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THE STRUCTURE OF STATE UTILITY COMMISSIONS AND PROTECTION OF THE CAPTIVE RATEPAYER: IS THERE A CONNECTION?

by

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EXECUTIVE SUMMARY

From the late 1980s until the present, strict economic regulation of public utilities, which has acted as a stand-in for competition, has been challenged. As competition has entered the market the incumbent local exchange companies have petitioned state regulatory commissions for less restrictive forms of regulation. In response, several state regulatory commissions have authorized more relaxed forms of regulation, granting companies varying amount of regulatory freedom.

Recognizing that there was not sufficient competition at the local level to protect captive ratepayers from companies that were (and still are) largely monopoly providers, states also adopted one or more provisions to protect captive ratepayers. The theory proposed in this research attempts to model the "protection variation" in commission decisions.

While there is a considerable body of literature on regulatory decision making, the dominant theories have emphasized the influence of external factors on commissioners, which largely result in capture. Underlying these theories is the assumption that resources translate into influence. The theory proposed in this research is that while resources are necessary in order to influence commission decisions, they are not sufficient. Instead, their effects are mediated by two conditions: one, the structural characteristics of each state commission, which enable it to acquire and analyze information and two, the attributes of the type of consumer safeguards, e.g. a rate freeze or quality-of-service standards with attached financial penalties, which commissions could have adopted.

The guiding research hypothesis is that the greater the ability of the commission to acquire and analyze information, the more likely it is to enact more stringent measures to protect the captive ratepayer.

The study's conceptual framework emphasizes three dimensions of agency structure (resources, analytical ability and commissioner motivation), two environmental dimensions (political and demographic) and five dimensions of regulatory decisions (freedoms granted with regard to setting of prices and retention of earnings and restrictions imposed with regard to setting of prices, maintenance of service quality, and plan length/plan review). Unlike several previous studies, agency structure and regulatory environment are broadly conceived and regulatory performance is measured, not in the level of the commission's response to the utility but in the level of their protection of the captive ratepayer.

The research design is a comparative state policy analysis, using 38 decisions made by commissions in 34 states and the District of Columbia over the 1987 to 1994 period. To reduce the number of variables, a number of indices were developed, modeled on those used in past research efforts. Multivariate analysis was used and the research findings provide strong support for the proposed research hypothesis.

The major implications of this research are two. (1) This research suggests that commissions react not just to political pressure and economic incentives, but also to information. Indeed, this research asserts that information is a significant determinant in the decision making process. (2) Where the general public has neither the knowledge nor the understanding to take a position with regard to an issue, a regulatory commission with greater resources and more professional personnel is more likely to be its champion than is a commission with fewer resources and less professional personnel.

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FOREWORD

The impact of commission structure upon the decisions and actions of state regulatory commissions has been and continues to be an enduring area of interest — both for researchers and practitioners. This report abstracts the independent research conducted by Dr. Nancy N. Zearfoss in her original doctoral dissertation.[1] Researchers interested in a more complete exposition of the analysis should consult her dissertation.

The research results suggest that better information resources and more professional personnel support more consumer protection.

Douglas N. Jones
Director
June 1998

[1]Nancy N. Zearfoss, The Structure of State Public Utility Commissions and the Protection of the Captive Ratepayer: Is There a Connection,? unpublished doctoral dissertation (Columbus, OH: The Ohio State University, 1997).

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CHAPTER 1

REGULATION IN AN ERA OF CONFLICT AND UNCERTAINTY

Introduction

Regulation of telecommunications in the 1990s has been difficult and contentious. The overriding question regulators are being asked to answer is how much regulation, if any, is necessary when the utility is no longer the sole provider. Regulators seem unable to please any group, being criticized by telephone companies, consumer advocates, their own legislatures, and the federal government. In addition, opinions vary among economists and other regulatory scholars about the degree of regulation required in this new marketplace or, indeed, the need for regulation at all. In telecommunications, there is now competition for long distance toll service, and in some urban areas, there is competition to provide access to long distance carriers. As competition, both potential and real, has entered the local exchange markets, state regulators have been forced to respond to company demands for greater regulatory freedom, particularly in the area of pricing.[1] Arguments advanced by the established local exchange companies (LECs), most often the Bell Operating Companies (BOCs), are that they need greater regulatory freedom in order to meet the threat of competition. But for the majority of residential and small business customers of the LECs, there are no choices of alternate providers. So when LECs are granted greater regulatory freedom, should regulatory measures protect captive ratepayers from possible

[1] In telephony, an exchange is defined as the local geographical service area established by the LEC and approved by the commission. This area usually encompasses a city, town, or village and a designated surrounding or adjacent area. It usually consists of one or more central offices, together with the associated plant used in furnishing communication service to the general public.

monopoly abuses, such as price gouging or poor service quality? And if so, how much regulatory protection should they be given?

The decisions to adopt measures to protect the captive ratepayer are being made in an environment overlaid with tension between those who see a decreasing need for regulation as competition increases and those who wish to see regulatory oversight maintained, at least until competition is a greater force in the telecommunications market. It is this tension between those who espouse deregulation and those who perceive a continuing need for regulatory oversight that has heightened interest in the decisions of state regulatory commissions.

The safeguards which public utility commissions have decided to adopt in order to protect the consumer are the focus of this research. In modeling the variations in commission responses, this research explores several aspects of regulatory commission decision making and the factors affecting it, particularly commission structure.

The Regulatory Environment

The Purpose of Regulation and the Goals of Regulators

Historically, economic regulation has been enacted when an industry showed itself to be a natural monopoly, one in which the economies of scale and scope were such that to have competing providers was uneconomical. In addition, since monopoly providers of essential services are in a position to charge excessive prices while restricting output, regulation is needed to protect the consumer.

However, regulators in state public service commissions see the goal of regulation as protecting the ratepayer against the potential for monopoly abuses as well as protecting the interests of the investor.

> [T]he traditional concept of public service regulation was inextricably tied to the 'social contract' theory, which in turn was tied to the concept of limited entry...under the social contract theory a public service company assumes a responsibility to provide an important public service in exchange for a measure of freedom from competition and authority to charge rates which will provide a reasonable return on investment devoted to public service.[2]

This brief explanation of the goals of economic regulation suggests that the two groups most likely to be affected by regulatory decisions are ratepayers and the utility company shareholders, whose interests parallel and are represented by the utility companies. This does not mean that there are not other participants, only that the most obvious lines of cleavage are between the consumer and the producer.

Theories of Regulatory Decision Making

If one accepts the adage that politics is the art of deciding who gets what when, then regulatory decision making is clearly political. This implies that those most affected by regulatory decisions, i.e., ratepayers and utilities, will engage in various activities to influence regulators and thus the outcome. Given the financial resources of the large utility companies, it is reasonable to assume that utility companies will have greater resources than ratepayers to use in attempting to influence commissioners.

This situation has given rise to a number of theories of regulatory decision making, most of which emphasize the influence of factors external to the commissions and the commissioners, and assert that regulatory decisions have often favored the utilities rather than the ratepayers. Underlying these theories is again the assumption that the resources of the participants, particularly the resources of the utilities, translate into influence.

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[2] Comments of Washington Utilities and Transportation Commission (WUTC), National Telecommunications and Information Administration (NTIA) Docket No. 61091-6191 (December 15, 1986), 1, 2.

The Structural Theory Proposed

The theory supporting this research is that while resources are necessary, they are not sufficient. Instead, the influence of these resources is modified by two conditions: one, the structural characteristics of each state commission which impact its ability to acquire and analyze information; and two, the attributes of the type of consumer safeguards which commissions could have adopted.

The guiding hypothesis of this research is that the greater the ability of the commission to acquire and analyze information, the more likely the commission is to enact more stringent measures to protect the captive ratepayer. To appreciate why the acquisition and analysis of information could be an influential factor in a commission's decision to protect captive ratepayers, the remainder of this chapter sketches, in broad strokes, political and social factors affecting commission decisions to adopt less restrictive forms of regulation.

Telecommunications Regulation After 1984

Background

Traditionally, telecommunications companies have been regulated through a process known as ratebase, rate-of-return (RBROR). RBROR has offered regulators effective control of utilities by virtue of the fact that if the company did not provide adequate and timely service, the commission could reduce its allowed rate of return until specified improvements were made. Additionally, because infrastructure investments legitimately could be incorporated into the ratebase, companies had an incentive to make those investments.

Evaluations of RBROR

The BOCs/Other LECs

With the introduction of competition into their markets, most LECs have declared RBROR an unsuitable method for regulating a market in which competition, no matter how little, exists.

> [T]he principal difficulties, and inefficiencies, associated with current regulation result from the coexistence of competitive entry with the continuation of traditional, public utility type regulation.[3]

What LECs have wanted is a method less expensive and less administratively burdensome than RBROR and one which would allow them to change rates quickly in order to respond to competition.[4]

The Regulators

Many regulators credit RBROR with making possible the achievement of regulation's social goals of "universal service, reasonable and non-discriminatory rates, innovation and development of the most advanced telecommunications network in the world."[5]

The major weakness of RBROR for regulators is that it has sent the wrong signals to companies.

> [S]ome of the distorted incentives of rate of return regulation are that it encourages inefficiency and inhibits innovation by shifting costs from

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[3] Comments of United Telephone System, NTIA Docket No. 61091-6191 (December 15, 1986), 4.

[4] Jeffrey A. Masoner, *Alternatives to Rate Base Rate of Return Regulation of Local Exchange Carriers: An Analysis of Stakeholder Positions* (Cambridge: Harvard University, 1989), 56.

[5] Ibid., 62.

> competitive to regulated services; it provides incentives to inflate the rate base; it provides incentives to exploit factors within their control to increase earnings at ratepayers' expense; and, it does not distinguish or allow for the possibility of entrepreneurial profits, thereby inducing the LEC to keep service prices higher than they need to be.[6]

While acknowledging the need to accommodate increasing competition in the telecommunications market, regulators have been hesitant to move too far away from some form of regulation, particularly for basic local exchange service, which is still a monopoly market.[7] The problem regulators have had to solve is how to regulate an industry in which both competitive and monopolistic services are offered by the same company.[8]

The Ratepayers

Organizations representing the interests of the consumers, particularly the captive residential and small business ratepayer, are often wary or unconvinced of the wisdom of rapidly dismantling RBROR. While supportive of increased competition, they contend that the LECs "face no effective competition at all for the bulk of their access services."[9] In 1995, in response to one of the early versions of the federal telecommunications legislation which would have eliminated the use of RBROR, the National Association of State Utility Consumer Advocates (NASUCA) argued that "By

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[6] Ibid., 60.

[7] In 1987, the Washington Commission stated that "despite the development of competition for some services, many markets remain effective monopolies. For example, there is no effective competition for local exchanges." WUTC Notice of Inquiry (NOI), Docket No. 87-1320-SI (September 16, 1987), 1.

[8] This comment from a report by the Michigan Public Service Commission (PSC) to the state legislature succinctly states the regulator's difficulty. "[T]he basic short-term dilemma of the regulator is to balance the goals of promoting competition in the telecommunications industry while assuring the maintenance of universal telephone service at a reasonable price." MI PSC *Draft Report to the Michigan Legislature: The Status of Telecommunications Competition in Michigan*, October 2, 1987, 39-40.

[9] Masoner, *Alternatives to Rate Base Rate of Return Regulation*, 49.

preempting states and prohibiting them from using rate-of-return regulation, these bills will deny consumers the benefits of the telephone companies' falling costs without any of these offsetting benefits."[10] The problem for regulators was how to appease consumers while granting at least some of the LECs' demands.

The Market, Industry Structure, and Regulation

One of the most troubling aspects of altering RBROR has arisen from lack of knowledge about the role of competition in a former monopoly market. Whether the provision of telecommunications services at the local level can be provided more efficiently by one provider than by two or more, i.e., whether local exchange service is a "natural" monopoly, is a subject of debate among economists as well as other interested observers.[11]

This subject was raised in a 1989 discussion of the effects of divestiture by two of its main architects, William Baxter, who served as the U. S. Assistant Attorney General, Antitrust Division, from 1981-1983 and was a signatory to the consent decree which broke up the Bell System, and Charles Brown, Chairman of the Board and CEO of AT&T from 1979 to 1986. Baxter and Brown had the following exchange:

Baxter:

> If it is really true that there are significant economies of scope there, then it follows, almost as a matter of definition, that you cannot have equal interconnection except at a cost significantly higher than the cost for a

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[10] NASUCA position paper on Federal Telecommunications Legislation (1995), 1.

[11] It is fair to say that the majority opinion leans to the local exchange being not a natural monopoly but, as Jack High labels it, "center industry." However, there is no clear empirical evidence that the local exchange market is not a natural monopoly, only that it not over all local markets. Jack High, "Introduction: A Tale of Two Disciplines," in *Regulation: Economic Theory and History*, ed. Jack High (Ann Arbor: University of Michigan Press, 1991), 14-17; Richard T. Shin and John S. Ying, "Unnatural Monopolies in Local Telephone," *Rand Journal of Economics* 23, No. 2 (Summer 1992): 171-183; Sanford V. Berg and John Tschirhart, "A Market Test for Natural Monopoly in Local Exchange," in *Journal of Regulatory Economics*.

single company. That is pretty much a definition of the concept of economies of scope. We do not know that yet, and one of the really fascinating things will be to watch the FCC struggle with that problem, and perhaps eventually give us a very interesting answer to the question of how big were the economies of scope in the first instance.

Stanley M. Besen, Interviewer:

That brings us back, of course, to the decree. Suppose the question were answered in the affirmative, so there were lots of scope economies.

Baxter:

Then the decree looks less wise than it would in the contrary situation. The decree implicitly made a wager that the regulatory distortions of those portions of the economy, which could have been workably competitive, yielded social losses in excess of the magnitude of economies of scope that would be sacrificed by this approach. It was a wager, a guess. It would be absurd to pretend it was made on the basis of detailed econometric data. It was not; we did not have the data. Of course, all other courses from that point were also guesses. Clear proof was not about to become available any time soon. It was a judgment call, and I guess, in some senses, I do not yet know. Maybe we will never know whether it was right or wrong. Charlie?

Brown:

A hell of a bet.[12]

The lack of knowledge about whether there are economies of scope and scale in providing telecommunications at the local level gives rise to related concerns. One consequence of introducing competition into the local telecommunications market is the effect on prices. Historically, local telephone service has been seen as a type of quasi-public good, meaning that it was in the public interest to have the largest possible number of households connected to the network. In order to ensure that the largest number of people were on the network, local service rates were kept low. It is widely

[12] Barry G. Cole, ed., *After the Breakup: Assessing the New Post-AT&T Divestiture Era* (New York: Columbia University Press, 1991), 30.

believed that local service rates have been priced below cost.[13] AT&T claimed, as do the LECs today, that the cost of local service was subsidized by the prices charged for toll services. If there is competition in the toll services market, will the price of local service have to be increased? There is little consensus among the regulation experts to give regulators comfort on this issue.[14]

Regulators vs. LECs

Given the lack of agreement about the outcome of the introduction of competition into the telecommunications market, it is not surprising that regulators were deliberate and thorough and consequently, slow, in reaching a decision about relaxing regulation, and having arrived at a decision, to often grant the LEC less regulatory freedom than it had requested.[15]

The LECs were, understandably, dissatisfied with commission responses and visibly demonstrated this dissatisfaction by seeking political remedies for their

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[13] Because cost information has been labeled proprietary, it is difficult to acquire. In addition, specification of costs related to certain services is difficult to track. The question of whether local services are priced below cost is an issue in introducing competition, reducing access prices, changing prices of local service and maintaining universal service subsidies. See David Gabel, "Pricing Voice Telephone Services: Who is Subsidizing Whom?," *Telecommunications Policy* 19 (August 1995): 453-464; Consumer Federation of America, *Basic Service Rates and Financial Cross-Subsidy of Unregulated Baby Bell Activities* (October 1995).

[14] Two state commissions which have made decisions about the costs of local service and corresponding prices are Massachusetts and Idaho. In 1990, Massachusetts decided to go to cost-based pricing and subsequently raised local rates to accommodate this. In 1994, in an investigation of the earnings sharing plan, the Idaho Commission stated "Relying on its earnings investigation results, Staff concluded that costs are being fairly allocated under the plan and State's estimate of Title 61 [fully regulated] services' return on investment was within a range of reasonableness. U S West was alone in alleging that basic local residence service was priced below its cost and that Title 62 [partially regulated] services substantially contribute to Title 61 services." (Order No, 25826, p. 9, December 12, 1994).

[15] BellSouth Telecommunications State Regulatory Policy and Planning, *Regulatory Reform: A Nationwide Summary* (Atlanta, GA: BellSouth Telecommunications State Regulatory Policy and Planning, 1987-1995), vol. 1-17.

regulatory difficulties. Their primary tactic was the lobbying of state elected officials, both governors and legislators, for less regulation, or, if possible, deregulation.

To appreciate the impact of this action on regulators, it is necessary to understand the relationship between the majority of regulators and elected officials. Regulatory commissions are controlled, directly and indirectly, by governors and state legislatures. Many state commissioners are appointed by governors and confirmed by state legislators. More importantly, governors as well as legislators determine budgets for regulatory commissions and are thus in a position to pressure commissioners. Finally, state legislatures have the legal power to augment or diminish the regulatory authority of state commissions. Consequently, should commissioners be unresponsive to them, these political players can threaten commissioners with staff and budget cuts.

Given this balance of power, utility companies can indirectly lobby the commissioners or otherwise make representations for policy outcomes favoring their interests through the governor and the legislature. If this approach proves unproductive or too time consuming, they can take a more adversarial approach. They can lobby legislatures directly, introducing legislation to restrict the commission's authority over them as they have done successfully in several states.[16] (Such tactics have been tried in other states but rejected by legislative vote.)[17] One of the messages

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[16] In the past 10 years, several state legislators have enacted legislation to limit the authority of the utility commissions with regard to telecommunications rates and revenues. Effective January 1, 1987, the legislature in Nebraska deregulated all telecommunications services, including basic exchange service. For an in-depth discussion of the situation in Nebraska, see Milton Mueller, *Telephone Companies in Paradise* (New Brunswick, NJ: Transaction Publishers, 1993). In Michigan, on December 18, 1991, the legislature enacted a law substantially deregulating services, and freezing local exchange rates until January 1, 1994. The Commission retains authority over basic local, switched access and toll services. Legislation adopted in Delaware, July 8, 1993, established the specific rules under which companies could adopt price regulation, effectively cutting the commission out of the decision-making process regarding when and under what circumstances a company can gain greater regulatory freedom.

Other states in which the legislature curtailed regulatory powers of the commission are Colorado, Idaho, Kansas, Minnesota, Montana, North Dakota, Ohio, South Dakota, West Virginia and Wisconsin. For more detailed information, see BellSouth Telecommunications Regulatory Policy and Planning, *Regulatory Reform: A Nationwide Summary*, vol. 1-17.

[17] Ibid.

that these tactics convey to regulators is that if the telecommunications company requests greater regulatory freedom, the commission cannot deny such a request without risking financial and political consequences.

Regulators and Ratepayers

Representing the ratepayer in many states is the consumer advocate. In states which do not have this office, ratepayer interests may be represented by the attorney general or specialized staff within the commission. It is usually the captive ratepayer, i.e., the residential and small business ratepayer, who is represented by these advocates. This is the one most at risk because s/he has no alternative provider of local service now or in the near future.[18] If companies choose to raise prices or degrade service in order to increase profits, there is little the captive ratepayers can do initially. But a politically adept consumer advocate can generate media attention on the regulators, e.g., accusing them of bowing to industry pressure in implementing a company's plan for alternative regulation that will raise rates and lower service quality. This can result in consumers becoming angry and voting regulators or those who appointed them out of office. Thus, between the LECs and the ratepayers, the regulators have found themselves between a proverbial rock and a hard place.

Information, Commission Staff Ability, and Ratepayer Protection

What has become apparent to state regulators is that they must respond to BOC/LEC demands for relaxed regulation. On the other hand, they must be wary of telecommunications companies taking advantage of their market position and allowing service to decline and prices to increase. One method of restraining the companies from engaging in monopolistic abuses is through the institution of various consumer safeguards. Given that these will restrain the company in some way, it is assumed that

[18] Herb Kirchoff, "Experts See Long Local Competition Gestation; States Still Act," *State Telephone Regulation Report* 13, No. 13 (June 29, 1995): 1, 8-11; and "GSA Says Local Competition Years Away, And Resellers Don't Count," *State Telephone Regulation Report* 14, No. 25 (December 12, 1996): 1, 7, 8.

the companies would oppose such measures, particularly if financial penalties were involved.

Since the company can use its influence to pressure commissions for favorable decisions, if the commission is going to impose consumer protections, it will need to defend such actions to the public and elected officials. Information which provides the material to construct a comprehensive rationale for the decision to impose restrictions in order to protect the consumer offers the commission its best defense.

But the sources of information are often biased in support of particular stakeholders and will most likely conflict on core issues. In order to use such information to full advantage, the commission must have staff capable of independently analyzing what is presented and separating what is truth from what is half-truth and innuendo, and what is outright incorrect.

This research asserts that this ability to acquire and analyze information is measurable, is an essential factor in a commission's decision to enact consumer protections, and varies by commission.

Research Issues

There is an abundant literature on utility regulation.[19] It is, after all, over one hundred years in practice in the United States. Theoretical contributions have been made by economic, political, and inter-disciplinary fields. Because regulation deals with the distribution and redistribution of wealth, much attention has focused on the incentives, both explicit and implicit, that motivate the various regulatory participants. Consequently, theories which attempt to explain regulatory behavior rest on the same foundation as economic theory, i.e., utility maximization, which is being carried out

[19] Charles Phillips has extensively documented the history of regulation as well as referencing several works on regulatory theory and practice. Charles F. Phillips, Jr., *The Regulation of Public Utilities* (Arlington, VA: Public Utilities Reports, 1993).

either on the part of the individual or the company s/he represents. But even if research correctly identifies the motives of the participants, there is still the matter of translating motives into policy. That requires both financial resources and professional capabilities.

Structural theories in general and the one proposed here provide a method of examining how motives are translated into policy, offering a theoretical structure to model the effects of agency attributes on regulatory decisions.

This research is interested in determining if commission structure affects commission decisions to protect the captive ratepayer. More specifically, this research focuses on commission decisions to adopt alternative regulation for LECs. If commissions did give companies the benefit of reduced regulation, did they also provide the ratepayer with some protection?

As Commissions have granted or been legislatively forced to grant more regulatory freedom to telephone companies, particularly in allowing them to keep larger shares of their earnings, concern for the protection of the captive ratepayer has grown. Commissioners, commission staff, consumer advocates and academics have expressed concern that companies will attempt to increase profits by reducing the quality of service through work force reduction or lessened investment in the network.

It is reasonable to assume that telecommunications companies would prefer fewer rather than more restrictions on their activities. More stringent service-quality standards impose greater restrictions and therefore, may be opposed by utility companies. This research hypothesizes that agency structure can be examined from the perspective of how it facilitates the ability of commissioners and commission staff to affect decisions to adopt more stringent quality standards. Structures that enhance information flow and expand the range of proposed policy alternatives give regulators an opportunity to gather information from numerous sources and use it to construct rebuttals to utility demands. Thus, agency structure is seen as an important element in the regulatory decision making.

Value of This Research

This study joins a growing body of work examining commission decisions across the states, particularly decisions regarding alternative regulatory frameworks for telecommunications companies.[20] The theory falls into the positive category and is empirically based. It is positive because it models observed decision-making behavior of state utility commissioners and empirically based because it uses quantitative data to model conditions affecting regulatory decisions.

The primary value of this study is that it examines commission decisions in the context of a theoretical framework that comprehensively models political and demographic dimensions as well as structural factors of commissions identified in earlier works as affecting regulatory performance. While previous studies have examined these elements, singly or in concert, this research views regulatory decision making within a more comprehensive context.

Second, this study models regulatory decision making in a manner seldom explored. Instead of focusing on whether the decision favors the company, such as the type of alternative regulation adopted or the resulting prices for basic and/or toll services, this study examines actions taken by commissions to protect ratepayers still subject to the potential problems associated with monopoly providers. Third, this research recognizes the influence of the telephone companies on state legislatures as well as the influence of state legislatures on public utility commissions. There has clearly been disagreement between these two political bodies on how LECs should be

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[20] Stephen Donald and David E. M. Sappington, "Explaining the Choice Among Regulatory Plans in the U.S. Telecommunications Industry," *Journal of Economics and Management Strategy* 4, No. 2 (Summer 1995): 237-265; Sanford V. Berg and R. Dean Foreman, "Incentive Regulation and Telco Performance," Prepared for the Michigan State University Institute of Public Utilities Twenty-Sixth Annual Conference, Williamsburg, Virginia, December 13, 1994; Jeffrey E. Cohen, *The Politics of Telecommunications Regulation* (Armonk, NY: M.E. Sharpe, 1992); Paul Eric Teske, *After Divestiture* (Albany, NY: State University of New York Press, 1990); and William D. Berry, "An Alternative to the Capture Theory of Regulation: The Case of State Public Utility Commissions," *American Journal of Political Science* 28, No. 3 (August, 1984): 524-558.

regulated, as demonstrated by the cases of Nevada, Michigan, and Delaware. However, there is currently little research on this relationship.

Study Outline

Chapter 2 provides an overview of the intellectual arguments advanced for the establishment of government regulation. Included is a discussion of the economic, legal, and public interest rationales for regulation. This chapter also places the current issues in telecommunications in historical perspective by providing a brief history of telecommunications regulation. This includes a description of various alternative regulatory frameworks and pricing and subsidy issues. Chapter 3 explains the conceptual model of this research. Further, this chapter analyzes components of the dimensions of agency structure, regulatory environment, and regulatory performance, which past research indicates affect commission decisions. This chapter concludes with the presentation of testable hypotheses. In Chapter 4, the selected factors are operationalized, the multivariate models are explained and the results of the analysis presented. In conclusion, Chapter 5 summarizes the study and discusses the theoretical and practical implications of the findings.

CHAPTER 2

RATIONALES FOR REGULATION, MOTIVATIONS FOR REGULATORS, AND THE STATE OF TELECOMMUNICATIONS REGULATION[1]

Introduction

Regulation most commonly refers to the governmental oversight of privately owned businesses, with the intention of restricting the manner in which the regulated firm operates. In the public utility field, this restriction often takes the form of setting limits on rates and revenues. An explanation of why such curtailment of freedom is sanctioned in a democratic society, particularly one in which individual freedom has been both a rallying point and a unique hallmark, is the main subject of this discussion.

Overall, regulation in America began as a policy response by government to the problem of balancing private greed against public welfare. The primary legal support for regulation in America is rooted in British common law. But the moral justification for limiting a business's freedom of action, and as a consequence, potentially limiting its profits, is to be found in the philosophy of the public interest.[2] This philosophy, simply stated, is that the government has an obligation to protect the welfare of its citizens from (in this case) economic harm brought about by the action of private enterprise.

Buttressing this moral argument is economic theory, which is predicated on the assumption that in a competitive market, consumers will rationally select the market

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[1] For those readers familiar with this history and current context, go to the next chapter.

[2] Barry M. Mitnick, *The Political Economy of Regulation* (New York: Columbia University Press, 1980), 6-8.

basket of goods and services which maximizes their utility or well-being, given their financial resources. In this theoretical situation, there is perfect information and the prices of goods and services are kept at their marginal cost through competition. Economists postulate that if each individual maximizes his or her own economic utility, the optimal allocation of society's resources will be achieved.

Generally, society chooses to regulate private enterprise when one or more of three situations causes, in economic parlance, a market failure. Michael Reagan categorizes these as externalities, inadequate information, and natural monopolies.[3]

Externalities refer to the unintended costs or benefits of a transaction between two or more parties which are not included in the costs of production and fall on a third party not directly involved in the transaction. Inadequate information refers to the situation in which consumers do not have adequate information about the quality of goods and services to make informed choices.

But the market failure which is the primary rationale for utility regulation is the development of “natural” monopolies. Utilities are classified as natural monopolies[4] and in answer to the question of why this is so, Bonbright offers this explanation:

> The familiar statement that a public utility is a "natural monopoly" is meant to indicate that this type of business, by virtue of its inherent technical characteristics rather than by virtue of any legal restrictions or financial power, cannot be operated with efficiency and economy unless it enjoys a monopoly of its market. So great are the diseconomies of direct competition that, even if it gets an effective start, the competition will probably not long persist if only because it will lead to the bankruptcy of the rivals. But even if the competition is long lived, as has occasionally happened when the rivalry has taken a restrained form, it is wasteful of

[3] Michael D. Reagan, *The Politics of Policy* (Boston: Little, Brown and Company, 1987), 36.

[4] On the "naturalness" of monopolies, see the analysis of Harold Demsetz, "Why Regulate Utilities?," *Journal of Law and Economics* 11 (April 1968): 55-65; and James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961), 11-18.

> resources because it involves unnecessary duplication of tracks, of cables, of substations, etc.[5]

Overall, the reasons for regulating utilities are that they are monopolies and their services are necessities. Without some form of control, it is all too easy to imagine such an industry using its position to earn excessive profits by charging rates well above the marginal cost.

Having explained why a capitalist society allows, even embraces regulation, this discussion now focuses on possible motivations of regulatory decision makers. Regulatory scholars are concerned with whether commission decisions favor the utilities or the ratepayers. The various theories which have been advanced to explain why regulatory decisions favor one group over another resolve themselves into three distinct groups of theoretical arguments. The first is labeled public interest theories. These view regulation as a form of social contract between society and the utility, where utilities have certain rights as well as obligations.[6] Overall, the public interest theory suggests that regulatory decisions are made in an effort to balance the desires of the various participants in order to achieve an improvement in the public welfare. As a theory of decision making, it assumes that regulators act as arbitrators of the various interests, while looking out for the common good.

The second group of theories can be classified as capture theories which view regulators as operating primarily for the benefit of the industries they were established to regulate. These theories assume that regulators are not independent in their thinking and subsequent decision making, but are influenced by the incentives offered by the regulated industries.

The third group of theories are interest group theories and postulate that regulators continually respond to the changing political climate, which is manifested by

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[5] Bonbright, 11.

[6] Phillips, *The Regulation of Public Utilities*, 104-105.

the pressures exhibited by various groups. In interest group theories, influence on regulators is largely a function of the resources groups bring to the process. Thus regulation is perceived as a good to be sold by those in power in return for financial or political wealth.

Overview

This section has provided brief explanations of why regulation has been sanctioned in America and theories of why regulators make the choices that they do. Despite other objectives which regulation may have been enacted to achieve, the ostensible one has been to protect consumers from the abuses of business, usually those operating as monopolies.

But regulation has also served to protect capitalism from itself. As Claire Wilcox wrote:

> It is not always safe to leave business to its own devices; experience has shown that its freedom will sometimes be abused...These abuses have not characterized all business at all times, but they have occurred with sufficient frequency to justify the imposition of control. Regulation is clearly required, not only to protect the investor, the worker, the consumer, and the community at large against the unscrupulous businessman, but also to protect the honest businessman against his dishonest competitor.[7]

As to why such governmental interference is allowed, a provocative and unique rationale is offered by E. E. Schattschneider in his elegant work, *The Semisovereign People*. Schattschneider depicts American democracy as a "great experiment."

