a policy of promoting foothold entry should not be considered in the same class and thus not encouraged. To stimulate competition, the type of entry that should be encouraged is de novo entry, and this would involve relaxing restrictions on bank charters.

ENDNOTES

[1]United States v. Falstaff Brewing Corp., 410 U.S. 533 (1973).

[2]United States v. Marine Bankcorp., 418 U.S. 639 (1974).

[3]Sam Peltzman, "Bank Entry Regulation: Its Impact and Purpose," 3 National Banking Review, 174 (1965).

[4]See Alan S. McCall and Manferd O. Peterson, "The Impact of De Novo Commercial Bank Entry," Federal Deposit Insurance Working Peper No. 76-7, reprinted in Compendium of Issues Relating to Branching by Financial Institutions, U.S. Senate Subcommittee on Financial Institutions, Oct. 1976, pp. 499-521.

[5]United States v. First National Bancorp., 418 U.S. 602 (1974).

[6]George J. Benston, Gerald A. Hanweck and David B. Humphrey, "Operating Costs in Commercial Banking," Economic Review, Federal Reserve Bank of Atlanta (November 1982), pp. 14-15.

[7]See Charles Haywood, "The Potential Competition Doctrine: An Analysis of Its Application to Bank Acquisitions" (Association of Registered Bank Holding Companies, August 1972).

[8]L. Kalish and R. A. Gilbert, "The Influence of Bank Regulation on the Operating Efficiency of Commercial Banks," Journal of Finance (December 1973), pp. 1287-1301.

[9]A. A. Alchian and R. A. Kessel, "Competition, Monopoly, and the Pursuit of Money," Aspects of Labor Economics (Princeton: Princeton University Press, 1962), pp. 159-63.

[10]Alchian and Kessel, p. 167.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

If patterns of bank expansion continue to evolve along their present course, the degree to which the banking authorities directly influence changes in the structure of banking in the coming years may depend in part on the manner in which it applies the potential competition theory. Unfortunately, the very little empirical evidence in support of the theory makes its application difficult. The purpose of this study was to formulate an empirical test of the theory. This chapter presents the summary and conclusions of this study.

Restatement of the Problem

Recently, the banking industry has been subject to legislative and institutional forces that are likely to have a significant effect on the overall structure of the industry.

Institutionally, the bank holding company form of organization has become a potent vehicle for geographic market diversification into numerous banking markets. While the banking authorities are required to consider the competitive effects before approving (or denying) bank mergers and acquisitions, the market extension nature of much of the recent market expansion activity precludes the use of traditional, single market micro models for analytical purposes. This situation is conducive to an increasing concentration of banking resources, since, at least on the basis of competitive effects, the banking authorities do not have a solid analytical or empirical basis for retarding the recent geographic expansion of multibank holding companies.

Economic theory does not provide tools that are adequate to the task of analyzing the competitive effects of market extension combinations. Traditional models of economic theory deal with the manner in which firms in the same market influence and react to one another. These models provide no direct insights into the implication for competition of firms operating in more than one geographic market. Consequently, traditional theory is directly applicable to horizontal mergers. It is not, however, applicable to market extension type mergers and acquisitions.

Potential competition is one of the few analytical tools for analyzing the competitive implications of

multimarket relationships between firms. The potential competition theory actually consists of two theoretical presentations: the theory of "perceived" and "actual" potential competition. According to the "perceived" potential competition theory, the mere existence of a bank posing a threat of entry to established banks in a market may exert a procompetitive influence on the present conduct of banks in that market. That is, the threat of entry is expected to cause lower prices and profits than would otherwise prevail. In contrast, the concept of "actual" potential competition focuses on the procompetitive effect that would result should the outside firm actually enter the market in the future. In this case, actual entry (rather than a threat of entry) is expected to lower prices and profits by deconcentrating the market.

So long as the banking authorities were faced with applications for horizontal combinations--combinations involving banks in the same geographic market--the evaluation of competitive effects could proceed within a traditional framework of analysis. According to traditional economic theory, horizontal type mergers and acquisitions increase concentration in the market yielding socially less desirable conduct and performance. Supported by a considerable body of empirical evidence, the results predicted by traditional theory were sufficiently persuasive that they led to

legislation and court decisions which have gone a long way toward halting strictly horizontal combinations. The landmark legislation was the 1950 amendments to Section 7 of the Clayton Act.

The new emphasis on the competitive effects stemming from horizontal type combinations was made directly applicable to the commercial banking industry in subsequent legislation including the Bank Merger Act of 1960, amendments to the banking laws in 1966, and a series of judicial decisions strongly reinforced the legislation, taking a very hard line against horizontal mergers. Beginning with the Philadelphia National Bank case (1963) the courts have taken a particularly strong stand against horizontal mergers in banking.[1] This has tended to reduce the number of strictly horizontal bank mergers and to increase the number of market extension mergers and acquisitions. The famous footnote 42 in the Philadelphia National Bank decision argued that "if concentration is already great, the importance of preventing even slight increases in concentration and so preserving the possibility of eventual deconcentration is correspondingly great."[2] Eventual deconcentration is a major objective of the banking potential competition cases decided by the antitrust and regulatory authorities.

The Board of Governors has played an active role in the development and application of the potential competition

doctrine. The Court has held that elimination of a "perceived" potential entrant can constitute a violation of the Clayton Act. It has also held that this doctrine applies to the banking industry. However, the Court has never found a banking organization to be guilty of a Clayton Act violation on the basis of eliminating a "perceived" potential competitor; nor has the Court ruled, in either a banking or industrial context, on whether the elimination of an "actual" potential entrant constitutes a violation of the Clayton Act. However, the Court did hold that in order to find that the elimination of an "actual" potential entrant establishes a violation of Section 7, two preconditions must exist. First, there must be feasible alternative means of entry. Second, those alternative means must offer a substantial likelihood of producing deconcentration or other important procompetitive effects in the target market.[3]

While the Board has denied acquisitions which would eliminate potential competitors, it has not done so consistently. This vacillation is probably attributable to the lack of empirical evidence to sustain or support the assumptions (or preconditions as the Court refers to them) on which the theory is applied.

According to the banking regulators, de novo or foothold entry is preferred to an acquisition of a leading bank in a market because both forms of entry are likely to cause

deconcentration in market structure. Both economic theory and much of the existing empirical evidence suggest that market deconcentration will have a favorable impact on market performance. Nonetheless, the validity of applying the theory of potential competition may be questioned because there is no solid empirical basis for believing that the banking authorities, by adhering to the basic tenets of the potential competition theory, can bring about banking markets that are less concentrated and, consequently, more competitively structured.

Significance of This Study

This study presents a framework for evaluating and testing the potential competition hypothesis. The weakness and confusion surrounding the empirical literature stems in large measure because no systematic framework has been presented for assessing the competitive effects of market extension mergers.

The preceding discussion, particularly as presented in Chapter III, indicated that there are two separate determinants of the level of competition associated with any market extension merger or acquisition: the effect on present market conduct and the effect on future market structure. As applied to the potential competition hypothesis, the framework presented in this study demonstrates that the

total competitive effect of any market extension proposal is the combined result of two separate but distinct aspects: the entry threat of a "perceived" potential entrant on the conduct of established firms, and the structure effect, with a change in market concentration associated with the "actual" entry of a potential entrant. Under some conditions, the two factors reinforce each other, while under others they work in opposite directions. Analysis of the combinations of directional change in the structure and conduct forces provides a useful framework for classifying the various types of mergers and acquisitions and analyzing their probable net competitive effect.

In this formulation, the loss of a perceived potential entrant was given a negative sign to indicate that the loss of the entry threat would have an adverse effect on competitive conditions in the market. The effect associated with a change in structure was assigned either a positive or negative sign. The implication here was that a merger or acquisition which led to a decrease in concentration was assigned a plus value, while any merger or acquisition which led to an increase in concentration was assigned a negative value, due to its adverse competitive effect.

For example, a horizontal merger, involving firms in the same market, would experience no competitive loss from the threat factor, but the structural impact of such mergers

would yield adverse competitive effects. Market-extension mergers, on the other hand, produce an adverse competitive effect from a union of firms in different markets, due to the loss of the entry threat. This type of merger involves the loss of the entry threat with the possibility of a procompetitive effect resulting from market deconcentration. The net effect of a merger of this type can only be determined by carefully weighing the relative magnitude of the opposing competitive factors. If the probability of entry was small, then the procompetitive effect stemming from the threat factor was assessed to be minimal. Thus the procompetitive effect of market deconcentration, particularly those involving foothold entry, were viewed as outweighing the adverse competitive effect associated with the loss of the entry threat. Typically, the cases challenged by the regulatory authorities on the basis of the potential competition argument have been where both the loss of the entry threat and a probable tendency toward increased concentration indicate adverse competitive developments from the merger or acquisition.

