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DEREGULATION, STRATEGIC CHOICE, RISK AND FINANCIAL PERFORMANCE

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This study explores the effects of regulation and deregulation on strategic choice and performance in the U.S. banking industry. Drawing on literature from strategic management, industrial organization economics, and organization theory, we develop a framework which suggests that regulatory scope and regulatory incrementalism influence strategic choice and performance. A path analytic model is used to empirically examine these influences. The results suggest that deregulation has direct effects on firms' strategic choices and both direct and indirect effects on risk and return.

Strategic management, organization theory, and industrial organization economics researchers have hypothesized that government regulation will affect strategic choice and performance (e.g. Andrews, 1971; Scherer, 1980; Ungson, James, and Spicer, 1985; Cook, *et al.*, 1983). Despite the pervasiveness of regulation and the critical role of strategic choice in determining firm performance, the intersection of strategic choice and regulation has been largely ignored.

These issues are increasing in importance because of two major trends: globalization and deregulation. As industries globalize, firms that historically competed in a particular regulatory context begin to look beyond their borders and face new competitors. Competitors that developed strategies and strategic capabilities under different home governmental regulatory environments are likely to bring differential advantages to the new competitive arena.

The international deregulation trend also heightens the need for empirical study of the relationships among deregulation, strategic choice, and performance (Mahon and Murray, 1981; Smith and Grimm, 1987). The effects of deregulation are of increasing interest both in the U.S. and abroad as major industrial sectors such as financial services and transportation continue to be deregulated in the U.S. and as the European Economic Community prepares for unrestricted trade.

Like regulation, deregulation has attracted scant empirical attention from researchers in strategic management or organization theory (again, Smith and Grimm's 1987 paper is an exception). Many vital questions remain unaddressed. For example, how does deregulation affect strategic choice? Do firms pursue riskier

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strategies under regulation, or under deregulation? Is deregulation simply the opposite of regulation or does deregulation have different kinds of impacts? From the perspective of regulatory agencies, regulation and deregulation appear to be mirror-image processes with similar concerns evoking both processes. For regulated firms, however, regulation and deregulation may pose asymmetric challenges.

THEORETICAL SUPPORT FOR THE MODEL

The field of strategic management rests on the premise that managers match their firms' strategies to the characteristics of their environments, and that firms achieving superior matches will enjoy superior competitive positions and levels of performance. Building from organizational theory, one research perspective argues that environmental characteristics largely drive performance (Aldrich, 1979; Hannan and Freeman, 1977), effectively leaving domain or environment selection as management's most critical input to firm outcomes. Other theorists (most notably Child, 1972) argue that managers' strategic choices make a difference. Perhaps the most critical of these choices are those that are made in an effort to 'match' firm strategies with changing environmental conditions in order to maintain or improve competitive positions.

Deregulation of the banking industry offers a nearly ideal context for examining the interactions of environment, strategic choice, and firm performance suggested by the strategic management framework. Federal and state government regulations not only clearly define the banking industry, but regulations and subsequent moves toward deregulation typically apply evenly across all banking institutions in the various states. As a result, this study of deregulation avoids many of the confounding factors that often cloud studies examining responses to environmental changes.

In the model that guided this research, government regulation and deregulation are expected to affect strategic choice which, in turn, will affect financial performance and risk (Mahon and Murray, 1981; Scherer, 1980). Figure 1 presents the research model with the hypothesized relationships among variables indicated as positive or negative. We explore both indirect and direct effects of the environment. Indirect effects of government regulation and deregulation on financial and risk outcomes might occur through the mediating effects of strategic choices. However, regulatory activity may directly, as well as indirectly, influence the financial performance and risk of firms participating in an industry. Porter (1980), for example, suggests that deregulation might directly lower firm performance by increasing the threat of entry or increasing rivalry among existing competitors. As a result, the model includes the possibility that regulatory

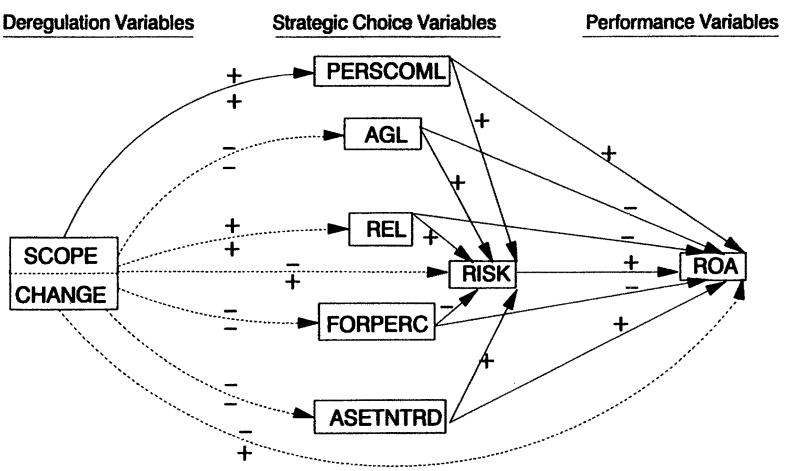

Figure 1. Research model.
Note: A broken line (---) indicates two paths, with the hypothesized relationship of SCOPE indicated above the line and the hypothesized effects of CHANGE indicated below the line

Table 1. List of variables

DEPENDENT VARIABLES
Financial performance variables
ROA—return on assets
BANKERS' RISK—ratio of net interest income to total assets
INDEPENDENT VARIABLES
Regulation and deregulation variables
SCOPE—total scope of regulation
CHANGE—regulatory incrementalism—number of changes in regulations
Strategic choice variables
PERSCOML—ratio of personal to commercial loans
AGL—ratio of agricultural loans to total loans
REL—ratio of real estate loans to total loans
FORPERC—ratio of foreign loans to total loans
ASETNTRD—ratio of assets in nonbanking subsidiaries to total assets
BANKERS' RISK—ratio of net interest income to total assets

scope and incrementalism may have both direct as well as indirect effects on financial performance and risk.

The following sections further explain the development of the model tested in this study and provide additional theoretical support for the hypothesized relationships summarized in Figure 1. Table 1 details all of the variables included in this model.