> The dualism of government and business in the American system did not arise by chance or mischance...Rather, American democracy was an

[7] Claire Wilcox, *Public Policies Toward Business*, 2nd ed. (Homewood, IL: Richard D. Irwin, 1960), 8.

early attempt to split the political power from the economic power. This is the great American experiment. In the long story of western civilization the union of economic and political power has been the rule, not the exception, i.e., the owners of economic power were also the owners of the government...The function of democracy has been to provide the public with a second power system, an alternative power system, which can be used to counterbalance the economic power.[8]

[8] E. E. Schattschneider, *The Semisovereign People* (Chicago: Holt, Rinehart and Winston, Inc., 1983), 118-119.

The need for this power system is the size and strength of business.

> There is something about the government that makes it grow when it is attacked. The public likes competitive power systems. It wants both democracy and a high standard of living and thinks it can have both provided it can maintain a dynamic equilibrium between the democratic and the capitalist elements in the regime. The public is willing to try to get along with the capitalist system provided that it can maintain alongside it a democratic political system powerful enough to police it...People value government because it is the only device that is able to protect them against competing power systems of which they do not approve wholly, power systems they fear or cannot control.[9]

If Schattschneider's theory is correct, while regulation may diminish in some segments of the economy as competition flourishes, it will most likely expand elsewhere to combat the power of big business.

The Changing Landscape of Telecommunications

In general terms, the normative and positive reasons for government regulation of private enterprise have been outlined. Now the focus shifts to the specific case of telecommunications regulation, explaining how early pricing decisions opened the door for competition and how competition led to divestiture of the LECs from long distance services and dramatically changed regulation of telephone service at the state level.

With the expiration in 1893 and 1894 of the basic patents issued to Bell, Bell competitors began operations in earnest, particularly in areas where service was absent or unsatisfactory.[10] In the many cities where there were two companies, many

[9] Ibid., 121.

[10] Phillips, *The Regulation of Public Utilities*, 752.

people had “dual service,”[11] meaning that customers of one company could not reach customers of the other so people were often customers of both.[12]

Competitors Respond

Theodore Vail, general manager of AT&T, formed a two-part strategy to reduce competition and squarely place AT&T at the head of the telephone industry. The first part of the strategy was to acquire competitors where possible. One of the reasons this was such a successful policy was that although AT&T had pioneered the development of long distance service, it did not have to interconnect with competitors. "Without access to long distance service, the independent local companies found it difficult to compete and to resist AT&T's offers to acquire them."[13] It is worth noting that similar problems exist today.[14]

The second was to embrace regulation with the intention of using it for the benefit of the company.[15] Vail was well aware that there was increasing political support for regulation, and antitrust actions at the federal level indicated a lack of sympathy for a private, unregulated monopoly.[16]

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[11] Mueller, *Telephone Companies in Paradise*, 13.

[12] Ibid.

[13] Robert W. Crandall, *After the Breakup* (Washington, D.C.: The Brookings Institute, 1991), 17.

[14] "ELI Seeks Help for Oregon, Utah Interconnection," *Telecommunications Reports* (March 4, 1996): 15-16; "Michigan Competitor Sues Ameritech," *State Telephone Regulation Report* 14, no. 7: 11; "MCI Faults Interconnection Pacts," *Telecommunications Reports* (June 24, 1996): 14; and "AT&T Criticizes US WEST's Interconnection Compliance," *Telecommunications Reports* (March 10, 1997).

[15] Gerald W. Brock, *The Telecommunications Industry* (Cambridge, MA: Harvard University Press, 1981), 158.

[16] Ibid.

> Regulation could provide positive benefits to the company. The regulatory agencies of the time were not very effective in controlling company behavior, and weak regulation could provide a justification for unified control of the system. Early pronouncements from some courts and regulatory agencies had indicated displeasure with competition in telephones because of the problem of running double wires along the streets and lack of interconnection of the systems. Thus there was reason to believe that a regulatory agency would sanction the combination of Bell and its competitors and also prevent other companies from entering the industry. Enough experience had been accumulated through the Interstate Commerce Commission regulation of the railroads to see that regulation would not necessarily reduce profits.[17]

To achieve this goal of using regulation to benefit his company, Vail began to publicly tout the benefits of regulation in 1907.[18]

> Eventually, however, consolidation of the competing exchanges was sanctioned. The reason was not, as is commonly assumed, the existence of economies of scale and scope on the supply side. In fact, telephone exchanges exhibited supply-side diseconomies of scope; that is, the unit costs of providing service tended to increase as the number of telephone users grew. The real reason monopolies were established was the public's desire to eliminate fragmentation of the calling universe. The term "universal service" originated during debates of the merits of fragmented, competitive telephone supply vs. unified, monopolistic service. Universal service meant not a telephone in every home, but the end of competitive fragmentation, the interconnection of all users into a single, integrated telephone system. The universal service idea was advanced by the Bell system's Theodore Vail starting in 1907 and by 1920, had won over most users, telephone companies, and public officials.[19]

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[17] Ibid.

[18] Walter G. Bolter, James W. McConnaughey, and Fred J. Kelsey, *Telecommunications Policy for the 1990s and Beyond* (Armonk, NY: M.E. Sharpe, 1990), 82.

[19] Mueller, *Telephone Companies in Paradise,* 13-14.

Vail's strategy of acquisition and regulation worked well for AT&T. The reduction of competitors in the telephone exchange business, particularly through mergers which gave companies geographical monopolies, resulted in Bell achieving a market share of 79 percent by 1932.

Challenges to the AT&T Monopoly

The states began to formally regulate intrastate telephone rates following World War I and the Interstate Commerce Commission (ICC) provided some control of interstate rates after 1910. But in fact, federal control of rates and charges was practically nonexistent through the early 1930s.[20]

> This deficiency was attributable to the lack of a Congressional mandate and to insufficient funding and attention of the Interstate Commerce Commission (ICC). Similarly, state regulation of operating companies by the 1930s was frequently ineffective because of funding problems, far ranging duties over multiple utilities, and the increasing complexities of the business, particularly AT&T's emerging long distance network and its complex vertical operational arrangement.[21]

To remedy some of these problems, Congress passed the Communications Act in 1934, creating the Federal Communications Commission (FCC). Its mandate was a formalized version of Vail's universal service objective.[22]

> [T]o make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio-communication service with adequate facilities at reasonable charges.[23]

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[20] Bolter et al., *Telecommunications Policy for the 1990s*, 82.

[21] Ibid.

[22] Ibid., 83.

[23] Communications Act of 1934, as amended, 47 U.S.C. Section 201.

In complying with its initial mandate, the newly formed FCC began an investigation of the telephone industry and discovered cause for concern. Specifically, staff suspected that AT&T was paying supra-competitive prices for capital equipment from its own unregulated, equipment supplying subsidiary, Western Electric. The 1938 FCC staff report on this activity was suppressed by AT&T through application of political pressure.[24]

In 1949, the Justice Department filed a Section 2 Sherman Act suit against AT&T, alleging "monopolization of telephone equipment through its exclusive purchases from Western Electric."[25] Again, political pressure from changing presidential administrations forced the Justice Department to settle in a manner favorable to AT&T.[26]

Following an investigation into the allocation of electromagnetic spectrum for private microwave use in the provision of long distance service, the FCC in 1959 opened a new band of microwave for use and allowed the granting of frequency rights to firms wishing to build a private line system.[27]

Once this chink in AT&T's long distance monopoly business appeared, competitors began to clamor for the right to build microwave systems and resell the services. In 1969, after six years of pleading its case before the FCC, MCI was authorized to build a common-carrier network for private line services.[28] In 1971, the authority granted to MCI was extended to specialized common carriers by the FCC.

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[24] Crandall, *After the Breakup,* 18.

[25] Ibid., 19.

[26] Ibid.

[27] Carol L. Weinhaus and Anthony G. Oettinger, *Behind the Telephone Debates* (Norwood, NJ: Ablex Publishing Company, 1988), 13.

[28] Crandall, *After the Breakup,* 20.

But in order to realize the promise of this new opportunity, these specialized companies would need to connect with their customers through AT&T.

AT&T did enter into interim contracts with MCI, specifying that it would only provide point-to-point private-line services (in which one phone is connected to only one other phone), not "foreign exchange" (in which a user ties into the local network of a distant city) or common-control, switching-type services (which allows a subscriber to link a system of private lines through telephone company switches to provide a private network). AT&T's reason for, in effect, denying MCI these types of connections was to bar MCI from having access to AT&T's local network and, in turn, its local customers.[29] MCI challenged AT&T's decision before the FCC but the issue was not settled until a 1974 FCC decision and a 1977 court decision established that MCI had full interconnection rights.[30]

In view of AT&T's undisputed dominance of the telecommunications industry, as well as its financial and political power, what induced companies such as MCI and others to enter into competition with it? The obvious answer is the prospect of earning attractive profits. To better understand the perception of these fledgling competitors of the undeveloped opportunity to earn attractive profits in telecommunications, particularly in the long distance market, it is necessary to briefly review the costs and pricing history of telecommunications services.

Rate Regulation

From the advent of the telephone until well into the 1930s, despite apparent regulation of telephone services at both the state and federal level, there was little or

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[29] Phillips, *The Regulation of Public Utilities,* 767; and Brock, *The Telecommunications Industry,* 217.

[30] Phillips, *The Regulation of Public Utilities,* 767.

no regulation of rates for a number of reasons.[31] First, laws governing regulatory powers were uncertain and subject to restriction of government confiscation of property. Second, the courts did not provide clear and precise rules as to how rates were to be determined other than stipulating a fair return on assets. Third, the relationship between the operating companies and their parent companies made it difficult to determine the costs of providing local or long distance service. As a result, it was virtually impossible for regulatory commissions to determine rates that would provide a fair return on capital.[32]

Not only was there no real rate regulation, there was little regulation of any phone activities from 1876 until the 1920s.[33] Rates were set at the state level until the early 1920s through competition.[34] Long distance rates, the responsibility of the ICC, were not of great interest to the agency for two reasons. One, there was very little interstate traffic. Even in 1923, only one half of one percent of calls originated by the Chicago Telephone Company were interstate toll calls.[35] Two, by WWI, costs for long distance declined because of technological progress.[36]

By 1925, competition at the local level had been eliminated and regulation by RBROR had been established in almost every state.[37] Under RBROR, both the costs of the company and revenues needed to provide a "fair" return on capital were established for the company as a whole, and then rates were set to assure the

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[31] Brock, *The Telecommunications Industry,* 159-160.

[32] Ibid.

[33] Brock, *The Telecommunications Industry,* 159-160; and Bolter et al., *Telecommunications Policies for the 1990s,* 75-77.

[34] Mueller, *Telephone Companies in Paradise*, 13.

[35] Smith et al. v. Illinois Bell, 282 U.S. 133 (1930).

[36] Brock, *The Telecommunications Industry,* 161.

[37] Mueller, *Telephone Companies in Paradise*, 14.

company of its predetermined rate of return. This meant that costs and revenues were determined in total, so that the prices charged for *individual* services had little or no relation to the costs of providing that service.[38]

This situation provided no indication of how much of those costs should be borne by any particular service or group of services. Clearly, the equipment and plant required to make a local call are also required to make a long distance call. So how much of the overall costs of providing telephone service should be recovered from LEC and how much from long distance service? The debate over how to answer this question began among state regulators in the 1920s and continues to this day.

> State regulators insisted that part of the cost of the local exchange plant should be recovered from interstate toll charges, because the interstate calls used local plant to originate and terminate calls. AT&T and the Bell companies resisted this logic, arguing that the only cost element of long distance calls was the physical plant and operators directly involved in connecting the local exchanges.[39]

. This argument was formalized in the case of *Smith v. Illinois*, which asked for a shift from the situation where long distance calls paid no part of the costs of the local exchange to the situation where they did. The case went to the Supreme Court and was settled in 1930 in favor of the long distance calls paying part of the costs of the local exchange.[40]

Under this new concept of shared plant, some portion of costs for local plant could be shifted to long distance calls, which were under federal jurisdiction. In addition, the Supreme Court ordered a revision in costing methods.[41] Their reasoning

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[38] Weinhaus, et al., *Behind the Telephone Debates*, 52.

[39] Mueller, *Telephone Companies in Paradise*, 16.

[40] Ibid.

[41] Weinhaus et al., *Behind the Telephone Debates*, 61.

was that if some effort was not made to apportion costs to interstate and intrastate jurisdictions, the local exchange would bear an undue burden of the costs.[42]

In 1943, a joint board of federal and state regulators met and devised a formula for allocating local plant costs between federal and state jurisdictions based on minutes of use.[43] Three percent of local exchange usage was devoted to interstate calls in 1943; therefore, regulators allocated three percent of the local network's costs to be recovered from interstate services.[44] While this appears a fair assessment, the formula had changed dramatically by 1982, the date of the AT&T divestiture. As of that date, while only 8 percent of local network use was attributed to long distance calls, long distance calls were being charged 27 percent of the local exchange's costs.[45]

The major cause of the pricing distortion was basically political. Regulators did not want to raise the price of local service, and were able to cover the costs of the local plant through higher prices for long distance calls. This was possible because costs for long distance "dropped by a factor of eight between the late 1950s and the mid-1970s, thanks to advances in microwave radio, solid-state electronics and multiplexing."[46]

This distortion of long distance call pricing beckoned competitors.[47] Other rate distortions which have invited competitive entry are:

(1) long distance rates based on distance, not call density;
(2) local rates higher for low-cost urban areas than for high-cost rural areas;
(3) business rates higher than residential rates in the same exchange;

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[42] Ibid, 62.

[43] For a fuller explanation of the lag between the Supreme Court decision and the apportionment of costs and revenues between local and long distance calls, see Weinhaus et al., 61-62.

[44] Mueller, *Telephone Companies in Paradise*, 16.

[45] Ibid., 17.

[46] Ibid.

[47] Ibid.; and Weinhaus et al., *Behind the Telephone Debates*, 138.

(4) moderate and light users of the local exchange charged the same rate as heavy users.[48]

These factors, in conjunction with technological changes, made it possible for companies to challenge the Bell monopoly. They were successful in bringing about the end of this vertically integrated company in 1982.

Divestiture, Price Distortions, and Competition

In 1974, the Justice Department brought an anti-trust suit against AT&T which did not go to court until 1981. AT&T soon conceded and began negotiations to settle the suit. On January 8, 1982, AT&T and the Justice Department filed a Modification of Final Judgment, which was approved on August 24, 1982 and required AT&T to divest itself of its 22 LECs, called the Bell Operating Companies (BOCs), separating what was then viewed as the competitive segments of the industry (long distance service and customer premises equipment (CPE)) from the segment viewed as a natural monopoly (the local exchange service).[49] Subsequently, the twenty-two BOCs were organized into the existing seven regional Bell holding companies (RBHCs).

The BOCs also filed new local exchange areas, known as local access and transport areas (LATAs). Except with court approval, no LATA could cross states lines.[50] Thus, the Modified Final Judgment prohibited the LECs from carrying long distance traffic between LATAs, though they could carry toll traffic within LATAs.

Competition and Regulation

[48] Adapted from Crandall, *After the Breakup*, 23.

[49] GAO/RCED-94-285 Information Superhighway, (Washington, D.C.: Government Accounting Office, 1994).

[50] Phillips, *The Regulation of Public Utilities,* 776.

The opening up of the telephone network to competition dramatically changed the regulatory environment. Because of the historic precedent of subsidizing basic local rates by pricing other potentially competitive services above their marginal cost, BOCs were fearful of losing revenue to competitors who would price such services, particularly services which catered to large businesses, at marginal cost or at least below those prices being charged by the BOCs. Thus, the BOCs and their respective RBHCs, began petitioning the states for methods of regulation that would give them more freedom in service pricing.

At around the same time, regulators and scholars alike had become increasingly concerned with improving a company's efficiency. For a number of reasons, RBROR blunts companies' incentives to operate efficiently.

> First, because the firm is not a full residual claimant, its incentives to cut costs are dulled. Second, because earnings are bounded above and below, the firms' incentives for investment and risk-taking are distorted...Third, because fixed costs are typically allocated in proportion to output, the firm makes inefficient decisions regarding its multiple service offerings...Fourth, because rate review must rely on cost data from prior periods, price only gradually converges to average cost, the firm may have incentives to delay this convergence through wasteful expenditures.[51]

For all these reasons, regulators were looking for new regulatory mechanisms to provide better incentives to companies to operate efficiently. This climate fostered the origination of alternative forms of regulation, often referred to as AFORs.

Alternatives to RBROR

[51] Thomas P. Lyon, "Incentive Regulation in Theory and Practice," in *Incentive Regulation for Public Utilities*, ed. Michael A. Crew (Boston: Kluwer Academic Publishers, 1994), 2.

In their struggles to find policy solutions, state commissions have investigated types of services and the competitiveness of the markets for those services. Definitions of basic discretionary, partially competitive, and fully competitive services have emerged along with methods of determining the competitiveness of a market. These definitions frame the issue of how prices are to be set for various services and it is this issue of pricing that is the fundamental one in the discussion of how to regulate state telecommunications.

A second factor in determining as well as defining the type of state regulatory framework is whether there is oversight of company revenues. Often, this is not an all-or-nothing decision but is decided on a service-by-service basis. For example, revenues from some services which have been deregulated because of competition are not monitored by the commission but revenues from regulated services are. Where there is no oversight of revenues, the level of profit the company makes is not a relevant factor in the setting of prices for service.

A third dimension in the study of state regulatory choices pertains to the quality of service provided by the company. While most states have some quality-of-service standards, in some states, there are penalties and/or rewards attached to the company's performance with regard to those standards. Also, in some states renewal of the AFOR is dependent on the company's performance with regard to quality-of-service standards.

This search for regulatory policies that would solve the problems of controlling a dominant/ monopolistic provider in order to foster competition has led to some innovative alternative approaches to regulation. The main ones are briefly described below.

1. **Price Cap Plan** - Prices for services determined to be basic are generally fixed for some period of time following a rate review. Future price adjustments for these services are made in accordance with some predetermined formula which includes

changes in a designated price index. Non-basic services may be categorized as competitive or emerging competitive and their prices set by the market. Revenues are usually unregulated. In this plan, which has been adopted by some 38 states as of April 9, 1997, once basic rates are frozen, the connection between costs and prices is severed.[52]

[52] *State Telephone Regulation Report* 15, Nos.6 and 7 (March 20 and April 3, 1997).

2. **Banded Pricing** - This regulatory form allows the company pricing flexibility within prescribed ranges for designated services. These services could be basic services or competitive services. Under this approach, revenues may or may not be regulated.

3. **Incentive Regulation** - Under this form, the regulators set the rate of return, but the company can earn whatever rate of return it can with the understanding that some predetermined amount of its earnings above the prescribed level will be shared with ratepayers. Basic service rates are usually frozen under this form, and there is pricing flexibility for competitive services.

4. **Rate Stabilization and Equalization Plan** - This is the plan closest to RBROR. Under this plan, the regulators set a high and low rate of return and so long as the company's earnings remain within this band, rates remain stable. If earnings exceed the ceiling, rates are lowered; if earnings fall below the floor, rates are raised.

In 1994, among the 40 states with some type of alternative regulation, there were as many as 17 different structures. They ranged from almost complete deregulation (Nebraska) to simply detariffing of some services or commitments to streamline regulation. Some states that originally sanctioned some type of alternative regulation returned to some form of RBROR (Connecticut, New Mexico). In some states the legislature has removed most oversight responsibility from the commission for rates, leaving them with the monitoring of quality of service or the handling of consumer complaints (Delaware, Indiana, Michigan, Nebraska, Pennsylvania).[53]

[53] BellSouth Telecommunications Regulatory Policy and Planning, *Regulatory Reform: A Nationwide Summary*.

Summary

This brief history of telecommunications regulation has highlighted the relationship between AT&T's activities and the oversight provided by both federal and state regulators as well as the courts. One conclusion to be drawn from this is that the financial and political clout of AT&T shielded it for well over 80 years from governmental demands that it desist from using its monopolistic powers to gain and retain its market dominance.

A second, though less obvious conclusion, is that there was never any real relationship of rates to costs, except in the very early days of the company. Clearly, there was and many maintain still is cross subsidization of some services by others. The service most often selected as the target for this charge has been basic local service.[54]

With the arrival of competition, mostly in the long distance market, the function of regulation is no longer so clear. As states move away from RBROR and the historic view of telecommunications as a natural monopoly, they are faced with a myriad of complex questions about the purpose, goals, and effects of regulation. Increasingly, regulators are being required to be proactive, to view the former status quo of telecommunications as a natural monopoly as only a transient position on the road to a new market structure. As to what that structure will be there is little agreement. Is a competitive telecommunications market a real possibility and if so, is it a reality regulators should enthusiastically embrace? Should the quality of service offered by the telephone companies continue to be regulated? Should the reliability and interoperability of the network continue to be concerns of regulators and if so, how are

[54] For a review of the arguments, both pro and con, regarding pricing of services, see both Bolter et al., *Telecommunications Policies for the 1990s*, 375-381, and Weinhaus et al., *Behind the Telephone Debates*. For an economically derived argument in favor of the current pricing structure, see Gabel, "Pricing Voice Telephony Services," 453-64.

those concerns to be manifested and enforced? At what price should universal service be maintained? On what basis should basic local rates be determined?

At a more fundamental level, the question may be at what point is there enough competition to lessen or eliminate regulation and still ensure protection of the consumer from monopolistic abuses?

In the following chapters, this research examines the decisions state regulators have made regarding AFORs. Of interest are the choices made to relax regulation for the companies with regard to rates and revenues and the concommitant protections afforded ratepayers with regard to service quality and price of basic local service.

In analyzing these decisions, the focus is on those factors external to the commission, including the political and financial power of the BOCs as well as factors internal to the commission, such as the quality of its staff and the extent of its resources. A third focus of this study is the group of factors, specific to the regulators themselves, which may motivate them to make decisions favoring either the telephone company or the ratepayer.

CHAPTER 3

THEORY, CONCEPTUAL MODEL, AND HYPOTHESES

Introduction

As discussed in Chapter 2, one of the outcomes of the divestiture of AT&T was the introduction of competition into the monopoly structure of local telecommunications markets. This, in turn, led to the local BOCs requesting greater freedom from regulatory commissions, particularly in the area of pricing. Many participants in the regulatory arena firmly believe that with the enactment of AFORs, consumers still need to be protected, particularly from price gouging and reduced service quality. Eli Noam wrote about the need for regulating quality in this new regulatory system.

> The importance of understanding and measuring the quality of telecommunication services has grown with the turn towards price formulas and incentive forms of regulation and away from pure rate-of-return systems. A price-based regulatory mechanism provides incentives to cut cost, which is good up to a point, but may also lead to undesirable corner-cutting. Any price-based regulation, including a moratorium approach such as New York's, is relevant only in reference to some quality measure. Otherwise, where competition is inadequate, a hidden price increase could be imposed through quality deterioration, or improvements may be forsaken because no financial reward for them is forthcoming.[1]

[1] Eli Noam, "The Quality of Regulation in Regulating Quality: A Proposal for an Integrated Incentive Approach to Telephone Service Performance," in *Price Caps and Incentive Regulation in Telecommunications*, ed. M.A. Einhorn (Boston: Kluwer Academic Publishers, 1990), 167.

This research attempts to model the policy responses of commissions to protect consumers at the time they enacted AFORs in their state.

The guiding idea behind the proposed theory is that the impact of resources on the policy-making process is conditional, i.e. resources do not translate directly into influence. Rather, they are modified by conditions. While there are several conditions which possibly could modify the influence of resources on policy decisions, the two of interest to this study are (1), the structural characteristics of each state commission and (2), the attributes of the issue under consideration.

The guiding research hypothesis is that *the greater the ability of a commission to acquire and analyze information, the more likely that commission is to enact measures to protect the captive ratepayer from opportunistic behavior on the part of the utility under certain conditions*.

Changing Market Structure and Utility Regulation

Market structure can be viewed as the driving force behind regulation. For example, both the size of a market and its rate of growth signal whether competition is feasible and efficient.[2] Changes in technology and demand patterns have changed the regulatory landscape[3] and utilities and the services they provide, once considered natural monopolies because of their economies of scale (increased efficiency of a single supplier) and scope (increased efficiency of multi-product production) are now facing competition in several product and service areas.

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[2] Berg and Foreman, "Incentive Regulation."

[3] Raymond W. Lawton, Edwin A. Rosenberg, Mary Marvel, and Nancy Zearfoss, *Measuring the Impact of Alternative Regulatory Pricing Reforms in Telecommunications* (Columbus, OH: The National Regulatory Research Institute, 1994); Berg and Foreman, “Incentive Regulation;” John Wenders, *The Economics of Telecommunications: Theory and Practice* (Cambridge, MA: Ballinger Publishing, 1987).

The continuing growth of competition in the local exchange market has prompted the BOCs and the large independents such as GTE, United, Cincinnati Bell, Rochester Telephone and Southern New England Telephone to request some flexibility in setting prices, something not available under RBROR.

However, since competition was not and still is not a viable alternative in all markets, regulators are faced with the difficulty of creating transitory regulatory frameworks which will facilitate a movement away from regulation and toward competition. Berg and Foreman define the problem facing regulators in telecommunications in this question: "How can transitional regulation be designed to protect customers without alternative sources of supply, while ensuring that the benefits of competition flow to those who successfully commercialize new services and consumers who desire those services?"[4]

Alternative Forms of Regulation

The regulatory plans adopted by commissions to replace RBROR vary considerably with regard to specifics but are all designed to accomplish two main objectives: (1), make the pricing structure more flexible to enable companies to meet competition; and (2), give a company financial incentives to increase its efficiency by allowing it to earn and retain a greater share of its revenue.

Price Structure

Building on the assumption that where it is feasible competition will yield better results than governmental regulation, pricing controls are seen to be needed most where there is little or no competition. Consequently, many states set out criteria for

[4] Berg and Foreman, "Incentive Regulation," 7.

categorizing services by the level of competition such services face.[5] Services believed to be essential, such as dial tone, access to the local network and access to interexchange carriers, are labeled basic services and in a number of states are controlled through price freezes or through some predetermined formula which limits the amount prices can be changed within some time period, usually annually. The length of time these safeguards are to be in place varies. Services deemed competitive, partially competitive or that are discretionary are granted pricing flexibility and in some cases have been deregulated.[6]

Revenue Retention

Incentives to improve efficiency center on increasing the amount of money companies can earn and retain, providing encouragement to companies to operate more efficiently and, in the process, hold down or even reduce prices. Under RBROR, earnings are restricted to some percent return on ratebase or on equity; under AFOR, states either increase the ceiling on the amount companies can retain or remove the earnings cap, allowing companies to earn as much as the market will allow.

Possible Company Responses to AFOR

Given the incentives to operate more efficiently and retain a larger share of earnings, there are three possible strategies companies might adopt in response to the

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[5] Lawton et al., *Measuring the Impact*; and Vivian Witkind Davis, *Breaking Away from Franchises and Rate Cases: A Perspective on the Evolution of State Telecommunications Policy* (Columbus, Ohio: National Regulatory Research Institute, 1995).

[6] Vivian Witkind Davis and Nancy Zearfoss, eds., *National Regulatory Research Institute Update to the Maine and Missouri Reports on Alternative Regulation Plans in Telecommunications* (Columbus, Ohio: National Regulatory Research Institute, 1993), 89-95.

enactment of an AFOR.[7] In the first strategy, the company increases earnings by expanding its service offerings through improved infrastructure investment, aggressive marketing and advertising, more efficient service provision and lower prices. This was the result envisioned by regulators and may be thought of as a win-win outcome.

In the second strategy, the company does everything in the first strategy except lower prices. Instead, the company raises prices. If there are controls on basic service prices and competitive pressure on other service offerings, this tactic should prove unsatisfactory to the company.

Some regulatory analysts believe the more likely scenario is a third strategy, in which companies are induced not just to cut costs but to cut corners.[8] For example, companies may cut personnel costs through layoffs, reducing the workforce available to maintain and repair equipment.[9] The economic theory of profit maximizing behavior holds that if companies can increase profits through measures for which there is little or no risk of adverse effects, they will. Cutting service quality, unless there are financial penalties for doing so, is a logical response by companies to this incentive.

Preventing Monopoly Abuses in Transitional Markets

There are two possible and obvious methods of compelling companies to continue providing efficient service of high quality. These are ensure a competitive market so that consumers have more than one choice or hold down prices for basic

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[7] These three strategies are condensed from five offered in Lawton et al., *Measuring the Impact*. The two eliminated are (1) the company does nothing different under an AFOR than under RBROR and; (2) the company over-invests in infrastructure and is then unable to recoup its investment. While both of these responses are possible, neither seems to require consumer safeguards.

[8] Eli Noam, “The Quality of Regulation,” 167; John R. Norsworthy and James C. MacDonald, "Service Quality at Large Local Exchange Carriers: Is There a Tradeoff between Efficiency and Quality?" Paper presented at the Ninth Biennial Regulatory Information Conference, 1994, Columbus, Ohio.

[9] Barbara Alexander, "How to Monitor Customer Service and Reliability in Performance Based Ratemaking," *Electricity Journal*, 1996, 3.

services and impose penalties, financial or otherwise, on companies when they provide service which fails to meet certain standards.

Competition

Competition appears to operate in both the long distance and "bypass" markets. In the long distance market, the most competitive telecommunications market today, AT&T, Sprint and MCI are the three major participants. In addition to these three, there are numerous other participants, many of whom are resellers operating at the market fringe.[10] Despite the large number of competitors with varying amounts of market share, several scholars maintain that the long distance market is an oligopoly.[11] However, a survey of state utility commissions done by NRRI in 1995 found that few states monitor the service provided by long distance carriers.[12] This is because if a customer is dissatisfied with one carrier, he or she can easily switch to another one and with little or no financial expenditure.

There is some competition for business customers through competitive access providers (CAPs). CAPs have begun offering businesses a way of bypassing the local network when accessing their long distance carrier, thus reducing the charge for local access. However, a GAO report released in September of 1994, indicated that nationally CAPs had attracted only "about $250 million out of $27 billion in long distance access business."[13] This market is also not monitored for service quality by

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[10] *1996 Telephone Industry Directory*, ed. Suzanne B. de Silva (Potomac, MD: Phillips Business Information, 1996). This publication is industry-oriented and lists, among other things, both equipment and service providers. In the section “Interexchange Carriers,” no state has less than 50 such providers listed and several have over 100.

[11] "Report Laments Failure of Long Distance Competition," *Telecommunications Reports* (July 29, 1996), 23; and Harry Trebing, "Protecting Residential Consumers in the New World of Oligopoly and Imperfect Competition: What Should Regulators Do?" keynote address at Utilities, Consumers and Public Policy IV: Issues of Quality, Affordability, and Competition, The Pennsylvania State University, University Park, PA, May 1995.

[12] Vivian Witkind Davis, David Landsbergen, Raymond W. Lawton, Larry Blank, Nancy Zearfoss, and John Hoag, *Telecommunications Service Quality* (The National Regulatory Research Institute, 1996).

[13] GAO/RCED-94-285 *Information Superhighway*, 31.

utility commissions because users can easily switch service providers should they find the service unsatisfactory.