While the preceding discussion indicated that the net competitive effect of any merger is the result of at least two distinct forces, no indication was given as to how the magnitude of the respective forces were assessed. This problem of measurement was particularly difficult for the

threat element, where there is limited empirical evidence relating to the importance of a "perceived" entry threat as a competitive factor.[4]

In deciding cases involving potential competition, the banking authorities assess the likely competitive consequences of the proposed transaction. This study was limited to only those market extension cases where approval was granted on the basis that the proposed transaction was likely to yield a more competitive banking structure and the loss of the "perceived" entry threat was assessed to be minimal, having no significant adverse competitive effects.

The empirical evidence, as reported in the survey of the literature chapter of this study, clearly indicates a deconcentrating effect from de novo entry by bank holding companies. On the other hand, empirical research generally points to little or no structural effects from foothold entry by bank holding companies. However, when examined from within the framework presented in this study, the empirical research surveyed appears inadequate in one respect or another as a basis for testing the assumptions of the potential competition theory. Perhaps the most serious limitation of these studies is that no effort was made to distinguish cases involving market entry from those involving market expansion. Analysis of mergers and acquisitions, be they foothold or de novo, between banks in the same geographic market involve

predictions and conclusions relevant to market expansion (and not market entry). Since the theoretical concept of potential competition is relevant only when the potential competitors are in separate geographic markets, a valid test of the deconcentration assumption would limit the study to only locally defined markets experiencing foothold or de novo entry (and not foothold or de novo expansion). Failure to limit the sample to entry cases only results in the structural effects of foothold and de novo entry being understated. Foothold and de novo expansion result in an immediate increase in concentration levels regardless of any probable future deconcentration effects.

Perhaps the most serious defect of the empirical literature, as a basis for testing the potential competition thesis, is that the competitive effects stemming from the loss of the entry threat on market conduct have not been directly incorporated into the models used for testing purposes. Because the present study tested the thesis as directly applied by the Federal Reserve Board, it was not necessary to make an independent assessment of the adverse competitive effect stemming from the loss of the entry threat. Consequently, this study was limited to only those cases where the Board predicted that the proposed foothold acquisition would produce more competitively structured markets (deconcentration) and where the adverse competitive

effects stemming from the loss of the entry threat were assessed to be minimal.

Findings and Policy Implications

This study tested the hypothesis that markets which realized foothold entry experienced a decline in concentration, or less of an increase than markets which do not experience foothold entry. Even limiting the sample of markets to those experiencing foothold entry, as opposed to foothold expansion, the results of this study do not give support to the contention that adherence to the potential competition hypothesis will yield more competitively structured banking markets. Markets which experienced foothold entry did not produce any statistically significant difference in deconcentration than markets which did not.

The results of the study indicate that entrenchment should probably be dropped as an argument for denying the acquisition of a leading bank where no direct competition is eliminated. It would still be possible to deny an acquisition of this sort on potential competition grounds if it could be shown that the elimination of the holding company as a potential entrant into the market would seriously restrict the number of firms that could start new banks. If foothold entry does not produce market deconcentration, then an acquisition of this nature would not likely yield more

competitive banking markets. Given the strong empirical evidence in support of de novo entry as a means of promoting more competitive banking markets, it seems appropriate that a policy of promoting foothold entry should not be considered in the same class and thus not encouraged. To stimulate competition, the type of entry that should be encouraged is de novo entry, and this would involve relaxing restrictions on bank charters.

Suggestions for Further Research

Antitrust laws are based on the notion that business behavior is motivated by profits. As long as horizontal mergers are the primary form of merger activity, the belief that business behavior is motivated by profits does not seem implausible. Horizontal mergers hold out the prospect of monopoly profits through elimination of a competitor and the possibility of higher profits from increased efficiency. However, the prospect of increasing profits by gaining monopoly or increased efficiency is generally unlikely from market extension type mergers. Consequently, the assumption of profit maximization in connection with this type of merger does not appear realistic. Empirical investigation of recent market extension merger activity provides support for such skepticism.

One of the papers in a study done at the Federal

Reserve Board concluded that from all available evidence the banks acquired by bank holding companies do not experience an increase in profitability subsequent to acquisition.[5] Another paper reported that available research evidence provides no general indication that banks acquired by bank holding companies become more cost-efficient.[6] Thus, the evidence on market extension mergers in banking provides little indication that increased profits motivate these mergers. Consequently, traditional structure-performance relationships do not provide tools that are adequate to the task of analyzing the competitive effects of market extension mergers. As part of the assessment of the multibank holding company movement by the staff of the Federal Reserve Board in 1978, Rhoades suggested some new approaches for research concerning the effect of such organizations on competitors.[7] One approach would abandon the traditional structure-conduct-performance model and focus on the potential anticompetitive effect uniquely associated with the geographically diversified firm.

The growing number of important bank combinations which do not fit neatly into the usual potential competition analysis has led banking economists and officials to search for some broader and more generalized basis for their analysis. The potential competition cases brought by the antitrust authorities have involved entry by merger or

acquisition into a local market by one of the largest banks eligible to enter the market in circumstances where the acquired bank was one of the largest banks in terms of operations in the local market. In other instances, where the proposed combination was not attacked, de novo entry was not legally possible because of "home office" protection which prohibits de novo branching into communities where a head office of a bank is already located. Potential competition may also be an awkward method of analysis in the more frequent situation where de novo entry is legally possible, but there exists a history or pattern of regulatory barriers to entry of new branches into the market or markets of equivalent sizes and types.

Finally, even where none of these restrictive, legal or regulatory entry barriers are present, potential competition analysis often raises serious practical problems involving the availability of objective evidence of probable entry de novo. It may be often difficult to demonstrate that the acquiring bank was in fact a likely potential entrant into the market of the acquired bank.

The analysis of market extension combinations should not be strictly confined to the probable effects upon present or potential competition within the local market of the acquired bank. A consideration and adaptation of newer theories of industrial organization would seem useful here,

as postulated and developed by Alexander Henderson, Almarin Phillips, and Oliver Williamson.[8] These theories, I believe, extend and clarify traditional economic theory within a broadened and more generalized analytical framework. These theories begin with the premise, which is not inconsistent from conventional theory, that performance is a function of interbank rivalry. Interbank rivalry is in turn dependent upon traditional variables such as market concentration, numbers of banks, and the threat of entry by external forces. But, in addition, other variables which can be treated only indirectly under the premises of conventional antitrust theory, may also affect interbank rivalry and, presumably, performance within markets. One of the most important factors affecting interbank rivalry is the degree of linkage of adjacent banking markets. The concept of linkage (or linked oligopoly as the courts have referred to it) suggests that an intermeshing of the same banks in increasing numbers of local markets within a state, may serve to strengthen the lines of communication between them and increase the adherence to any pre-existing competitive standard.[9]

According to this concept, as business firms become increasingly diversified into different geographic markets there is likely to be an increase in the number of markets in which any given pair of firms meet each other as competitors. The existence of these multiple contacts provides the

foundation for the same type of mutual interdependence between firms that is found in the traditional, single market oligopoly models. In particular, it is held that as firms come in contact in a large number of markets, they tend to become aware of the possibility that aggressive action in any one market may result in retaliatory action in some other market where they may be more vulnerable. Moreover, since the firms that tend to be most diversified are typically large and influential, their presence even in relatively unconcentrated markets can lead to a reduction in the vigor of competition.

When a bank which already holds a large share of the state's deposits secures a new controlling primary market position through elimination of a strong local bank, its ability to extend its domination to still other markets throughout the state seems likely to be enhanced. Purely conventional analysis, with its emphasis on market concentration and on discerning the degree of potential competition in the primary market of the acquired bank, may permit such expansion, which the recognition of market linkages throughout the broader secondary market area would stop. Hence, even if no change is observed in local market structure (or in local market concentration), the geographic expansion by multibank holding companies throughout the state may affect market conduct and performance, depending on the degree of

mutual restraint and mutual interdependence between banks in the local market.