Regulation: Scope and incrementalism

Government regulation includes legislation passed by legislative bodies as well as rules issued by administrative agencies. Mahon and Murray (1980; 1981) offer a framework for evaluating regulation as an environmental force affecting firms' actions and performance levels from a strategic management perspective. They identify two types of regulation: social regulation and economic regulation. Social regulation aims to regulate noneconomic activities across industries. The Environmental Protection Agency and the Consumer Products Safety Commission are examples of governmental agencies that enact social regulation. Economic regulation, in Mahon and Murray's framework, is typically directed at a specific industry. Examples of agencies that enforce economic regulation include the Federal Aviation Administration, the Federal Reserve, and the Federal Communications Commission.

A primary justification for regulation identified by industrial organization researchers is to limit excessive competition (Vietor, 1989). Regulation implemented to limit excessive competition among firms in a particular industry, competition-constraining regulation, roughly corresponds to Mahon and Murray's economic regulation. This may be the most important type of regulation from a strategic management standpoint because it directly affects the competitive dynamics of the industry (Mahon and Murray, 1981). Competition-constraining regulation historically has affected many U.S. industries including railroads, trucking, communications, and airlines. It also impacts global competition as many countries have sought to constrain competition in various markets in order to protect domestic firms while they develop. For these reasons, the research reported here focuses on competition-constraining regulations.

The purpose or type of regulation, however, does not capture the extent of influence of the regulation on strategic choices and firm performance. Some industries face strict regulation which prohibits and proscribes many activities while other industries face little regulation. The *scope of regulation* more fully reflects the intensity of regulation and deregulation. Our definition of regulatory scope encompasses both scope and stringency as defined by Cook, *et al.* (1983). They separate the extensiveness of a regulation (scope) from the degree of constraint imposed by the regulation (stringency), however, we maintain these two dimensions are difficult, if not impossible, to separate in empirical research. Thus, in our model a single scope of regulation dimension captures these effects.

Mahon and Murray (1981) also suggest that the speed of deregulation should be considered when examining firm-level regulatory effects. Spulber, too, suggests that the amount of time firms have to adjust to changes in regulatory policy is important. He contends that delays in implementing new regulatory policies may provide warnings for firms to adjust their capital expenditures to the anticipated environment (Spulber, 1989: 86). When regulatory change is implemented gradually, especially as step-by-step deregulation over several years, firms have time

to react to impending changes. This offers firms advantages not enjoyed when deregulation is abrupt or unanticipated (Mahon and Murray, 1980). Other authors have noted that unpredictable change increases uncertainty (Cook, *et al.*, 1983). Thus, both the rate of change and the logical progression of change are influential. We have dubbed gradual adjustment in an ongoing direction '*regulatory incrementalism*' to convey a process akin to Quinn's (1980) logical incrementalism.

Thus, the two critical dimensions of regulation tested in our model are (1) regulatory scope, and (2) regulatory incrementalism.

Choice

To examine the relationships among regulatory change, strategic choice and performance, it is next necessary to identify strategic choices. But what constitutes a strategic choice is an unsettled issue in strategic management. Competing conceptualizations of the strategy concept give conflicting guidance to empirical studies (Chaffee, 1985). In addition, many theorists maintain that the strategic choice variables which are critical, and thus should be included in an empirical study, are situational, not universal (Andrews, 1971; Schendel and Hofer, 1979). However, some broad classes of variables have wide support regardless of the situation: These include product/market choices, scope or diversification, synergy, distinctive competence (Hofer and Schendel, 1978; Cool and Schendel, 1987), risk (Baird and Thomas, 1985; Fiegenbaum and Thomas, 1988) and strategic orientation (Miles and Snow, 1978; Venkatraman, 1989). It is difficult to include variables which operationalize all aspects of strategic choice in one empirical study. However, it is equally unjustified to use unidimensional measures of the multidimensional strategic choice construct (Snow and Hambrick, 1980).

In this study, it was crucial to include strategic choice variables that the literature and an industry analysis suggested would be influenced by deregulation and that are expected to be related to performance outcomes. Thus, the theoretical strategic choice dimensions of product/mix, geographic and product diversification and risk were embraced in this study. In addition to their general importance in the strategic management literature, these variables take on added significance as industries are deregulated. Thus, they are especially germane to our study. Although strategic orientation is likely to be an important moderator in a firm's response to deregulation, it was not included in this study due to data limitations. This omission was deemed to be relatively minor given the exploratory nature of the study.

Performance

Previous research, when it has examined regulatory effects on firm-level performance, has defined performance as financial performance (Smith and Grimm, 1987). Much of the economics literature has concluded that competition-constraining regulations allow firms to enjoy artificially high profit levels (Stigler, 1971).[1] In environments regulated to prohibit 'excess competition,' higher firm profitability is expected because of a more favorable industry structure (Porter, 1980; Scherer, 1980). For instance, competition-constraining regulations typically mitigate against price competition. Other regulations may be designed to discourage or even prevent the entry of new competitors.

Firm performance, however, is more than financial return. Another important component of firm performance is the degree of risk assumed by a firm in order to achieve a given level of financial performance (Bettis and Hall, 1982). Risk can be conceptualized both as a strategic variable (firms choose a given level of risk) and as an outcome variable (strategic choices lead to a level of risk) (Baird and Thomas, 1985). A firm may enjoy exceptional profitability in the short run by accepting high levels of risk, but may not be able to weather negative industry conditions in the long run. The explicit consideration of risk is especially warranted when studying regulatory impacts because regulation tends to limit strategic options and distort risk profiles. Deregulation opens new opportunities and some firms might seek to more actively manage risk as well as financial performance. Thus, it is necessary to consider risk/return trade-offs, not just financial returns, in examining regulatory

[1] Some research suggests, however, that managers may prefer higher expenses in these cases (Edwards, 1977; Leibenstein, 1966).

effects on firm-level performance. Because risk can be both a strategic variable and an outcome variable, path analytic models are especially well suited to isolate the separate effects of the dual nature of risk.

RESEARCH DESIGN AND HYPOTHESIZED RELATIONSHIPS

The U.S. banking industry is an ideal setting in which to test the effects of government regulation and deregulation. Since each of the fifty states regulates the activities of banks operating within its borders, a variety of regulatory environments exist within the industry. While states regulate activities within their borders, the trend is toward greater deregulation of banking activity, and competition across state lines is increasing. This trend toward greater deregulation continues today in the banking industry, providing a timely and important research site.