In the local exchange market available to residential and many small business consumers, however, there is little or no competition. Despite the claims of the companies as of 1997 there was virtually no competition in any local market for residential service. Consequently, while the threat of competition is growing from cable television companies, wireless communications providers such as cellular, satellite and personal communications services, and some utility companies installing fiber optic cable,[14] for residential ratepayers and small business consumers at the local exchange level, there is currently little or none. And according to some analysts, it may never truly arrive.[15] Given the amount of competition evident at the local level, its use as a restraining force on the opportunistic behavior of the LECs is doubtful.

Commission Enacted Safeguards

When companies are regulated under RBROR, neither price gouging nor reduction in service quality are likely actions on the part of the utilities. Since the commission sets and controls rates through the regulatory process, companies have no opportunity to change them on their own initiative. Additionally, whether service quality is capital- or labor-intensive, the cost of providing such quality is recoverable, either as operating costs or as part of the company's property.

In AFORs enacted over the past decade, commissions have retained varying amounts of control over rates, revenues, and service quality. Increased competition is supposed to restrain companies' behavior. But given the lack of competition in the residential and small business markets, many states have recognized a need to provide

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[14] Ibid., 24.

[15] Trevor R. Roycroft, *A Comprehensive Approach to Local Exchange Competition in Indiana*. Prepared for the Indiana Office of Utility Consumer Counselor and presented to the Executive Committee, Cause No. 39983 (October 19, 1995) from prologue by Barry Payne, OUCC Director of Utility Analysis.

more direct restraints on companies' activities in order to protect captive ratepayers. Three recognized methods for achieving this protection are discussed.

Rate Freeze/Rate Cap

Many commissions have protected the rates of basic local service through rate freezes of varying durations as well as rate caps. The determination of the length of an imposed rate freeze rests on no set formula or methodology. Often these freezes are enacted following a rate adjustment based on the authorized rate of return. As an alternative to rate freezes, some commissions have established rate caps for non-competitive services allowing for price flexibility below the cap.

Quality-of-Service Standards

With the lessening of commission control over telecommunications companies, several knowledgeable participants in the regulatory debates have argued that there is now a need to strengthen standards and/or adopt rules imposing financial penalties because of the increased potential for poor service quality. To protect service quality, commissions can strengthen standards through changes in performance thresholds and the imposition of penalties, usually financial, if service falls below these designated levels.

Ending Dates and Plan Reviews

A third protective device, though less direct than the first two, is a planned defense against unexpected and undesirable outcomes when adopting alternative regulation. This device consists of two possible parts: one, a specified ending date for the plan, which is often three to five or more years from its adoption; and two, a decision to review the plan prior to the ending date, usually within two to three years.

Summary of Consumer Protections

In summarizing this discussion, the main point is that in adopting alternative regulatory schemes, commissions have faced uncertain outcomes, several of which can have potentially adverse effects on captive ratepayers. Several commissions have chosen to provide varying levels of protection for the captive ratepayer through the adoption of rate freezes, strengthened service-quality standards, and specified ending dates for plans and plan reviews. Some states have enacted all three provisions, some one or two. The proposed theory attempts to explain this variation in commission response.

Dimensions of a Theory of Commission Decision Making

The motivational theories discussed in Chapter 2 are so-named because they attempt to account for participation of the key players. Motivational theories, which rest on the assumption that all participants are rational utility maximizers, provide a powerful analytic tool.

In contrast to motivational theories, structural or institutional theories are based on the premise that although interest groups influence commission decisions, the influence of other factors should be considered, primarily those attributable to the bureaucratic structure of the commission itself. Structural theories do not dispute the importance of motivation in explaining regulatory decisions. Rather, structural theories suggest that motivational theories are incomplete because they do not acknowledge the bureaucratic structure in which these decisions are fashioned and how variations in that structure in terms of resources, size, expertise and ideology can mediate the impact of motives on those decisions.

Structural theories in general suggest that bureaucratic structure mediates the motives of regulators and other regulatory players.[16] As William Berry states:

[16] For a general discussion of agencies whose histories are reflective of the life cycle theory, see Phillips, *The Regulation of Public Utilities*, 183-185.

> Clearly, a reasonable theory of regulation should not ignore the motivations and objectives of regulatory personnel. On the other hand, we must not assume that the policy *outcomes* of the regulatory process will necessarily match the *objectives* of regulatory personnel. Such an assumption ignores the potential limitations of regulators in terms of information, analytical capabilities and other resources. [emphasis original][17]

In addition, structural theories attempt to account for factors in the regulatory environment such as market conditions, area-specific demographics, and the principal-agent relationship of legislatures and commissions. In short, it is not enough to know the motivations of regulators. The means by which motivations are translated into policy are also necessary in order to formulate a complete theory of regulatory decision making.

Viewing regulatory agencies as organizations can also facilitate the view of regulation as a dynamic process, allowing researchers to understand the interplay of external forces—political, economic and demographic—on the agency and its decision-making process. Barry Mitnick argues that such a perspective is necessary to avoid explaining all regulatory behavior as the logical outcome of competing incentives.

> Of key importance to the development of a better understanding of change processes and patterns in the regulatory system is further work on what we shall call the bureaucratic or bureaucratic protection theory of regulation. Public organizations are not passive and/or defensive responders to client-manipulated incentives or disincentives. And they are not merely collections of individuals with different goal sets who respond rationally to the available distribution of goal satisfactions. Regulatory organizations possess, almost by definition, unusual powers to regulate and control their environments. They are characterized by different structures (e.g. commission vs. bureau form) and different technologies of regulating (e.g. routine vs. complex). They are adaptive in that they can both affect and be affected by environmental change. Different structures, technologies, and environments can, of course, be

[17] Berry, "An Alternative to the Capture Theory," 525-526.

> understood as contingencies affecting extant incentive systems. But the temptation to reduce *all* explanations of regulatory behavior to simple rational choice calculations involving individuals should be resisted. [emphasis original][18]

[18] Paul Joskow and Roger Noll, "Regulation in Theory and Practice: An Overview," in *Studies in Public Regulation*, ed. Gary Fromm (Cambridge, MA: The MIT Press, 1981), 53.

Central Issue: Fairness or Favoritism

One of the reasons so much attention has focused on regulatory decisions and the decision-making process centers on fairness. In the main, commissioners are given the job of arbitrating the requests (demands) of various groups, with the mandate that their decisions be just and reasonable to both consumers and utilities. If commission decisions are perceived as favoring any one party at the expense of others, there is a general perception of bias and favoritism. When the actions of public officials benefit personal interests at the expense of the public interest, the public officials have abused their position and violated the terms of their office. And because maximization of self-interest is universally accepted as one of the dominant motivating factors in human behavior, public officials are often suspected of acting for the benefit of personal interests, their own as well as others, rather than public ones.

Sources of Influence: Within, Without, or Both

The conventional wisdom has been, and to some extent still is, that the greatest influences on regulatory decision making are forces external to the commission which offer incentives to commissioners to maximize their own utility.

In response to this assumption, the leading theoretical models of the regulatory policy-making process are those which suggest regulatory commissions make their decisions in response to the demands of the utility (capture theory) or balance the demands of competing interest groups based on the rewards each group offers (economic/interest group theory).[19] Within these theoretical models, variations within

[19] Steven B. Caudill, Bae-Geun Im and David L. Kaserman, "Modeling Regulatory Behavior: The Economic Theory of Regulation Versus Alternative Theories and Simple Rules of Thumb," *Journal of Regulatory Economics* 5 (1993): 251-262; David L. Kaserman, L. Roy Kavanaugh and Richard C. Tepel, "To Which Fiddle Does the Regulator Dance? Some Empirical Evidence," *Review of Industrial Organization* 1 (1984): 246-258; and Paul Teske, "Interests and Institutions in State Regulation," *American Journal of Political Science* 35, No. 1 (February, 1991): 151.

commissions, whether in budget, staff, structure, or commissioner ideology and experience, are seldom acknowledged as affecting regulatory decisions.

In contrast, structural theories suggest that variations in the institutional structure[20] or differences in the training and ideology of the institution's leaders[21] account for some appreciable amount of variation in regulatory outcomes.

Determining Commissioners' Motivations—Only Self-Interest?

While a few previous studies have attempted to combine both internal and external factors, the inclusion of factors internal to the commission is seldom supported by underlying theory.[22] Thus, the selection of such factors often appears arbitrary and piecemeal.

However, while theories of commissioner behavior based on external influences assume a compelling motive, i.e. self-interest, a great deal of evidence does not support this assumption. Structural theorists such as Berry, Derthick and Quirk, Gormley, and Sabatier and Mazmanian have all presented research findings suggesting commissioners act on less self-serving and more public-spirited motives

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[20] Berry, "An Alternative to the Capture Theory," 524-558; Mitnick, *The Political Economy*; William T. Gormley, Jr., *The Politics of Public Utility Regulation* (Pittsburgh: The University of Pittsburgh Press, 1983); and James Q. Wilson, "The Politics of Regulation," in *Social Responsibility and the Business Predicament*, ed. James McKie (Washington, D.C.: The Brookings Institute, 1974).

[21] Martha Derthick and Paul J. Quirk, *The Politics of Deregulation* (Washington, D.C.: The Brookings Institute, 1985); Robert H. Miles and Arvind Bhambri, *The Regulatory Executives* (Beverly Hills, CA: Sage Publications, 1983); and Daniel A. Mazmanian and Paul A. Sabatier, "A Multivariate Model of Public Policy Making," *American Journal of Political Science* 24, No. 3 (August 1980).

[22] Cohen, *The Politics of Telecommunications Regulation*, 89; and Berg and Foreman, "Incentive Regulation." In this paper, the authors present a table comparing 12 studies which focused on responses of companies to alternative regulation. Of these, Berg and Foreman categorize five as having no underlying theory. Of the remaining seven, six are based on economic interest group theory. The seventh relies on utility maximization as the motive for regulators in combination with public interest.

than the capture or economic interest group theory assumes.[23] On the other hand, structural theories have made few assumptions about regulators' motives separate from those proposed by the external forces theorists. Rather, they have implicitly accepted those motives while suggesting that factors internal to the commission can accentuate or diminish the impact of those outside influences.[24]

In this research the theoretical rationale for the inclusion of factors both within and outside the commission is that while commissioners are susceptible to outside influence because of their desire to maximize their self-interest, they also have their own policy preferences. The theory developed in this study provides an explanation of what those preferences are and how structural factors specific to each commission facilitate or hinder the implementation of those preferences.

One of the underlying assumptions of this research is that both sets of factors will be shown to influence commission decisions, but that structural characteristics of the commission will prove to be the more potent explanatory force for certain types of decisions.

The Basic Theory

Formulating a theory of policy decision making revolves around the questions of who influences policy in what ways and by how much. Previous theories have postulated the answers to these questions as: (1) those who influence decisions have resources, usually financial or political; (2) they exercise that influence from outside the

[23] William Berry, "Utility Regulation in the States: The Policy Effects of Professionalism and Salience to the Consumer," *American Journal of Political Science* 23, No. 2 (May 1979): 263-277; Derthick and Quirk, *The Politics of Deregulation*; Gormley, *The Politics of Public Utility Regulation*; Mazmanian and Sabatier, "A Multivariate Model;" Miles and Bhambri, *The Regulatory Executives*; and Teske, "Interests and Institutions."

[24] Mitnick, *The Political Economy*; and Teske, "Interests and Institutions."

commission by appealing to the self-interest of regulators; and (3) those who have the most resources and strongest motives exercise the greatest influence on policy.

The proposed theory accepts the relationship of resources to influence but suggests two conditions which affect the relationships of the factors in the model.

First Condition

The first condition to the resource theory is the addition of the commission as a distinct force influencing policy. This theory assumes that the commission is more than just a referee for a host of competing interests. Rather, it has resources and policy preferences and is itself engaged in pursuing a policy agenda which may differ from that of other regulatory participants. But like the other participants, its ability to influence decisions rests on its access to resources and its ability and inclination to use those resources.

A mathematical equation modeling this theory in its current form is a multiple regression equation which is additive. The dependent variable is one of the three consumer safeguards previously described or some indices of two or all three. The independent variables to be discussed in the following paragraphs are proxies for the resources, abilities and motivations of those groups determined to influence the commission as well as the commission itself.

In this form, this theory tests the effects of commission structure on regulatory decision making while accounting for other factors recognized as influencing commission decisions.

Second Condition

The second condition is that attributes of the issue under consideration will affect the strength (influence) of the various players' resources. The issue attributes which appear to have the greatest effect on the ability of regulatory participants to exercise influence are the complexity of the issue and the amount of public scrutiny it

receives. The addition of this condition will place a further restraint on the influence of resources outside of the commission as well as constraining those of the commission itself. This condition and its effect on the influence of all regulatory participants will be discussed in greater detail following the presentation of the factors, both within and outside the commission, determined to influence regulatory policy.

Overall, this theory will generate hypotheses suggesting that specific characteristics of both the state regulatory commission and the issue under consideration will have significant influence on the nature of regulation. Since these hypotheses are not readily comprehensible without an understanding of the relevant factors and assumed commissioner motivation, they are presented at the end of these discussions.

Relevant Factors

The theory presented in this research is based on the premise that resources are necessary but not sufficient to influence policy. It is also necessary to have the ability and the motivation to use those resources.

In order to test the null hypothesis, that structural factors of commissions do not affect policy decisions, it is necessary to account for those sources of influence external to the commissions as well as the effects of the commission itself on the decision-making process. This research proposes to model the influence exerted by the major participants on the decision to enact measures to protect captive customers when adopting AFORs.

Because of the central role this theory gives to regulatory commissions, the methods by which commissions influence policy will be discussed in detail prior to those influences external to the commission.

Internal Factors

To understand how or why commissions might want to move policy in a different direction from that of other regulatory participants requires some examination of regulators' incentives.

Commissioners' Objectives

The selection of utility commissioners is a political process.[25] Whether commissioners are elected or appointed, there are financial interests supporting or challenging potential candidates.

The main participants in the regulatory process, other than the commission, are the utilities, large commercial interests, the public, the legislature and the governor. The response of each of these groups, if negative, can seriously impair the commission's ability to perform and fulfill its obligations. For example, decisions which adversely affect the public through increased rates can result in publicity embarrassing to other public officials; or in public displeasure which manifests itself in the voting booth. If utilities are seriously displeased they may lobby the legislature to cut a commission's budget or limit its authority. Given this array of powerful participants in the regulatory contest, each of whom can curtail a commission's powers, it is reasonable to assume that a major or primary objective of commissioners is to act in such a way that no such curtailment occurs.

Commissioners' Motives

This proposed theory assumes that a primary objective of commissioners is to remain in office and to maintain the necessary political strength to be effective while in that office. As a consequence, commissioners desire that their decisions appear to be

[25] Patrick J. Mann and Walter J. Primeaux, "Elected versus Appointed Commissioners: Does It Make A Difference in Utility Prices?", in *Adjusting to Regulatory, Pricing and Marketing Realities*, Proceedings of the Institute of Public Utilities Fourteenth Annual Conference (Morgantown, WV: West Virginia University, 1983) 56-72; and Louis M. Kohlmeier, Jr., *The Regulators* (New York: Harper and Row, 1969), 47-52. Kohlmeier's reference is to commissioners and staff at the federal level, but the methods of appointment and the effect of political pressure on state commissioners is similar.

equitable since should they appear to be biased, their ability to remain in office and be effective would be threatened. On a less cynical note, it is believed that commissioners have motivations other than self-interest, such as fairness and equity and a concern for the public interest which would motivate them to want their decisions to actually be fair and equitable, not just appear to be so or be done for crass reasons.

Accepting this assumption of a commissioner's primary objective leads to the conclusion that they will not knowingly harm ratepayers in order to favor the utilities. This concern arises either out of their own ideology or the threat of possible loss of political effectiveness. In either case, regulators cannot afford to make decisions which unduly favor one group over another.

In terms of consumer protection, the areas in which consumers require protection from the utility are those concerning rates and quality of service. It is reasonable to assume that if the commission perceived a need to provide protection to the captive ratepayer, the situation requiring such a decision would most likely place the company and the captive ratepayer on opposite sides. Consequently a decision to protect the captive ratepayer is often also a decision to oppose the company and may force the commission to pit its resources against those of the utility company.

Commissioners' Access to Information and Protection of the Captive Ratepayer

Unless it is assumed that regulatory decisions are already predetermined by virtue of industry influence or personal ideology, the central role of information in decision making must be acknowledged. Without the necessary information, the commission is unable to make the most efficient or equitable decision.[26] Accepting this basic premise is key to understanding the manner in which structure mediates motives.

If information is crucial to regulatory decisions, the control of information, in terms of quality and quantity, offers a means of influencing decisions. Theorists have

[26] M. E. Porter and J. F. Sagansky, "Information, Politics and Economic Analysis," *Public Policy* 24 (Spring, 1976): 263-307.

postulated that an agency's autonomy is affected by the amount of information it is able to acquire about the firms it regulates[27] and that the acquisition, accuracy and quality of the information significantly affect commission decisions.[28] William Gormley's descriptive study of regulatory politics credits the public's perception that information was a key element affecting agency decisions as the driving force behind the creation of offices of consumer advocates.[29] Consumer advocates were seen as the means by which information favorable to consumers could be brought before commissions and affect regulatory decisions. Gormley states, "If regulated industries dominate the regulatory process, it is through the control of information, not personnel."[30] Thus, the greatest resource of commissions to ensure that both utilities and consumers are treated equitably is their ability to acquire and analyze information.

The large LECs, which are usually the BOCs, are considered by regulatory observers to be the single most powerful influence in regulatory decision making. They enjoy this position primarily because of their financial wealth and attendant political clout. They have vast resources, considerable motivation, impressive organization, and a formidable amount of information, much of it complex and highly technical. In the regulatory process, the lawyers, economists, engineers, and accountants employed by the company can present substantive amounts of information in support of the company's proposals or in an attack on the proposals of other parties. The company's proposals, such as those for alternative regulation, often contain descriptions of the benefits their proposed actions will confer on the public.

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[27] Wesley A. Magat, Alan J. Krupnick and Winston Harington, *Rules in the Making* (Washington, D.C.: Resources for the Future, 1986), 53.

[28] Porter and Sagansky, "Information, Politics."

[29] William Gormley, Jr. "Nonelectoral Participation as a Response to Issue-Specific Conditions: The Case of Public Utility Regulation," *Social Science Quarterly* 62, No. 3, September 1981).

[30] Gormley, *The Politics of Public Utility Regulation*, 31.

Given the underlying rationale for regulation, that it is needed to protect the common good from the excesses of capitalism or private interest, prudence suggests that a company's proposals and claims of public benefit be examined circumspectly. To make such an examination requires expertise to both acquire and analyze relevant information.

Without the necessary expertise furnished through the commission's own staff or through contracted services, utility companies may succeed in having proposals adopted which appear to be in the public interest but actually work to further the well-being of the company at the expense of the ratepayer.

To deny company proposals, or even to significantly rework them, requires expertise and information. This is because of the amount of information and expert analysis presented by the company as well as the political power utility companies can wield. Commissions may be forced to accept company proposals unless they are able to publicly demonstrate the potentially undesirable consequences of such proposals.

When commissions are able to acquire the necessary information, submit it to analysis, and forecast possible outcomes for both the ratepayer and the utility, they have the means to challenge the claims of the utility and forge a decision which also protects the interest of the captive ratepayer. This is in accordance with both Gormley's and Mitnick's arguments that the autonomy of a commission is directly related to its ability to access and process information.[31] Without the ability to analyze and interpret factual information, the commission may be unable to challenge the utility's counterproposals and/or denials which are fashioned to weigh the balance of benefits in the company's favor.

In summary, commissioners have as a primary objective staying in office, which gives them a motive to act in a manner which protects the interests of the ratepayer as well as those of the utility. However, their ability to do so is dependent on their access

[31] Gormley, *The Politics of Public Utility Regulation,* 31; and Mitnick, *The Political Economy.*

to information. In specifying in greater detail those factors which determine the influence of commissions on decisions to protect the captive ratepayer, it should be remembered that not all commissioners are equally constrained by the above described objective. Rather the importance the commissioners give to this objective and the attendant motive to protect the captive ratepayers' interests may vary with ideology, training and experience.

Given the above discussion, those measurable aspects of a commission which may affect its policy-making decisions to protect the captive ratepayer will be identified as determinants of its resources, its abilities, or its commissioners' motives.

Resources

While information is an essential factor in commission decisions, it is not the only force shaping those decisions. Of equal importance are the financial resources available to the commission and the structure which determines the means by which such resources can be accessed.

Where there is an adequate supply of financial resources, the agency will be able to attract to itself knowledgeable personnel with sufficient expertise to acquire and analyze necessary information.[32] Regulation scholars frequently address the decision-making capacity of agencies in terms of their available resources.[33]

The connection between adequacy of resources and susceptibility of commissions to outside influence was recognized in much earlier work seeking to

[32] Gormley, *The Politics of Public Utility Regulation,* 29; and Mitnick, *The Political Economy*, 212.

[33] David Welborn, *The Governance of Federal Regulatory Agencies* (Knoxville: University of Tennessee Press, 1977), 63; Teske, "Interest and Institutions;" Mitnick, *The Political Economy*; and Gormley, *The Policies of Public Utility Regulation.*

understand regulatory decision-making behavior.[34] Several of these pioneering researchers attributed regulatory failure to underfunded and understaffed commissions, in which there was inadequate expertise available to the commission to analyze and decide complex technical issues associated with utility regulation. As to why such a situation existed or was allowed to continue, Robert Cushman postulates that such circumstances were the result of legislatures which did not "desire aggressive enforcement of regulatory policy" and could justify the small size with concerns for protecting the taxpayer from the costs of large government bureaucracy.[35]

For the commission as organization, resources such as overall budget and number of staff improve a commission's ability to acquire and analyze information. Measuring salary levels for commissioners recognizes that adequate compensation is required to attract and retain qualified people needed to make fair and reasonable judgements.[36]

Abilities

The means by which commissioners challenge proposals before them or propose their own rests partly on their access to information and partly on the complexity and professionalism of their own organization which improves their ability to make use of information. Having research facilities, such as computers and a research

[34] James W. Fesler, *The Independence of State Regulatory Agencies* (Chicago, IL: Public Administration Service, 1942); and Marver Bernstein, *Regulating Business by Independent Commission* (Princeton, N.J.: Princeton University Press, 1955).

[35] Robert E. Cushman, *The Independent Regulatory Commissions* (New York: Oxford University Press, 1941), 497.

[36] Berry, "Utility Regulation in the States;" Heather Campbell, "The Politics of Requesting: Strategic Behavior and Public Utility Regulation," *Journal of Policy Analysis and Management* 15, No. 3 (1996): 395-423; and Gormley, *The Politics of Public Utility Regulation*. Both Berry and Gormley construct indices to measure commission professionalism and commission resources on the premise that these attributes of the commission affect commission decisions.

library, and research personnel available on-site should improve a commission's ability to use information.

Both the quality and quantity of agency staff have been viewed as important factors in agency decisions. This importance is explained by both the technical complexity of regulatory decisions and the perceived nature of bureaucratic decision making. "Technical expertise is needed if the bureaucracy is to confront complex issues with timeliness and precision."[37] Organizational complexity refers to an agency's specialization. Jeffrey Cohen explains that "Complexity provides a degree of specialization—a division of labor—that enhances the agency's ability to tackle large, difficult tasks and to understand and utilize technical information."[38] Given the benefits of such a division of labor with regard to technical information, this research is particularly interested in whether there is a telecommunications staff as opposed to rate or utility analysts employed to analyze rate proposals for any utility. Heather Campbell also takes this factor into account in measuring the resources of a commission with an explanation similar to Cohen's. "It seems likely that people who specialize in telecommunications issues will be more efficient at making use of agency resources and at understanding the information provided by the regulated telephone firm."[39]

Although there is some agreement that staff professionalism is an important factor in understanding agency decision making, the manner in which it impacts the process is debated. William Berry and Barry Mitnick view professionalism as an agency resource which helps prevent industry capture.[40] Gormley postulates that the aggregate number of professional staff are less important than the types of professions represented by the staff. Given that each profession has its own perspective as well as

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[37] Gormley, *The Politics of Public Utility Regulation*, 29.

[38] Cohen, *The Politics of Telecommunications Regulation*, 90.

[39] Campbell, "The Politics of Requesting," 411-412.

[40] Mitnick, *The Political Economy*, 212; and Berry, "An Alternative to the Capture Theory," 543.

expertise, the diversity of views represented by a varied staff composition provide a greater potential resource for decision makers.

In an examination of influence on commission decision making, Gormley found that commissioners were more responsive to staff members than governmental consumer advocates.[41] Gormley points out two possible reasons for this. First and most important, senior staff are often appointed by commissioners rather than selected through the civil service network. Other things being equal, one would expect that senior staff chosen in such a manner would be in agreement with a commissioner's value preferences. The proximity of staff to commissioners provides an opportunity for them to shape a commissioner's issue priorities, as well as vice versa. As Gormley explains:

> The staff plays many important roles in the public utility regulatory process. The staff educates commissioners and explains bewildering concepts from the fields of economics, engineering, accounting, and law. As an extension of its educational role, the staff analyzes proposals submitted by utility companies, public advocates, and others. In addition, the staff develops its own policy proposals and offers recommendations to the commissioners. Although much staff activity is behind the scenes, the staff actively participates in public hearings on which the record of each case is based. After these hearings, the staff interprets the positions of other parties to the commissioners, who lack the time to read every transcript and every brief. Finally, the staff writes the opinions rendered by commissioners, choosing the precise words that will constitute the commission's point of view.[42]

Given that commissioners often work under time constraints, they are forced to forgo a goal-optimizing approach of examining all possible alternatives and rather "satisfice" with those presented to them by their staff.

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[41] Gormley, *The Politics of Public Utility Regulation*, 138.

[42] Ibid.

In addition to increasing the agency's information gathering and analytical ability, thus reducing their vulnerability to outside influence, the size and professionalism of staff have other implications. Berry explored the relationship between level of staff professionalism[43] and protection of the captive ratepayer, particularly the very poor and determined that the more professional the commission, the more likely rate structure decisions would favor the interests of the captive ratepayer. Gormley also found that there is greater participation by the public in energy rate cases in states with less professional public utility commissioners. Gormley explains this result as the perception by citizens' groups that if they do not intervene, "they cannot count on a highly professional public utility commission to rescue them from the grip of high energy rates by matching its expertise against that of utility company lawyers and consultants."[44]

Professionalism refers to the formal training of staff. Berry defines professionalized personnel as those who "have both formal educational training and the ability and willingness to follow up the training by keeping up with innovations in the field."[45] In choosing factors to measure the professionalism of regulatory commissions, Berry borrowed from indices developed by John Grumm in 1971.[46] Grumm wanted to measure the professionalism of state legislatures and made this determination.

> Some legislatures may be characterized as highly professional. By this I mean that their members and their committees are well staffed; good informational services are available to them; a variety of services and

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[43] Professionalism was defined on two indices: (1) operating resources, consisting of size and salary of staff and computer usage and (2) recruitment activity, consisting of four dimensions, including method of commissioner selection, years of service by commissioner, existence of staff job training, and employee job protection. Berry, "Utility Regulation in the States," 270-271.

[44] Gormley, "Nonelectoral Participation," 533.

[45] Berry, "An Alternative To the Capture Theory," 542.

[46] John G. Grumm, "The Effects of Legislative Structure on Legislative Performance," in *State and Urban Politics*, eds. Richard I. Jofferbert and Ira Sharkansky (Boston: Little, Brown, 1971), 298-322.

> aids, such as bill drafting and statutory revisions, are maintained and well supported; the legislators themselves are well paid, tend to think of their legislative jobs as full time or close to it, and regard their legislative role as a professional one.[47]

While aspects of the professionalism of the organization can be measured in the financial resources available to the commission and its access to computers, as well as the availability of research personnel and research materials, the professionalism of the staff can be measured in terms of salary. Although only a single measure, a few researchers on legislative professionalism considered it the best available single measure.[48]

Motives

In recognition that commissioners, rather than staff, legislators, or governors ultimately make regulatory decisions, attempts to understand and predict regulatory decisions have focused on the personal characteristics of commissioners.

In the research carried out over the past three decades on regulation, the structural factor most often analyzed has been the method of commissioner selection and its relationship to decisions favoring the captive ratepayer. The underlying rationale for this interest has been the recognition of commissioners as utility maximizing actors. Thus, where commissioners are elected, in order to get re-elected their actions must please a large number of voters, namely the captive ratepayers. Gormley has suggested that electing commissioners and having consumers or their representatives participate in regulatory proceedings are different means to the same end, namely, representation of the consumer interest.[49] That consumers also perceive

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[47] Ibid., 309.

[48] John E. Chubb, "The Political Economy of Federalism," *American Political Science Review* 68:1118-24; and Grumm, “The Effects of Legislative Structure,” 309.

[49] Gormley, “Nonelectoral Participation.”

this relationship is suggested by the empirical evidence. In states with elected commissioners, consumer intervention is less than in states with appointed commissioners. Gormley concludes that "citizen groups assume—rightly or wrongly—that elected agency officials can be trusted to safeguard their interest."[50] Whether elected commissioners are more responsive to the needs of ratepayers than those of the utilities is a subject still open to examination despite the extensive empirical research done in this area.

The second most studied aspect of commissioner ideology is political party affiliation. Gormley has identified party affiliation as a significant factor indicative of certain attitudes and policy decisions of regulators. For example,

> Democrats are more supportive of seasonal rate structures, which promote energy conservation when peak demand is highest by charging more per unit of energy during peak months (usually summer), less during off-peak months...Democrats tend to be more supportive of direct popular election of public utility commissioners, less willing to sacrifice environmental protection for economic prosperity, and more enthusiastic about inverted rates, which tend to benefit the poor (who consume less energy), and which also encourage energy conservation.[51]

Both method of selection and political affiliation have been theorized to give some indication of which party in a regulatory hearing commands more of a commissioner's concern. Categorizing commissioners by their professional experience is also an attempt to determine ideological leanings.

Including the number of commissioners at a state commission as a factor acknowledges that politically sensitive decisions are sometimes less difficult to make for large commissions than small ones because the criticism can be spread among a larger group, lessening individual responsibility. Taking account of the length of

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[50] Ibid, 535.

[51] Gormley, *The Politics of Public Utility Regulation*, 73.

commissioners' terms recognizes that too few years of service can hinder the ability of commissioners to adequately understand the issues and over-long service on a commission can distort a commissioner's objectivity, leaving him/her open to undue influence by utilities or consumers. Length of term has also been linked to the amount of independence from political pressures shown by commissioners. Specifically, Robert Hagerman and Brian Ratchford suggested that the longer the commissioner's term, the less likely s/he is to recognize public pressure as an important consideration in making decisions, particularly ones which may be disliked by the public.[52]

Another factor possibly influencing commission decisions is the response of other state commissions in similar situations. Of particular interest are the decisions of state commissions whose BOCs are members of the same RBOC. There are seven such companies in the United States, excluding Alaska and Hawaii.[53] Of interest to this study are the number of states and the dates when they adopted AFORs and what types of protective measures they enacted for captive ratepayers. It is possible that commissioners in states which adopted AFORs later rather than earlier may have been influenced by the experience of their sister states.

Finally, how much commissioners may be motivated by direct industry influence is affected, among other things, by whether a commissioner can leave a commission and go to work immediately for a regulated utility or must wait for some period of time before commencing such employment. The adoption of some waiting period after leaving commission employment and before accepting employment with a utility, for commissioners and highly placed staff, is referred to as a "cooling off" provision. This provision varies by commission, both in the nature and length of the "cooling off" period as well as the personnel to whom it applies.