It is beyond the scope of this study to determine what proportion of intermarket control, or what pattern of control should presume anticompetitive behavior and thus constitute a violation of antitrust standards. However, once concentration over a cluster of interlinked markets within a state in which de novo branching is legally barred has reached a certain specified level, any further dominant bank acquisitions of controlling positions in adjacent markets might be prohibited outright, irrespective of the state law with respect to de novo branching and chartering.

ENDNOTES

[1]United States v. Philadelphia National Bank, 374 U.S. 321 (1963).

[2]United States v. Philadelphia National Bank, 374 U.S. 365 (1963).

[3]United States v. Marine Bancorp., 418 U.S. 602 (1974).

[4]Dale K. Osborne, "The Role of Entry in Oligopoly Theory," Journal of Political Economy (August 1964), pp. 396-402.

[5]James Burke, "Bank Holding Company Behavior and Structural Change," Journal of Bank Research, Vol. 9 (Spring 1978), pp. 43-51.

[6]Timothy J. Curry, "The Performance of Bank Holding Companies," The Bank Holding Company Movement to 1978: A Compendium (Washington: Board of Governors of the Federal Reserve System, 1978), pp. 95-120.

[7]Stephen A. Rhoades, "The Effect of Bank Holding Companies on Competition," in The Bank Holding Company Movement to 1978: A Compendium (Washington: Board of Governors of the Federal Reserve System, 1978), pp. 185-207.

[8]F. Machlup, "Theories of the Firm: Marginalist, Behavioral, Managerial," American Economic Review (March 1967), pp. 1-33.

[9]Elinor H. Solomon, "A Linkage Theory of Oligopoly," Journal of Money, Credit and Banking (August 1970), pp. 323-336.

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APPENDICES

APPENDIX A

U.S. DEPARTMENT OF JUSTICE

MERGER GUIDELINES

Issued May 30, 1968

Section III, Paragraph 18.

U.S. DEPARTMENT OF JUSTICE

MERGER GUIDELINES

Issued June 14, 1982

Section IV(A).

U.S. DEPARTMENT OF JUSTICE MERGER GUIDELINES

Issued May 30, 1968

Section III, Paragraph 18.

18. Mergers involving potential entrants.

(a) Since potential competition (i.e., the threat of entry, either through internal expansion or through acquisition and expansion of a small firm, by firms not already or only marginally in the market) may often be the most significant competitive limitation on the exercise of market power by leading firms, as well as the most likely source of additional actual competition, the Department will ordinarily challenge any merger between one of the most likely entrants into the market and:

(i) any firm with approximately 25% or more of the market;

(ii) one of the two largest firms in a market in which the shares of the two largest firms amount to approximately 50% or more;

(iii) one of the four largest firms in a market in which the shares of the eight largest firms amount to approximately 75% or more, provided the merging firm's share of the market amounts to approximately 10% or more; or

(iv) one of the eight largest firms in a market in which the shares of these firms amount to approximately 75% or more, provided either (A) the merging firm's share of the market is not insubstantial and there are no more than one or two likely entrants into the market, or (B) the merging firm is a rapidly growing firm.

In determining whether a firm is one of the most likely potential entrants into a market, the Department accords primary significance to the firm's capability of entering on a competitively significant scale relative to the capability of other firms (i.e., the technological and financial resources available to it) and to the firm's economic incentive to enter (evidenced by, for example, the general attractiveness of the market in terms of risk and profit; or any special relationship of the firm to the market; or the firm's manifested interest in entry; or the natural expansion pattern of the firm; or the like).

(b) The Department will also ordinarily challenge a merger between an existing competitor in a market and a likely entrant, undertaken for the purpose of preventing the competitive "disturbance" or "disruption" that such entry might create.

(c) Unless there are exceptional circumstances, the Department will not accept as a justification for a merger inconsistent with the standards of this paragraph 18 the claim that the merger will produce economies, because, among other reasons, the Department believes that equivalent economies can be normally achieved either through internal expansion or through a small firm acquisition or other acquisition not inconsistent with the standards herein.

U.S. DEPARTMENT OF JUSTICE MERGER GUIDELINES

Issued June 14, 1982

Section IV(A).

A. Elimination of specific potential entrants.

1. THE THEORY OF POTENTIAL COMPETITION. In some circumstances, the non-horizontal merger of a firm already in a market (the "acquired firm") with a potential entrant to that market (the "acquiring firm") may adversely affect competition in the market. If the merger effectively removes the acquiring firm from the edge of the market, it could have either of the following effects:

(a) Harm to "perceived potential competition." By eliminating a significant present competitive threat that constrains the behavior of the firms already in the market, the merger could result in an immediate deterioration in market performance. The economic theory of limit pricing suggests that monopolists and groups of colluding firms may find it profitable to restrain their pricing in order to deter new entry that is likely to push prices even lower by adding capacity to the market. If the acquiring firm had unique advantages in entering the market, the firms in the market might be able to set a new and higher price after the threat of entry by the acquiring firm was eliminated by the merger.

(b) Harm to "actual potential competition." By eliminating the possibility of entry by the acquiring firm in a more pro-competitive manner, the merger could result in a lost opportunity for improvement in market performance resulting from the addition of a significant competitor. The more pro-competitive alternatives include both new entry and entry through a "toehold" acquisition of a present small competitor.

2. RELATION BETWEEN PERCEIVED AND ACTUAL POTENTIAL COMPETITION. If it were always profit-maximizing for incumbent firms to set price in such a way that all entry was deterred and if information and coordination were sufficient to implement this strategy, harm to perceived potential competition would be the only competitive problem to address. In practice, however, actual potential competition has independent importance. Firms already in the market may not find it optimal to set price low enough to deter all entry; moreover, those firms may misjudge the entry advantages of a particular firm and, therefore, the price necessary to deter its entry.

3. ENFORCEMENT STANDARDS. Because of the close relationship between perceived potential competition and actual potential competition, the Department will evaluate mergers that raise either type of potential competition concern under a single structural analysis analogous to that applied to horizontal mergers. The Department first will consider a set of objective factors designed to identify cases in which harmful effects are plausible. In such cases, the Department then will conduct a more focused inquiry to determine whether the likelihood and magnitude of the possible harm justify a challenge to the merger. In this context, the Department will consider any specific evidence presented by the merging parties to show that the inferences of competitive harm drawn from the objective factors are unreliable.

The factors that the Department will consider are as follows:

(a) Market concentration. Barriers to entry are unlikely to affect market performance if the structure of the market is otherwise not conducive to monopolization or collusion. Adverse competitive effects are likely only if overall concentration, or the largest firm's market share, is high. The Department is unlikely to challenge a potential competition merger unless overall concentration of the acquired firm's market is above 1800 HHI (a somewhat lower concentration will suffice if one or more of the factors discussed in Section III(C) indicate that effective collusion in the market is particularly likely). Other things being equal, the Department is increasingly likely to challenge a merger as this threshold is exceeded.

(b) Conditions of entry generally. If entry to the market is generally easy, the fact that entry is marginally easier for one or more firms is unlikely to affect the behavior of the firms in the market. The Department is unlikely to challenge a potential competition merger when new entry into the acquired firm's market can be accomplished by firms without any specific entry advantages under the conditions stated in Section III(B). Other things being equal, the Department is increasingly likely to challenge a merger as the difficulty of entry increases above that threshold.

(c) The acquiring firm's entry advantage. If more than a few firms have the same or a comparable advantage in entering the acquired firm's market, the elimination of one firm is unlikely to have an adverse competitive effect. The other similarly situated firm(s) would continue to exert a present restraining influence, or, if entry would be profitable, would recognize the opportunity and enter. The Department is unlikely to challenge a potential competition merger if the entry advantage ascribed to the acquiring firm (or another advantage of comparable importance) is also possessed by three or more other firms. Other things being equal, the Department is increasingly likely to challenge a merger as the number of other similarly situated firms decreases below three and as the extent of the entry advantage over non-advantaged firms increases.

If the evidence of likely actual entry by the acquiring firm is particularly strong, however, the Department may challenge a potential competition merger, notwithstanding the presence of three or more firms that are objectively similarly situated. In such cases, the Department will determine the likely scale of entry, using either the firm's own documents or the minimum efficient scale in the industry. The Department will then evaluate the merger much as it would a horizontal merger between a firm the size of the likely scale of entry and the acquired firm.

(d) The market share of the acquired firm. Entry through the acquisition of a relatively small firm in the market may have a competitive effect

comparable to new entry. Small firms frequently play peripheral roles in collusive interactions, and the particular advantages of the acquiring firm may convert a fringe firm into a significant factor in the market. The Department is unlikely to challenge a potential competition merger when the acquired firm has a market share of five percent or less. Other things being equal, the Department is increasingly likely to challenge a merger as the market share of the acquired firm increases above that threshold. The Department is likely to challenge any merger satisfying the other conditions in which the acquired firm has a market share of 20 percent or more.