In order to study the effects of regulation and deregulation on choices and performance, specific regulations in the banking industry are examined. A testable path analytic model is developed, incorporating operationalizations of regulatory scope, regulatory incrementalism, strategic choice and performance.

Regulation and deregulation in the banking industry

Regulatory scope (SCOPE)

The banking industry faces regulations that constrain banks in their ability to engage in interstate banking, operate branches, and form multibank holding companies. When passed, each of these regulatory restrictions was intended to limit competition, stabilize the industry, and improve profitability. Thus, interstate banking, branching, and multibank holding company restrictions are examples of competition-constraining regulations enacted at the state level.

Even superficial knowledge of the banking industry suggests that easing of interstate banking, branching, and multibank holding company restrictions provide unequal strategic choice opportunities and impact performance differentially. Therefore, a regulatory scope index was developed to measure the extent of regulation present in each state and to reflect the differential impacts of the three regulations. The coding scheme for the regulatory scope index was developed through an extensive review of the banking literature and many interviews with banking executives. The appendix provides the rationale for its construction.

The literature review and the interviews reported in the appendix suggested that deregulation of interstate banking activities creates more significant environmental change than does deregulation of branching or multibank holding companies, and also that the deregulation of branching creates a higher level of change than does deregulation of multibank holding companies; thus, higher values were assigned in that order for the coding scheme. Regulations for each state were coded: for interstate banking, 8 = nationwide nonreciprocal, 7 = nationwide reciprocal, 6 = regional nonreciprocal, 5 = regional reciprocal, and 0 = not permitted; for branching, 4 = statewide unlimited, 2 = limited, and 0 = not permitted; for multibank holding companies, 2 = unlimited, 1 = limited, and 0 = unit banking. The SCOPE of regulation index was then calculated as the sum of the values for interstate banking, branching, and multibank holding companies. Thus, higher values of SCOPE are assigned to states with more deregulation. Although we recognize that this index is not without limitations, we believe it captures the differential effects of specific regulatory areas in a way that prior studies have been unable to do.

An alternative to constructing an index of regulatory scope would be to dummy code each of the regulations. This approach is less appropriate for path analytic models beceause it requires the specification of a significantly greater number of paths, and interpretation of path coefficients is troublesome when several dummy variables are present. In addition, dummy coding each of the regulations separately fails to capture the theoretical construct of scope of regulation as well as a single index does. Thus, dummy coding was rejected for this research.

Regulatory incrementalism (CHANGE)

The amount of regulatory incrementalism varies widely from state to state. The states that provide the most stable regulatory environment have

made no changes in their interstate banking, branching, or multibank holding company laws in the last 30 years. Some states are gradually implementing deregulation by phasing-in interstate banking in two or three preannounced orderly stages spread over many years. Other states have rapidly deregulated banking competition in one or two major legislative changes. A greater number of changes to reach the same level of deregulation should provide firms with more opportunities to adjust strategies, thus resulting in higher financial performance and less risk.

In constructing an index to measure regulatory incrementalism, information gathered from telephone interviews and mail surveys was used to calculate the number of regulatory changes (CHANGE) in the 5 years prior to December 31, 1986. All regulatory changes during this period were toward greater deregulation, therefore it was justified that a count of the number of changes would provide a reasonable index of regulatory incrementalism. Interpreting this index, a higher number corresponds to more changes which constitute a higher level of incrementalism. This is an admittedly rough measure of regulatory incrementalism, but more precise measures would require additional subjective judgments which we wanted to avoid. For example, it is possible to weight each regulatory change by the number of years since the change (a strategy attempted in preliminary data analysis and given support by Cook, *et al.*, 1983), but fundamental issues concerning appropriate weights to assign are difficult to resolve. Thus, a straight count, although primitive, best suited our research objectives.

The regulatory SCOPE and CHANGE variables capture different aspects of regulation. SCOPE is a measure of the absolute level of regulation in a state at a given point in time. CHANGE, on the other hand, measures the degree of change in regulation during a given time period. As was argued earlier, both the absolute level of regulation and the amount of regulatory incrementalism (measured here by CHANGE) are expected to have critical, but possibly conflicting, impacts on firm strategies, risk and performance. However, since these variables may covary, the correlation coefficients will be examined before utilizing them concurrently in the path analytic model.

Strategic choice

Many variables have been offered as possible operationalizations of strategic choice (e.g. Hambrick, 1980; Hofer and Schendel, 1978; Snow and Hambrick, 1980). In fact, it has been noted that determining the key strategic choices within an industry is a difficult but crucial task (Harrigan, 1985). We chose to examine product/market mix, diversification and risk-related strategic choices because these domains are significant in many empirical strategy studies and because the industry review indicated that they are important choices in banking that have been impacted by deregulation. Other aspects of strategy, such as strategic orientation, might profitably be included in future studies.

The key product/market mix decision in the banking industry is the trade-off between focusing on personal (or retail) banking and concentrating on commercial (or wholesale) banking (Passmore, 1985; Reger, 1988). It is tempting to simply divide all loan activity into personal or commercial loans. The banking literature and the Federal Reserve Board, however, suggest that two other major product/market decisions that behave differently from either personal or commercial banking and that influence performance are the extent to which BHCs choose to participate in the agricultural and the real estate economic sectors. These four, personal, commercial, agriculture and real estate, constitute the largest and most important product/market areas for BHCs. Thus, product/market mix variables included in this study were the ratio of personal to commercial loans (PERSCOML), and agricultural loans (AGL) and real estate loans (REL) as a percentage of total loans.

Because of the industry's history, two types of diversification are important in the banking industry: geographic and traditional product/market diversification. Therefore, the extent of diversification was measured by two variables: foreign loans as a percentage of total loans (FORPERC), and assets in nonbanking subsidiaries as a percentage of total assets (ASETNTRD). FORPERC is a measure of a BHC's geographic diversification outside of the United States and ASETNTRD measures the extent of product/market diversification outside of traditional banking industry services.

There are many ways to measure risk (Baird

and Thomas, 1985). Strategic management researchers have often looked toward the variability in returns as an approximation of the risk inherent in a firm's earning stream (Bettis and Hall, 1982; Bowman, 1980; Fiegenbaum and Thomas, 1988; Jemison, 1987). However, there is some concern that managers may not experience risk as variation in returns (Baird and Thomas, 1985; Kahneman and Tversky, 1979) and thus other measures, when available, should be examined.