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[52] Robert L. Hagerman and Brian T. Ratchford, "Some Determinants of Allowed Rates of Return on Equity to Electric Utilities," vol. 9, no. 1 (Spring 1978): 46-55, 48.

[53] The RBOCs and its member states are listed in Appendix A of my dissertation. Nancy Zearfoss, *The Structure of State Utility Commissions and Protection of the Captive Ratepayer: Is There a Connection?* (Columbus, OH: The Ohio State University, 1997).

Summary

The internal factors discussed in the preceding paragraphs are those which have been determined to influence commission decisions by affecting the information available to a commission, its analysis, and/or its reception by commissioners. These factors have been categorized as resources, abilities, and commissioner motivations. Overall, internal factors cover several aspects of a commission, both as institutional and political structure and as bureaucratic organization. The factors discussed attempt to capture some of the differences among commissioners, both within a commission as well as across commissions.

Having accounted for commissions as a separate and distinct influence in the policy-making process, those factors external to the commission which are recognized as having influence on commission decisions are now discussed.

External Factors

External factors refer to those forces outside the commission which have the ability to influence policy because of their political and/or financial resources. They are categorized as being part of two environments: (1) the political environment, consisting of (a) elected officials, and (b) public and private interest groups; and (2) the socioeconomic environment, represented by demographic profiles.

Political Environment

The regulatory environment is inherently political because it deals with the allocation of wealth. Given the nature of the regulatory process, there are gainers and losers as a result of most regulatory decisions. To increase the possibility of gaining and minimize the chance of losing, interest groups with varying amounts of financial resources and political clout attempt to influence commission decisions. The most prominent interest groups lobbying the public utility commissions in the regulatory

process are the utilities, the consumers, the state government, and the large commercial customers.

The Utilities

Because the zero-sum nature of economic regulation implies that if the utility company wins, the consumer loses, the utilities have been viewed by most regulatory observers as the single greatest threat to regulatory decisions being made in the public interest.[54] Since the company is almost always better organized, motivated, and financed than any other group, it is expected to dominate the regulatory process.[55] Both the capture theory and the economic interest group theory are based on this premise.

The methods companies use to influence commissions are varied. They lobby commissioners directly and indirectly through frequent contact and the provision of information and, sometimes, the promise of future employment. They may attempt to subvert the flow of information by hiring away key staff people, by offering incomplete or misinformation, or by invoking proprietary information claims. Utilities may also attempt to influence commissions in more subtle ways by encouraging staff to rely on them for information and problem solving.[56]

In the political arena, they support candidates sympathetic to their point of view. They lobby legislatures and governors and attempt to lobby the public through the media and sometimes their own bill inserts. Their tenacity and creativity in pursuing

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[54] Many decisions made by commissions are compromises between the requests of the utility and the consumers. Particularly with regard to rates, an increase granted to the utility is seen as a loss to consumers. Thus, the view of utility regulation as a zero-sum game, where what one requester gains is seen as a loss to the other(s), particularly if the decision favors either the utility or the consumer.

[55] Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University Press, 1971).

[56] Mitnick, *The Political Economy*.

favorable regulatory decisions is driven by their knowledge of the substantial impact of regulatory decisions on their income and quality of life.

Measuring the influence of telecommunications utilities is limited by the type of information readily available. This research focuses on BOCs operating in those states which have adopted AFORs and the District of Columbia. The one non-BOC LEC included in this study is Southern New England Telephone operating in Connecticut. The influence of those companies is measured by their presence in the state in relation to other LECs. The amount each BOC spent on lobbying in the state was also considered but such information was not available for all states for the requisite time period.

The Consumers

Consumers exercise influence through their representatives in the regulatory process, i.e., consumer advocates and/or attorneys general, and through their elected representatives. Consumer advocates can and do officially challenge the claims of utilities, often opposing them by providing information and by developing alternative solutions, such as the use of demand side management to reduce the need for building new power plants. Consumer advocates can also use the media to heighten the visibility of conflict between ratepayers and the utility.[57]

State Government

Elected officials, from governors to legislators, have the most direct access to commissions. The formal expression of this access is whether the commission reports to an arm of the executive or legislative branch of government. Control of the

[57] For a number of reasons, both political and financial, consumer or "proxy" advocates usually refrain from advocating a position favorable to only one consumer class, such as the residential ratepayer as opposed to the business ratepayer. Gormley explains that this is because proxy advocates realize that if they antagonize business groups, they may also antagonize the legislature, which controls the group's purse strings. Gormley, *The Politics of Public Utility Regulation*, 170.

commission's budget and the appointment process are other more immediate avenues of influence.

As both Gormley and Cohen have suggested, legislative interest in commission decisions centers more on broad policy decisions than on specific issues such as the setting of rates.[58] However, the enactment of AFORs and measures to protect the captive ratepayer are significant policy issues which have concerned the legislatures. In several states, legislatures have seriously reduced the regulatory authority of the commissions, particularly with regard to regulating telecommunications companies under alternative regulatory frameworks.[59]

The ability of a legislature to successfully contend with the informational capacity of the commission bureaucracy and thus influence its decisions correlates with its level of institutional resources, according to Cohen.[60] Thus, as in the commissions, legislative salaries provide a measure of legislative professionalism and, concomitantly, concern about regulatory policy and the likelihood that such legislatures will intercede in regulatory matters.

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[58] Cohen, *The Politics of Telecommunications*, 80-81; and Gormley, *The Politics of Public Utility Regulation*, 85-88.

[59] In the past ten years, several state legislators have enacted legislation to limit the authority of the utility commissions with regard to telecommunications rates and revenues. Effective January 1, 1987, the legislature in Nebraska deregulated all telecommunications services, including basic exchange service. For an in-depth discussion of the situation in Nebraska, see Mueller, *Telephone Companies in Paradise*. In Michigan, on December 18, 1991, the legislature enacted a law, substantially deregulating services, and freezing local exchange rates until January 1, 1994. The Commission retains authority over basic local, switched access and toll services. Legislation adopted in Delaware July 8, 1993, established the specific rules under which companies could adopt price regulation, effectively cutting the commission out of the decision-making process regarding when and under what circumstances a company can gain greater regulatory freedom.

Other states in which the legislature curtailed regulatory powers of the commission are Colorado, Idaho, Kansas, Minnesota, Montana, North Dakota, Ohio, South Dakota, West Virginia and Wisconsin. For more detailed information, see BellSouth Telecommunications Regulatory Policy and Planning*, Regulatory Reform: A Nationwide Summary*, vol. 1-17.

[60] Cohen, *The Politics of Telecommunications*, 52.

With regard to politicians' policy preferences, political party affiliation serves as a reasonable proxy. States with Republican governors and/or Republican dominated legislatures should tend to side more with the utility companies than the ratepayers, all other things being equal.

Large Commercial Customers

Given the importance of interest groups in the regulatory decision-making literature, business customers, particularly large commercial users, constitute a significant influence in the regulatory environment, specifically in rate making decisions. They may exert influence directly on regulators through frequent socializing, promises of financial support for elections or future employment, or indirectly through lobbying of legislators and governors.

In decisions regarding basic rates and quality of service for ordinary customers, large commercial customers have little to gain or lose, no matter what the outcome. Most large commercial customers have individual contracts with the telephone companies in which they negotiate their own rates, so a rate freeze would have little effect on them.[61] Quality-of-service problems do not appear to be a serious issue for large customers but presumably they would, at the least, not lose if service standards were strengthened. In short, they have substantial leverage because of their size.

While the presence of business customers in the BOC service area will be measured as a group, information measuring the presence of large business users distinct from other smaller businesses is not readily available by state and year. No prediction is made about their affect on the selected commission decisions. Depending on the issue under consideration, they may support the position of the company or the consumer, or chart a unique position of their own.

[61] Wenders, *The Economics of Telecommunications*, Chapter 8.

Socioeconomic Environment

In their pioneering research on the determinants of policy making, Mazmanian and Sabatier examined the effects of the socioeconomic composition of a community on policy outputs and determined that a society's needs and resources give rise to its public policies and that the best measurements of those needs and resources are certain socioeconomic characteristics.[62]

While the linkage between a community's makeup and its public policies is unclear, Heinz Eulau and Kenneth Prewitt suggest that a community's characteristics set the boundaries for what is possible in terms of policy, rather than dictating specific policy solutions.[63] For example, a society with a higher than average median income or education level will generally favor more public services and be supportive of policies which provide them.[64] Also, populations with higher education and income levels are more cognizant of public policies and more willing and able to lobby commissioners and elected representatives for change if they are dissatisfied with commission decisions.[65]

Summary

Given the impressive array of forces attempting to influence commission decisions, it is not surprising that many theories of regulatory decision-making focus entirely on the forces outside the commission, excluding structural factors internal to a commission. But structural factors do appear to make a difference. The structural

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[62] Mazmanian and Sabatier, "A Multivariate Model."

[63] Heinz Eulau and Kenneth Prewitt, *Labyrinths of Democracy: Adaptations, Linkages, Representation, and Politics in Urban Politics* (Indianapolis: Bobbs-Merrill, 1973).

[64] Mazmanian and Sabatier, "A Multivariate Model."

[65] Kent P. Schwirian and Gustavo S. Mesch, "Embattled Neighborhoods: The Political Ecology of Neighborhood Change" (Xerox handout from Schwirian, Ohio State University class, Winter 1993).

theory proposed in this research suggests that the reason internal factors make a difference is that they facilitate the commission's ability to access and analyze information, making clearer to regulators the potential consequences of possible regulatory decisions before they are made.

The forces impacting the commission and the structural elements within the commission which moderate the impact of those forces indicate the inherent tensions existing in the regulatory environment. Perhaps one reason for the abundant literature on regulatory reform and commission decision making is, in part, the result of the human fascination with conflict.[66] It is surely found in this arena.

Having described the environment in which regulatory decisions are crafted, this discussion now focuses on types of commission decisions in general and then moves to a discussion of the specific decisions under observation in this study.

[66] Schattschneider, *The Semisoverign People.*

Issue Attributes Affecting Commission Decisions

An accepted axiom of regulatory decision making is that various political and demographic factors influence the decisions of regulatory commissions. One of the fundamental tenets of political science is that politics determines public policy. But, as Gormley points out, this is not a unidirectional relationship.[67] Theodore Lowi, in his seminal piece "Four Systems of Policy, Politics and Choice,"[68] suggests that policy also determines politics. This suggestion that factors identified as influencing commission decisions have varying impact depending on the issue under consideration offers another perspective. If Lowi's assertion is followed to its logical conclusions, argues Gormley, "the politics of public utility regulation should vary from issue area to issue area, with important policy consequences.[69]

Complexity

Gormley has determined that one of the dimensions of regulatory issues which could affect the impact of both internal and external factors on commission decisions is the issue's complexity.[70] Gormley defines a complex issue as one requiring technical expertise to analyze relevant data and formulate options.[71] The way in which

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[67] Gormley, *The Politics of Public Utility Regulation*, 152.

[68] Theodore Lowi, "Four Systems of Policy, Politics and Choice," *Public Administration Review* (July/August 1972), 298-310.

[69] Gormley, *The Politics of Public Utility Regulation*, 152-153.

[70] Ibid., 212.

[71] Gormley also considered the conflictuality of an issue important for the same reasons. He defined a conflictual issue as one that fragments consumers as a group, such as pitting business groups against residential consumers or consumer groups against environmental groups. Because the decision chosen for analysis addresses the adoption of safeguards for all consumers, this dimension is not one that will be included in this study.

complexity affects commission decisions has to do with its effect on the role of commission staff. A complex issue strengthens the role of staff by heightening the effects of its ability to competently analyze technical data. This is because a complex issue requires greater expertise to formulate and defend positions, which may be in opposition to the positions of other groups capable of exerting political pressure.

Given the underlying hypothesis of this research, that the greater a commission's ability to acquire and analyze information, the more likely that commission is to make decisions that protect the captive ratepayer, determining whether the issue before the commission was one deemed complex would appear to be a salient point.

Public Scrutiny

William Berry also concludes that various aspects of an issue make a difference in both the pressures being exerted on commissioners and the way in which commissioners respond to those pressures.[72] The issue attribute he has identified as the most influential is the amount of public attention the issue receives. His conclusion is extrapolated from Wamsley and Zald's suggestion that a public organization's responsiveness to its environment is, in part, a function of the amount of scrutiny it faces.[73] Berry defines public scrutiny as media attention to issues known to be highly salient to the public, such as changes in rates and rate structures.[74] When such issues are before a commission, commissioners are more likely to make decisions favorable to the consumer.

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[72] Berry, "An Alternative To the Capture Theory," 542.

[73] G. L. Wamsley and M. N. Zald, *The Political Economy of Public Organizations* (Lexington, MA: Heath, 1973).

[74] Berry, "An Alternative To the Capture Theory," 531.

The reason commission decisions are affected by public attention or the belief that a decision will receive public attention has to do with the political power of voters. If voters are unhappy with a commission decision, they may register their unhappiness at the voting booth. This may result in elected commissioners losing office or loss of office for the public officials who are responsible for appointing commissioners or approving their appointments. In this way public scrutiny moderates the impact of potentially influential factors. Therefore, determining the amount of public scrutiny an issue is likely to receive gives some insight into how commissioners may behave.

These two issue attributes, complexity and public scrutiny, offer clues to what factors may have the most impact on commission decisions. Therefore, this research argues that the impact of those characteristics identified as influencing commission decisions will vary, depending on both the complexity of the issue and the amount or degree of public scrutiny the issue receives.

Issue Attributes of Proposed Consumer Safeguards

The three consumer safeguards chosen for study call forth different responses from both the public and the utilities, in part because of their varying degrees of complexity and receipt of public scrutiny.

Rate Freezes/Price Caps

Because of the importance of rates to the public, rates have and most likely will continue to receive a fair amount of media attention. The media highlight such aspects of regulatory frameworks as rate freezes because of the public interest they compel. Also, the public is supportive of rate freezes, particularly on basic rates. Therefore, rate freezes are high in public scrutiny.

With regard to complexity, determining if this is an issue high or low in complexity depends on what aspect of the decision is being examined. In terms of setting the rates that are to be frozen or capped, there is no question that such a decision is complex. But deciding to implement a rate freeze or impose a rate cap on those rates is not complex. In fact, under RBROR, once rates are set, those rates are frozen until a company comes again before a commission and requests a rate change. In addition, since most AFORs allows the company to return to RBROR should it find its financial standing in jeopardy, a rate freeze is not irreversible. For these reasons, the decision to implement a rate freeze is not categorized as a complex issue.

Quality-of-Service Standards

The imposition of quality-of-service standards is a horse of a different color. Most customers are seldom troubled by problems with their telephone service so take little interest in service-quality standards, either in their formulation or implementation. Indeed the National Association of Regulatory Utility Commissioners (NARUC) standard for companies performing adequately is one complaint per 1,000 lines annually.[75] Because of this disinterest on the part of the general public, regulatory decisions regarding quality-of-service standards receive little media attention, absent some dramatic breakdown.[76]

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[75] National Association of Regulatory Utility Commissioners, *Telephone Service Quality Handbook* (Washington, D.C.: NARUC, 1992).

[76] Since we, as a society, are more and more dependent on communications services, to have them unavailable for any length of time is both inconvenient and dangerous. Under these circumstances, quality-of-service factors, such as the reliability and availability, not to mention the transmission quality, of telephone service do become important to consumers. This quote from an article by Eli Noam puts the problem in perspective.

> In 1988, fire destroyed an Illinois Bell telephone exchange in the Chicago suburb of Hinsdale. As a result, communications between regional air traffic controllers and O'Hare Airport, the nation's largest, were closed down, as were hotel and airlines reservation centers, mail order sales facilities, and the national reservation system for

Commissions have varied in their treatment of quality-of-service standards when granting BOCs greater regulatory freedom, some simply reaffirming the current ones, others strengthening them by raising acceptable performance levels. This varied response by state commissions may result partly from commissioners' understanding that the designing, implementing and enforcing of quality-of-service standards is a complex issue, involving technical and specialized knowledge, requiring staff time and expertise but having little salience for the public at the time of enactment. Because of this set of circumstances, the decision to adopt more stringent quality-of-service standards is complex but attracts little public scrutiny.

Adoption of Plan Review

The length of time for which an AFOR will be in place varies across the states as does the time specified between enactment of the plan and a review of its effects. Because companies are being given greater regulatory freedom with regard to revenues and pricing, concern for the effect of such freedoms on the consumers as well as the utility have prompted many commissions to specify ending dates and plan reviews. The determination of the length of time before the plan's first review and the selection of that review's focus are issues on which commission staff, consumer advocates and utility company representatives negotiate. However, unless a rate change accompanies these decisions, they remain of little interest to the general public. They are, therefore, complex but have a low degree of public scrutiny.

12,500 florists—on Mother's Day.

A similar demonstration of vulnerability occurred when in 1985 a computer breakdown at the Bank of New York lasting less than a day caused a cash deficit that required the bank to borrow $24 billion overnight from the Federal Reserve Bank (letter from Levine to Hesser, 1988). (Eli M. Noam, "The Quality of Regulation," 170.)

The three decisions commissions could have made to protect captive ratepayers have now been categorized with regard to complexity and public scrutiny. Table 3-1 summarizes this discussion.

TABLE 3-1

ISSUES ATTRIBUTES OF CONSUMER SAFEGUARDS

Commission Decision	Complexity	Public Scrutiny
Rate Freeze	Low	High
Quality-of-Service Standards	High	Low
Time and Focus of Plan Review	High	Low

Source: Author's construct.

Summary

The categorization of these three decisions along the dimensions of complexity and public scrutiny completes the discussion of factors determined to impact commission decisions to protect the captive ratepayer when granting the utility greater regulatory freedom. In preparation for the formulation of relevant hypotheses, these commission decisions have been shown to be comparable across states, clearly made to protect the captive ratepayer and varying in both complexity and public scrutiny.

Assumptions and Hypotheses

The structural theory advanced in this research extends a theory of influence based on resources by specifying two conditions. The first is that the commission itself should be included as a source of influence affecting commission decisions to protect the captive ratepayer. Accepting this condition suggests that both internal and external

factors impact commission decisions to protect the captive ratepayer when granting utility companies greater regulatory freedom.

One of the assumptions of this research is that a commissioner's primary objective is to remain in office. If this objective motivates a commissioner to make decisions which are perceived as fair and equitable, then there should be some balance between the freedoms granted the telecommunications companies and the protections granted the captive ratepayer. For this reason:

> *HYPOTHESIS 1: The greater the freedom granted to the telecommunications company to set prices and retain earnings, the more consumer safeguards in the form of price freezes, quality of service standards and plan reviews will be established by the commission.*

The second condition specified by the theory of influence involves whether the issue being considered has the attribute of public scrutiny or complexity. The presence of either of those attributes will affect the influence exercised by the various factors on commission decisions.

Thus, issue attributes interact with internal and external factors, affecting commission decisions. The second hypothesis is derived from the assumption that an issue high in public scrutiny is more likely to be enacted by a commission than an issue low in public scrutiny, regardless of the influences of other internal and external factors. This is the result of the political power of ratepayers as a group.

Of the three protective measures commissions could have enacted, only rate freezes are high in public scrutiny. The connection of rates to the political power of the public is explained in more detail by John Wenders:

> If, as I have suggested, it is relatively cheap for members of a large group to know the impact of telecommunications prices on their well-being, and if the threat of the ballot box, either directly or indirectly, easily gets the attention of the regulators, then the outcome of the more general theory of regulation will be that the largest group will dominate the regulatory

> process. If a policy clearly and immediately benefits a lot of voters, even if only marginally, all of whom clearly know it, and if the regulatory process is sensitive to the election process, then the minority who will be hurt most by the policy will be outvoted by the majority. This phenomenon will be enhanced if, as in the telecommunications industry, the good that is underpriced has few substitutes.[77]

Thus, the political powers of the state should favor a rate freeze, as there is political capital to be made. On the other hand, strengthening of quality-of-service standards is a complex issue commanding little public scrutiny. There is little political capital for the commission to make with the public for implementing more stringent quality-of-service standards and the possibility of making political enemies exists both within the utilities and the legislature. For these reasons:

> *HYPOTHESIS 2: Controlling for the amount of regulatory freedom granted the utility, more commissions will enact a rate freeze than will make current quality-of-service standards more stringent when implementing an AFOR.*

Hypotheses 1 and 2 offer a test of this theory's predictions derived from assumptions concerning the objectives of commissioners and the effect of an issue's attributes on other sources of policy influence. They do not offer a direct test of the effect of variations within commissions, particularly with regard to commissions' ability to acquire and analyze relevant information.

Accepting the original assumption regarding commissioners' objectives, an hypothesis can be developed regarding the interaction of commission resources with the public scrutiny and complexity of the issue to be decided. If, when an issue is high in complexity but low in public scrutiny, a commission's resources are a significant determinant in the policy outcome, then the decisions made by commissions with

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[77] Wenders, *The Economics of Telecommunications,* 156.

greater information resources should differ from those made by commissions with fewer information resources.

Taking this line of reasoning one more step leads to an examination of the relationship between a commission's resources and its concern for the captive ratepayer. Berry has provided empirical evidence that the level of a commission's resources is correlated with the decision to protect the least affluent captive ratepayer, i.e., the greater the amount of resources of a commission, the more likely the commission will act to protect the most economically needy ratepayer.[78] Extrapolating from this result suggests that commissions with greater information resources are more likely to make decisions that favor the captive ratepayer than are commissions with fewer information resources, particularly when the issue is complex. This line of reasoning leads to Hypotheses 3 and 4, the most important hypotheses of this research. Therefore:

> *HYPOTHESIS 3: The greater the level of information resources, the greater the probability that the commission will adopt the more complex forms of ratepayer protection (plan ending dates, plan reviews and more stringent service-quality standards).*
>
> *HYPOTHESIS 4: The greater the level of commission resources, the greater the probability that, when adopting an AFOR, the commission will implement more stringent service-quality safeguards, namely financial penalties for service which falls below certain prescribed standards.*

Summary

This chapter presents a structural theory which models the effects of a commission's structure on its decision making, accounting for the influence of factors external to the commission. The proposed theory assumes that regulatory

[78] Berry, "Utility Regulation in the States."

commissioners are rational actors attempting to maximize their self-interest but suggests that such interests are modified by the commissioners' objective of remaining in office and being effective in that office. This objective supports an assumption about the motivations of commissioners—that their decisions have the appearance of being fair to ratepayers as well as utilities.

The theory presented accepts that variations in factors both external and internal to the commission affect commission decisions. In addition, the theory suggests that a commission's structural features, which directly affect its ability to acquire and analyze information, are highly correlated with decisions to protect the captive ratepayer under certain conditions. These conditions refer to the level of complexity and public scrutiny of the issue being considered.

The utility sector chosen for the test of this theory is telecommunications; the decision being analyzed is the enactment of measures to protect the captive ratepayer when granting an AFOR to a LEC. The telecommunications utility sector has been chosen because the similarity of the situation facing commissions with regard to types of AFORs being adopted coupled with the possibility of threats to captive ratepayers has offered an excellent opportunity to examine the impact of regulatory structure on regulatory decisions across states.

This area of commission activity has also been chosen because of the uncertainty surrounding it. As increased competition has changed market structure and demanded new regulatory responses; commissions have had to fashion new regulatory frameworks. While these frameworks may improve the efficiency of the incumbent LEC, other issues, which are currently troublesome and unresolved, include funding of universal service, pricing of interconnection, and even the desirability and efficiency of competition in the local exchange.

Chapter 1 mentioned the difficulty commissions face because they cannot accurately predict the effects, either short- or long-term, of their decisions to adopt new regulatory frameworks. Although they have felt pressure from various political and

economic forces to grant companies greater regulatory freedom, they have been made aware that they will be held accountable if prices rise or service deteriorates. Given these circumstances, aspects of commission structure which improve its ability to acquire and analyze relevant information could reasonably be expected to affect commission decisions.

The hypotheses chosen for analysis aim at clarifying the circumstances under which a commission's ability to competently deal with complex and highly technical information affects its decisions. By arguing that a commission with greater resources and, thus, more professional ability, is more likely to protect the interests of the captive ratepayer, this research suggests that commissions react not just to political pressure and economic incentives, but also to information. Indeed, this research asserts that information is a significant determinant in the decision-making process, particularly in a period of uncertainty.

Furthermore, this research hypothesizes that, where the general public has neither the knowledge nor understanding to take a position with regard to an issue which affects it, a regulatory commission with greater resources and more professional personnel is more likely to be its champion than a commission with fewer resources and less professional personnel.

CHAPTER 4

OPERATIONALIZATION AND MEASUREMENT OF VARIABLES, TESTS OF HYPOTHESES 1 AND 2

Introduction

The testable hypotheses having been specified in the previous chapter, this chapter explains (1)how the variables used to test the hypotheses were selected and measured, (2) the methodology chosen to test the hypotheses, and (3) the results of the statistical analysis. The dependent variables are presented under the heading of commission decisions. The independent variables are arranged under the headings used in the previous chapter to designate whether factors are proxies for influences outside or within the commission. Tables of the selected factors, showing values, means, ranges, and standard deviations are included at appropriate places within the chapter.

Tests of the four hypotheses are offered, and the methodology appropriate for each hypothesis is explained prior to the statistical analysis. Results are presented and the strength of their support for the proposed hypotheses is discussed.

Selection of Commission Decision

Because state regulatory commissions enacted AFORs over a number of years, this study is both cross-sectional and longitudinal, with the earliest decision being made in 1987 and the latest in 1994. The commission decisions which are the focus of this study are those made to adopt an AFOR for the large telecommunications companies, usually the BOCs. The number of such decisions analyzed in this research

is 38, representing 34 states and the District of Columbia. In this context, an AFOR is defined as one which allows the company greater freedom with regard to the setting of rates and/or the retention of earned revenues than the company had enjoyed under RBROR. The year in which the commission adopted an alternative regulatory framework is also the year for which all other data for the state are collected.

Classification of Freedoms Granted Company

Commissions varied in both the amount of regulatory freedom granted companies through the adoption of alternative regulatory plans and in the types of restraints to protect consumers they imposed. It is this variation in consumer protection manifested in commission decisions that this research is attempting to explain.

To facilitate the comparison of AFORs along the dimensions of freedoms and restraints, indices were created specifically for this research. They are employed to give an indication of the level of freedom granted the companies with regard to rates and earnings. While each ranges in numerical value from 1 to 4, the distance between each number is not assumed to be equal. The purpose of the numbers is only to indicate that a state with a higher score, such as 4, with regard to rates or earnings, has been granted greater freedom than a state with a score of 1, 2, or 3.

Table 4-1, on page 85, lists the commissions whose decisions are being analyzed, the RBOC to which the state BOC belongs, the year the decision to adopt an AFOR was made, and the amount of freedom granted the company with regard to rates and revenues. The raw scores are found under the following headings, respectively: STATE, RBOC, YR, RATES and EARN.

Freedom to Set Rates

The amount of freedom granted companies in the setting of rates was determined and indexed from 1 to 4, with 4 representing the greatest amount of freedom granted by the commission and 1 the least. The category each number represents is described:

1. All rates are regulated.
2. All rates are regulated but there is some pricing flexibility allowed for specific services.
3. Only basic and discretionary services are regulated; services deemed competitive are not regulated.
4. Only basic services are regulated.

Freedom to Retain Earnings

With few exceptions, prior to adopting an AFOR, commissions have required companies to go through the process of defining and defending a ratebase on which the commission set a rate of return prior to adopting an AFOR. In this way, those rates which are regulated are set initially in accordance with the established rate of return. The incentive for the company is the legal right to retain earnings above the predetermined ROR, if they are efficient. The level of earnings which a company is legally entitled to retain is rated on a scale of 1 to 4, with 1 representing the least and 4 the most. A description of each category is presented:

1. The commission keeps account of all earnings. The company is allowed to retain all earnings up to some specified ROR, must share earnings with ratepayers within a specified range above that threshold ROR, and must return earnings above the specified range.

2. The commission does not regulate all earnings as some services are deregulated and the earnings from them not included in calculated earnings. For regulated services, the company is allowed to retain all earnings below a specified ROR, must share earnings with ratepayers within a specified range above that threshold ROR, and must return earnings above the specified range.

3. The commission may or may not oversee all earnings, depending on whether some services have been deregulated. As in categories 1 and 2, there is a threshold ROR below which the company retains all earnings. Above that threshold, the company must share its earnings with ratepayers but there is no upper limit to the ROR. The company can retain a portion of all earnings, no matter how high the earned ROR.

4. The commission may or may not oversee all earnings depending on whether some services have been deregulated, but there is no ceiling placed on what the company can retain, and the company does not have to share these earnings with the ratepayers.

Classification of Restraints Placed on the Company

The variable of interest in this study is embedded in the decision of commissions to adopt a form of regulation other than RBROR for telecommunications. This variable has three parts, each of which represents a method by which the commission could protect the captive ratepayer by placing restraints on the company, even while granting that company greater regulatory freedom. These three methods of consumer protection are described below.

TABLE 4-1

INDEX OF COMMISSION DECISIONS TO GRANT COMPANIES GREATER FREEDOM WITH REGARD TO SETTING RATES AND RETAINING REVENUES

OBS	STATE	RBOC	YR	RATES	EARN
1	AL	BS	88	1	3
2	CA	PB	89	3	2
3	CO	USW	92	3	3
4	CN	SNT	87	1	1
5	DE	BA	88	1	4
6	FL	BS	88	1	1
7	GA	BS	90	1	1
8	IL	AM	94	3	4
9	IN	AM	94	3	4
10	KS	SWB	89	2	4
11	KY	BS	88	1	3
12	LA	BS	92	1	1
13	ME	NY	89	2	4
14	MD	BA	90	3	2
15	MI	AM	90	1	3
16	MN	USW	90	2	1
17	MS	BS	90	1	3
18	MO	SWB	89	1	1
19	NV	PB	90	3	3
20	NJ	BA	87	3	2
21	NJ	BA	92	3	3
22	NM	USW	89	2	1
23	NY	NY	87	1	1
24	NY	NY	92	2	1
25	OH	AM	94	4	4
26	OR	USW	91	2	2
27	PA	BA	94	3	4
28	RI	NY	89	1	1
29	RI	NY	92	2	1
30	SC	BS	90	1	1
31	TN	BS	90	3	1
32	TX	SWB	90	2	1
33	VT	NT	88	3	4
34	VA	BA	88	3	2
35	WA	USW	90	4	3
36	WV	BA	88	3	4
37	WI	AM	87	1	1
38	DC	BA	93	2	1

Note: Descriptive statistics and frequency counts in Table 4-4, p.92.

Rate Freeze/Rate Cap

To protect customers from unfair or monopolistic prices, particularly for basic services for which there is no alternative provider, most commissions have enacted rate freezes or rate caps. Through these devices, companies are unable to raise prices on basic services for some period of time, often the length of the plan. Rate freezes and rate caps are considered equal in this study and measured by the number of years they are to be in effect. The score for each commission is found in Table 4-2, on page 89 under FRZCAP.

Quality-of-Service Standards

Of particular interest to this study is the relationship between the adoption of regulation giving companies greater freedom and the enactment of quality-of-service standards. In measuring this variable, commissions were rated from 0 to 2. The definition of each score is the following:

0 The service standards to which the company must adhere have not changed with the adoption of an AFOR.

1 The standards are strengthened in some way. Either the company is to be held to a stricter standard than before or the commission will exercise greater scrutiny of the company's performance through increased monitoring and/or reports.