APPENDIX B

CURRENT LEGAL STATUS OF POTENTIAL COMPETITION DOCTRINE

CURRENT LEGAL STATUS OF POTENTIAL COMPETITION DOCTRINE

The potential competition doctrine has evolved somewhat haphazardly through a series of legal cases involving both industrial and banking issues. Two of the most important cases shaping the present legal status of the doctrine are United States v. Falstaff Brewing Corporation[1] and United States v. Marine Bancorporation.[2]

The Falstaff case involved a Section 7 action based on potential competition. Falstaff, the fourth largest brewer in the United States, had attempted to extend its operations into New England by the acquisition of the Narragansett Brewing Company, the largest producer of beer in that area. New England was considered a concentrated market with the four largest producers controlling 61.3 percent of the market. The government asserted that the acquisition would result in a lessening of competition "because Falstaff was a potential entrant and because the acquisition eliminated competition that would have existed had Falstaff entered the market de novo or by acquisition and expansion of a smaller firm, a so-called 'toe-hold' acquisition."[3] The District Court, relying on statements by Falstaff that it would not enter the market except through the acquisition, eliminated Falstaff as an actual potential entrant and concluded that the acquisition would have no adverse effect on competition.

In Falstaff, the Supreme Court for the first time clearly distinguished the actual and perceived potential entrant bases of potential competition. It accepted the perceived potential entrant theory and defined its various elements. However, there was a serious division of opinion on the actual potential entrant theory. Only four justices accepted the theory, while three maintained doubts as to its validity. Even the four that accepted, differed on the acceptable level and burden of proof. This uncertainty raised serious questions in the banking industry, ince the actual potential entrant theory was generally the primary basis upon which the Justice Department hoped to halt geographic market extension mergers by banks.

The questions left open in Falstaff were answered in United States v. Marine Bankcorporation, wherein the Justice Department challenged the proposed merger of two commercial banks in the State of Washington. The acquiring organization, the National Bank of Commerce, was the second largest bank in the state with almost 20 percent of the statewide market. It had 107 branches in Seattle and lesser developed areas of Washington. However, it had no offices in Spokane where it hoped to acquire the Washington Trust Bank, which controlled approximately 19 percent of the local market. The Spokane market was concentrated, with the three largest banking organizations controlling 92 percent of the market.

The government's case was based on potential competition. The Justice Department first treated the National Bank of Commerce as an actual potential entrant which, by entering de novo or through a toehold acquisition, "would assist in deconcentrating that market over the long run."[4] Additionally, the government claimed that Commerce was a perceived potential entrant whose presence on the fringe of the market generated present procompetitive effects. The Court addressed the question of the applicability of potential competition to the banking industry by holding that commercial banks must pass muster under the doctrine. However, the Court held "that application of the doctrine to commercial banking must take into account the unique federal and state regulatory restraints on entry into that line of commerce."[5] Such limitations often significantly reduce, if they do not eliminate, the likelihood that the acquiring bank is either a perceived potential de novo entrant or a source of future competitive benefits through de novo or foothold entry."[6]

The Court then addressed the question reserved in Falstaff--whether Section 7 prohibits a merber based on the actual potential entrant theory when the merger has no present anticompetitive effect in the market, but may forestall future procompetitive effects which would be generated by de novo or toehold entry. However, before resolving the question, the Court required that "two essential

preconditions" be met: that there exist "available feasible means" for entering the market and that "those means offer a substantial likelihood of ultimately producing deconcentration of that market or other significant procompetitive effects."[7]

Prior to Marine Bancorporation, it was generally assumed that it was sufficient for the government to prove that an alternative feasible means of entry was available. In addition to severely restricting what could be considered a feasible means of entry, the Marine Bancorporation case imposed the additional requirement that, at least in the banking context, these alternative means be sufficient to create a substantial likelihood that the market would become deconcentrated. The emphasis given by the Court to regulatory restraints means that it is now almost impossible to prove that alternative means of entry are available in the 60 percent of our states which either prohibit or limit branching by devices similar to those used in Washington. These statutory restrictions will generally prohibit de novo branching into any significant market. The second precondition--requiring a reasonable possibility of deconcentration--will foreclose requiring use of a toehold acquisition as an alternative means of entry unless branching is permitted from the toehold. In those states that permit statewide branching, the Court indicated that "great weight"

should be given to the statements of regulatory officials on the feasibility of de novo entry. Thus a mere statement by a local regulatory official that de novo entry will not be permitted may be the most important factor in determining the issue. This priority given to bank regulators in a potential competition case is far different from that shown in the horizontal bank merger cases; there, the regulatory status of the industry has been given little or no weight, reflecting the feeling that the potential competition doctrine is inappropriate in a highly regulated industry where barriers to entry are traditionally high. In summary, the imposition of the two preconditions to a resolution of the question of the actual potential entrant theory has increased the government's task in attempting to utilize potential competition as a vehicle to forestall geographic market extension mergers by banking institutions.

ENDNOTES

[1]410 U.S. 526 (1973).

[2]418 U.S. 602 (1974).

[3]410 U.S. 529 (1973).

[4]418 U.S. 615 (1974).

[5]418 U.S. 627 (1974).

[6]418 U.S. 640 (1974).

[7]418 U.S. 633 (1974).

APPENDIX C

BOARD OF GOVERNORS AND POTENTIAL COMPETITION CASES

The Tyler Bank Case

Capital National Bank Case

Mercantile Texas Case

THE BOARD OF GOVERNORS AND POTENTIAL COMPETITION CASES

Beginning in the early 1960's, the Board of Governors frequently denied mergers on the basis of an adverse impact on potential competition. These denials quite often involved acquisitions of one of the leading banks in a market by one of the state's largest bank holding companies. Beginning in 1975, however, the Board grew increasingly reluctant to deny applications on potential competition grounds alone. It was not until late 1979 that the theory once again became a viable issue. The Board of Governors' attitude toward potential competition in banking can best be illustrated by analyzing specific issues in some key Board decisions.

The Tyler Bank Case

A landmark decision was handed down in December 1973 when the Board denied an application by First International Bancshares to acquire Citizens First National Bank of Tyler, Texas. The reasoning behind the denial, which became known as the "Tyler Doctrine," consisted of two elements.

First, the Board was concerned with the growing disparity in size among the state's twenty-four bank holding companies. The Board worried that this disparity was likely

to increase since all of the major holding companies (First International was the largest in the state) were acquiring leading banks in secondary markets. Thus the Board's denial was designed in part to prevent any increase in the concentration of resources in the state and to preserve the existing level of competition.

Second, the Board noted that Citizens was the leading bank in a highly concentrated local market that was growing and, therefore, attractive to de novo entry. Furthermore, the acquisition would remove First International as a potential future entrant through de novo entry or foothold acquisition. De novo entry and foothold acquisitions, the Board concluded, were the only means of providing more competition and were the preferred method of expansion by the major multibank holding companies into secondary markets.

Capital National Bank Case

By mid-1976, the Tyler Doctrine was beginning to show signs of wear as the Board approved certain proposed acquisitions in secondary markets which it found unattractive for de novo entry. The approval of the acquisition of Capital National Bank of Austin by Texas Commerce Bancshares in 1977 left little doubt that the Board had changed its position on the importance of potential competition. The Capital acquisition proposal was almost an exact replica of the earlier

proposal by Texas Commerce to acquire Austin National Bank, the largest bank in the Austin market. The Board had concluded that the acquisition of Austin National would have an adverse effect on competition by eliminating Texas Commerce Bancshares as "a new and aggressive competitor" through de novo entry. In the case of Capital National Bank, however, the Board reversed its opinion, stating that "approval of this application may have a positive effect on competition in the market by introducing a new and aggressive competitor."

Several applications involving acquisitions similar to that of Capital National were approved over the next year. Applicants ranking among the three largest banking organizations in their states were allowed to acquire leading banks in new markets. Only in one instance from 1977 to 1979 was an application denied strictly on the basis of potential competition. And even in that case the Board later reversed its decision.

The Mercantile Texas Case

Recent developments have had a substantial effect on the Board's application of the theory of potential competition. In April 1980, the Board denied the application of Mercantile Texas Corporation, Dallas, Texas, to acquire by merger Pan National Group, Inc., El Paso, Texas. The Board

based its denial largely on the basis that the merger would substantially lessen competition under the theory of potential competition.