One of the primary reasons the Board of Governors of the Federal Reserve System collects the data that we used in this research is so that they can assess the safety and soundness of the BHCs they regulate. Risk is one of the predominate concerns in regulating bank activities, therefore, using this data source, we were able to use a standard risk measure employed by bank examiners.

Several measures of risk are routinely used to assess the riskiness of bank holding companies (Sinkey, 1986). Two of the most significant financial risks are interest rate exposure and asset management risk. Interest rate, or spread, exposure represents the risk of mismatched assets and liabilities. For example, when long term, low rate mortgages are funded through short term, high rate deposits, the result is increased risk of insolvency. Through managing maturities and varying the mix of maturities in their portfolios, bankers can influence the degree of interest rate risk they carry. The other major area of financial risk for banks, asset management, or default risk, can be measured by the ratio of nonperforming loans to total assets. However, nonperforming loans has an almost inverse accounting–identity relationship with return on assets, the most commonly used profitability measure in the banking industry, thus it was not suitable for use in this research.

Because interest rate risk is an area of risk that bankers actively manage and that is expected to influence performance (but not in the direct mathematical relationship of nonperforming loans), it was deemed the most appropriate measure of risk to use in this study. Risk, then, was operationalized as total interest income less total interest expense, as a percentage of average total assets, a standard measure of interest rate risk in the banking industry. We call this variable BANKERS' RISK to differentiate it from the more common measure of risk as variation in returns.

A key advantage of a path analytic model is that it allows the dual nature of risk to be captured in one model. Thus, level of risk can be viewed partially as a strategic choice variable and partially as an outcome variable.

Performance

Financial performance was measured using return on assets (ROA). ROA is the most meaningful financial indicator in the banking industry and is the indicator most closely watched by bank analysts and bankers themselves. Additionally, ROA is an appropriate measure of financial performance to use in this study because deregulation and strategic choice directly affect the asset mix of BHCs. Return on equity is not as meaningful because for most BHCs the equity base is very small compared to total liabilities. Since many of the firms included in the sample are not publicly traded, it was not possible to use market based measures of performance.

METHODOLOGY

Sample

The population for this study consists of U.S. bank holding companies located in all 50 states and the District of Columbia. To reduce possible distortions arising from size variation in the population, the study is limited to all medium and large bank holding companies—those with $300 million or more in total assets. This results in a sample of 563 bank holding companies ranging in size from $300 million to $205,012 million with a mean level of total assets of $4,776 million. These bank holding companies (BHCs) account for 90 percent of the total assets in the U.S. banking system and are thus the key players in the industry. This sample includes a broad range of U.S. bank holding companies (BHCs), ranging from large money center BHCs to regional and local BHCs, thus the size requirement does not lead to a sample so homogeneous as to be unrepresentative of the population. However, it eliminates possible distortions in model specification that might arise

if the nearly 6,000 smaller BHCs that account for the remaining 10 percent of banking system assets were included.

Data collection

In the first phase of collecting regulatory data, telephone interviews were conducted with officials at the state agencies which regulate banks and other financial institutions. Officials in all 50 states and the District of Columbia were contacted during the summer of 1988. For each state, a detailed history of regulations and/or statutes governing interstate banking, branching, and multibank holding companies, the three most significant areas of state banking regulation, were obtained.

Mail surveys sent during the spring of 1989 to the officials at these state agencies provided confirmation of all the data collected via telephone interviews. These mail surveys summarized the information gathered through the telephone interviews, and requested additions, corrections, and any necessary updates. Of the 51 mail surveys sent, we received responses from 49 states and the District of Columbia for a response rate of 98 percent. We verified the one remaining questionnaire by telephone.

Regulatory variables reflect the extent of deregulation in the various states as of December 31, 1986. These regulatory variables were matched with strategic choice and performance data for 1987, the latest available data. This is an excellent time frame to assess the influence of deregulation on strategic choice and performance because during 1986 many states deregulated various aspects of bank holding company activity. This deregulation is reflected in the mean levels of SCOPE and CHANGE. As of December 31, 1985, the mean levels of SCOPE and CHANGE were 5.47 and 0.89 respectively; by December 31, 1986, however, the mean levels of SCOPE and CHANGE had risen to 8.08 and 1.46, respectively.

Data on strategic choices and performance was gathered from the 1987 Bank Holding Company Subscription Tape compiled by the Board of Governors of the Federal Reserve System. Only publicly traded BHCs are listed on Compustat, therefore a Compustat-based sample would not be as representative of the BHC population as our sample is.

RESULTS

Means, standard deviations, and correlations are shown in Table 2. Not unexpectedly, SCOPE and CHANGE were moderately correlated, suggesting that these variables captured different but related aspects of regulation. The correlations, however, were all within acceptable limits so that the variables could be included together in the analysis.

Path analysis was used to test the model illustrated in Figure 1. A path-analytic framework is an ideal way to assess the proposed causal relationships, and is the appropriate analytical method when both direct and indirect influences are hypothesized (James, Mulaik and Brett, 1982). The model proposed in this paper suggests that deregulation might have both direct and indirect effects on risk and return.

We derived path coefficients by regressing each variable on all prior variables in the model as suggested by Asher (1976) in a manner similar to the approach taken by Hill and Snell (1989). Following the theory-trimming approach to path analysis suggested by James *et al.* (1982) and used in a comparable strategic management application by Hill and Snell (1989), we assumed coefficients not significant at the 10 percent acceptance level or better to be zero and excluded them from the final estimation of path coefficients. The final estimates are reported in Figure 2, and the decomposition of the causal relationship is shown in Table 3.

The results of the final path model reported in Figure 2 offer support for some of the relationships we hypothesized and illustrated in Figure 1. Perhaps the most interesting finding is that SCOPE and CHANGE have both significant direct and indirect influences on BANKERS' RISK and ROA. Furthermore, in every case, the direct effects are stronger than the indirect effects. SCOPE has both negative direct and negative indirect influences on ROA and BANKERS' RISK, while CHANGE has positive direct and negative indirect influences on ROA and negative direct and positive indirect effects on BANKERS' RISK.