2 Whether or not the actual standards have been strengthened, the commission has made provision for financially penalizing the company if it does not meet the service standards.

The scores for this variable can be found in Table 4-2 on page 89, labeled QOS.

Ending Dates and Plan Reviews

While some commissions adopted plans for three to five years, others adopted plans for indefinite periods of time. Likewise, some commissions set the time for the first plan review within the first four years of the plan; others set no plan review. The raw data scores for these two variables can be found in Table 4-2, measured in number of years. PLNLN represents the number of years from adoption of the plan until its end; those commissions which set no ending date are given a score of 10, three years longer than the longest plan with a definite length. PLNSEE represents the number of years from adoption of the plan until the first planned review.

Reviewing the plan within a reasonable time period to make certain the ratepayers are not being harmed, whether through a review or an ending date, provides the ratepayer with some measure of protection. Therefore, a second measure of this protective device was constructed, using a combination of both the time to plan review and the time until the plan ended. Since an ending date signals a review of the plan to determine if it is to be renewed. The ending date can also be substituted for a plan review. A variable labeled PLAN was constructed, using the lesser of PLNLN or PLNSEE. This variable is also shown in Table 4-2.

Indices of Freedoms and Constraints

In order to facilitate a comparison of commissions' decision to impose restraints and grant freedoms to companies, two additional indices were constructed. A measure of the total amount of freedom granted a company was created by adding together the two previously defined measures for indicating the level of freedom granted to companies with regard to rates and earnings. This sum is listed in Table 4-3 on page 79 and is labeled FREE.

Restraints have been individually measured using the scores for rate freezes, quality-of-service standards, and plan ending dates and plan reviews. In order to collectively compare them to freedoms granted to companies, the following composite index of restraints was created.

1. The commission was given 1 point if some type of rate freeze on basic services had been imposed, regardless of the length of the freeze.

2. The commission was given 1 point if either the plan review date or plan ending date occurred within four years of enactment of the plan.

3. The commission was given 1 point if the commission had either strengthened quality-of-service standards or imposed financial penalties if standards were not met.

Using this index, a commission could have a score for imposing restraints of between 0 and 3. This variable is labeled RES and shown in Table 4-3.

Testing of Hypothesis 1 and 2

Having specified a method of measuring both the freedoms granted and restraints imposed upon companies by commissions, it is now possible to test the first two hypotheses. Each hypothesis will first be presented as originally stated and then operationalized to more clearly indicate the expected relationship between the variables.

> *HYPOTHESIS 1: The granting to the telecommunications company of greater freedom to set prices and retain earnings will be positively associated with the establishment by the commission of consumer safeguards in the form of price freezes, quality-of-service standards and timely plan reviews.*
>
> HY1: Regulatory freedom (FREE) is positively related to regulatory restraints (RES).

TABLE 4-2

INDEX OF RESTRAINTS PLACED ON COMPANY WITH REGARD TO ADOPTION OF AN AFOR

OBS	STATE	FRZCAP	QOS	PLNLN	PLNSEE	PLAN
1	AL	2	2	2	0.0	2
2	CA	3	1	3	2.0	2
3	CO	5	2	5	2.0	2
4	CN	2	0	2	0.0	2
5	DE	2	1	2	0.0	2
6	FL	3	1	3	0.0	3
7	GA	0	2	3	0.0	3
8	IL	5	2	10	4.0	4
9	IN	4	0	4	2.0	2
10	KS	5	0	5	3.0	3
11	KY	2	0	2	0.0	2
12	LA	0	0	3	0.0	3
13	ME	2	0	2	0.0	2
14	MD	2	0	10	2.0	2
15	MI	4	2	4	2.0	2
16	MN	4	0	4	0.0	4
17	MS	3	0	3	0.0	3
18	MO	3	0	3	1.5	2
19	NV	5	1	5	2.0	2
20	NJ	6	1	6	3.0	3
21	NJ	7	2	7	2.0	2
22	NM	3	0	3	1.0	1
23	NY	3	0	3	0.0	3
24	NY	1	2	1	0.0	1
25	OH	6	2	6	5.0	5
26	OR	5	1	5	4.0	4
27	PA	5	1	10	2.0	2
28	RI	2	0	2	0.0	2
29	RI	4	2	4	4.0	4
30	SC	0	1	3	3.0	3
31	TN	0	2	3	0.0	3
32	TX	4	0	4	1.0	1
33	VT	3	1	3	3.0	3
34	VA	4	1	4	4.0	4
35	WA	5	1	5	2.5	3
36	WV	3	0	3	0.0	3
37	WI	2	0	2	0.0	2
38	DC	3	1	3	0.0	3

Note: Descriptive statistics and frequency counts in Table 4-4, p. 92.

The null hypothesis is that there is no significant difference between the restraints adopted for a company given a low degree of freedom and a company given a high degree of freedom. Two tests were performed to determine whether to accept or reject the null hypothesis.

The first test was one of association between FREE, the index of pricing and earning freedom and RES, the index of regulatory restraints.

Table 4-5 on page 94 shows the contingency table for the levels of freedom granted and the index of restraints. It presents relationships which lend support to the hypothesis. First, over 57 percent of companies granted the highest levels of freedom also had the greatest amount of restriction imposed on them. In contrast, slightly less than 27 percent of companies granted the least amount of freedom were given the greatest amount of restriction. This is a difference of approximately 30 percent. Second, no company given the highest levels of freedom were given 0 or even just 1 restriction.

Although convincing, these percentages do not necessarily demonstrate the extent or direction of association between freedoms and constraints. But a test that is suitable to the type of data displayed in Table 4-5 is Kendall's tau, which offers a measure of statistical significance for ordinal data.[1] The tau for this contingency table is .292. It is possible to determine the statistical significance of tau through the determination of the Z value of the achieved tau. The probability of obtaining a Z value of 2.582 for a one-tailed test is .0049. This indicates that the relationship between freedoms granted and restraints imposed is statistically significant at the 1 percent level.

The null hypothesis that there is no significant difference between the restraints adopted for a company given a low degree of freedom and one given a high degree of

[1] Calculations for Kendall's Tau can be found in Appendix B of Zearfoss dissertation.

freedom is rejected. This hypothesis was used to test the assumption that commissioners are motivated by their desire to remain in office and be effective. If the

TABLE 4-3

INDEX OF FREEDOMS GRANTED COMPANIES AND RESTRAINTS IMPOSED

OBS	STATE	RBOC	FREE	RES
1	AL	BS	4	3
2	CA	PB	5	3
3	CO	USW	6	2
4	CN	SNT	2	2
5	DE	BA	5	2
6	FL	BS	2	3
7	GA	BS	2	2
8	IL	AM	7	3
9	IN	AM	7	2
10	KS	SWB	6	2
11	KY	BS	4	3
12	LA	BS	2	1
13	ME	NY	6	2
14	MD	BA	5	1
15	MI	AM	4	2
16	MN	USW	3	1
17	MS	BS	4	2
18	MO	SWB	2	2
19	NV	PB	6	3
20	NJ	BA	5	3
21	NJ	BA	6	3
22	NM	USW	3	2
23	NY	NY	2	2
24	NY	NY	3	3
25	OH	AM	8	2
26	OR	USW	4	3
27	PA	BA	7	3
28	RI	NY	2	2
29	RI	NY	3	3
30	SC	BS	2	1
31	TN	BS	4	2
32	TX	SWB	3	2
33	VT	NT	7	3
34	VA	BA	5	3
35	WA	USW	7	3
36	WV	BA	7	2
37	WI	AM	2	2
38	DC	BA	3	3

Note: Descriptive statistics and frequency counts in Table 4-4, p. 92.

TABLE 4-4
DESCRIPTIVE STATISTICS AND FREQUENCY COUNTS FOR TABLES 4-1, 4-2, AND 4-3

Variable	N	Mean	Std Dev	Minimum	Maximum
RATES	38	2.0789	0.9693	1.000	4.000
EARN	38	2.2532	1.2452	1.000	4.000

Frequency counts for:

RATES	EARN
1 = 14	1 = 16
2 = 9	2 = 5
3 = 13	3 = 8
4 = 2	4 = 9

Descriptive statistics and frequency counts for Table 4-1.

Variable	N	Mean	Std Dev	Minimum	Maximum
FRZCAP	38	3.2105	1.7577	0	7.000
QOS	38	0.8421	0.8229	0	2.000
PLNLN	38	4.000	2.2056	1.000	10.000
PLNSEE	38	1.4474	1.5413	0	5.000
PLAN	38	2.6053	0.9165	1.000	5.000

Frequency counts for:

FRZCAP	QOS	PLNLN	PLNSEE	PLAN
0 = 4	0 = 16	1 = 1	0 = 17	1 = 3
1 = 1	1 = 12	2 = 7	1 = 2	2 = 16
2 = 8	2 = 10	3 = 13	1.5 = 1	3 = 13
3 = 9		4 = 6	2 = 8	4 = 5
4 = 6		5 = 5	2.5 = 1	5 = 1
5 = 7		6 = 2	3 = 4	
6 = 2		7 = 1	4 = 4	
7 = 1		10 = 3	5 = 1	

Descriptive statistics and frequency counts for Table 4-2.

Variable	N	Mean	Std Dev	Minimum	Maximum
FREE	38	4.3421	1.8928	2.000	8.000
RES	38	2.2895	0.6538	1.000	3.000

Frequency counts for:

FREE	RES
1 = 0 4 = 6 7 = 6	1 = 4
2 = 9 5 = 5 8 = 1	2 = 19
3 = 6 6 = 5	3 = 15

Descriptive statistics and frequency counts for Table 4-3.

assumption is valid, then there should be a balance between the freedoms granted the company and the safeguards put in place for the consumer. Given the statistical results, the assumption is accepted and it is expected that commissioners will balance their decisions favoring the utility with decisions favoring the consumer. Given the statistical results, the assumption is accepted and it is expected that commissioners will balance their decisions favoring the utility with decisions favoring the consumer.

> *HYPOTHESIS 2: Controlling for the amount of regulatory freedom granted the utility, commissions are more likely to enact restraints which are high in public scrutiny and low in complexity, such as a rate freeze or rate cap, than to enact restraints which are low in public scrutiny and high in complexity, such as more stringent quality-of-service standards.*

Operationalizing this hypothesis, as was done with Hypothesis 1, yields the following:

> HY2: More commissions will enact rate freezes and rate caps than will adopt more stringent quality-of-service standards.

The null hypothesis is that, controlling for the amount of regulatory freedom granted the company, there is no significant difference in the adoption of restraints, whether high or low in complexity or public scrutiny.

To determine whether to accept or reject the null hypothesis, two different contingency tables were constructed, using the variables for stringency of quality-of-service standards (QOS), level of freeze or rate cap imposed (FRZCAP), and level of freedom granted (LVLFRE).

In the contingency Table 4-5, the relationship between quality-of-service standards and rate freezes/rate caps is specified. Of the total of 38 commission decisions examined, four (10.5 percent) provided for no rate freeze or cap, while 34 (89.5 percent) were categorized in the following manner.

None If there was no freeze, the category was none.

Some	If the rate freeze was for some period of time, it was categorized as some.

TABLE 4-5

CONTINGENCY TABLE OF RELATIONSHIP OF YEARS OF RATE FREEZE TO STRINGENCY OF QUALITY-OF-SERVICE STANDARDS ADOPTED WHEN ENACTING AN AFOR

	Increased Strength of Quality-of-Service Standards		N = 38
Years of rate freeze	None	Some	Total (percent of 38)
None	1	3	4 10.53
Some	15	19	34 89.47
Total (percent of 38)	16 (42.11)	22 (57.89)	38 (100.00)

Source: Author's construct.

Sorting the data by the level of freedom granted the company, as shown in Table 4-6, the contingency tables for the variables are displayed for low, medium and high levels of freedom. They are labeled respectively, Table 4-7, Table 4-8, and Table 4-9.

Table 4-7 indicates that at the low level of regulatory freedom, 12 commissions have imposed a rate freeze or cap while only six have adopted more stringent quality-of-service standards. At the medium level of freedom granted the companies, shown in Table 4-8, 15 commissions enacted rate freezes, but only 11 adopted more stringent quality-of-service standards. And at the high level of freedom, Table 4-9, seven commissions adopted rate freezes and five adopted more stringent quality-of-service standards. In terms of percentages, Table 4-10 makes clear the differences between adoption of a rate freeze and adoption of more stringent quality-of-service standards.

TABLE 4-6

CONTINGENCY TABLE OF LEVEL OF FREEDOM GRANTED COMPANIES AND NUMBER OF RESTRAINTS IMPOSED

Key: Frequency Percent of total Row percent Column percent	**Number of restraints imposed**			
	1	2	3	Total
Level of freedom granted				
Low (Free=2,3)	3 7.89 20.00 75.00	8 21.05 53.33 42.11	4 10.53 26.67 26.67	15 39.47
Medium (Free=4,5,6)	1 2.63 6.25 25.00	8 21.05 50.00 42.11	7 18.42 43.75 46.67	16 42.11
High (Free=7,8)	0 0.00 0.00 0.00	3 7.89 42.86 15.79	4 10.53 57.14 26.67	7 18.42
Total	4 10.53	19 50.00	15 39.47	38 100.00

Source: Author's construct.

The percentage figures in brackets indicate the percentage of the total N of each column. Looking at the last three lines of the table, it is clear that at all levels of regulatory freedom, the percentage of commissions adopting a rate freeze exceeds the percentage adopting more stringent quality-of-service standards. The least difference between adoption of a rate freeze and quality-of-service standards is 25 percent at the medium level of freedom. The greatest difference is at the low level of freedom, at

40 percent. However, even at the high level of freedom the difference is over 28 percent.

TABLE 4-7

RELATIONSHIP OF LEVEL OF RATE FREEZE TO STRINGENCY OF QUALITY-OF-SERVICE STANDARDS AT *LOW* LEVEL OF FREEDOM GRANTED TO COMPANY

	Quality-of-Service Standards		N = 15
Years of rate freeze	None	Some	Total (percent of 15)
None	1	2	3 20.00
Some	8	4	12 80.00
Total (percent of 15)	9 (60.00)	6 (40.00)	15 (100.00)

Source: Author's construct.

TABLE 4-8

RELATIONSHIP OF LEVEL OF RATE FREEZE TO STRINGENCY OF QUALITY-OF-SERVICE STANDARDS AT *MEDIUM* LEVEL OF FREEDOM GRANTED TO COMPANY

	Quality-of-Service Standards		N = 16
Years of rate freeze	None	Some	Total (percent of 16)
None	0	1	1 6.25
Some	5	10	15 93.75
Total (percent of 16)	5 (31.25)	11 (68.75)	16 (100.00)

Source: Author's construct.

TABLE 4-9

RELATIONSHIP OF LEVEL OF RATE FREEZE TO STRINGENCY OF QUALITY-OF-SERVICE STANDARDS AT *HIGH* LEVEL OF FREEDOM GRANTED TO COMPANY

	Quality-of-Service Standards		N = 7
Years of rate freeze	None	Some	Total (percent of 7)
None	0	0	0 0.00
Some	2	5	7 100.00
Total (percent of 7)	2 (28.57)	5 (71.43)	7 (100.00)

Source: Author's construct.

TABLE 4-10

RELATIONSHIP BETWEEN LEVEL OF FREEDOM GRANTED UTILITY AND CONSUMER SAFEGUARDS ADOPTED

Restraint adopted	Low level of freedom, N=15 (percent of 15)	Medium level of freedom, N=16 (percent of 16)	High level of freedom, N=7 (percent of 7)
None	1 (6.7%)	0	0
Just QOS	2 (13.3%)	1 (6.3%)	0
Just rate freeze	8 (53.3%)	5 (31.3%)	2 (28.8)
Rate freeze + QOS	4 (26.7%)	10 (62.4%)	5 (71.2%)
Total with rate freeze	12 (80%)	15 (93.7%)	7 (100%)
Total with QOS	6 (40%)	11 (68.7%)	5 (71.4%)
Difference	6 (40%)	4 (25%)	2 (28.6%)

Source: Author's construct.

In summation, when controlling for the amount of regulatory freedom granted companies, the number adopting rate freezes is consistently greater than the number adopting more stringent quality-of-service standards. The null hypothesis is rejected. The alternative hypothesis, that commissions are more likely to enact restraints which are high in public scrutiny than those which are high in complexity, is accepted.

Factors Affecting Regulatory Decisions

This research is interested in examining whether factors internal to commissions are significant determinants of commission decisions to adopt restraints to protect the captive ratepayer. The proposed theory suggests that factors both within and outside of the commission affect commission decisions which are high in complexity and low in public scrutiny. In addition, it is hypothesized that factors measuring a commission's resources will prove to be the most statistically significant of either internal or external factors in explaining commission decisions to protect the captive ratepayer. Before subjecting these statements to empirical testing, those factors identified in the previous chapter as influencing commission decisions are discussed in greater detail and presented as being factors internal or external to the commission. The names of all the variables used in the analyses and their descriptions are listed in Appendix A.[2]

Internal Factors

In the previous chapter, internal determinants of commission decisions were categorized under the headings of resources, organizational attributes, and motives. Using those same categories, the operationalization and measurement of the identified determinants are explained.

[2] The number of observations, the mean, standard deviation, sum, minimum and maximum of these variables are listed in Appendix C; the raw scores of each variable are listed in Appendix D.

Resources

The variables included in this category measure aspects of the professionalism of the commission staff as well as the financial resources and information processing capability available to the commission.

Professionalism of Staff

Based on the discussion of professionalism in Chapter 3, the variable offering the best measure of professionalism of commission staff is the average salary plus benefits of commission staff for each commission. Assuming that the better qualified the staff, the higher will be their salary, average staff salary offers a measure of staff professionalism which is not directly tied to the level of resources available to the commission. It is hypothesized that commissions with more professional staff will be more likely to adopt more restraints.

Commission Resources

Commission resources are measured by combining the following four variables into an index.

(1) Annual expenditures of commission (EXPEND). This measures the total budget of the commission for the particular year, including salary figures. To facilitate comparisons, all dollar figures used in computations are converted to 1994 dollars.

(2) Total number of staff (STAFF). This variable is the total number of staff employed.

(3) Average commissioner salary (COMSAL). This measures the average of commissioners' salaries and does not include that of the chair. Where a range for the salary was indicated, the mid-point of the range is the figure given.

(4) A dichotomous measure of whether the commission regulated motor carriage (MC). This variable was included in the index measuring resources because, on average, expenditures and staff are greater for commissions which regulate motor carriage. Therefore, commissions which regulate motor carriage were scored as 0 and those which did not scored as 1.

To create the index, each of the these four variables was standardized and the average taken of the sum of the four standardized scores. The resulting variable is labeled COMRES. Given the underlying premise of this research, the relationship between commission resources and the adoption of restraints should be positive.

Organizational Attributes

The resources of a commission and the professional expertise of its personnel provide two indicators of a commission's overall analytical ability. Other measures of its organizational structure give a clearer indication of how resources are used to enhance information processing and decision making. Four such measures, described below, are used to create the index COMCAPA.

(1) A dichotomous measure of whether the commission has a research library(LIB).

(2) A dichotomous measure of whether a commission has a telecommunications staff (TELSTF). A consistent measure of the size of such staff was not available.

(3) A dichotomous measure of whether the majority of senior staff is protected by civil service (JOBP).

(4) A dichotomous measure of whether the commission has above the average number of computers per staff person (MCOMPSTF). This was determined by dividing the number of personal computers by the number of staff and then assigning a 1 to those commissions which had a ratio of computers to staff that was above the average.

The index COMCAPA was created by taking the sum of the scores for these four attributes for each state commission. The scores could range from 0 to 4. As with commission resources, this research hypothesizes that the relationship between commission capabilities and the adoption of restraints will be positive.

Motives

Motives as a dimension covers aspects of commission structure as well as commissioner preferences. Each of the variables described in this section offers some insight into the ideological leanings of the commissioners and thus gives some indication as to their policy preferences.

Commission Structure

Within this category are variables that indicate how commissioners are selected, how many serve on a commission, their actual length of service on the commission, and whether they can go to work for a utility directly upon leaving a commission.

(1) Elected versus appointed (EVA). In this sample of 38 commission decisions, eight states elect commissioners. In seven they are elected by voters and in one, they are elected by the legislature. In the other 30 commissions, commissioners are appointed by the governor, usually with confirmation by the legislature. This research hypothesizes that elected commissioners are more willing to adopt restraints.

(2) Number of commissioners (NUMCOM). Commissions range in size from three to seven commissioners. This variable measures the number of commissioners sitting on the commission at the time the decision was made to adopt an AFOR. This research makes no prediction about the relationship between commission size and adoption of restraints.

(3) Average tenure of commissioners (COMTEN). This variable measures the average length of actual service of commissioners as a group. This was calculated by dividing the total number of years of service by commissioners by the number of commissioners serving at the time the decision was made. This research predicts longer service will result in the adoption of more restraints.

(4) A dichotomous variable that indicates whether there is a cooling off period (COOLOFF). This variable is scored as 1 if the commissioner must wait some period of time before going to work for a utility and 0 otherwise. Since this research is concerned with the possible influence of the BOCs on commission decisions, this research predicts a positive relationship between this variable and the adoption of restraints.

Commissioners' Preferences

Commissioner preferences include, first, those choices made by commissioners that indicate their ideological leanings. Second, the term refers to choices made by other commissions that could influence current commission decisions. The specific indicators measure political party affiliation, past professional experience, and the percent of other commissions within the same RBOC that have already adopted AFORs.

(1) Political party affiliation (DEM, DEMS). The percentage of Democrats and Independents sitting on a commission were measured (DEM). In addition, because southern Democrats have been known to favor policy positions which differ from those traditionally held by Democrats,[3] the percent of Democrats sitting on each commission in states which were part of the confederacy was also measured (DEMS). Given Gormley's findings that political affiliation is associated with attitudes toward redistributive policies[4] it is presumed that the greater the presence of Democrats and Independents, the more likely a commission will be to adopt more restraints and more stringent quality-of-service standards. No prediction is made regarding the presence of southern Democrats.

(2) Past professional experience (POLI, BUSINESS, CONSUME). Working on the premise that past occupational experience is likely to have an effect on current behavior,[5] three dimensions of commissioners' past professional experience were measured by determining the percentage of commissioners who had such

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[3] Cohen, *The Politics of Telecommunications Regulation*, 103; Campbell, "The Politics of Requesting," 411.

[4] Gormley, *The Politics of Public Utility Regulation*, 73.

[5] Campbell, "The Politics of Requesting," 409.

experience. The three dimensions measured were past experience in politics (POLI), business (BUSINESS) and consumer protection (CONSUMER).

Commissioners were determined to have political experience if they had run for or been elected to office prior to sitting on the commission, had been state party chair, or had been personal staff to elected officials (although not legislative staff). Given the political pressure surrounding the adoption of restraints, political experience should have a negative relationship to adoption of restraints.

Measuring the percentage of commissioners with past experience in business or consumer affairs controls for the possibility of some commissioners' empathy for either the firm or the consumer. Commissioners who had past experience in private enterprise were categorized as having business experience. Lawyers were not included in this category.

Commissioners were coded as having experience protecting consumers if they had previously worked for the Office of the Attorney General (OAG) in those states where the OAG operates as a consumer advocacy organization, for the Consumers' Counsel, Legal Aid Society or for a consumer affairs office (CONSUME). Only eight commissions had commissioners with such experience. For the adoption of restraints, the estimated coefficients should be negative for business experience and positive for consumer experience.

The final variable in commissioner preferences measures the influence of other commission decisions (AFOR). It is possible that commissions which adopted AFORs later than other commissions within the same RBOC may have been influenced to adopt more restraints rather than fewer. The difference between earlier and later adoptions was measured by determining the percentage of commissions within each RBOC which had already adopted AFORs at the time the commission of interest made the decision to adopt an AFOR. The estimated coefficient for this variable is expected to be positive with regard to the adoption of restraints.

External Factors

Factors outside the commission determined to affect commission decisions are categorized as being in one of three environments: (1) political structure; (2) public and private interest groups; and (3) socioeconomic demographics.

Political Structure

There are several factors of interest in this category. These are comprised of the governor, the legislature, and the formal definition of the relationship between the commission and elected officials.

Governors

The first variable measures the political affiliation of the governor (GOV). GOV was coded 0 if the governor was a Republican and 1 if a Democrat or Independent. For the District of Columbia, since there is no governor, the party affiliation of the mayor was coded. It is expected that there were will be a positive relationship between Democratic governors and adoption of restraints.

GOVS measures the party affiliation of governors in southern states. GOVS was coded 0 if the state had not been a member of the Confederacy or if it had been a member of the Confederacy and had a Republican governor. If a member of the Confederacy with a Democratic governor, it was coded 1. Since party is not a reliable indicator of ideology in the South no prediction is made about the coefficient of this variable.[6] It is included as a control in observing the behavior of Democratic and Republican governors.

[6] Cohen, *The Politics of Telecommunications Regulation*, 103; Campbell, "The Politics of Requesting," 411.

Legislatures

State legislatures were also coded with regard to party affiliation by measuring the average percentage of Democrats and Independents in both houses (LEGDEM). It is expected that the estimated coefficient for LEGDEM will be positive with regard to the adoption of restraints.

Taking into account the geographical location of the commission, southern Democrats were also measured using the variable LEGDEMS. States that had been part of the Confederacy were coded 1 if there was a Democratic majority in the legislature. All other states were coded 0. Again, no prediction is made about this variable but it is included for control.

Legislators

As explained in Chapter 3, legislatures take more of an interest in the policy decisions of commissions than in the specific decisions determining rates. Legislators with more professionalism, like more professional commission staff, may be more concerned about the protection of consumers than less professional ones.

The variable LEGSL94 offers a measure of legislator professionalism as it is the annual legislative salary expressed in 1994 dollars. But having outlined two possible and opposing responses of professional legislatures to the adoption of consumer safeguards, the relationship of the variable LEGSL94 to the adoption of restraints is not predicted.

Relationship of Commission to Political Structure

The last two variables in this category measure the formal relationship between commissions and the political structure. These are dichotomous variables which measure whether the commission is formally an arm of the executive branch (EARM) or the legislature (LARM). These are not mutually exclusive categories as some commissions are not formally the arm of either. Given the political pressure exerted by

the BOCs on state legislatures, a negative coefficient is predicted for LARM. No prediction is made for EARM but it is included for control.

Interest Groups

While interest groups are clearly a part of the political scene, they are not an institutional part of the political structure. As such, they are discussed separately. In this research, the groups of interest are those representing the local exchange carriers, the residential customers and the large business users.

Local Exchange Carriers

In the previous chapter, reference was made to the political power of the BOCs, because of their extensive presence in the states and their formidable war chest with regard to lobbying elected officials as well as commissioners and commissions. In this sample, they control, on average, over 80 percent of the phone lines in the states and 100 percent in the District of Columbia.[7] Since the only consistent measurement of the presence of the BOCs is the percentage of lines they control within the state, this percentage was used as the variable BOC. There should be a negative relationship between BOC and the adoption of restraints.

While the BOCs are recognized as a significant presence in the regulatory arena, their influence has been visible in state politics, particularly the legislature. In an attempt to measure some of this influence, two interaction terms, LARMBOC and EBOC, were created. LARMBOC is composed of LARM x BOC and measures the presence of the BOC in those states where commissions report directly to the legislature. EBOC is composed of EARM x BOC and measures the presence of the BOC in those states in which the commission reports directly to the governor. Both variables are predicted to have a negative relationship with the adoption of restraints.

[7] *Annual Report on Utility and Carrier Regulation of the National Association of Regulatory Utility Commissioners*, 1987-1994.

Business Customers

The second interest group in this study is that representing business customers. This is measured by recording the percentage of phone lines in the state which are business rather than residential lines (BUS). No prediction is made about the sign of the estimated coefficient for this variable.

Consumer Advocates

The third interest group represents the residential ratepayer and is measured using the budget of the consumer advocate's office (CONSUM94). In those states which do not have such an office, the amount is 0. Given the need for consumer counsels to engage in disputes which will give them high visibility with the public in order to justify their funding with tax dollars, it is possible that the presence of the consumer counsel's office will have no effect on the adoption of restraints which are complex and have low visibility. However, it is possible that they will have a positive effect on the adoption of lengthier rate freezes. Such an issue would be highly visible and enhance their credibility with the public.

Socioeconomic Factors

Factors which define the population of a state, such as per capita income, level of urbanization, and population density affect the type of public policies adopted. Overall, the higher the level of education, income, and urbanization, the more support there is for public services.[8] To control for this influence, two measures of states' socioeconomic profiles were used. These were the state's average per capita income, measured in 1994 dollars, and the percentage of the state classified as urban. Since these two variables were highly correlated, they were combined into an index, URBINC,

[8] Mazmanian and Sabatier, "Multivariate Model," 445.

created by taking the average sum of their standardized scores. States with a higher URBINC score are expected to adopt more restraints.

Other

Two other factors that could affect commission decisions are the amount of freedom granted the company and the year in which the commission adopted an AFOR. The measurement of the total amount of freedom granted the company is identified as FREE and should have a positive relationship to the adoption of restraints.

Lastly, it is possible that time alone may be a factor in the adoption of restraints. To account for this, the year in which the AFOR was adopted is recorded and labeled YR. No relationship is predicted for this variable.

Summary

The variables selected for a multivariate analysis of the relationship between commission structural factors and adoption of consumer safeguards have been identified. Whether the relationship of these various factors to the adoption of consumer safeguards is predicted to be positive or negative has also been specified. A complete list of the variables to be used in the analysis and their hypothesized relationship with adoption of restraints which are complex and low in public scrutiny are presented in Table 4-11.

TABLE 4-11
HYPOTHESIZED RELATIONSHIP OF SELECTED VARIABLES TO ADOPTION OF RESTRAINTS

Variables of Interest	Hypothesized Relationship with Adoption of Restraints
STFSL94 - Average staff salary	(+)
COMRES - Index of commission resources	(+)
COMCAPA - Index of commission capabilities	(+)
EVA - Presence of absence of elected commissioners	(+)
NUMCOM - Number of commissioners	not specified
COMTEN - Tenure of commissioners	(+)
COOLOFF - Cooling-off period required	(+)
DEM - Percent commissioners Democrat or Independent	(+)
DEMS - Percent commissioners Democrat or Independent in South	not specified
POLI - Percent commissioners with political experience	(-)
BUSINESS - Percent commissioners with business experience	(-)
CONSUMER - Percent commissioners with consumer protection experience	(+)
AFOR - Percent states in same RBOC with AFOR	(+)
GOV - Governor is Democrat	(+)
GOVS - Governor is Democrat in South	not specified
LEGDEM - Percent of Democrats in state legislature	(+)
LEGDEMS - Percent of Democrats in southern state legislature	not specified
LEGSL94 - Salary of state legislators	not specified
EARM - If commission reports to governor	not specified
BOC - Percent access lines controlled by BOC	(-)
BUS - Percent business access lines	not specified
CONSUM94 - Budget of consumer agency	(+)
URBINC - Index of socioeconomic factors	(+)
FREE - Amount of freedom granted company	(+)

Source: Author's construct.