In the early months of 1981, a federal appellate court rejected the Board's method of employing the theory with respect to the application submitted by Mercantile Texas. In light of the appellate court action, the Board reversed its original denial and approved the application. The court declared that, to deny a merger application on the basis of the potential competition theory, the Board must make four findings of fact, and that the Board's Order denying the application had not fulfilled this requirement.

First, the court required the Board to show that the market of the firm to be acquired was concentrated. A finding that a market is concentrated serves as a proxy for a determination that the market is oligopolistic. The Board usually measures concentration in a market by calculating the percentage of the market's deposits held by the four largest organizations in the market. This measure is called the four-firm concentration ratio. The court indicated that the Board's use of concentration ratios satisfied its first evidentiary requirement.

The court's second criterion required the Board to determine whether the pool of potential entrants into the market was so large as to negate the importance of the

acquiring firm as a potential competitor. The court believed that a lessening of competition would be substantial under the theory only if there were a small number of other potential entrants. In the Mercantile case, the court held that there were likely to be other potential competitors in Texas and that a significant number of large Texas bank holding companies remained as potential entrants.

Third, the court's opinion directed the Board to develop a "persuasive rationale" that, upon denial of a merger or acquisition, an institution would prefer the opportunity to enter the market either de novo or through a toehold acquisition. In its original order the Board determined that Mercantile possessed the financial and managerial resources for toehold or de novo entry, but the court viewed this set of findings as insufficient.

Finally, if the Board is to deny an application, the court required it to find that de novo or toehold entry will be substantially likely to bring about deconcentration of the market or other significant procompetitive effects. The Board could not, according to the court, deny a firm entry through acquisition or merger on the grounds that sometime in the remote future the firm would enter the market in such a way as to produce deconcentration. The court suggested that the Board could satisfy the requirement only if it determined at what point in time the expected results would materialize.

APPENDIX D

SUMMARY OF BANK STRUCTURE-PERFORMANCE STUDIES

October 1977-June 1982

SUMMARY OF BANK STRUCTURE-PERFORMANCE STUDIES
October 1977-June 1982

Author (date)	Unit of Observation (Number) (Geographical area)	Type of Test	Data Source for Performance Measure(s)	Year(s) Studied	Primary Purpose of the Study
Osborne & Wendel (1978)	Banks(113) (23 Texas towns)	Graphical	Special survey	1978	To determine whether the price of demand deposit services varies with the number of banks in a market.
Graddy & Kyle (1979)	Banks(463)(unit-banking & limited-branching states)	Three-stage least squares and OLS multiple regression	Report of condition Income and dividend report	1974	Uses a simultaneous equation model, as well as OLS, to test the structure-performance relationship.
Rose & Scott (1979)	Banks(600)(widespread)	Multiple regression	Report of condition Income and dividend report	1972	Tests comparing the earnings, loans, investments, capital, and prices of BHC affiliates and independent banks.
Rhoades & Rutz (1979)	SMSAs(184)(widespread)	Multiple regression	Report of condition Income and dividend report	1972	Tests for the effect of multi-BHCs on performance in banking markets.
Savage & Rhoades (1979)	Unit banks(6,619) (widespread)	Multiple regression	Report of condition Income and dividend report	1977	Tests for differences in profits, prices, and expenses between unit banks in unit-banking states and unit banks in statewide-branching states.
Rhoades (1979)	SMSAs(184)(widespread)	Multiple regression	Report of condition Income and dividend report	1972	Tests to determine whether non-bank thrifts influence commercial bank performance.
Hannan (1979)	Banks(400+)(Pennsylvania)	Tobit analysis	Examination reports	1970	Test the "limit price" hypothesis.

SUMMARY OF BANK STRUCTURE-PERFORMANCE STUDIES, OCTOBER 1977-JUNE 1982

Author (date)	Unit of Observation (Number) (Geographical area)	Type of Test	Data Source for Performance Measure(s)	Year(s) Studied	Primary Purpose of the Study
Whitehead (1979)	Markets(130)(Sixth Federal Reserve District)	Multiple regression	Report of condition Income and dividend report	1974	Uses a Herfindahl index adjusted to account for multimarket operations in testing the structure-performance relationship.
Short (1979)	Banks(60)(Canada, Western Europe, Japan)	Multiple regression	The Bankers' Almanac Year Book; Moody's Bank and Finance Manual; K. Tritten, European Banks; Sources for individual countries	1973	Tests the structure-performance hypothesis using bank data for several countries.
Glassman & Rhoades (1980)	Banks(1,406)(widespread)	Multiple regression	Report of condition Income and dividend report	1976	Tests for the effect of owner v. manager control on banks' profits, expenses and growth.
Graddy (1980)	Banks(335)(95 counties in Tennessee)	Multiple regression	Report of condition Income and dividend report	1974	Tests the structure-performance hypothesis using numerous alternatives to the CR_3.
Graddy & Kyle (1980)	Banks(463)(unit banking & limited branching states)	Three-stage least squares	Report of condition Income and dividend report	1974	Tests to compare the performance of BHC affiliates and independent banks.
Rhoades (1980)	Banks(3,120)(widespread)	Multiple regression	Report of condition Income and dividend report	1976	A test of the "expense-preference" hypothesis.
McCall & Peterson (1980)	SMSAs and counties (155)(14 unit-banking & limited-branching states)	Switching regression technique	FRB Functional Cost Analysis Program	1968	Tests for nonlinearity in the structure-performance relationship.

SUMMARY OF BANK STRUCTURE-PERFORMANCE STUDIES, OCTOBER 1977-JUNE 1982

Author (date)	Unit of Observation (Number) (Geographical area)	Type of Test	Data Source for Performance measure(s)	Year(s) Studied	Primary Purpose of the Study
Rhoades (1981)	SMSAs(167)(widespread)	Multiple regression	Report of condition Income and dividend report	1966,1968, 1970,1972-1975	Tests to determine whether level of interest rates affects the results of structure-performance studies and tests for nonlinearity in the relationship.
Osborne & Wendel (1981)	Banks(154)(Texas)	Multiple regression	Special survey and other sources	1977	Tests to compare results of price proxies with actual prices in a structure-performance model
Curry (1981)	Banks(1,156)(excludes statewide branching and New England states)	Multiple regression	Report of condition Income and dividend report	1969	Tests to determine whether banks that BHCs acquire are different from other banks.
Rhoades & Savage (1981)	Multimarket banks (269)(widespread)	Multiple regression	Report of condition Income and dividend report	1976	Tests for differences in profits risk, operating efficiency, and services between multi-market BHCs and branching systems.
Heggestad (1981)	Banks(403)Consumer finance companies (221) credit unions (71)(57 SMSAs)	Multiple regression	Special survey	1973	Tests for strength of inter-institutional competition for consumer credit.
Rhoades & Rutz (1982)	Banks(1,511)(widespread)	Multiple regression	Report of condition Income and dividend report	1979	Tests for the effect of multi-BHCs on performance in banking markets.
Rhoades (1982)	Unit banks(6,500) (widespread)	Tabular and multiple regression	Report of condition Income and dividend report	1978	Estimates the welfare loss, redistribution effect, and restriction of output due to monopoly in banking.

SUMMARY OF BANK STRUCTURE-PERFORMANCE STUDIES, OCTOBER 1977-JUNE 1982

Author (date)	Unit of Observation (Number) (Geographical area)	Type of Test	Data Source for Performance measure(s)	Year(s) Studied	Primary Purpose of the Study
Kwast & Rose (1982)	Banks(80)(widespread)	Multiple regression	Report of condition Income and dividend report	1977	Tests to compare pricing and operating efficiency of profitable and less profitable banks and determine yields on different balance sheet items.
Rhoades & Rutz (1982)	Unit banks(6,500) (widespread)	Multiple regression	Report of condition Income and dividend report	1978	Test of Hick's "quiet life" hypothesis--that firms with monopoly will be risk averse.
Rhoades & Heggestad (1982)	SMSAs(167)(widespread)	Multiple regression	Report of condition Income and dividend report	1974	Test of the linked oligopoly or mutual forbearance hypothesis.
Milkove & Weisblat (1982)	Counties(220) (Arkansas, Florida, Oklahoma, Texas, & West Virginia)	Multiple regression	Report of condition Income and dividend report	1977	Tests for the effect of financial structure on economic growth.
Marlow (1982)	SMSAs(111)(statewide-branching & unit-banking states)	Multiple regression	Special survey	1975	Tests for differences in mortgage rates between statewide-branching and unit-banking states).