SCOPE also influences strategic choices regarding AGL, REL, FORPERC, and ASETNTRD. CHANGE influenced only choices regarding AGL and FORPERC. The direction of these influences agrees with our predictions in every

Table 2. Means, standard deviations, and correlations

	Variable	Mean	Standard deviations	1	2	3	4	5	6	7	8
1.	SCOPE	8.0785	2.9597								
2.	CHANGE	1.4580	1.0315	0.334***							
3.	PERSCOML	0.9434	0.9176	0.051	0.013						
4.	AGL	0.0146	0.0361	− 0.086+	− 0.087+	− 0.032					
5.	REL	0.4236	0.1604	0.086+	− 0.043	0.048	− 0.182***				
6.	FORPERC	0.0099	0.0381	0.132**	− 0.078+	− 0.056***	− 0.083+	− 0.231***			
7.	ASETNTRD	0.0201	0.0650	0.093+	− 0.056	0.004	− 0.052	− 0.096+	0.094+		
8.	BANKERS' RISK	0.0368	0.0069	− 0.127**	− 0.175***	0.249***	− 0.085+	0.013	− 0.276***	0.101+	
9.	ROA	0.0051	0.0185	− 0.081+	0.028	0.107*	− 0.003	0.047	− 0.090*	0.050	0.368***

+$p < 0.10$ *$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

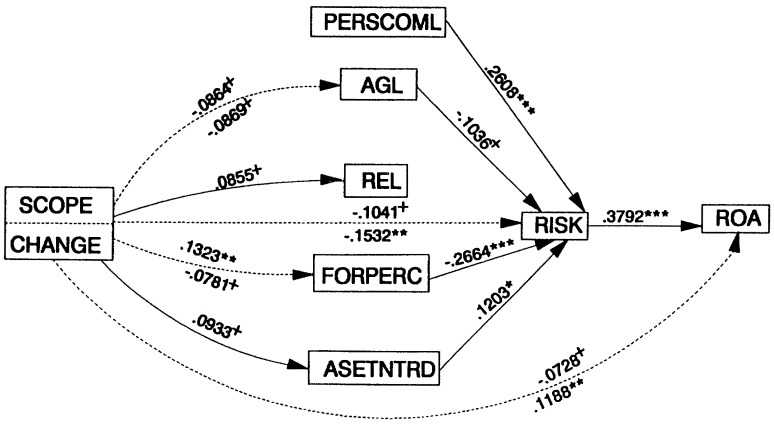

Figure 2. Final path mediation model.
$^{+}p < 0.10$ $^{*}p < 0.05$ $^{**}p < 0.01$ $^{***}p < 0.001$
Note: A broken line (---) indicates two paths, with the coefficient for SCOPE above the line and the coefficient for CHANGE below the line

Table 3. Results of regression analysis[1]

Independent variable	Dependent variables	
	ROA	BANKERS' RISK
SCOPE	− 0.10489+	− 0.09799+
	(0.00039)	(0.00014)
CHANGE	0.13167*	− 0.16075*
	(0.00121)	(0.00042)
PERSCOML	0.00161	0.26240***
	(0.00121)	(0.00041)
AGL	0.04902	− 0.11345*
	(0.02933)	(0.01033)
REL	− 0.02073	− 0.06318
	(0.00798)	(0.00283)
FORPERC	0.07839	− 0.28402***
	(0.02693)	(0.00917)
ASETNTRD	0.01463	0.11426*
	(0.01674)	(0.00590)
BANKERS' RISK	0.45736***	
	(0.15916)	
ADJ. R^2	0.1857	0.2020
F VALUE	10.124***	12.575***

Standardized beta weights are reported; standard errors are in parentheses.
$^{+}p < 0.10$ $^{*}p < 0.05$ $^{**}p < 0.01$ $^{***}p < 0.001$

case, except that SCOPE has an unexpected positive influence on ASETNTRD. The strategic choice variables PERSCOML, AGL, FORPEC, and ASETNTRD influenced BANKERS' RISK but not ROA. Here again, the direction of these influences agrees with our predictions in every case, except that AGL has a negative influence on BANKERS' RISK. As expected, BANKERS' RISK exerts a positive influence on ROA.

DISCUSSION

The results of the final path model suggest that the influence of deregulation on strategic choice and performance is complex, but, especially for risk and financial performance, significant. The results are not only statistically significant, they also are consequential to strategic management theory and practice.

The finding that deregulation has both direct and indirect impacts on BANKERS' RISK and ROA suggests that deregulation, by itself, may increase rivalry and entry, thereby lowering ROA. The positive relationship between BANKERS' RISK and ROA provides incentive for BHCs to accept higher levels of risk under deregulation in order to maintain profitability at levels obtained under regulation. However, SCOPE and CHANGE are both negatively associated with BANKERS' RISK, thus it does not appear that most firms in our sample chose this option. Some BHCs might be tempted by the opportunity to maintain profits through increased risks, a seemingly attractive option for managers faced with rewards based on short-term financial performance. This has been one of the primary reasons given for recent failures and near failures of some BHCs: management

accepted excessive risks to maintain profitability and growth in the face of increased competitive pressures due to deregulation (Hector, 1988). We emphasize again that our results suggest that this shortsighted trade-off was not widespread, although the incentive appears to be in place. Both firm managers and public policy makers should be aware of these incentives in formulating strategies for regulated businesses.

Significantly, the negative impact of SCOPE on ROA is tempered by the relationship between CHANGE and ROA. As we hypothesized, the results suggest that incrementalism has a positive influence on ROA—a gradual shift toward deregulation provides firms with opportunities to adjust to the changing regulatory environment. Similarly, incrementalism is negatively associated with BANKERS' RISK—again, a gradual shift toward deregulation may allow BHCs time to adopt less risky strategies. This finding suggests that deregulation is least disruptive when changes are enacted gradually as part of an overall plan and when affected firms have sufficient advance notice of changes.

The negative relationship between SCOPE and BANKERS' RISK, which was hypothesized, suggests that deregulation either provides opportunities for firms to better manage the risk they assume or it removes incentives for excessive risk-taking present under regulation. In our data, it appears that deregulation of interstate banking, branching, and multibank holding companies provides BHCs with opportunities to adopt new strategies that are less risky than strategies which are tied to the vagaries of a particular geographic region.

While deregulation influence strategic choice, the impact is less than expected. SCOPE influences choices regarding AGL, REL, FORPERC, and ASETNTRD, but for three of these choice variables, the relationship is only moderately significant. CHANGE influences only AGL and FORPERC; in each case this influence is in the hypothesized direction. It appears that deregulatory incrementalism leads BHCs to reduce the proportion of riskier agricultural and foreign loans.