CHAPTER 5

MULTIVARIATE TESTING OF HYPOTHESES 3 AND 4

Having specified factors both internal and external to the commission that have been identified by reviewed research as affecting commission decisions, it is now possible to test the two remaining hypotheses.

> *HYPOTHESIS 3: The greater the level of commission resources, the greater the probability that the commission will adopt consumer safeguards when enacting an AFOR.*
>
> *HYPOTHESIS 4: The greater the level of commission resources, the greater the probability that, when adopting an AFOR, the commission will implement the more complex form of consumer protection, more stringent service quality safeguards.*

Operationalizing these hypotheses, they can be restated as the following:

> HY3: There is a positive relationship between the level of commission resources (COMRES, COMCAPA, STFSL94) and the adoption of the consumer safeguards (RES).
>
> HY4: There is a positive relationship between the level of commission resources (COMRES, COMCAPA, STFSL94) and the adoption of more stringent quality-of-service standards (QOS).

The null hypothesis for both Hypotheses 3 and 4 is that commission resources, which this research has measured in terms of overall financial and staff resources, capability to acquire and analyze information and commission professionalism, have no relationship to the adoption of restraints. In order to reject the null hypothesis, those factors which account for a commission's resources must be shown to have a

statistically significant impact on commission decisions to adopt these consumer safeguards.

Methodology

The objective of this research is to demonstrate that the relationship of a subset of independent variables to the dependent variable, adoption of restraints, is significant. Such a research objective suggests the use of multiple regression. Ordinary multiple regression assumes interval level data. However, the dependent variables, RES and QOS, are ordinal level variables. Using ordinary least squares regression with ordinal dependent variables results in coefficient estimates which are inefficient but not biased.

The presence of ordinal dependent variables indicates that the more appropriate statistical method is a form of logistic regression, the ordered probit model. But with small sample sizes (50 or less), ordered probit models do not provide parameter coefficients which are asymptotically efficient or easily interpretable.[1]

Consequently, because of both the nature of the dependent variables and the small sample size, neither multiple regression with ordinary least squares nor the ordered probit model using maximum likelihood will provide estimates of coefficients which are consistent, efficient, or easily interpretable.

Given the drawbacks of either method, it is necessary to assert that this research is not focused on providing specific parameter estimates. Rather, the purpose of this research is to analyze the importance of commission resources in relation to other factors both internal and external to the commission, as being significant determinants of commission decisions.

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[1] Robert S. Pindyck and Daniel Rubinfield, *Econometric Models and Economic Forecasts*, 3rd ed. (New York: McGraw Hill, 1991), Chapters 9 and 10.

Given the problems inherent in using either multiple regression method to determine the significance of the relationship of the independent variables to the dependent variable, four different methods, both bivariate and multivariate, were used.

The bivariate methods were Pearson product moment correlations and contingency table analyses. The multivariate methods were ordinary least squares and probit multiple regression.

The logic of using these different methodologies is that if the specified independent variables are shown to be related to the dependent variables in a statistically significant manner in either three or all four types of analyses, then despite the shortcomings of the method employed, the significance of the variable tends to be supported.

Bivariate Analysis

The first method of analysis of the relationship of the independent variables to the dependent variables adoption of restraints (RES) and more stringent quality-of-service standards (QOS) was to establish the Pearson product moment correlation between these variables and each of the independent variables. Table 5-1 shows the correlations of the selected independent variables with RES and QOS and the probability that such a relationship could have occurred by chance.

A third dependent variable, FRZCAP, is also shown in this table. FRZCAP measures the length in years of the rate freeze or rate cap adopted by the commission. Since a rate freeze is high in public scrutiny and low in complexity, recording the relationship of the independent variables to this third variable offers an opportunity to examine the assertion of the second condition, that commissions react differently to issues that are high in public scrutiny from those that are high in complexity. If this assertion is correct, then the examined independent variables should show a different relationship to adopted length of the imposed freeze than to adoption of consumer safeguards (RES) or increased stringency of quality-of-service standards (QOS).

A second analysis was performed on the relationship of the independent variables to the dependent variables using contingency tables. The indicator of the

strength of the relationship is Kendall's Tau. The probability that such a relationship could have occurred by chance is measured using Fisher's exact. The results of the contingency table analysis are shown in Table 5-1, alongside the results of the tests of correlation.[2]

Test Results

To more easily perceive both the differences and the similarities in the analysis of the relationship of the independent variables to the dependent variables, the independent variables have been ranked by the probability of the relationship occurring by chance from least likely to occur by chance to most likely to occur by chance. The results of this ranking for both correlation and contingency table analyses are shown for adoption of restraints (RES), adoption of more stringent quality-of-service standards (QOS) and length of rate freeze adopted (FRZCAP) in Tables 5-2, 5-3 and 5-4.

Test Results of Correlation and Contingency Table Tests

The most notable result from Tables 5-1, 5-2 and 5-3 is the high level of significance of the relationship of commission resource factors (COMRES, COMCAPA, STFSL94) to both adoption of restraints (RES) and adoption of more stringent quality-of-service standards (QOS). The significance of these relationships is demonstrated by both correlation and contingency table analysis.

In Table 5-2, the strongest relationship demonstrated by contingency table analysis is between socioeconomic factors (URBINC) and adoption of restraints (RES). The second strongest relationship is between commission resources (COMRES) and RES. Since adoption of restraints encompasses issues both high in complexity (plan length, plan review and more stringent quality-of-service standards) as well as issues

[2] Appendix G shows the division of the continuous variables into categories so contingency tables could be constructed. Contained in original dissertation.

high in public scrutiny (rate freeze and rate cap), this result gives support to Hypothesis 3.

TABLE 5-1
CORRELATION AND CONTINGENCY TABLE ANALYSIS OF LEVEL OF RELATIONSHIP BETWEEN INDEPENDENT VARIABLES AND QOS, RES, AND FRZCAP PAIRED WITH NON-ZERO PROBABILITY OF RELATIONSHIP HAPPENING BY CHANCE

	QOS		RES		FRZCAP	
Variable	Bivariate corr. Non-0 Probability	Contingency Table-Kendall's Tau and Non-0 Probability	Bivariate corr. and Non-0 Probability	Contingency Table-Kendall's Tau and Non-0 Probability	Bivariate corr. and Non-0 Probability	Contingency Table-Kendall's Tau and Non-0 Probability
COMRES - Index of commission resources	.11/.53	.164/.24	.44/.01	.370/.07	.23/.16	.202/.59
COMCAPA - Index of commission capabilities	.17/.30	.165/.78	.21/.21	.229/.03	.25/.13	.160/.08
STFSL94 - Average staff salary	.57/.0002	.404/.02	.30/.07	.101/.72	.17/.29	.159/.68
EVA - Commissioners are elected	.10/.55	.089/.78	-.23/.16	-208/.26	-.51/.0011	-.423/.0005
NUMCOM - Number of commissioners	.18/.29	.112/.52	-.15/.36	-.134/.04	-.24/.15	-.150/.67
COMTEN - Tenure of commissioners	.05/.78	.097/.70	-.38/.02	-.251/.78	-.53/.0006	-.372/.035
COOLOFF - Commission has cooling-off period	-.07/.67	-.066/.91	.15/.36	.173/.27	.28/.09	.231/.34
DEM - Percent Democratic commissioners	.15/.53	.134/.66	-.13/.44	-.024/.59	-.29/.08	-.221/.33
DEMS - Percent southern Democratic commissioners	.09/.57	.069/.95	-.19/.25	-.162/.67	-.56/.0003	-.468/.0009
BUSINESS - Percent commissioners with business experience	-.19/.25	-.184/.88	-.06/.70	-.048/.75	-.14/.41	-.148/.99
POLI - Percent commissioners with political experience	.15/.37	.142/.44	-.13/.45	-.109/.27	-.09/.58	-.099/.81
CONSUMER - Percent commissioners with consumer experience	-.22/.19	-.165/.89	-.02/.92	.000/.52	-.01/.96	-.006/.58
AFOR - Percent states in RBOC adopted AFOR	.44/.01	.334/.24	.02/.92	-.029/.08	-.02/.95	-.021/.45
GOV - Governor is Democrat	.10/.56	.083/.65	-.03/.86	-.013/.72	-.05/.77	-.038/.63
GOVS - Governor is southern Democrat	-.07/.66	-.081/.58	-.21/.20	-.218/.32	-.41/.01	-.342/.02
LEGDEM - Percent Democrats in state legislature	-.18/.29	-.119/.50	-.20/.22	-.197/.34	-.53/.0007	-.533/.000
LEGDEMS - Percent southern Democrats in state legislature	.02/.91	.099 /.431	-.20/.24	-.134/.55	-.51/.001	-.454/.0005
LEGSL94 - Legislators' salary	.27/10	.162/.54	.20/.23	.130/.46	.16/.34	.182/.40
EARM - Commission reports to governor	0/1.00	-.015/.46	-.04/.81	-.044/1.00	.21/.20	.116/.78
LARM - Commission reports to legislature	-.12/.47	-.12/.71	-.25/.13	-.232/.24	-.32/.05	-.257/.33
BOC - Percent access lines controlled by BOC	.03/.83	.027/.75	-.10/.53	-.026/.72	-.14/.42	-.039/.85
LARMBOC - Percent BOC lines in state where commission reports to legislature	-.15/.36	-.149/.26	-.28/.09	-.252/.04	-.31/.06	-.234/.50
EBOC - Percent BOC lines in state where commission reports to governor	.06/.73	.072/.38	-.03/.87	-.002/.80	.20/.24	.085/.57
BUS - Percent business lines in state	.20/.23	.326/.48	.26/.12	.217/.49	.11/.50	.151/.81
CONSUM94 - Budget of consumer agency	.16/.35	.097/.97	.15/.36	.091/.96	.42/.01	.296/.49
URBINC - Index of socioeconomic factors	.32/.05	.244/.08	.41/.01	.423/.01	.36/.03	.190/.22
FREE - Freedom granted company	.23/.17	.207/.51	.31/.06	.264/.58	.60/.0001	.418/.02
YR - Year AFOR adopted	.40/.01	.327/.10	.09/.59	.042/.39	.29/.08	.228/.41

Source: Author's construct. Non-0 probability is the probability that the measured correlation or Tau statistic will be observed if the true correlation is zero or if there is no relationship between the variables in the contingency table.

TABLE 5-2

RANK ORDERING OF INDEPENDENT VARIABLES BY PROBABILITY OF BIVARIATE ASSOCIATION WITH RES OCCURRING BY CHANCE

Variable	Probability of estimated correlation occurring by chance	Variable	Probability of estimated contingency table association occurring by chance
COMRES - Index of commission resources	.01	URBINC - Index of socioeconomic factors	.01
URBINC - Index of socioeconomic factors	.01	COMCAPA - Index of commission capabilities	.03
COMTEN - Tenure of commissioners	.02	LARMBOC - Percent BOC lines in state where commission reports to legislature	.04
FREE - Freedom granted company	.06	NUMCOM - Number of commissioners	.04
STFSL94 - Average staff salary	.07	COMRES - Index of commission resources	.07
LARMBOC - Percent BOC lines in state where commission reports to legislature	.09	AFOR - Percent states in RBOC adopted AFOR	.08
BUS - Percent business lines in state	.12	LARM - Commission reports to legislature	.24
LARM - Commission reports to legislature	.13	EVA - Commissioners are elected	.26
EVA - Commissioners are elected	.16	POLI - Percent commissioners with political experience	.27
GOVS - Governor is southern Democrat	.20	COOLOFF - Commission has cooling-off period	.27
COMCAPA - Index of commission capabilities	.21	GOVS - Governor is southern Democrat	.32
LEGDEM - Percent Democrats in state legislature	.22	LEGDEM - Percent Democrats in state legislature	.34
LEGSL94 - Legislators' salary	.23	YR - Year AFOR adopted	.39
LEGDEMS - Percent southern Democrats in state legislature	.24	LEGSL94 - Legislators' salary	.46
DEMS - Percent southern Democratic commissioners	.25	BUS - Percent business lines in state	.49
CONSUM94 - Budget of consumer agency	.36	CONSUMER - Percent commissioners with consumer experience	.52
COOLOFF - Commission has cooling-off period	.36	LEGDEMS - Percent southern Democrats in state legislature	.55
NUMCOM - Number of commissioners	.36	FREE - Freedom granted company	.58
DEM - Percent Democratic commissioners	.44	DEM - Percent Democratic commissioners	.59
POLI - Percent commissioners with political experience	.45	DEMS - Percent southern Democratic commissioners	.67
BOC - Access lines controlled by BOC	.53	BOC - Access lines controlled by BOC	.72
YR - Year AFOR adopted	.59	GOV - Governor is Democrat	.72
BUSINESS - Percent commissioners with business experience	.70	STFSL94 - Average staff salary	.72
EARM - Commission reports to governor	.81	BUSINESS - Percent commissioners with business experience	.75
GOV - Governor is Democrat	.86	COMTEN - Tenure of commissioners	.78
EBOC - Percent BOC lines in state where commission reports to governor	.87	EBOC - Percent BOC lines in state where commission reports to governor	.80
CONSUMER - Percent commissioners with consumer experience	.92	EARM - Commission reports to governor	.81
AFOR - Percent states in RBOC adopted AFOR	.92	CONSUM94 - Budget of consumer agency	.96

Source: Author's construct.

TABLE 5-3

RANK ORDERING OF INDEPENDENT VARIABLES BY PROBABILITY OF BIVARIATE ASSOCIATION WITH QOS OCCURRING BY CHANCE

Variable	Probability of estimated correlation occurring by chance	Variable	Probability of estimated contingency table association occurring by chance
STFSL94 - Average staff salary	.0002	STFSL94 - Average staff salary	.02
AFOR - Percent states in RBOC adopted AFOR	.01	URBINC - Index of socioeconomic factors	.08
YR - Year AFOR adopted	.01	YR - Year AFOR adopted	.10
URBINC - Index of socioeconomic factors	.05	COMRES - Index of commission resources	.24
LEGSL94 - Legislators' salary	.10	AFOR - Percent states in RBOC adopted AFOR	.24
FREE - Freedom granted company	.17	LARMBOC - Percent BOC lines in state where commission reports to legislature	.26
CONSUMER - Percent commissioners with consumer experience	.19	EBOC - Percent BOC lines in state where commission reports to governor	.38
BUS - Percent business lines in state	.23	LEGDEMS - Percent southern Democrats in state legislature	.40
BUSINESS - Percent commissioners with business experience	.25	POLI - Percent commissioners with political experience	.44
NUMCOM - Number of commissioners	.29	EARM - Commission reports to governor	.46
LEGDEM - Percent Democrats in state legislature	.29	BUS - Percent business lines in state	.48
COMCAPA - Index of commission capabilities	.30	LEGDEM - Percent Democrats in state legislature	.50
CONSUM94 - Budget of consumer agency	.35	FREE - Freedom granted company	.51
LARMBOC - Percent BOC lines in state where commission reports to legislature	.36	NUMCOM - Number of commissioners	.52
POLI - Percent commissioners with political experience	.37	LEGSL94 - Legislators' salary	.54
LARM - Commission reports to legislature	.47	GOVS - Governor is southern Democrat	.58
DEM - Percent Democratic commissioners	.53	GOV - Governor is Democrat	.65
COMRES - Index of commission resources	.53	DEM - Percent Democratic commissioners	.66
EVA - Commissioners are elected	.55	COMTEN- Tenure of commissioners	.70
GOV - Governor is Democrat	.56	LARM - Commission reports to legislature	.71
DEMS - Percent southern Democratic commissioners	.57	BOC - Percent access lines controlled by BOC	.75
GOVS - Governor is southern Democrat	.66	EVA - Commissioners are elected	.78
COOLOFF - Commission has cooling-off period	.67	COMCAPA - Index of commission capabilities	.78
EBOC - Percent BOC lines in state where commission reports to governor	.73	BUSINESS - Percent commissioners with business experience	.88
COMTEN - Tenure of commissioners	.78	CONSUMER - Percent commissioners with consumer experience	.89
BOC - Percent access lines controlled by BOC	.83	COOLOFF - Commission has cooling-off period	..91
LEGDEMS - Percent southern Democrats in state legislature	.91	DEMS - Percent southern Democratic commissioners	.95
EARM - Commission reports to governor	1.00	CONSUM94 - Budget of consumer agency	.96

Source: Author's construct.

TABLE 5-4

RANK ORDERING OF INDEPENDENT VARIABLES BY PROBABILITY OF BIVARIATE ASSOCIATION WITH FRZCAP OCCURRING BY CHANCE

Variable	Probability of estimated correlation occurring by chance	Variable	Probability of estimated contingency table association occurring by chance
FREE - Freedom granted company	.0001	LEGDEM - Percent Democrats in state legislature	.0003
DEMS - Percent southern Democratic commissioners	.0003	LEGDEMS - Percent southern Democrats in state legislature	.0005
COMTEN - Tenure of commissioners	.0006	EVA - Commissioners are elected	.0005
LEGDEM - Percent Democrats in state legislature	.0007	DEMS - Percent southern Democratic commissioners	.0009
EVA - Commissioners are elected	.0011	FREE - Freedom granted company	.02
LEGDEMS - Percent southern Democrats in state legislature	.001	GOVS - Governor is southern Democrat	.02
CONSUM94 - Budget of consumer agency	.01	COMTEN - Tenure of commissioners	.035
GOVS - Governor is southern Democrat	.01	COMCAPA - Index of commission capabilities	.08
URBINC - Index of socioeconomic factors	.03	URBINC - Index of socioeconomic factors	.22
LARM - Commission reports to legislature	.05	LARM - Commission reports to legislature	.33
LARMBOC - Percent BOC lines in state where commission reports to legislature	.06	DEM - Percent Democratic commissioners	.33
YR - Year AFOR adopted	.08	COOLOFF - Commission has cooling-off period	.34
DEM - Percent Democratic commissioners	.08	LEGSL944 - Legislators' salary	.40
COOLOFF - Commission has cooling-off period	.09	YR - Year AFOR adopted	.41
COMCAPA - Index of commission capabilities	.13	AFOR - Percent states in RBOC adopted AFOR	.45
NUM COM - No. of Comms	. 15	CONSUM94 - Budget of consumer agency	.40
COMRES - Index of commission resources	.16	LARMBOC - Percent BOC lines in state where commission reports to legislature	.50
EARM - Commission reports to governor	.20	EBOC - Percent BOC lines in state where commission reports to governor	.57
EBOC - Percent BOC lines in state where commission reports to governor	.24	CONSUMER - Percent commissioners with consumer experience	.58
STFSL94 - Average staff salary	.29	COMRES - Index of commission resources	.59
LEGSL944 - Legislators' salary	.34	GOV - Governor is Democrat	.63
BUSINESS - Percent commissioners with business experience	.41	NUMCOM - Number of commissioners	.67
BOC - Percent access lines controlled by BOC	.42	STFSL94 - Average staff salary	.68
BUS - Percent business lines in state	.50	EARM - Commission reports to governor	.78
POLI - Percent commissioners with political experience	.58	BUS - Percent business lines in state	.81
GOV - Governor is Democrat	.77	POLI - Percent commissioners with political experience	.81
AFOR - Percent states in RBOC adopted AFOR	.95	BOC - Percent access lines controlled by BOC	.85
CONSUMER - Percent commissioners with consumer experience	.96	BUSINESS - Percent commissioners with business experience	.99

Source: Author's construct.

In Table 5-3, which shows the bivariate relationship of independent variables with the adoption of more stringent quality-of-service standards, the most significant factor is staff professionalism, represented by STFSL94. This finding also gives support to Hypotheses 3 and 4.

The most notable result about Table 5-4 is the low significance of commission factors in relation to the adoption of a rate freeze. Instead, the most significant positive factors, from both the correlation and contingency table analysis, are the amount of freedom granted the company, the presence of a consumer advocate and the socioeconomic profile of the state. Since adoption of a rate freeze is categorized as high in public scrutiny, but low in complexity, these results are in line with the proposed theory.

From Table 5-1, the most significant negative factors in relation to the length of a rate freeze pertain to elected officials and their geographic location. Southern Democratic governors and legislatures with Democratic majorities, whether southern or not, were negatively and significantly related to the length of the rate freeze. Surprisingly, the number of elected southern Democratic commissioners was negatively related to the length of the rate freeze as was the presence of commissioners with longer terms of service. Also, southern Democratic commissioners were more likely to adopt shorter rate freezes than were Democratic commissioners as a group.

While these figures might suggest that commissioners who are southern Democrats are, indeed, ideologically dissimilar to non-southern Democrats, such may not be the case. Instead, Table 5-4 indicates that these three measures are highly correlated, with the central factor being the method of commissioner selection, since seven of the eight states with elected commissioners are in the South. The majority of those elected commissioners are Democrats with average tenures of 9.56 years while the average tenure for all commissioners is 5.13 years.

The reason that method of commissioner selection may affect the length of the adopted rate freeze is because elected commissioners may be more easily influenced by the BOCs than appointed commissioners who do not have to be concerned with raising money for campaigns.

Finally, the relationship of the percentage of Democrats in the legislature is negatively and significantly related to the length of the freeze in both the South and the rest of the country, suggesting that southern Democrats may differ little from non-southern Democrats. Such a result is contrary to expectations and suggests legislatures have sympathy for the BOCs.

Other Surprising Results

(a) The negative relationship of both the length of commissioner tenure (COMTEN) and the presence of elected commissioners (EVA) to the adoption of restraints as well as the length of the rate freeze. Both results suggest that commissioners who serve for long periods and/or who are particularly in need of financial contributions become more sympathetic to the company's interests. This provides modest support for the capture theory.

(b) The negative but significant level of association between the adoption of restraints and the presence of the BOC in states where the commission reports formally to the legislature. The assumption in creating both LARMBOC and EBOC was that because elected officials can put significant pressure on commissions, elected officials are heavily lobbied by the utilities. If such lobbying is effective, there should be some discernible and negative relationship between the variables LARMBOC, EBOC and adoption of restraints.

The bivariate analyses supports this hypothesis, but only for LARMBOC. In Table 5-2, the measure of association between LARMBOC and overall adoption of restraints (RES) is negative and significant at the 5 percent level. Such significance is not an artifact of either the presence of the BOC or the entity to which the commission

formally reports. The variable LARMBOC has a stronger relationship with measures of adopted restraints (RES), and adoption of more stringent quality-of-service standards (QOS) than either BOC or LARM.

(c) The negative relationship of the party affiliation of other elected officials to the adoption of restraints and length of rate freeze. While this research has discussed the channels by which the BOCs may influence elected officials, the results shown in the relationship of the adoption of restraints with Democratic governors (GOV, GOVS), and Democratic legislatures (LEGDEM, LEGDEMS) were not expected. It would appear that political party is not a reliable predictor of elected officials' behavior with regard to protection of the consumer.

(d) The strength of the relationship of socioeconomic factors (URBINC) to adoption of more stringent quality-of-service standards (QOS), adoption of consumer safeguards (RES), and length of adopted rate freeze (FRZCAP). While this relationship was predicted to be positive, the level of significance was not expected. It would appear that voters do exercise an influence on appointed representatives and that states with a more urban population and higher incomes are more supportive of consumer protections than their less affluent and less urban neighbors.

Conclusion

Despite some of the unexpected results of the correlation and contingency table analyses, overall, results give strong support to the stated hypotheses. In both adoption of restraints and adoption of more stringent quality-of-service standards, commission resources are among the most statistically significant of the independent variables.

These initial analyses also give credibility to the assertion that commissions react differently to issues depending on their level of complexity and public scrutiny,

with commission resources being of greater importance in the making of decisions regarding complex rather than highly visible issues.

Multivariate Analysis

Having looked at the relationship of pairs of variables while ignoring the effect of other variables, the focus now centers on the relation between pairs of variables while simultaneously considering the influence of additional variables.

Because of the problems inherent in having an ordinal dependent variable and a small sample size, ordinary multiple regression and ordered probit analyses were conducted on both RES and QOS. The intention of these analyses is to reject the null hypotheses that commission resources have no relation to commission decisions.

The results of both analyses are compared. The logic of this comparison is that if Hypotheses 3 and 4 are true, they should be supported by both types of multivariate analyses.

Limiting the Independent Variables

Given a sample size of 38, the number of variables discussed in the previous section cannot all be used in the multiple regression analysis. Rather, a choice of variables must be made from those described. The selection of variables for the initial regressions was made using the following guidelines.

(3) The three variables representing commission resources are retained in the initial regression equations for both RES and QOS because of their importance to the proposed hypotheses.

(4) All independent variables with intercorrelations greater than .55 were identified and a determination made about which variables were to be retained. A list of variables with high intercorrelations is given in Table 5-5.

(a) Method of commissioner selection (EVA) was highly correlated with southern Democratic commissioners (DEMS), southern Democratic governors (GOVS) and length of service on the commission (COMTEN). Since a great deal of research, discussed extensively in Chapter 3, has

focused on the possible effects of elected versus appointed commissioners, EVA was retained and DEMS, GOVS, and COMTEN eliminated.

(b) The percentage of states which have adopted an AFOR (AFOR) was highly correlated with the year in which the decision was made to adopt an AFOR (YR). Since AFOR represents a possible commissioner motive, YR was eliminated.

(c) Legislator salary (LEGSL94) was highly correlated with commission resources (COMRES), percentage of business lines in the state (BUS), and the budget for consumer advocates offices (CONSUM94). Given the theoretical significance of COMRES and CONSUM94, LEGSL94 was eliminated.

(d) Whether the commission formally reports to the governor (EARM) is highly correlated with whether the commission formally reports to the legislature (LARM). EARM is also correlated with EBOC which measures the influence of the BOC in those states where the commission does formally report to the governor (EBOC), as well as those states where the commission reports to the legislature (LARMBOC). Since LARMBOC represents an opportunity to examine the relationship of the BOCs to adoption of restraints in states where the commission reports directly to the legislature, LARMBOC was retained and EARM, EBOC, and LARM eliminated.

(e) The percentage of lines used by business (BUS) is highly correlated with the per capita income and percent urbanization (URBINC). Since URBINC encompasses more information than BUS, BUS was eliminated.

These eliminations left the following variables, arranged by category, for use in the initial regressions.

Internal Factors

Commission Resources: (1) Financial resources (COMRES); (2) information processing ability (COMCAPA); and (3) staff professionalism (STFSL94).

Commissioner Preferences: (3) Method of commissioner selection (EVA); (4) number of commissioners (NUMCOM); (5) political party affiliation (DEM);

(6,7,8) past professional experience (BUSINESS, POLI, CONSUMER); and (9) the percent of commissions within the same RBOC which have adopted AFOR (AFOR).

TABLE 5-5

INDEPENDENT VARIABLES WITH HIGH INTER-CORRELATIONS

VARIABLE OF INTEREST				
AFOR (Percent states in RBOC adopted AFOR)	YR .75 (Year AFOR adopted)			
BUS (Percent business lines)	LEGSL94 .69 (Legislators' salary)	URBINC .59 (Index of socioeconomic factors)		
COMRES - Index of commission resources	LEGSL94 .61 (Legislators' salary)			
COMTEN - Tenure of commissioners	EVA .61 (Commissioners elected)	DEMS .60 (Percent southern Democratic commissioners)		
COOLOFF - Commission has cooling-off period	EVA .58 (Commissioners elected)			
DEMS (Percent southern Democratic commissioners)	EVA .78 (Commissioners elected)	GOVS .75 (Governor is southern Democrat)	COMTEN .60 (Tenure of commissioners)	
EARM (Commission reports to governor)	EBOC .98 (Percent BOC lines in state where commission reports to governor)	LARM -.56 (Commission reports to legislature)	LARMBOC -.55 (Percent BOC in state where commission reports to legislature)	
EBOC (Percent BOC lines in state where commission reports to governor)	EARM .98 (Commission reports to governor)			
EVA - Commissioners are elected	DEMS .78 (Percent southern Democrat commissioners)	GOVS .59 (Governor is southern Democrat)	COMTEN .61 (Tenure of commissioners)	COOLOFF -.58 (Commission has cooling-off period)
GOVS (Governor is southern Democrat)	DEMS .75 (Percent southern Democrat commissioners)	EVA .59 - Commissioners elected		
LARM (Commission reports to legislature)	LARMBOC .99 (Percent BOC in state where commission reports to legislature)	EARM -.56 (Commission reports to governor)		
LARMBOC (Percent BOC lines in state where commission reports to legislature)	LARM .99 (Commission reports to legislature)			
LEGSL94 (Legislators' salary)	COMRES .61 - Index of commission resources	BUS .69 (Percent business lines in state)	CONSUM94 .55 (Budget of consumer agency)	
URBINC (Index of socioeconomic factors)	BUS .59 (Percent business lines in state)			
YR (Year AFOR adopted)	AFOR .75 (Percent states in RBOC adopted AFOR)			

Source: Author's construct.

External Factors

Political Factors: (1) political party of the governor (GOV); (2) political party of southern governors (GOVS); (3) whether Democrats have a majority in the legislature (LEGDEM); (4) whether Democrats have a majority in legislatures in states in the Confederacy (LEGDEMS).

Interest Groups: (5) percentage of access lines in state controlled by the BOC (BOC); (6) influence of the BOC in states where the commission formally reports to the legislature (LARMBOC); (7) budget of consumer counsel's office (CONSUM94).

Other: (8) per capita income and percent of state which is urban (URBINC); and (9) level of regulatory freedom granted utility by commission (FREE).

The Model

The model proposed to test Hypotheses 3 and 4 is a linear additive-effects model:

$$RES = a + B_1COMRES + B_2COMCAPA + B_3STFSL94 + B_4EVA + B_5NUMCOM + B_6DEM + B_7BUSINESS + B_8POLI + B_9CONSUMER + B_{10}AFOR + B_{11}GOV + B_{12}LEGDEM + B_{13}LEGDEMS + B_{14}BOC + B_{15}LARMBOC + B_{16}CONSUM94 + B_{17}URBINC + B_{18}FREE$$

$$QOS = a + B_1COMRES + B_2COMCAPA + B_3STFSL94 + B_4EVA + B_5NUMCOM + B_6DEM + B_7BUSINESS + B_8POLI + B_9CONSUMER + B_{10}AFOR + B_{11}GOV + B_{12}LEGDEM + B_{13}LEGDEMS + B_{14}BOC + B_{15}LARMBOC + B_{16}CONSUM94 + B_{17}URBINC + B_{18}FREE$$

These models were first tested using ordinary multiple regression and then ordered probit. The results are displayed in Appendix B, Tables B-1 and B-2 for RES and B-3 and B-4 for QOS. Following this initial test, the models were reduced by removing those variables which were the least significant. The results from the

reduced model, using both ordinary multiple regression and probit analysis, are reported in Tables B-5 and B-6 for RES and Table B-7 and B-8 for quality of service.

Results for Hypothesis 3—Full Model Analysis

The first analysis, using all 18 independent variables with RES as the dependent variable is shown in Tables B-1 and B-2. The adjusted R^2 for the regression using ordinary least squares was .2468 with a probability of occurring by chance 14 times out of a hundred. The regression using ordered probit analysis had a log likelihood of -14.3955. This indicates the model is due to chance about 5 times out of 100.