SOURCE: Staff Studies 119 (Board of Governors of the Federal Reserve System, 1982).

APPENDIX E

MEASURING CONCENTRATION IN BANKING MARKETS

MEASURING CONCENTRATION IN BANKING MARKETS

Market concentration measures generally indicate the number and relative size distribution of buyers and sellers in a market. Markets that consist of numerous firms that control approximately equal market shares are less concentrated than markets which have few sellers controlling a disproportionately large share of total industry or market output.

No single measure adequately describes market concentration. Concentration is frequently measured by the n-firm concentration ratio--the combined market share held by the largest, two largest, three largest, four largest, or ten largest firms in the industry or market, with the choice depending partly on the number of firms in the market and partly on the comparisons to be made.

The Herfindahl index is a summary measure that takes into account the total number of firms in a market. This index is constructed by simply summing the squares of the market shares of all firms in the market. That is:

$$\text{Herfindahl Index} = \sum_{i=1}^{N} (X_i)^2$$

where:

N = the number of firms; and

x_i = the market share of each firm.

For example, suppose that the total dollar amount of deposits held by all commercial banks in a given market is $100 million and that four banks compete in the market and hold deposits of $40 million, $30 million, $20 million, and $10 million, respectively. The Herfindahl Index for this market would be 0.30, or the sum of $(.40)^2$ plus $(.30)^2$ plus $(.20)^2$ plus $(.10)^2$.

Like the n-firm concentration ratio, the Herfindahl Index varies between zero and 1. When a large number of firms of equal size exist in a market, the index approaches zero; in a monopoly market where only one firm competes, the index would be 1. Where there are several firms in a market all of which are of equal size, the index would be equal to the ratio (1/N), where N is the number of firms in the market.

APPENDIX F

REGRESSION RESULTS

(Computer Printout)

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

**** MULTIPLE REGRESSION ****

VARIABLE LIST NUMBER 1.
LISTWISE DELETION OF MISSING DATA.

EQUATION NUMBER 1.

DEPENDENT VARIABLE..
VAR21 CONCHG

BEGINNING BLOCK NUMBER 1. METHOD: ENTER

VARIABLE(S) ENTERED ON STEP NUMBER

1..	VAR24	DEPCHG
2..	VAR19	YR75-76
3..	VAR18	YR73-74
4..	VAR09	ICON72
5..	VAR17	YR71-72
6..	VAR13	MKS772
7..	VAR23	ORGCHG
8..	VAR22	TDYOFF
9..	VAR16	FTHDAQ

MULTIPLE R	.77899
R SQUARE	.60683
ADJUSTED R SQUARE	.54976
STANDARD ERROR	4.26609

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	9	1741.57134	193.50793
RESIDUAL	62	1128.37311	18.19957

F = 10.63256 SIGNIF F = .0000

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

* * * * MULTIPLE REGRESSION * * * *

DEPENDENT.. VAR21 CONCHG

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-10.53767	4.24127	-.27973	.50028	-2.485
VAR19	-2.58753	4.95604	-.06735	.38106	-.522
VAR18	-3.01938	3.56866	-.17206	.15334	-.846
VAR09	-.15490	.03630	-.43758	.60320	-4.268
VAR17	-.07643	3.53205	-.00359	.23085	-.022
VAR13	.00190	.00205	.09229	.63980	.927
VAR23	-8.89310	3.07262	-.32153	.51384	-2.894
VAR22	.07042	.03556	.22793	.47860	1.980
VAR16	2.32634	3.27447	.16973	.11110	.710
(CONSTANT)	30.86929	6.51808			4.736

------ IN ------

VARIABLE	SIG T
VAR24	.0157
VAR19	.6035
VAR18	.4008
VAR09	.0001
VAR17	.9828
VAR13	.3575
VAR23	.0052
VAR22	.0521
VAR16	.4801
(CONSTANT)	.0000

FOR BLOCK NUMBER 1 ALL REQUESTED VARIABLES ENTERED.

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/25/84) DEP VAR IS CONCHG

**** MULTIPLE REGRESSION ****

DEPENDENT.. VAR21 CONCHG

BEGINNING BLOCK NUMBER 2. METHOD: BACKWARD

VARIABLE(S) REMOVED ON STEP NUMBER
10.. VAR17 YR71-72

MULTIPLE R	.77899
R SQUARE	.60683
ADJUSTED R SQUARE	.55690
STANDARD ERROR	4.23212

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	8	1741.56282	217.69535
RESIDUAL	63	1128.38163	17.91082

F = 12.15440 SIGNIF F = .0000

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

**** MULTIPLE REGRESSION ****

DEPENDENT.. VAR21 CONCHG

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-10.54893	4.17571	-.28003	.50792	-2.526
VAR19	-2.52268	3.91591	-.06566	.60070	-.644
VAR18	-2.95707	2.09097	-.16851	.43957	-1.414
VAR09	-.15503	.03556	-.43793	.61845	-4.359
VAR13	.00189	.00198	.09179	.67712	.956
VAR23	-8.89285	3.04812	-.32152	.51385	-2.917
VAR22	.07049	.03511	.22818	.48333	2.008
VAR16	2.26601	1.70418	.16533	.40367	1.330
(CONSTANT)	30.89467	6.36063			4.857

------ IN ------

VARIABLE	SIG T
VAR24	.0141
VAR19	.5218
VAR18	.1622
VAR09	.0000
VAR13	.3427
VAR23	.0049
VAR22	.0489
VAR16	.1684
(CONSTANT)	.0000

------ NOT IN ------

VARIABLE	TOLERANCE
VAR17	.23085

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

**** MULTIPLE REGRESSION ****

DEPENDENT.. VAR21 CONCHG

VARIABLE(S) REMOVED ON STEP NUMBER
11.. VAR19 YR75-76

MULTIPLE R	.77733
R SQUARE	.60424
ADJUSTED R SQUARE	.56095
STANDARD ERROR	4.21273

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	7	1734.12964	247.73281
RESIDUAL	64	1135.81481	17.74711

F = 13.95905 SIGNIF F = .0000

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-10.50107	4.15592	-.27876	.50808	-2.527
VAR18	-2.36624	1.87049	-.13484	.54428	-1.265
VAR09	-.15641	.03533	-.44182	.62069	-4.426
VAR13	.00159	.00191	.07729	.71650	.832
VAR23	-9.75782	2.72394	-.35280	.63755	-3.582
VAR22	.07209	.03486	.23334	.48574	2.068
VAR16	1.73944	1.48851	.12691	.52428	1.169
(CONSTANT)	31.94321	6.12069			5.219

------ IN ------		------ NOT IN ------	
VARIABLE	STG T	VARIABLE	TOLERANCE
VAR24	.0140	VAR17	.36390
VAR18	.2104	VAR19	.60070
VAR09	.0000		
VAR13	.4065		
VAR23	.0007		
VAR22	.0427		
VAR16	.2469		
(CONSTANT)	.0000		

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

**** MULTIPLE REGRESSION ****

DEPENDENT.. VAR21 CONCHG

VARIABLE(S) REMOVED ON STEP NUMBER
12.. VAR13 MKS772

MULTIPLE R	.77457
R SQUARE	.59996
ADJUSTED R SQUARE	.56303
STANDARD ERROR	4.20274

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	1721.84642	286.97440
RESIDUAL	65	1148.09803	17.66305

F = 16.24716 SIGNIF F = .0000

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-11.50825	3.96625	-.30549	.55520	-2.902
VAR18	-2.22807	1.85869	-.12697	.54861	-1.199
VAR09	-.16847	.03215	-.47589	.74630	-5.240
VAR23	-9.50300	2.70025	-.34358	.64572	-3.519
VAR22	.07974	.03354	.25812	.52215	2.378
VAR16	1.90300	1.47197	.13885	.53359	1.293
(CONSTANT)	34.28049	5.42493			6.319

------ IN ------

VARIABLE	SIG T
VAR24	.0051
VAR18	.2350
VAR09	.0000
VAR23	.0008
VAR22	.0204
VAR16	.2007
(CONSTANT)	.0000

------ NOT IN ------

VARIABLE	TOLERANCE
VAR13	.71650
VAR17	.36489
VAR19	.63563

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

* * * * MULTIPLE REGRESSION * * * *

DEPENDENT.. VAR21 CONCHG

VARIABLE(S) REMOVED ON STEP NUMBER
13.. VAR18 YR73-74

MULTIPLE R	.76884
R SQUARE	.59111
ADJUSTED R SQUARE	.56014
STANDARD ERROR	4.21663

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	1696.46534	339.29307
RESIDUAL	66	1173.47910	17.77999