Significantly, the fundamental product/market decision, the balance between personal and commercial orientation, was unaffected by regulatory scope or incrementalism. This finding was unexpected. It may be that other environmental factors not represented in the model affect this choice. However, since every banking market of any size supports both retail-oriented and commercial-oriented BHCs, it is possible that this choice is not environmentally determined, but results from managerial or owner preference. Also, since the skills and resources needed to support these two strategies are radically different, the time frame of the study might not have captured long term, major repositioning that deregulation may eventually cause. The last explanation is further supported by the fact that the strategic choice variables that were affected by both SCOPE and CHANGE, agricultural loans and foreign loans, constitute smaller proportions of the loan portfolios of most of the BHCs in the sample. Thus, it would be easier for most BHCs to sell these portions of their holdings in order to change strategies than it would be to exit from, or even significantly reduce, commercial or personal activity.

Four of the five strategic choice variables influence BANKERS' RISK, but none influences ROA directly. These are interesting and unexpected findings, but are not without plausible explanation. One scenario that supports these findings is that, in response to deregulation, BHCs adopt new strategies very quickly as evidenced by the four strategic choice variables significantly influenced by SCOPE. The immediate impact of these new strategies could be to reduce the key risks in the loan portfolio. Yet, we know from other research that the successful implementation of new strategies, especially diversification strategies, requires a considerable amount of time and investment to exert a significant influence on bottom line performance (Biggadike, 1979). This suggests that most managers in the banking industry have been rather conservative in the face of deregulation and, perhaps, have taken a longer term perspective than they have been given credit for.

IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study has addressed several important questions concerning the relationship between government regulation and deregulation, strategic choice, and firm performance. These are pressing issues. Policy makers are now debating the merits

Table 4. Decomposition table for final path model

Bivariate relationship	Causal path		
	Direct	Indirect	Total
AGL and SCOPE	− 0.0864		− 0.0864
AGL and CHANGE	− 0.0869		− 0.0869
REL and SCOPE	0.0855		0.0855
FORPERC and SCOPE	0.1323		0.1323
FORPERC and CHANGE	− 0.0781		− 0.0781
ASETNTRD and SCOPE	0.0933		0.0933
BANKERS' RISK and SCOPE	− 0.1041	(− 0.0864) (− 0.1036) + (0.1323) (− 0.2664) + (0.0933) (0.1203) = − 0.0151	− 0.1192
BANKERS' RISK and CHANGE	− 0.1532	(− 0.0869) (− 0.1036) + (− 0.781) (− 0.2664) = 0.0298	− 0.1232
ROA and SCOPE	− 0.728	(− 0.0864) (− 0.1036) (0.3792) + (0.1323) (− 0.2664) (0.3792) + (0.0933) (0.1203) (0.3792) + (− 0.1041) (0.3792) = − 0.0452	− 0.1180
ROA and CHANGE	0.1188	(− 0.0869) (− 0.1036) (0.3792) + (− 0.0781) (− 0.2664) (0.3792) + (− 0.1532) (0.3792) = − 0.0468	0.0720
BANKERS' RISK and PERSCOML	0.2608		0.2608
BANKERS' RISK and AGL	− 0.1036		0.1036
BANKERS' RISK and FORPERC	− 0.2664		− 0.2664
BANKERS' RISK and ASETNTRD	0.1203		0.1203
ROA and PERSCOML		(0.2608) (0.3792) = 0.0989	0.0989
ROA and AGL		(− 0.1036) (0.3792) = − 0.0393	− 0.0393
ROA and FORPERC		(− 0.2664) (0.3792) = − 0.1010	− 0.1010
ROA and ASETNTRD		(0.1203) (0.3792) = 0.0456	0.0456
ROA and BANKERS' RISK	0.3792		0.3792

of past deregulation of many industries including banking, health care, and transportation. Furthermore, competitors from different regulatory environments are increasingly competing in markets that had enjoyed regulatory protection in Europe, throughout North America and elsewhere as economic unity of regions and worldwide deregulation continues. These trends should continue as firms throughout the world increasingly strive for a global presence.

Our findings, especially if replicated in additional empirical research, may be of assistance to regulators in their efforts to formulate regulatory policies. Company strategists might also be advised to consider our results carefully when formulating strategies in response to deregulation. Our findings on the relationship between risk and financial performance lend support to the common sense notion that managers should use caution in responding to deregulation. Another fruitful direction for future research would be to consider the potential for firms to achieve competitive advantage by formulating political strategies toward regulatory agencies (Murray, 1978) or by competing with firms across regulatory jurisdictions.

In spite of the importance of regulation and deregulation, relatively few studies have examined regulatory impacts on strategy formulation and implementation and subsequent firm performance. Some studies have appeared recently (Provan, 1987; Ungson *et al.*, 1985). Our study contributes to this new stream of literature, and offers a framework suggesting how regulatory scope and incrementalism influence firm strategies and performance. The results suggest that deregulation has significant impacts on strategic choices, risk, and performance. These relationships should be explored and further refined in future research since deregulation is increasing in importance.

This study examined two important dimensions of deregulation: scope and incrementalism. Other important dimensions may exist that were not incorporated in this study and that should be considered in a complete strategic management model of regulation. For example, regulatory turbulence is another promising dimension. Regulatory turbulence refers to changes in regulatory direction—first encouraging an activity, then restricting it, then requiring it, and so on. The thrift industry has been plagued by regulatory turbulence as Congress and thrift regulators vacillate. Regulatory turbulence creates an 'undulating playing field.' Managers of firms may find it particularly difficult to develop effective strategies under these conditions. Ungson, *et al.* (1985) examined the negative impact of unpredictable change. They referred to the negative impact of regulatory 'volatility' operationalized as the number of changes in regulations. Similarly, Cook, *et al.* (1983) focus on the negative aspects of regulatory change through suggesting operationalization of regulatory 'uncertainty' as number of regulatory changes. However, our study suggests that an increased number of changes can have a positive impact if all changes are in one, anticipated direction. Thus, it is important in future research to examine the positive and negative effects of volatility separately as incrementalism and as turbulence.