For both models, the same five variables have the highest probability scores, but in different order. In ordinary least squares, the most significant variables, in order from highest to lowest are:

1. Socioeconomic factors (URBINC)
2. Level of freedom granted company (FREE)
3. Number of commissioners (NUMCOM)
4. Index of commission's financial resources (COMRES)
5. Budget of consumer advocate's office (CONSUM94)

For the probit model, the order of the top five is:

1. Number of commissioners (NUMCOM)
2. Socioeconomic factors (URBINC)
3. Index of commission's financial resources (COMRES)
4. Budget of consumer advocate's office (CONSUM94)
5. Level of freedom granted company (FREE)

What is worth noting is that a variable representing commission resources is among the top four in both analyses.

Discussion

The results of the estimates are consistent with theoretical predictions and give strong support to Hypothesis 3. The prominence of both commission resources and level of freedom granted the company make it easy to reject the null hypothesis that commission structure is unrelated to adoption of restraints. The anomalies are the negative sign for Democratic commissioners (DEM), for the budget of consumer advocate's office (CONSUM94), for Democratic governors (GOV) and for commissioners with professional experience as consumer advocates (CONSUMER). While the estimates for DEM and CONSUM94 are almost 0, the direction does not fit expectations. It is possible that the negative sign for DEM is due to the large number of Democrats serving as commissioners. The average across commissions is approximately 67 percent so that commissions which adopted only one constraint had a majority of Democrats on their commission. This would contribute to the negative sign. It is also possible that Democrats are no more likely to support measures to protect consumers than are Republicans and that regardless of party affiliation, commissioners are less likely to support the consumer in opposition to the company.

The negative sign for CONSUM94, indicating the size of the budget of the consumer advocate’s office, may reflect the disparity in budgets across the states rather than the presence or absence of such an office. To check this, a second regression in which CONSUM94 was replaced with DCNSM94 was run using both methods. DCNSM94 is a dichotomous measure indicating the presence of a consumer advocate’s office in the state or district, without regard to the size of the budget of the office.

In the second regression, the size and sign of the coefficient estimate remain approximately the same, but the significance of the variable has changed from approximately 22 percent to 95 percent, meaning it has become far less important. The negative coefficient may indicate that consumer advocates are not particularly effective

in prompting commissions to adopt consumer protections, or are not themselves committed to supporting issues which are low in visibility.

The negative sign for GOV may be another indication that party is no guarantee that the governor will support protection for the consumer in opposition to the company. Or it may be an indication that the governor has stayed out of regulatory politics with regard to this issue, with the result that his/her influence may not be apparent. As one public utility regulator summed up the governor's situation over 15 years ago.

> If you look at the design of the public utility law, it's clearly designed to put some distance between the commission and partisan politics. But I suspect the real operative factor is that there's almost nothing to be gained by a governor getting involved. We are in some sense, under current circumstances, the real heavy in the social scene today. And the governor cannot escape criticisms for his appointments and the actions of his appointees, in fact, of the commission as whole, whether he appointed them or not. But if he speaks out, what's he going to do? Is he going to speak out and criticize? Well, that's pretty tough, since he made some of the key appointments...So is he going to speak out in favor? What does he gain by that? Then he has to accept responsibility for all the bad decisions. And they are bad from the public's point of view, in most cases. So I think that the incentive for every politician is to maintain that distance.[3]

The positive and relatively high significance of URBINC and FREE are supported by theory. As discussed earlier in the bivariate analyses, URBINC measures the per capita income plus the urban density of the state. The results of these two regressions indicate that states with higher incomes and greater urban density are more likely to have adopted more consumer safeguards. This gives support to the statement by Mazmanian and Sabatier that "demographic composition is generally the best predictor of policy outputs."[4]

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[3] Gormley, *The Politics of Public Utility Regulation*, 84-85.

[4] Mazmanian and Sabatier, 445.

And in support of the assumption that commissions try to balance their decisions, the level of freedom granted the utility, measured by FREE, is a significant determinant of the level of restrictions imposed.

The coefficient estimate which is puzzling is the significant and negative one for NUMCOM. The indication is that the greater the number of commissioners, the less likely they are to enact measures to protect the consumer. Although no prediction was made about the effect of this variable on the adoption of restraints, its significance is not easily explained. It would appear that larger numbers of commissioners allow them to diffuse responsibility for making decisions which might be publicly unpopular. Looking more closely at the number of commissioners making these decision, the average commission size is just under 4 commissioners. Twenty-two commissions have 3 commissioners, one has four (an anomaly because of vacancies on the commission which were not filled at the time AFOR was adopted), twelve have five commissioners, and three have seven. Since only fifteen of the thirty-eight commissions adopted all three restraints, of the twenty-three which adopted one or two, thirteen had three commissioners and ten had four, five or seven. This negative and significant estimate of NUMCOM suggests that smaller commissions are more likely to protect the captive ratepayer.

Results for Hypothesis 3—Reduced Model Analysis

The reduced model used nine variables. The adjusted R^2 was .44, with a probability of occurring by chance 15 times out of 10,000 (.015 percent). The log likelihood of the probit procedure was -17.6845, with a probability of occurring by chance 1 in 1,000. Attempts were made to reduce the nine variables, but that resulted in a lower adjusted R^2.

The five factors of greatest significance in the full models remain the most significant in the reduced models. Comparisons of the coefficient estimates and their significance from both the full and reduced models of both types of regression procedure are presented in Tables B-5 and B-6.

The results, again, are supportive of the model and provide ample justification for rejecting the null hypothesis that commission resources have no relationship to the adoption of restraints. Also, in further support of Hypothesis 3, the most significant factor of the internal and external factors examined is COMRES, representing financial commission resources. The fact that socioeconomic factors (URBINC) and level of freedom granted the company (FREE) are slightly more significant than commission resources gives greater weight to the assumption that commissions strive to meet the expectations of their polity and balance their decisions between the needs and wants of the consumer and the utility. This analysis also underlines the importance of commission resources in making decisions to protect ratepayers.

Results for Hypothesis 4—Full Model Analysis

As with Hypothesis 3, the first regressions of the full model used 18 variables. The adjusted R^2 for the ordinary least squares regression was .5349, with a probability of occurring by chance 59 times out of 10,000. The probit procedure yielded a log likelihood of -.14.7307, with a probability of occurring by chance less than 5 times out of 100.

For both models, the results of which are shown in Tables B-3 and B-4, the same five variables have the highest probability scores, but in different order. In ordinary least squares, the most significant variables, in order from highest to lowest, are:

1. Staff professionalism measured by average staff salary (STFSL94)
2. Socioeconomic factors (URBINC)
3. Method of commissioner selection (EVA)
4. Percentage of commissioners with professional experience in business (BUSINESS)
5. Level of freedom granted company (FREE)

For the probit model, the order of the top five is:

1. Staff professionalism measured by average staff salary (STFSL94)
2. Socioeconomic factors (URBINC)
3. Percentage of commissioners with professional experience in business (BUSINESS)
4. Method of commissioner selection (EVA)
5. Level of freedom granted company (FREE)

What is notable is that in both of these analyses staff professionalism, one of the three variables representing commission resources, is the most significant determinant in the adoption of more stringent quality-of-service standards. As explained in Chapter 3, adopting quality-of-service standards truly pits the commission against the BOCs and other political forces, such as the legislature and the governor, which are lobbied by the BOC. Under this kind of pressure, it appears that staff professionalism is the key to adopting the more complex and politically more costly forms of consumer protection.

Discussion

The results of the estimations are consistent with theoretical predictions and give strong support to Hypothesis 4. Unlike the analysis for RES, the estimate for BUSINESS, which measures the percentage of commissioners with past business experience, is negative and significant. One possible explanation is that while commissioners with past business experience believe the BOCs should be restrained in some ways, they are not prepared to have the BOCs financially penalized for poor quality of service.

A second determinant that was of significance in the enactment of more stringent quality-of-service standards was EVA. This factor is significant at the 10 percent level in the full model. It would appear that elected commissioners, while not supportive of

long rate freezes or early plan reviews, are supportive of more stringent quality-of-service standards.

The anomalies in the coefficient estimates are the negative signs for COMRES, AFOR, GOV, and LEGDEM but not LEGDEMS, and the positive sign for POLI. While not significant, the sign for COMRES is surprising and may indicate that in the more difficult political battles, the financial resources of the commission are less important than was previously believed and staff professionalism is more important. The small estimate and low level of significance for POLI, which measures the percentage of politicians on the commission, may be the result of fairly evenly balanced distribution. Or it may be that, contrary to expectations, commissioners with previous political experience are willing to hold companies to certain standards of conduct in order to protect the consumer. In either case, past political experience does not seem to be a significant determinant, either positive or negative, of adoption of more stringent quality-of-service standards.

The same remarks made about POLI apply to AFOR. While the sign is negative rather than positive, the estimate is close to 0 and less significant than the one for POLI. Overall, the implication seems to be that the decisions of other commissions have little effect on a commission currently deciding whether to strengthen quality-of-service standards.

The previous explanation of the negative coefficient estimate for GOV offered in the discussion of coefficient estimates in the analysis of RES applies here. The explanation of the negative sign for LEGDEM and the positive one for LEGDEMS is more difficult. However, Jeffrey Cohen's theory that the more professional a legislature, the more likely it would be to intercede in the policy decisions of a commission may provide a partial explanation.[5]

[5] Cohen, *The Politics of Telecommunications Regulation*.

Southern legislators are, on average, paid less than in other legislatures. If level of pay does in some way reflect professionalism, then it may be that southern Democrats in the legislature are less willing to intercede in the policy decisions of their state regulatory commissions than their non-southern counterparts. Thus the positive sign for LEGDEMS and the negative one for LEGDEM. Also, while LEGDEM has a positive sign in the analysis of RES, the negative one in regard to QOS may indicate that non-southern legislatures, no matter what their party make-up, are not in favor of penalties for BOCs.

Results for Hypothesis 4—Reduced Model Analysis

The reduced model used nine variables. The adjusted R^2 for the ordinary least squares regression was a resounding .6257, with a probability of occurring by chance one in 10,000 times. The log likelihood for the probit procedure was -16.4010 with a chance of occurring by chance less than 1 in a 1,000. As with Hypothesis 3, attempts were made to reduce the number of variables further but the result was a decrease in the adjusted R^2 and the log likelihood.

The five factors of greatest significance in the full models remain the most significant in the reduced models. Comparisons of the coefficient estimates and their significance from both the full and reduced models of both types of regression procedure are presented in Tables B-7 and B-8 in Appendix B..

In examining the relationship of the adoption of consumer safeguards with the presence of the BOCs in states where the commission reports to the legislature, the multivariate analyses were not so strong as the bivariate. In the adoption of overall restraints (RES), only the measure of the BOC's presence (BOC) was kept in the reduced model. But in the adoption of more stringent quality-of-service standards, which this research assumed BOCs would oppose, the effect of the BOCs' influence is heightened when the commission reports to the legislature. Although the significance

of the relationship is low, greater than 25 percent in the reduced ordered probit model, and little better than 10 percent in the reduced model regression, it is more significant than the relationship of the BOC alone to the adoption of consumer safeguards. This gives credibility to the proposition that the BOCs do influence state legislatures, which, in turn, influence commission decisions.

The other results are very supportive of the model and leave little doubt about being able to reject the null hypothesis. In full support of Hypothesis 4, the most significant factor in both methods of analysis is STFSL94, the proxy for staff professionalism. Such results suggest that as predicted, when the issue is complex and lacking in media appeal, the ability of staff to acquire and analyze information is the best assurance that consumers will be protected from the possible abuses of the utility.

Summary

This chapter has specified the operationalization of the selected variables, offered tests of the four hypotheses, explained the methodology used in testing them and discussed the results.

Using both bivariate and multivariate statistical methods, this research has supported the assumptions that (1) commissions strive for balance in their decisions so that neither the utility nor the ratepayer is unduly harmed or unfairly compensated; and (2) commissions are more likely to enact restraints with high public scrutiny and low complexity. More importantly, the analyses have also supported the theory that resources are a significant determinant of a commission's decision to adopt consumer protections and that staff professionalism is one of the most significant determinants of whether a commission implements the more complex and less publicly visible forms of consumer protection.

This research has shown strong support for the guiding research hypothesis that the ability of a commission to acquire and analyze information is a significant determinant in the decision making of regulatory commissions, particularly decisions favoring the captive ratepayer.

CHAPTER 6

CONCLUSIONS

The Research Question

This research was directed at answering the question: "Does commission structure affect regulatory decisions? If so, under what circumstances?" In order to answer those questions, regulatory decisions made by 38 commissions to protect captive ratepayers when granting a LEC greater regulatory freedom were analyzed. Before discussing the conclusions of this research, the research question being addressed needs to be restated.

Past regulatory scholars, such as Bernstein, Kolko, Stigler, Pelzman and Posner have questioned the ability and/or willingness of regulators to act in such an even-handed manner. Rather, they have asserted that commissioners and commission staff are either more inclined to protect the interests of the companies than the consumers because the companies are better able to compensate them for their efforts (capture theory); or are willing to sell their regulatory power to the highest bidder (economic/interest group theory).

These theories are premised on the assumption that self-interest maximization is, ultimately, the driving force behind regulatory decisions. What these theories have ignored are the effects of a commission's ability to acquire and analyze information on its regulatory decision making, the specific attributes of the issue under consideration, and how those two factors interact to affect commission decisions.

In addition, while acknowledging the influence of resources, especially those of the utility, on commissions, the effect of utilities lobbying legislatures, with the intention of having legislatures influence commissions, has received little systematic study.

Testing of Hypotheses

The guiding hypothesis of this research has been that the ability of a commission to acquire and analyze information would be a significant determinant in commission decisions to protect the captive ratepayer. This was qualified by hypothesizing that certain attributes of the issue under consideration, that is, its level of complexity and public scrutiny, would modify the effect of information, in general, on the decision-making process.

In assessing a commission's ability to competently handle complex and technical information, several aspects of commission structure were measured. Among these were a commission's financial resources, its information processing capability, the possible motivations and ideological leanings of its commissioners, and its average staff salary, used as a proxy for staff professionalism.

To control for the influence of outside forces, some of which have played a prominent role in the predominant theories of regulatory decision making, political, interest group, and demographic factors were also measured. In this way, the influence of the utilities, consumer advocates, business interests, the legislature, the governor, and the demographics of the state measured by socioeconomic profiles were accounted for in the analysis.

Empirical Results

The empirical results of this research strongly support the proposed theory, that both commission structure and issue attributes affect regulatory decisions. Moreover, there is an interaction between these two factors. When the issue under consideration is *high* in complexity and *low* in public scrutiny, commissions with more professional staff are more likely to make decisions to protect the captive ratepayer. Also, factors measuring *commission structure* are a more significant influence on commission decisions than those measuring *political* and *environmental* factors when the issue is high in complexity and low in public scrutiny.

This research also attempted to model the effects of the BOCs on commission decisions and the presence of the BOCs in states where the commission reports to the legislature or the governor. Since the only empirical measurement of the presence of the BOC was the number of BOC-controlled access lines, results were not expected to be robust, although the relationship of the BOC to the adoption of consumer safeguards was expected to be negative. The multivariate analyses gives credence to the assumption that BOCs do influence state legislatures, which, in turn, influence commission decisions. Results show a negative relationship between the presence of the BOCs in those states where the commission reports to the legislature and the adoption of consumer protections. Given the crude measures used to test this hypothesis, the 10 percent level of significance suggests a far stronger relationship.

Overall, the following observations are worthy of notice.

(1) Commissions do not just react to political pressure and economic incentives when making decisions. Information is also a significant determinant in the decision-making process. In fact, commission decision making is more affected by the ability of the commission to acquire and analyze information than by the influence of external factors when the issue is high in complexity and low in public scrutiny.

(2) Although influenced by external factors, regulators are not captured by the utility or special interests. Instead, they appear to be significantly responsive to their constituency. This is demonstrated by the fact that the

index of demographic factors is the single best predictor of state regulatory decisions to protect the captive ratepayer. Specifically, the higher the level of income and the more urban the state, the more likely the commission is to adopt measures to protect the captive ratepayer. A further indicator that commissioners are not captured is the significant and robust relationship between the level of freedom granted the companies and the consumer safeguards adopted. In short, regulatory commissions strike a balance between the demands of the utility and the ratepayer.

(3) Although the evidence is not significant at the 5 percent level, there is enough to suggest that the BOCs do influence commission decisions through the legislature in those states where the commission formally reports to it.

(4) Although the research reviewed in Chapter 3 indicates there is no consistent significant difference between rate decisions made by elected and appointed commissioners, statistical analysis confirms that elected commissioners are more likely to adopt more stringent safeguards to protect captive ratepayers than appointed ones, although not more likely to adopt rate freezes or adopt other consumer safeguards.

Contributions

This research makes three contributions to the study of regulatory decision making, each one an argument against self-interest maximization as the single most significant explanatory force driving regulators.

The most notable contribution is the demonstration of commissioners' concern for ratepayers. Because there is so much money involved in regulatory decisions, the theories suggesting regulation can be purchased and that the inevitable loser in such transactions is the captive ratepayer have had high intuitive appeal and a fair amount of empirical support. However, all of these studies, without exception, have based such conclusions on commission decisions about rates and rate structures.

This study, by contrast, chose as the dependent variable commission decisions made specifically to protect the captive ratepayer from potential abuses by a utility. The results of this analysis were two. One, when armed with the proper information because of competent staff and adequate financial resources, commissioners chose to protect the captive ratepayer. And they made this choice in the face of opposition and political pressure, with little to gain personally. Two, no matter what the situation with regard to pressures and inducements, commissioners have strived to balance their

decisions such that neither the utility nor the consumer is unduly rewarded or penalized.

The second contribution is to give credibility to what regulatory staff have known for some time, that commissioners are not unduly influenced by the BOCs but legislatures and governors can be. The pressure which elected officials can apply to commissions has been described in earlier chapters. Because such pressure directly affects the powers and finances of commissions, as well as the positions of the commissioners themselves, it can be expected to influence regulatory decisions. The empirical evidence furnished by this research supports the belief that BOCs may influence regulators, but more indirectly, by lobbying legislatures and governors, than directly.

The third contribution of this research is that it has examined regulatory decisions to protect the captive ratepayer within a larger context than most other research examining regulatory decisions. Incorporated into this analysis are factors which attempt to measure the political, organizational, and demographic factors determined by other regulatory researchers to be significant influences in regulatory decision making.[1] In contrast, most other research studying regulatory decision making has limited the scope of its inquiry, either to one or two factors measuring commissioner motivations, such as whether commissioners are elected or appointed, or to a few specific factors. Few have tried to account for the range of influences operating in the regulatory environment and measured in this study.

In summation, the research herein has offered clear and statistically significant evidence that commissioners are responsive to the needs of captive ratepayers even in the face of serious opposition; that the lobbying of legislatures by utilities may affect the decision-making procedures of the commissions; and that even when the numerous influences which make up the regulatory environment are taken into account, the ability

[1] See Chapter 2 above.

of the commission to acquire and analyze information is the most significant factor affecting decisions to protect the captive ratepayer.

Future Research and Policy Recommendations

Commissions operate in a political environment. They are dependent on the legislature and the governor, as well as the electorate for their continued existence. Since legislatures are lobbied by the utilities, should the commissions propose actions not to the utility's liking, commissions face opposition not just from the utility but also from legislators. To lessen or turn back such opposition, commissions must make a cogent case for their proposals.

To defend their actions, even their reason for being, commissions need the ability to present a clear and tightly constructed argument which allows the least opportunity for refutation and alternate interpretation. Consequently, one policy recommendation is to examine the organizational structure of commissions with the purpose of determining how to best facilitate the acquisition and analysis of pertinent information.

To this end, further research along the lines suggested by Gormley more than a decade ago is pertinent.[2] His suggestion was that it may not be the quantity of staff that is relevant but the specific mix of professional disciplines represented by staff. In attempting to determine the best way to facilitate the acquisition and analysis of information, the question of which professions and professional attributes would contribute the most to this effort should be explored.

A second area of research is suggested by the relationship between utilities and legislatures and the resulting pressure legislatures exercise on commissions. In several states, legislatures have taken back from commissions certain regulatory

[2] Gormley, *The Politics of Public Utility Regulation*, 192.

powers with regard to telecommunications, leaving them with less oversight responsibility. These actions have been, by all accounts, instigated and supported by the utilities.[3] More attention should be paid to the lobbying activities of utilities, particularly the efforts they direct toward legislators and governors and how such efforts affect regulatory decisions.

From this directive a second policy recommendation would be for commissions to pay closer attention to the lobbying efforts of utilities in order to be prepared to counteract possible proposals based on false or inaccurate information. If legislators, and possibly governors, had more frequent contact with commissioners and commission staff, commissions would stand a better chance of retaining those regulatory powers the utilities may wish to see them lose.

Closing Observations

As the market structure has changed in telecommunications and other utilities, from monopoly towards competition, the duties of regulators and regulatory commissions have also changed. While economic regulation is still a legal function of state regulatory commissions, its importance is diminishing. Instead, regulators have now been given the responsibility of cultivating competition in the former monopoly markets and are expected to bring into bloom sufficient competition to safeguard the public from monopoly abuses.

For many regulatory observers and participants, it is thought that the culmination of this effort to encourage competition should and will be deregulation. Such a circumstance would then call for a serious reduction in the budgets and staff of state regulatory commissions.

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[3] *Regulatory Reform: A Nationwide Summary*, vols. 1-17.

But this changing market structure brings with it a host of new problems. For example, what if there are economies of scale and scope inherent in the delivery of some telecommunications services and the effect of increased competition is higher prices for the same or lesser service. Should competition be encouraged? How should such a decision be made and by whom?

A second example concerns the oversight of multiple service providers. If competitors at the local level choose to set up their own networks, which will have to interconnect with other networks at both the local exchange and interexchange level, where does the responsibility lie for quality and reliability of service? On what basis will such a decision be made? How will such a decision be enforced?

While this list of potential problems arising from the struggles of emerging competitive markets could be expanded, the above two questions are enough to suggest that despite increased competition, the need for regulatory oversight will not soon abate. Indeed, the need for it may increase as the issues become more complex and possibly more conflictual.

In view of this, a sobering reflection is that given the pronouncements that deregulation and competition will mean less regulation, in conjunction with increased public antipathy toward taxes and government bureaucracy and the pressures being exerted by the utilities on the legislatures, PUCs may be in real danger of being dramatically reduced by financial starvation.

The mandate for regulatory commissions is generally to protect the consumer from monopoly abuses and the utility from financial harm. Such a broad and vague mandate can be used to cover a wide range of activities. But because the mandate is broad, there is no definitive method for determining when and if regulatory commissions are making a positive contribution to the social welfare. Instead, charges and counter charges are hurled by both advocates and opponents of regulation. And the ranks of each side swell and diminish, depending on the political and economic climate of the time.

In 1998, there is a rising cry from industry for less regulation and another one from consumer advocates for maintenance of the status quo, or possibly even more regulation. Ultimately, the public will decide the fate of regulatory commissions, but by then, as explained above, the lobbying of legislatures by BOCs and other utilities may result in commissions too weak to be of any consequence.

If commissions are to remain strong and capable of being effective in terms of maintaining a balance of power between industry and consumers, they need a platform on which to stand and proclaim their worth. As this research has endeavored to make clear, information is crucial in building convincing arguments, particularly against motivated opponents. If commissions and their supporters fail to demonstrate how and why they are necessary for the continued well-being of society, they may find themselves eliminated and consumers unprotected.

APPENDIX A

VARIABLES USED IN ANALYSIS

AFOR	The percentage of states within the RBOC that have adopted AFOR prior to the decision by the state specified in the observation.
BOC	Percentage of state's total switched access lines, as reported by the FCC, which are controlled by the BOC, or in the case of Connecticut, SNET.
BUS	Percentage of business phone lines in the state.
BUSINESS	Percentage of commissioners with background in business.
CNVRT	Factor used to convert dollar amounts to 1994 dollars.
COMCAPA	Index created by taking the sum of the following commission attributes: A) Has research library B) Has telecommunications staff C) Majority of senior staff protected by civil service D) Commission has above the average for computers per staff person. Commissions received a score of 1 for having each of the above.
COMRES	Index of 4 variables, created by standardizing each variable, and taking the average of the summation of standardized values of each of the 4 variables. The four variables are: total commission expenditures, total staff, average commissioner salary and whether commission regulated motor carriage. (Motor carriage was included because on average, expenditures and staff are greater for commissions which regulate motor carriage. Therefore, commissions which regulate motor carriage were scored as 0 and those which did not scored as 1).
COMTEN	Average length of time commissioners as a group have served on commission.
CONSUM94	Budget of consumer advocate's office, corrected to 1994 dollars. If there was no such office in the state, the amount shown is 0.

CONSUMER	Indicates percentage of commissioners who have some background in consumer protection.
COOLOFF	Dichotomous measure indicating whether commissioners are restrained from working for industry for some time after leaving commission.
DEM	Percentage of commissioners who are democrats or independents.
DEMS	Percentage of commissioners who are southern democrats.
EVA	Indicates whether a commissioner is elected or appointed. If elected, scores as 1; if appointed, scored as 0.
EARM	Dichotomous measure of whether state commission reports to the governor.
EARN	Index of earnings company is legally allowed to retain. 1=Shares earnings within specified range, returns all earnings above range. 2=Some services deregulated so earnings not reported. For reported earnings, must share within specified range and return all earnings above range. 3=Some services deregulated so earning not reported and company must share earnings But company retains a portion of all earnings, not matter how high the ROR. 4= No ceiling placed on earned ROR and company does not have to share earnings.
EBOC	Interaction term composed of EARM x BOC. Measures presence of BOC in states where commission is answerable to governor.
FREE	Summation of the scores RATES and EARN.
FRZCAP	Number of years for which a rate freeze or rate cap is to be in effect.
GOV	Dichotomous measure of political party affiliation of state governor. 1=Democrat, 0=Republican

GOVS	Measure of both party affiliation and regional identity of state governor. Regular Democrat and Republican = 0, and Southern Democrat = 1.
JP	Whether the majority of senior staff are protected by civil service.
LARM	Dichotomous measure of whether commission reports to legislature.
LARMBOC	Interaction term composed of LARM x BOC. Measures presence of BOC in state where commission answerable to legislature.
LEGDEM	Indicates average percentage of democrats in both houses in state legislature.
LEGDEMS	Indicates average percentage of southern democrats in both houses in stat legislature.
LEGSL94	Average legislative salary, measured in 1994 dollars.
LVLFRE	Categories of level of freedom granted company. 1 = If score on FREE was 2 or 3. 2 = If score on FREE was 4,5, or 6. 3 = If score on FREE was 7 or 8.
LVLFRZ	Categories of length of the rate freeze/rate cap adopted. 0 = No freeze. 1 = Freeze was for 1 or 2 years. 2 = Freeze was for 3 or 4 years. 3 = Freeze was for 5 or 6 years or more.
NUMCOM	Total number of commissioners serving at the time the decision was made. In only one case, New York, is there a discrepancy between the number of commissioners authorized and the number serving at the time the decision was made to adopt AFOR. The number authorized to serve in New York at that time was 7. The number on the commission which made the decision was 4.
PLAN	Variable constructed by taking the lesser of PLNLN or PLNSEE
PLNLN	Indicates length of time in years plan is to be in effect

PLNSEE	Indicates length of time in years plan is to be in effect before being reviewed.
POLI	Indicates percentage of commissioners with background in politics.
QOS	Index of measures enacted by a commission to protect quality of service when adopting an AFOR. 0=no change in service standards 1=Standards strengthened in some way 2=Financial penalties imposed if company fails to meet service standards
RATES	Amount of freedom granted to companies in the setting of rates, indexed on a scale of 1 to 4. 1= All rates regulated 2= All rates regulated but some pricing flexibility allowed 3=Only basic and discretionary services regulated 4=Only basic services regulated
RBOC	Abbreviation for RBOC of which state is a part. AM=Ameritech, BA=Bell Atlantic, BS=Bell South, NY=Nynex, PB=Pacific Bell, SNT=Southern New England Telephone, SWB=SouthWestern Bell, USW=US West
RES	Index of restraints imposed on companies, constructed by awarding a state 1 point for each of the following: A) Imposed some type of rate freeze or rate cap, regardless of length. B) Plan review or plan ending date occurred within 4 years of plan adoption. C) Commission has strengthened service quality standards or imposed financial penalties for violation of standards.
STATE	Alphabetical listing of states, using 2 letter abbreviations, in which decision was made by commission to adopt AFOR.
STFSL94	Average staff salary plus benefits corrected for 1994 dollars.
URBINC	Index of two variables, average per capita income, corrected for 1994 dollars, and percentage of state classified as urban. These two variables were highly correlated. The index was created by taking the average of the sum of their standardized scores.

YR Year in which decision was made to adopt AFOR.

APPENDIX B

MULTIVARIATE ANALYSES

TABLE B-1
FULL MODEL MULTIPLE REGRESSION USING ADOPTION OF CONSUMER SAFEGUARDS (RES) AS THE DEPENDENT VARIABLE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob > F
Model	18	9.69859	0.53881	1.674	0.1372
Error	19	6.11720	0.32196		
C Total	37	15.8157			

Root MSE	0.56741	R - Square	0.6132
Dep Mean	2.28947	Adj R - sq	0.2468
C.V.	24.78357		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H_0: Parameter = 0	Prob > |T| if Parameter = 0
INTERCEP	1	2.205148	1.46000992	1.510	0.1474
COMRES	1	0.313782	0.21266915	1.475	0.1565
COMCAPA	1	0.030414	0.11867886	0.256	0.8005
STFSL94	1	0.000017116	0.00001774	0.965	0.3466
EVA	1	0.086944	0.53300917	0.163	0.8721
NUMCOM	1	-0.211201	0.10974490	-1.924	0.0694
DEM	1	0.001100	0.00577987	0.190	0.8511
BUSINESS	1	-0.001508	0.00586566	-0.257	0.7999
POLI	1	-0.001802	0.00480817	-0.375	0.7119
CONSUMER	1	0.001210	0.01127923	0.107	0.9157
AFOR	1	0.002044	0.00693237	0.295	0.7713
GOV	1	-0.257578	0.25170809	-1.023	0.3190
LEGDEM	1	0.006926	0.00939975	0.737	0.4702
LEGDEMS	1	0.004673	0.00544150	0.859	0.4012
BOC	1	-0.009847	0.00855398	-1.151	0.2640
LARMBOC	1	-0.001954	0.00362656	-0.539	0.5963
CONSUM94	1	-0.000000128	0.00000010	-1.276	0.2173
URBINC	1	0.428672	0.18675970	2.295	0.0333
FREE	1	0.171977	0.08475985	2.029	0.0567

Source: Author's construct from regression analysis.