F = 19.08286 SIGNIF F = .0000

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-11.99611	3.95436	-.31844	.56110	-3.031
VAR09	-.17406	.03191	-.49170	.76238	-5.455
VAR23	-9.86982	2.69172	-.35685	.65412	-3.667
VAR22	.08613	.03322	.27881	.53568	2.593
VAR16	.74020	1.11080	.05401	.94318	.666
(CONSTANT)	35.54444	5.33906			6.657

------ IN ------

VARIABLE	SIG T
VAR24	.0035
VAR09	.0000
VAR23	.0005
VAR22	.0117
VAR16	.5075
(CONSTANT)	.0000

------ NOT IN ------

VARIABLE	TOLERANCE
VAR13	.72219
VAR17	.66938
VAR18	.54861
VAR19	.76748

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

* * * * MULTIPLE REGRESSION * * * *

DEPENDENT.. VAR21 CONCHG

VARIABLE(S) REMOVED ON STEP NUMBER
14.. VAR16 FTHDAD

MULTIPLE R	.76705
R SQUARE	.58836
ADJUSTED R SQUARE	.56379
STANDARD ERROR	4.19910

ANALYSIS OF VARIANCE

	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	1688.57024	422.14256
RESIDUAL	67	1181.37420	17.63245

F = 23.94123 SIGNIF F = .0000

---------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	SE B	BETA	TOLERANCE	T
VAR24	-12.45425	3.88199	-.33061	.57856	-3.208
VAR09	-.17463	.03177	-.49329	.76292	-5.497
VAR23	-10.00651	2.67273	-.36179	.65794	-3.744
VAR22	.08720	.03305	.28226	.53693	2.639
(CONSTANT)	36.52163	5.11238			7.144

------ IN ------		------ NOT IN ------	
VARIABLE	SIG T	VARIABLE	TOLERANCE
VAR24	.0020	VAR13	.76887
VAR09	.0000	VAR16	.94318
VAR23	.0004	VAR17	.86872
VAR22	.0103	VAR18	.96974
(CONSTANT)	.0000	VAR19	.84768

FOR BLOCK NUMBER 2 POUT = .100 LIMITS REACHED.

PROBABLE FUTURE COMPETITION

0 OUTLIERS FOUND. NO CASEWISE PLOT PRODUCED.

* *

RESIDUALS STATISTICS:

	MIN	MAX	MEAN	STD DEV	
*PRED	-8.7911	13.2106	.0278	4.8767	72
*ZPRED	-1.6083	2.7032	.0000	1.0000	72
*SEPRED	.5177	2.8721	1.0191	.4343	72
*ADJPRED	-10.2625	13.2414	-.0619	4.9131	72
*RESID	-10.9271	11.9088	-.0000	4.0791	72
*ZRESID	-2.6023	2.8360	-.0000	.9714	72
*SRESID	-2.6349	3.0360	.0097	1.0050	72
*DRESID	-11.2027	13.6476	.0896	4.3781	72
*SDRESID	-2.7621	3.2447	.0107	1.0263	72
*MAHAL	.0931	32.2291	3.9444	5.2871	72
*COOK D	.0000	.2692	.0153	.0363	72

TOTAL CASES = 72

DURBIN-WATSON TEST = 1.78749

* *

OUTLIERS - STANDARDIZED RESIDUAL

SEQNUM	SUBFILE	*ZRESID
53	COMPLETE	2.83602
24	COMPLETE	-2.60226
23	COMPLETE	-2.22301
30	COMPLETE	2.09875
41	COMPLETE	1.82106
15	COMPLETE	-1.70580
51	COMPLETE	1.58513
28	COMPLETE	1.52243
3	COMPLETE	-1.47692
25	COMPLETE	-1.33902

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

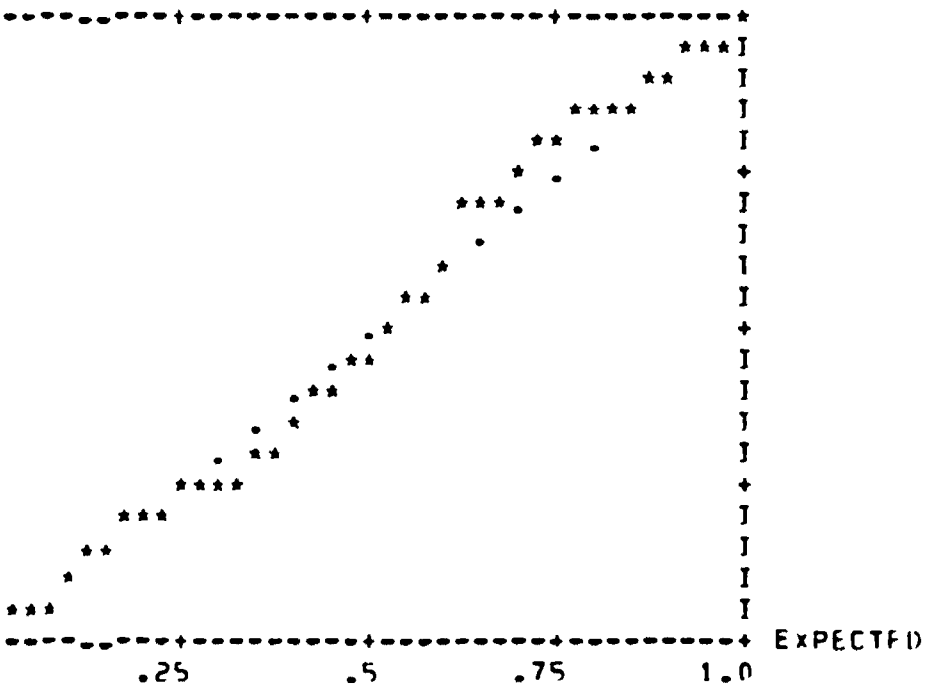
HISTOGRAM
STANDARDIZED RESIDUAL

N	EXP N	r	* = 1 CASES .: = NORMAL CURVE)
0	.06	OUT	
1	.11	3.00	*
0	.28	2.66	
0	.64	2.33	.
1	1.31	2.00	:
3	2.41	1.66	*:*
2	3.95	1.33	** .
3	5.81	1.00	*** .
9	7.65	0.66	*******:*
14	9.02	0.33	********:*****
9	9.53	0.00	*********.
11	9.02	-0.33	********:**
4	7.65	-0.66	**** .
6	5.81	-1.00	*****:
6	3.95	-1.33	***:**
1	2.41	-1.66	*.
0	1.31	-2.00	.
1	.64	-2.33	:
1	.28	-2.66	*
0	.11	-3.00	
0	.06	OUT	

PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONFHG

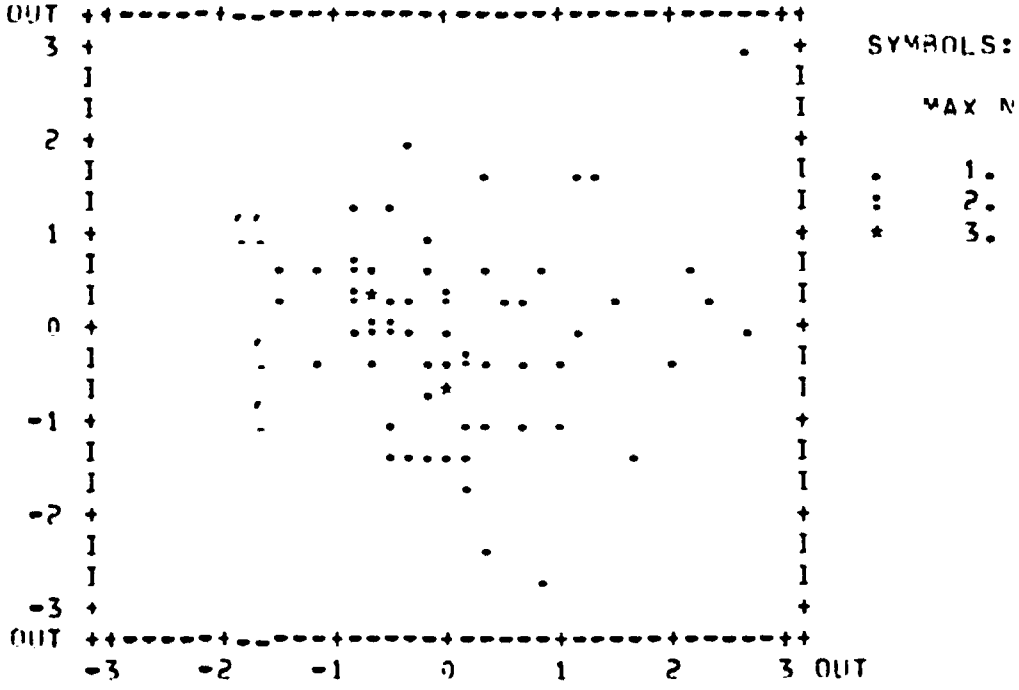
NORMAL PROBABILITY (P-P) PLOT
STANDARDIZED RESIDUAL