This study, like all studies, is limited and the results should be interpreted with caution. Although we developed longitudinal profiles of regulatory scope and incrementalism, we examined the impact of deregulation cross-sectionally. Though strategic choice and performance were measured in our study after a significant number of states made regulatory changes, the time lags between regulatory change, strategic response, and financial performance may, in some cases, be considerable. Future research which examines the long-term effects of deregulation is needed to provide additional insight into the findings from this study.

Longitudinal analysis of strategic choice and performance was not possible in this study given the data set. The Federal Reserve radically changed the reporting requirements for BHCs in 1985, therefore, it is not appropriate to compare data available before 1985 with later data. Soon, enough years of comparable data will be available on the Bank Holding Company Subscription tapes to allow longitudinal analysis. The data base should not be ignored in the interim as it is an extremely rich source of data on the strategies and performance of all U.S. BHCs, especially compared to Compustat which provides more limited strategic data on a much more limited set of BHCs.[2]

[2] Future research which compares results from the Federal Reserve Bank Holding Company Tapes and Compustat should be conducted with appreciation of GAAP-RAAP

Since industries have difference histories and, oftentimes, different regulatory agencies with different agendas (Ungson, *et al.*, 1985), generalized predictions from any research results to all regulated industries should be made with caution. Furthermore, understanding the effects of regulation and deregulation is complicated because regulators may intend one type of regulation, but the realized regulation may have different effects (Schwert, 1981). This is especially likely when regulations are enacted under one set of environmental conditions and those conditions later change. Similarly, deregulation may have realized effects quite different from its intended effects (Spulber, 1989). Because of these complexities, empirical examination of regulatory effects in other industries is needed to establish the generalizability of the key relationships found in this study. The model tested here provides a basis for such additional empirical investigations.

The indices used to operationalize regulatory type and regulatory incrementalism pose another limitation. They are admittedly rough approximations of the theoretical constructs. Given the exploratory nature of the research, the operationalizations were deemed sufficient. Future research should be directed toward developing alternative, more sophisticated measures, or refining the measures we have proposed. With more precise indices, it is expected that effect size may be even larger than found in the present study and more subtle effects may be uncovered.

Subsequent research might also examine other variables not included in this study. The role of managers in perceiving, framing and reacting to deregulation is especially promising. For instance, how managers assess the opportunities and threats posed by deregulation or how managerial interpretation and framing of this important environmental discontinuity moderates the relationship between deregulation and strategic choice should receive future research attention.

differences, the differences between SEC requirements which are guided by generally accepted accounting principles and Federal Reserve requirements which utilize regulatory accepted accounting principles. In general, RAAP requirements are more conservative than GAAP, and thus income and other performance measures tend to be lower using the Federal Reserve data.

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REFERENCES

Aldrich, H. E. *Organizations and Environments*, Prentice-Hall, Englewood Cliffs, NJ, 1979.

Andrews, K. *The Concept of Corporate Strategy*, Dow-Jones-Irwin, Homewood, IL, 1971.

Asher, H. B. *Causal Modeling*, Sage, Beverly Hills, CA, 1976.

Baird, I. S. and H. Thomas. 'Toward a contingency model of strategic risk taking', *Academy of Management Review,* **10**, 1985, pp. 230–243.

Bettis, R. A. and W. K. Hall. 'Diversification strategy, accounting determined risk and accounting determined return', *Academy of Management Journal,* **25**, 1982, pp. 254–264.

Biggadike, E. R. 'The risky business of diversification', *Harvard Business Review,* **57**(3), 1979, pp. 103–111.

Bowman, E. H. 'A risk/return paradox for strategic management', *Sloan Management Review,* **21**, Spring 1980, pp. 17–31.

Chaffee, E. E. 'Three models of strategy', *Academy of Management Review,* **10**, 1985, pp. 89–98.

Child, J. 'Organization structure, environment and performance: The role of strategic choice', *Sociology,* **6**, 1972, pp. 1–22.

Cook, K., S. M. Shortell, D. A. Conrad and M. A. Morrisey. 'A theory of organizational response to regulation: The case of hospitals', *Academy of Management Review,* **8**(2), 1983, pp. 193–205.

Cool, K. and D. Schendel. 'Strategic group formation and performance: The case of the U.S. pharmaceutical industry, 1962–1982', *Management Science,* **33**(9), 1987, pp. 1102–1124.

Edwards, F. R. 'Managerial objectives in regulated industries: Expense-preference behavior in banking', *Journal of Political Economy,* **85**, 1977, pp. 147–162.

Fiegenbaum, A. and H. Thomas. 'Attitudes toward risk and the risk-return paradox: Prospect theory explanations', *Academy of Management Journal,* **31**, 1988, pp. 85–106.

Hambrick, D. C. 'Operationalizing the concept of

business-level strategy in research', *Academy of Management Review,* **5**, 1980, pp. 567–575.
Hannan, M. and J. Freeman. 'The population ecology of organizations', *American Journal of Sociology,* **82**, 1977, pp. 929–964.
Harrigan, K. R. 'An application of clustering for strategic group analysis', *Strategic Management Journal,* **6**, 1985, pp. 55–73.
Hector, G. *Breaking the Bank: The Decline of BankAmerica*, Little, Brown & Co., Boston, MA, 1988.
Hill, C. W. L. and S. A. Snell. 'Effects of ownership structure and control on corporate productivity', *Academy of Management Journal,* **32**, 1989, pp. 25–46.
Hofer, C. W. and D. Schendel. *Strategy Formulation: Analytical Concepts*, West, St. Paul, MN, 1978.
James, L. R., S. A. Mulaik and J. M. Brett. *Causal Analysis: Assumptions, Models and Data*, Sage, Beverly Hills, CA, 1982.
Jemison, D. B. 'Risk and the relationship among strategy, organizational processes, and performance', *Management Science,* **33**, 1987, pp. 1087–1101.
Kahneman, D. and A. Tversky. 'Prospect theory: An analysis of decisions under risk', *Econometrica,* **47**, 1979, pp. 262–291.
Leibenstein, H. 'Allocative efficiency vs. X-efficiency', *American Economic Review,* **56**, 1966, pp. 392–412.
Mahon, J. F. and E. A. Murray. 'Deregulation and strategic transformation', *Journal of Contemporary Business,* **9**, 1980, pp. 123–138.
Mahon, J. F. and E. A. Murray. 'Strategic planning for regulated companies', *Strategic Management Journal,* **2**, 1981, pp. 251–262.
Miles, R. E. and C. C. Snow. *Organizational Strategy, Structure and Process*, McGraw–Hill, New York, 1978.
Murray, E. A. 'Strategic choice as a negotiated outcome', *Management Science*, **24**(9), 1978, pp. 960–972.
Passmore, S. W. 'Strategic groups and the profitability of banking', Research Paper No. 8501, Federal Reserve Bank of New York, New York, 1985.
Porter, M. E. *Competitive Strategy*, The Free Press, New York, 1980.
Porter, M. E. 'The contributions of industrial organization to strategic management: A promise beginning to be realized', *Academy of Management Review,* **6**, 1981, pp. 609–620.
Provan, K. G. 'Environmental and organizational predictors of adoption of cost containment policies in hospitals', *Academy of Management Journal,* **30**, 1987, pp. 219–239.
Quinn, J. B. *Strategies for Change: Logical Incrementalism*, Irwin, Homewood, IL, 1980.
Reger, R. K. 'Competitive positioning in the Chicago banking market: Mapping the mind of the strategist'. Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign, 1988.
Schendel, D. E. and C. W. Hofer (eds). *Strategic Management: A New View of Business Policy and Planning*, Little, Brown & Co., Boston, MA, 1979.
Scherer, F. M. *Industrial Market Structure and Economic Performance*, Rand McNally College Publishing Company, Chicago, IL, 1980.
Schwert, G. W. 'Using financial data to measure effects of regulation', *Journal of Law and Economics,* **24**, 1981, pp. 121–158.
Sinkey, J. F. *Commercial Bank Financial Management in the Financial Services Industry*, Macmillan, New York, 1986.
Smith, K. G. and C. M. Grimm. 'Environmental variation, strategic change and firm performance: A study of railroad deregulation', *Strategic Management Journal,* **8**, 1987, pp. 363–376.
Snow, C. C. and D. C. Hambrick. 'Measuring organizational strategies: Some theoretical and methodological problems', *Academy of Management Review,* **5**, 1980, pp. 527–538.
Spulber, D. F. *Regulation and Markets*, The MIT Press, Cambridge, MA, 1989.
Stigler, G. 'The theory of economic regulation', *Bell Journal of Economics and Management Science,* **2**, 1971, pp. 3–21.
Ungson, G. R., C. James and B. H. Spicer. 'The effects of regulatory agencies on organizations in wood products and high technology/electronics industries', *Academy of Management Journal,* **28**, 1985, pp. 426–445.
Venkatraman, N. 'Strategic orientation of business enterprises: The construct, dimensionality, and measurement', *Management Science,* **35**(8), 1989, pp. 942–962.
Vietor, R. H. K. *Strategic Management in the Regulatory Environment*, Prentice Hall, Englewood Cliffs, NJ, 1989.

APPENDIX

Based on a review of banking literature and over 45 interviews with bankers and bank industry analysts, the impact of changes in interstate banking, branching and multibank holding company regulations were assessed. This appendix provides more detailed analysis behind the development of the regulatory scope variable.

Interstate banking

The federal government outlawed interstate banking in 1956. However, courts ruled in the early 1980s that states have the right to regulate

interstate banking. Since then, states have begun to exercise this right. State regulations vary from outright prohibition of all interstate activity, to limitation of interstate banking through regional and/or reciprocal requirements, to unrestricted interstate activity.

More restrictive interstate regulations are expected to positively affect financial performance because competition is limited to in-state BHCs. When interstate banking restrictions are lowered or removed altogether, profits are expected to fall because competition increases as out-of-state competitors enter the state. Because interstate banking deregulation often leads to a significant and relatively sudden increase in competition, reduced performance levels are expected, especially in the short run.

Interstate banking restrictions limit in-state competition, but they may also prevent the state's BHCs from pursuing out-of-state opportunities. This may increase the riskiness of BHCs' strategies by forcing them to be dependent on the home state's economy or, in the case of regional restrictions, to be tied to the economic risks of the region. Also, since restrictions on interstate banking make it difficult for BHCs to invest excess deposits in neighboring states, BHCs facing regulatory restrictions which limit interstate banking may turn instead to the foreign loan market, which also appears to increase risk for many major BHCs. Finally, interstate banking restrictions which prevent BHCs from expanding in the banking industry may have led some firms to diversify into other, riskier financial industries such as brokerage services.

Branching

States have exercised jurisdiction over a second area of competition-constraining regulation, intrastate branching, since passage of the McFadden Act of 1927. Branching restrictions limit the number of locations a bank may operate. State regulations vary from complete prohibition of branching, to limitations by geography or BHC size, to unrestricted branching. In 1929, 28 states prohibited branching and only nine allowed unlimited branching. By 1983, these numbers were reversed with eight states prohibiting branching and 24 allowing unlimited branching.

Historically, BHCs located in states which prohibit branching have been more profitable than those located in unlimited branching states because competition is limited to single sites. However, as the U.S. moves toward nationwide full interstate banking, which is expected to occur by 1992, BHCs in branchless states may be at a disadvantage against competitors who have had the opportunity to gain experience in managing a network of geographically remote operations.

Like interstate restrictions, branching restrictions have multiple and conflicting effects on BHC risk. To the extent that branching prohibitions restrict the geographic scope of BHCs' markets, BHCs' opportunities are limited but their risk of facing large, powerful competitors is also limited. At the same time, however, branching restrictions, like interstate banking restrictions, are expected to increase risk because they limit geographic diversification and make it difficult for a larger BHC to balance more unstable commercial deposits with relatively stable retail deposits. On balance, branching restrictions are expected to increase risk but not as much as interstate banking restrictions.

Multibank holding companies

Multibank holding companies, the final area of state regulation studied, may be prohibited ('unit banking'), limited, or unrestricted. A BHC in an unrestricted state may own many banks located anywhere in the state. At the other extreme, a unit banking state allows a BHC to own only one bank. Multibank holding companies (MBHCs) may be used to circumvent branching restrictions, as they also result in multiple locations under common ownership. However, it is more costly to maintain a MBHC, as each bank must meet federal regulatory standards, while individual branches do not. Even in unrestricted states, MBHCs usually own only a few banks, while a BHC in an unlimited branching state may have more than 100 branches. Therefore, the effect of multibank holding company regulations are not expected to be as strong as branching regulation effects, but should be in the same direction.