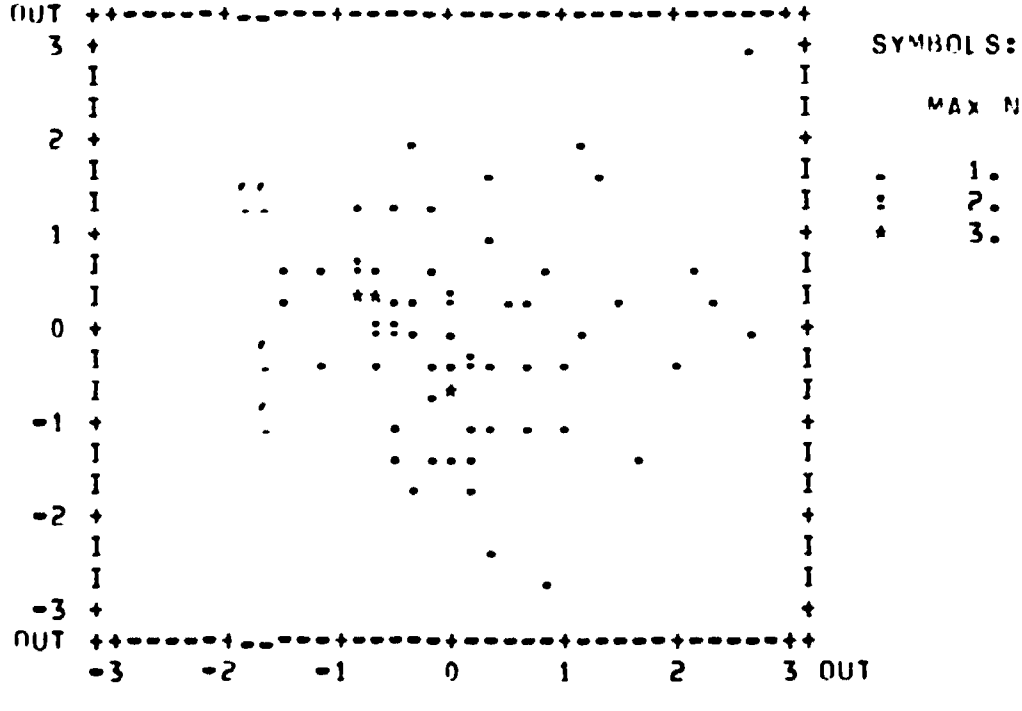
PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/26/80) DEP VAR IS CONCHG

STANDARDIZED SCATTERPLOT
ACROSS = *PRED DOWN = *ZRESID



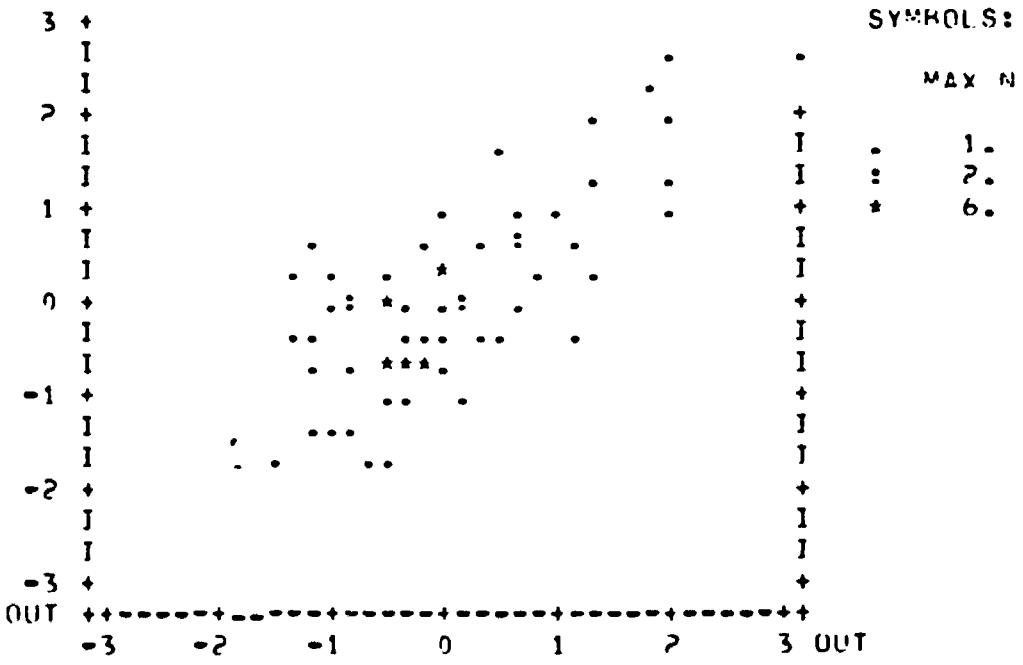
STANDARDIZED SCATTERPLOT
ACROSS = *PRED DOWN = *SRESID



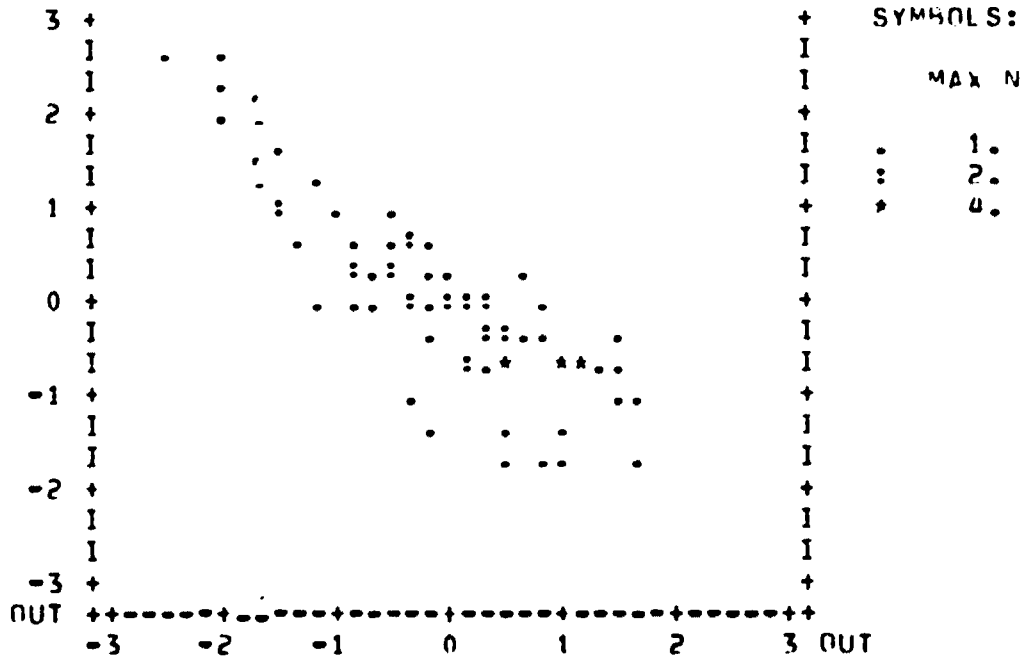
PROBABLE FUTURE COMPETITION

FILE COMPLETE (CREATION DATE = 2/28/84) DEP VAR IS CONCHG

STANDARDIZED SCATTERPLOT
ACROSS = VAR21 DOWN = *PRED



STANDARDIZED SCATTERPLOT
ACROSS = VAR09 DOWN = *PRED



PROBABLE FUTURE COMPETITION

TRANSPACE REQUIRED.. 600 BYTES
6 TRANSFORMATIONS
0 RECODE VALUES + LAG VARIABLES
18 IF/COMPUTE OPERATIONS
CPU TIME REQUIRED.. 16.62 SECONDS

34 FINISH

NORMAL END OF JOB.
34 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.