TABLE B-2
FULL MODEL ORDERED PROBIT MODEL USING ADOPTION OF CONSUMER SAFEGUARDS (RES) AS THE DEPENDENT VARIABLE

Class	Levels	Values
RES	3	3 2 1

Weighted Frequency Counts for the Ordered Response Categories

Level	Count
3	15
2	19
1	4

Log Likelihood for NORMAL -14.39549523

Variable	DF	Estimate	Standard Error	Chi^2	$Pr>Chi^2$	Label/Value
INTERCEP	1	-2.8773499	6.216528	0.214235	0.6435	Intercept
COMRES	1	4.38763827	2.340219	3.515188	0.0608	
COMCAPA	1	0.38967567	0.388691	1.005072	0.3161	
STFSL94	1	0.00006446	0.000064	1.026297	0.3110	
EVA	1	0.85402612	1.785523	0.228777	0.6324	
NUMCOM	1	-1.2105911	0.608255	3.961173	0.0466	
DEM	1	-0.0124406	0.021621	0.331087	0.5650	
BUSINESS	1	0.00620708	0.020829	0.088802	0.7657	
POLI	1	-0.0192355	0.019902	0.934167	0.3338	
CONSUMER	1	-0.0477539	0.048872	0.954768	0.3285	
AFOR	1	0.02608072	0.024511	1.132176	0.2873	
GOV	1	-1.3927448	1.349221	1.065557	0.3020	
LEGDEM	1	0.06569969	0.04679	1.97158	0.1603	
LEGDEMS	1	0.0275731	0.028687	0.923865	0.3365	
BOC	1	-0.0518316	0.038022	1.858362	0.1728	
LARMBOC	1	-0.0150833	0.014314	1.110423	0.2920	
CONSUM94	1	-1.6953E-6	1.025E-6	2.73373	0.0982	
URBINC	1	2.59962236	1.377443	3.561832	0.0591	
FREE	1	1.55153708	0.96008	2.611616	0.1061	
INTER.2	1	6.04433447	2.996087			

Source: Author's construct from regression analysis.
Notes: Number of observations used = 38.
Dependent Variable = RES.

TABLE B-3
FULL MODEL MULTIPLE REGRESSION USING ADOPTION OF MORE STRINGENT QUALITY-OF-SERVICE STANDARDS (QOS) AS THE DEPENDENT VARIABLE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob > F
Model	18	19.06862	1.05937	3.364	0.0059
Error	19	5.98402	0.31495		
C Total	37	25.05263			

Root MSE	0.56120	R - Square	0.7611
Dep Mean	0.84211	Adj R - sq	0.5349
C.V.	66.64279		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H_0: Parameter = 0	Prob > |T| if Parameter = 0
INTERCEP	1	-1.607682	1.44402878	-1.113	0.2795
COMRES	1	-0.187430	0.21034129	-0.891	0.3840
COMCAPA	1	0.077740	0.11737981	0.662	0.5157
STFSL94	1	0.000062119	0.00001754	3.541	0.0022
EVA	1	1.083709	0.52717490	2.056	0.0538
NUMCOM	1	-0.129519	0.10854364	-1.193	0.2475
DEM	1	0.003094	0.00571661	0.541	0.5947
BUSINESS	1	-0.011386	0.00580145	-1.963	0.0645
POLI	1	0.002378	0.00475554	0.500	0.6227
CONSUMER	1	0.001397	0.01115577	0.125	0.9016
AFOR	1	0.000774	0.00685649	0.113	0.9113
GOV	1	-0.403836	0.24895292	-1.622	0.1213
LEGDEM	1	-0.002566	0.00929686	-0.276	0.7855
LEGDEMS	1	0.008317	0.00538194	1.545	0.1388
BOC	1	-0.005034	0.00846035	-0.595	0.5589
LARMBOC	1	-0.004068	0.00358687	-1.134	0.2708
CONSUM94	1	8.9884794E-9	0.00000010	0.091	0.9287
URBINC	1	0.399585	0.18471545	2.163	0.0435
FREE	1	0.163715	0.08383207	1.953	0.0657

Source: Author's construct from regression analysis.

TABLE B-4
FULL MODEL ORDERED PROBIT MODEL USING ADOPTION OF MORE STRINGENT QUALITY-OF-SERVICE STANDARDS (QOS) AS THE DEPENDENT VARIABLE

Weighted Frequency Counts for the Ordered Response Categories

Level	Count
2	10
1	12
0	16

Log Likelihood for NORMAL -14.73068455

Variable	DF	Estimate	Standard Error	Chi^2	$Pr>Chi^2$	Label/Value
INTERCEP	1	-15.716854	6.136195	6.560439	0.0104	Intercept
COMRES	1	-0.8585491	0.667597	1.653871	0.1984	
COMCAPA	1	0.3541907	0.455662	0.60421	0.4370	
STFSL94	1	0.00024127	0.000077	9.898184	0.0017	
EVA	1	4.11921718	2.362092	3.041135	0.0812	
NUMCOM	1	-0.1987548	0.40024	0.246601	0.6195	
DEM	1	0.01602328	0.020088	0.636254	0.4251	
BUSINESS	1	-0.0444105	0.022777	3.801618	0.0512	
POLI	1	0.01605946	0.019918	0.650087	0.4201	
CONSUMER	1	-0.0260129	0.040914	0.404239	0.5249	
AFOR	1	-0.0106659	0.025849	0.170259	0.6799	
GOV	1	-0.9744432	0.928265	1.101969	0.2938	
LEGDEM	1	-0.0053031	0.035453	0.022374	0.8811	
LEGDEMS	1	0.02827229	0.021473	1.733623	0.1879	
BOC	1	-0.0024942	0.025568	0.009516	0.9223	
LARMBOC	1	-0.0129676	0.014538	0.795585	0.3724	
CONSUM94	1	1.40243E-7	4.471E-7	0.098399	0.7538	
URBINC	1	1.49430776	0.639199	5.465229	0.0194	
FREE	1	0.78120178	0.336715	5.382727	0.0203	
INTER.2	1	2.76154194	0.835081			

Source: Author's construct from regression analysis.
Notes: Number of observations used = 38.
Dependent Variable = QOS.

TABLE B-5
REDUCED MODEL MULTIPLE REGRESSION USING ADOPTION OF CONSUMER SAFEGUARDS (RES) AS THE DEPENDENT VARIABLE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob > F
Model	9	9.11294	1.01255	4.230	0.0015
Error	28	6.70285	0.23939		
C Total	37	15.81579			

Root MSE	0.48927	R-Square	0.5762
Dep Mean	2.28947	Adj R-sq	0.4400
C.V.	21.37052		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H_O: Parameter = 0	Prob > |T| if Parameter = 0
INTERCEP	1	2.015080	0.84360864	2.389	0.0239
COMRES	1	0.354662	0.14549581	2.438	0.0214
STFSL94	1	0.000014137	0.00001132	1.249	0.2221
EVA	1	0.262883	0.24825073	1.059	0.2987
NUMCOM	1	-0.164281	0.07438134	-2.209	0.0356
LEGDEM	1	0.007935	0.00605907	1.310	0.2010
BOC	1	-0.010493	0.00615358	-1.705	0.0992
CONSUM94	1	-0.000000124	0.00000007	-1.907	0.0668
URBINC	1	0.421265	0.12968364	3.248	0.0030
FREE	1	0.182905	0.05566405	3.286	0.0027

Source: Author's construct from regression analysis.

TABLE B-6
REDUCED MODEL ORDERED PROBIT MODEL USING ADOPTION OF CONSUMER SAFEGUARDS (RES) AS THE DEPENDENT VARIABLE

Class	Levels	Values
RES	3	3 2 1

Weighted Frequency Counts for the Ordered Response Categories

Level	Count
3	15
2	19
1	4

Log Likelihood for NORMAL -17.68456427

Variable	DF	Estimate	Standard Error	Chi^2	$Pr>Chi^2$	Label/Value
INTERCEP	1	-2.2253535	2.875309	0.599003	0.4390	Intercept
COMRES	1	2.23004749	0.82026	7.391368	0.0066	
STFSL94	1	0.00003709	0.000037	1.000039	0.3173	
EVA	1	1.61531385	0.894481	3.261155	0.0709	
NUMCOM	1	-0.5529796	0.288054	3.685284	0.0549	
LEGDEM	1	0.04287652	0.020911	4.204254	0.0403	
BOC	1	-0.0455767	0.027772	2.693242	0.1008	
CONSUM94	1	-8.8707E-7	3.512E-7	6.380088	0.0115	
URBINC	1	1.99158127	0.677376	8.644434	0.0033	
FREE	1	0.98656092	0.338318	8.503477	0.0035	
INTER.2	1	3.37591391	0.875689			

Source: Author's construct from regression analysis.
Notes: Number of observations used = 38.
Dependent Variable = RES.

TABLE B-7
REDUCED MODEL MULTIPLE REGRESSION USING ADOPTION OF MORE STRINGENT QUALITY-OF-SERVICE STANDARDS (QOS) AS THE DEPENDENT VARIABLE

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob > F
Model	10	18.20918	1.82092	7.184	0.0001
Error	27	6.84345	0.25346		
C Total	37	25.05263			

Root MSE	0.50345	R-Square	0.7268
Dep Mean	0.84211	Adj R-sq	0.6257
C.V.	59.78462		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H_O: Parameter = 0	Prob > |T| if Parameter = 0
INTERCEP	1	-2.034207	0.57465043	-3.540	0.0015
COMRES	1	-0.158401	0.14182497	-1.117	0.2739
STFSL94	1	0.000053148	0.00001118	4.752	0.0001
EVA	1	1.107110	0.31782784	3.483	0.0017
BUSINESS	1	-0.012260	0.00450722	-2.720	0.0113
POLI	1	0.003031	0.00322735	0.939	0.3560
GOV	1	-0.319490	0.19762730	-1.617	0.1176
LEGDEMS	1	0.007379	0.00437051	1.688	0.1028
LARMBOC	1	-0.004926	0.00290575	-1.695	0.1016
URBINC	1	0.387714	0.12979354	2.987	0.0059
FREE	1	0.195934	0.04963578	3.947	0.0005

Source: Author's construct from regression analysis.

TABLE B-8
REDUCED MODEL ORDERED PROBIT MODEL USING ADOPTION OF MORE STRINGENT QUALITY-OF-SERVICE STANDARDS (QOS) AS THE DEPENDENT VARIABLE

Class	Levels	Values
QOS	3	2 1 0

Weighted Frequency Counts for the Ordered Response Categories

Level	Count
2	10
1	12
0	16

Log Likelihood for NORMAL -16.40103449

Variable	DF	Estimate	Standard Error	Chi^2	$Pr>Chi^2$	Label/Value
INTERCEP	1	-13.854804	3.660661	14.32457	0.0002	Intercept
COMRES	1	-0.7713653	0.452426	2.906867	0.0882	
STFSL94	1	0.00020661	0.000058	12.70373	0.0004	
EVA	1	3.78906657	1.521386	6.202773	0.0128	
BUSINESS	1	-0.0438736	0.01719	6.514404	0.0107	
POLI	1	0.00757939	0.011089	0.467195	0.4943	
GOV	1	-0.9047169	0.705599	1.644029	0.1998	
LEGDEMS	1	0.03032261	0.019103	2.519544	0.1124	
LARMBOC	1	-0.0098181	0.008683	0.278677	0.2581	
URBINC	1	1.64586997	0.528359	9.703587	0.0018	
FREE	1	0.85120241	0.261976	10.55706	0.0012	
INTER.2	1	2.63530941	0.776797			

Source: Author's construct from regression analysis.
Notes: Number of observations used = 38.
Dependent Variable = QOS.

APPENDIX C

DESCRIPTIVE STATISTICS OF VARIABLES

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
QOS	38	0.842105	0.822860	32.000000	0	2.000000
RES	38	2.289474	0.653799	87.000000	1.000000	3.000000
FRZCAP	38	3.210526	1.757730	122.000000	0	7.000000
COMRES	38	0.001094	0.704084	0.041577	-1.049223	1.892498
COMCAPA	38	2.131579	1.094731	81.000000	0	4.000000
STFSL94	38	43715	9396.089965	1661167	26329	67203
EVA	38	0.210526	0.413155	8.000000	0	1.000000
NUMCOM	38	3.973684	1.283720	151.000000	3.000000	7.000000
COMTEN	38	5.130000	3.220850	194.940000	1.160000	16.000000
COOLOFF	38	0.657895	0.480783	25.000000	0	1.000000
DEM	38	66.105263	27.305865	2512.000000	0	100.000000
DEMS	38	22.105263	39.253018	840.000000	0	100.000000
BUSINESS	38	44.315789	21.749315	1684.000000	0	100.000000
POLI	38	47.605263	30.348908	1809.000000	0	100.000000
CONSUMER	38	4.684211	10.467725	178.000000	0	33.000000
AFOR	38	33.421053	27.544197	1270.000000	0	86.000000
GOV	38	0.578947	0.500355	22.000000	0	1.000000
GOVS	38	0.184211	0.392859	7.000000	0	1.000000
LEGDEM	38	61.846053	17.070840	2350.150000	30.000000	100.000000
LEGDEMS	38	20.105263	34.408272	764.000000	0	88.200000
LEGSL94	38	23204	18599	881736	158.394931	73728
EARM	38	0.500000	0.506712	19.000000	0	1.000000
LARM	38	0.236842	0.430851	9.000000	0	1.000000
BOC	38	81.478947	15.236180	3096.200000	30.400000	100.000000
LARMBOC	38	19.305263	35.586886	733.600000	0	99.800000
EBOC	38	42.739474	44.331451	1624.100000	0	100.000000
BUS	38	27.334211	7.217145	1038.700000	19.400000	65.200000
CONSUM94	38	1423148	1626213	54079641	0	5304689
DCNSM94	38	0.815789	0.392859	31.000000	0	1.000000
URBINC	38	-0.000063874	0.898545	-0.002427	-1.808186	1.638019
FREE	38	4.342105	1.892750	165.000000	2.000000	8.000000
YR	38	89.947368	2.104659	3418.000000	87.000000	94.000000

APPENDIX D

RAW SCORES OF VARIABLES

OBS	COMRES	COMCAPA	STFSL94	EVA	NUMCOM	COMTEN	COOLOFF	DEM	DEMS	BUSINESS	POLI	CONSUMER	AFOR	GOV	GOVS	LEGDEM	LEGDEMS
1	-0.73168	3	41609.02	1	3	5.33	0	100	100	100	67	0	22	0	0	85.50	85.5
2	1.89250	4	53450.96	0	5	2.80	1	0	0	80	40	0	0	0	0	56.30	0.0
3	-0.77329	4	48263.99	0	3	3.27	0	67	0	33	0	0	28	1	0	37.90	0.0
4	-0.24974	3	38537.16	0	5	5.90	1	60	0	20	20	0	0	1	0	38.50	0.0
5	-0.67294	3	43734.34	0	5	9.35	0	40	0	40	20	0	29	0	0	54.10	0.0
6	0.89409	3	43276.94	0	5	4.60	1	60	60	20	60	0	0	0	0	62.50	62.5
7	-0.29274	0	45663.88	1	5	10.10	0	80	80	40	80	0	67	1	1	80.20	80.2
8	-0.14215	2	59606.00	0	7	3.30	1	57	0	43	14	0	60	0	0	44.90	0.0
9	-0.25597	1	38101.00	0	5	3.78	0	60	0	60	0	0	40	1	0	42.00	0.0
10	-0.12150	1	33717.70	0	3	4.16	0	33	0	33	100	0	40	0	0	40.40	0.0
11	-0.04284	0	39721.80	0	3	2.57	0	100	100	67	67	0	0	1	1	73.70	73.7
12	-1.04922	1	33898.63	1	5	10.30	1	100	100	80	40	0	78	1	1	86.00	86.0
13	-0.06388	2	42645.93	0	3	2.60	1	67	0	33	0	33	33	0	0	57.10	0.0
14	-0.32982	3	45930.84	0	5	7.75	1	100	0	40	40	0	57	1	0	85.90	0.0
15	-0.28145	4	60732.43	0	3	2.83	1	67	0	0	100	0	20	1	0	51.50	0.0
16	-0.33083	4	46370.75	0	5	4.20	1	60	0	40	40	20	14	1	0	68.50	0.0

OBS	LEGSL94	EARM	LARM	BOC	LARMBOC	EBOC	BOCLEGLR	BUS	CONSUMER	DCNSM94	URBINC	FREE	YR
1	1315.79	0	1	80.0	80.0	0.0	80.0	21.1	208854.64	1	-0.54917	4	88
2	44383.97	0	0	78.7	0.0	0.0	0.0	30.6	0.00	0	0.73931	5	89
3	18479.41	1	0	98.1	0.0	98.1	0.0	28.1	1001630.41	1	0.66212	6	92
4	16949.15	1	0	99.2	0.0	99.2	0.0	28.3	977835.72	1	1.34398	2	87
5	26315.79	1	0	100.0	0.0	100.0	0.0	30.1	300751.88	1	0.20215	5	88
6	24872.18	0	1	58.9	58.9	0.0	58.9	23.7	1754385.96	1	0.78222	2	88
7	12111.24	0	1	83.6	83.6	0.0	83.6	30.4	1017744.02	1	-0.45272	2	90
8	42265.00	1	0	83.4	0.0	83.4	0.0	34.7	550000.00	1	0.56494	7	94
9	11600.00	1	0	62.8	0.0	62.8	0.0	27.7	4328221.00	1	-0.40291	7	94
10	2960.53	0	1	82.7	82.7	0.0	0.0	24.1	505935.41	1	-0.39899	6	89
11	3759.40	1	0	58.0	0.0	58.0	0.0	19.5	563408.52	1	-1.20373	4	88
12	17740.23	1	0	92.9	0.0	92.9	0.0	23.8	0.00	0	-0.43559	2	92
13	8971.29	0	1	84.6	84.6	0.0	84.6	23.2	673315.79	1	-1.14174	6	89
14	28344.67	0	1	99.8	99.8	0.0	99.8	30.0	3514739.23	1	0.54649	5	90
15	51530.61	1	0	84.8	0.0	84.8	0.0	27.2	1341325.40	1	-0.21249	4	90
16	29926.30	1	0	76.0	0.0	76.0	0.0	25.8	408163.27	1	-0.20814	3	90

RAW SCORES OF VARIABLES

OBS	COMRES	COMCAPA	STFSL94	EVA	NUMCOM	COMTEN	COOLOFF	DEM	DEMS	BUSINESS	POLI	CONSUMER	AFOR	GOV	GOVS	LEGDEM	LEGDEMS
17	-0.75282	2	29314.06	1	3	3.50	0	67	67	67	67	0	33	1	1	88.20	88.2
18	0.13126	2	38970.10	0	4	4.42	1	50	0	50	25	25	20	0	0	65.00	0.0
19	-0.56411	2	47819.73	0	5	4.20	1	80	0	60	20	0	50	1	0	54.50	0.0
20	0.88379	3	37661.02	0	3	6.00	1	33	0	67	33	0	0	0	0	47.50	0.0
21	0.48787	2	55342.13	0	3	1.50	1	67	0	67	67	0	71	1	0	30.00	0.0
22	-0.27958	2	26328.95	1	3	4.33	0	100	0	67	33	0	0	0	0	58.50	0.0
23	1.58263	0	51392.44	0	3	8.33	1	67	0	33	33	0	0	1	0	51.80	0.0
24	1.48751	3	67202.75	0	7	5.30	1	57	0	29	29	14	68	1	0	52.95	0.0
25	0.53280	1	50653.00	0	5	4.00	1	60	0	20	60	0	80	0	0	41.40	0.0
26	0.28463	2	43387.38	0	3	3.00	1	67	0	0	67	0	21	1	0	58.20	0.0
27	0.91305	3	49523.00	0	5	2.80	1	80	0	40	20	20	86	0	0	45.90	0.0
28	-0.74712	2	56220.10	0	3	2.50	1	0	0	67	100	0	33	0	0	78.00	0.0
29	-0.70729	2	58020.06	0	3	3.57	1	33	0	33	100	0	68	1	0	89.00	0.0
30	-0.67904	1	40990.93	1	7	16.00	0	100	100	57	100	0	56	0	0	73.00	73.0
31	-0.12294	1	35456.92	1	3	9.50	0	100	100	33	67	0	44	1	1	63.20	63.2
32	0.25578	2	34031.75	0	3	3.00	1	33	0	67	67	0	0	0	0	68.50	0.0

OBS	LEGSL94	EARM	LARM	BOC	LARMBOC	EBOC	BOCLEGLR	BUS	CONSUMER	DCNSM94	URBINC	FREE	YR
17	11337.87	0	1	93.9	93.9	0.0	93.9	22.1	170068.03	1	-1.57776	4	90
18	24942.58	1	0	75.9	0.0	75.9	0.0	22.6	793522.73	1	-0.42621	2	89
19	7369.61	0	0	30.4	0.0	0.0	0.0	26.8	1116461.45	1	0.59171	6	90
20	32594.52	1	0	96.9	0.0	96.9	0.0	31.2	3911342.89	1	1.48698	5	87
21	36958.82	1	0	96.9	0.0	96.9	0.0	30.2	4751847.94	1	1.63487	6	92
22	4037.08	0	0	85.9	0.0	0.0	0.0	24.0	538277.51	1	-0.72520	3	89
23	56062.58	1	0	90.0	0.0	90.0	0.0	31.2	2815775.75	1	0.92830	2	87
24	60718.06	1	0	90.3	0.0	90.3	0.0	30.3	3132629.36	1	1.20032	3	92
25	42426.00	0	0	59.3	0.0	0.0	0.0	26.9	5304689.00	1	-0.07129	8	94
26	12914.04	1	0	70.1	0.0	70.1	0.0	25.8	0.00	0	-0.03723	4	91
27	47000.00	0	0	77.3	0.0	0.0	0.0	29.3	5205200.00	1	-0.06687	7	94
28	179.43	1	0	100.0	0.0	100.0	0.0	23.1	0.00	0	0.28652	2	89
29	158.39	1	0	100.0	0.0	100.0	0.0	23.5	0.00	0	0.71677	3	92
30	11337.87	0	1	67.2	67.2	0.0	67.2	24.8	699863.95	1	-1.07215	2	90
31	18707.48	0	0	80.6	0.0	0.0	0.0	24.1	0.00	0	-0.73251	4	90

32	8163.27	1	0	77.9	0.0	77.9	0.0	26.8	1870748.30	1	-0.07278	3	90

RAW SCORES OF VARIABLES

OBS	COMRES	COMCAPA	STFSL94	EVA	NUMCOM	COMTEN	COOLOFF	DEM	DEMS	BUSINESS	POLI	CONSUMER	AFOR	GOV	GOVS	LEGDEM	LEGDEMS
33	-0.21929	2	45903.51	0	3	4.83	0	100	0	33	33	0	17	1	0	56.20	0.0
34	0.79068	2	35882.21	1	3	12.16	0	100	100	33	33	0	43	1	1	69.50	69.5
35	-0.20299	2	38942.18	0	3	3.97	1	67	0	33	67	33	7	1	0	56.60	0.0
36	-0.68242	3	32350.88	0	3	6.50	1	33	33	33	67	0	14	1	1	82.20	82.2
37	0.15735	1	32820.08	0	3	1.16	1	67	0	33	33	33	0	0	0	55.00	0.0
38	0.04329	3	37692.31	0	3	1.53	1	100	0	33	0	0	71	1	0	100.00	0.0

OBS	LEGSL94	EARM	LARM	BOC	LARMBOC	EBOC	BOCLEGLR	BUS	CONSUMER	DCNSM94	URBINC	FREE	YR
33	5112.78	0	0	84.2	0.0	0.0	0.0	24.0	372807.02	1	-1.48660	7	88
34	22556.39	0	0	75.8	0.0	0.0	0.0	28.3	626566.42	1	0.39576	5	88
35	20294.78	1	0	70.9	0.0	70.9	0.0	25.3	793650.79	1	0.12493	7	90
36	8145.36	0	1	82.9	82.9	0.0	82.9	19.4	938596.49	1	-1.80819	7	88
37	35465.45	0	0	66.3	0.0	0.0	0.0	25.5	0.00	0	-0.76555	2	87
38	73728.21	0	0	100.0	0.0	0.0	0.0	65.2	3891282.05	1	1.63802	3	93

APPENDIX E

INTER-CORRELATION TABLE

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	QOS	RES	FRZCAP	COMRES	COMCAPA	STFSL94	EVA	NUMCOM
AFOR	0.43707 0.0061	0.01706 9.9190	-0.01081 0.9486	-0.13411 0.4221	-0.15068 0.3665	0.34455 0.0341	0.17962 0.2806	0.39855 0.0132
GOV	0.09674 0.5634	-0.03044 0.8560	-0.05014 0.7650	-0.16918 0.3099	-0.04415 0.7924	0.08163 0.6261	0.04817 0.7740	-0.14395 0.3886
GOVS	-0.07480 0.6553	-0.21322 0.1987	-0.40993 0.0106	-0.21105 0.2034	-0.37209 0.0214	-0.39329 0.0146	0.58718 0.0001	-0.15090 0.3658
LEGDEM	-0.17639 0.2895	-0.20379 0.2197	-0.52527 0.0007	-0.37365 0.0208	-0.05522 0.7420	-0.25326 0.1250	0.41896 0.0088	-0.13357 0.4240
LEGDEMS	0.01855 0.9120	-0.19542 0.2397	-0.51736 0.0009	-0.27808 0.0909	-0.28724 0.0804	-0.38948 0.0156	0.73149 0.0001	0.00337 0.9840
LEGSL94	0.27427 0.0956	0.19927 0.2304	0.15818 0.3429	0.60734 0.0001	0.27676 0.0925	0.42089 0.0085	-0.30418 0.0633	0.27368 0.0964
EARM	0.00000 1.0000	-0.04079 0.8079	0.21241 0.2004	0.02751 0.8698	0.07308 0.6628	0.33806 0.0379	-0.38730 0.0163	0.02077 0.9015
LARM	-0.12037 0.4716	-0.24996 0.1301	-0.31743 0.0521	-0.24676 0.1353	-0.06786 0.6856	-0.25325 0.1250	0.31964 0.0504	0.06044 0.7185
BOC	0.03681 0.8264	-0.10410 0.5340	-0.13516 0.4185	-0.11053 0.5089	0.28860 0.0789	0.11696 0.4844	0.03464 0.8364	-0.18989 0.2535
LARMBOC	-0.15180 0.3629	-0.27932 0.0894	-0.30497 0.0626	-0.27227 0.0982	-0.06384 0.7034	-0.25903 0.1163	0.31297 0.0557	0.02314 0.8903
EBOC	0.05722 0.7329	-0.02847 0.8653	0.19645 0.2372	-0.04063 0.8086	0.13299 0.4261	0.38710 0.0164	-0.36745 0.0232	0.02429 0.8849
BUS	0.19754 0.2345	0.25731 0.1189	0.11340 0.4979	0.23764 0.1508	0.19235 0.2473	0.13870 0.4063	-0.18195 0.2743	0.10862 0.5163
CONSUM94	0.15651 0.3481	0.15348 0.3576	0.42108 0.0085	0.43198 0.0068	0.03931 0.8147	0.22853 0.1676	-0.32679 0.0452	0.17508 0.2931
DCNSM94	-0.00880 0.9582	0.00277 0.9868	0.25337 0.1248	0.02929 0.8614	0.12072 0.4703	-0.05308 0.7516	-0.08764 0.6008	0.15090 0.3658
URBINC	0.32248 0.0483	0.40973 0.0106	0.35668 0.0279	0.44362 0.0053	0.33172 0.0419	0.46603 0.0032	-0.37485 0.0204	0.17539 0.2922
FREE	0.22650 0.1715	0.31094 0.0574	0.59517 0.0001	0.01781 0.9155	0.13421 0.4218	0.10129 0.5451	-0.30196 0.0654	-0.02956 0.8601
YR	0.40083 0.0126	0.08994 0.5913	0.28800 0.0795	-0.05665 0.7355	0.01482 0.9296	0.35993 0.0264	-0.08016 0.6324	0.36960 0.0224

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	COMTEN	COOLOFF	DEM	DEMS	BUSINESS	POLI	CONSUMER	AFOR
QOS	0.04569 0.7853	-0.07191 0.6679	0.10541 0.5288	0.09425 0.5736	-0.19044 0.2521	0.14895 0.3721	-0.21618 0.1924	0.43707 0.0061
RES	-0.38234 0.0178	0.15160 0.3636	-0.13043 0.4351	-0.19289 0.2459	-0.06362 0.7043	-0.12757 0.4453	-0.01788 0.9152	0.01706 0.9190
FRZCAP	-0.53258 0.0006	0.27942 0.0893	-0.28991 0.0775	-0.55500 0.0003	-0.13894 0.4055	-0.09314 0.5781	-0.00804 0.9618	-0.01081 0.9486
COMRES	-0.12879 0.4409	0.33279 0.0412	-0.21292 0.1993	-0.22214 0.1801	-0.14202 0.3950	-0.19978 0.2292	0.11713 0.4837	-0.13411 0.4221
COMCAPA	-0.27050 0.1005	0.29324 0.0740	-0.26539 0.1073	-0.36324 0.0250	-0.10168 0.5435	-0.22942 0.1659	0.04146 0.8048	-0.15068 0.3665
STFSL94	-0.19177 0.2487	0.38054 0.0184	-0.27772 0.0914	-0.34318 0.0349	-0.22181 0.1808	0.07229 0.6662	-0.04749 0.7771	0.34455 0.0341
EVA	0.61296 0.0001	-0.58005 0.0001	0.52264 0.0008	0.07853 0.0001	0.36837 0.0229	0.22882 0.1670	-0.23419 0.1570	0.17962 0.2806
NUMCOM	0.34363 0.0347	0.11639 0.4865	0.01550 0.9264	0.03331 0.8426	0.00611 0.9709	-0.19729 0.2351	-0.02477 0.8826	0.39855 0.0132
COMTEN	1.00000 0.0	-0.38729 0.0163	0.34810 0.0322	0.60066 0.0001	0.04144 0.8049	0.14550 0.3834	-0.26722 0.1048	0.17663 0.2888
COOLOFF	-0.38729 0.0163	1.00000 0.0	-0.38628 0.0166	-0.51503 0.0009	-0.22459 0.1752	-0.08915 0.5945	0.32702 0.0451	0.03158 0.8507
DEM	0.34810 0.0322	-0.38628 0.0166	1.00000 0.0	0.50556 0.0012	-0.01344 0.9362	-0.17919 0.2817	-0.02702 0.8721	0.24721 0.1346
DEMS	0.60066 0.0001	-0.51503 0.0009	0.50556 0.0012	1.00000 0.0	0.30875 0.0593	0.32015 0.0500	-0.25881 0.1166	0.10647 0.5246
BUSINESS	0.04144 0.8049	-0.22459 0.1752	-0.01344 0.9362	0.30875 0.0593	1.00000 0.0	-0.00030 0.9986	-0.16207 0.3310	-0.03397 0.8395
POLI	0.14550 0.3834	-0.08915 0.5945	-0.17919 0.2817	0.32015 0.0500	-0.00030 0.9986	1.00000 0.0	-0.25035 0.1295	0.00509 0.9758
CONSUMER	-0.26722 0.1048	0.32702 0.0451	-0.02702 0.8721	-0.25881 0.1166	-0.16207 0.3310	-0.25035 0.1295	1.00000 0.0	-0.11032 0.5096

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	COMTEN	COOLOFF	DEM	DEMS	BUSINESS	POLI	CONSUMER	AFOR
AFOR	0.17663 0.2888	0.03158 0.8507	0.24721 0.1346	0.10647 0.5246	-0.03397 0.8395	0.00509 0.9758	-0.11032 0.5096	1.00000 0.0
GOV	0.09610 0.5660	-0.05322 0.7510	0.35149 0.0305	0.12892 0.4405	-0.26809 0.1037	-0.01836 0.9129	-0.18604 0.2634	0.14852 0.3735
GOVS	0.39985 0.0129	-0.37279 0.0212	0.29544 0.0717	0.74533 0.0001	0.13535 0.4178	0.09894 0.2311	-0.21550 0.1938	0.11253 0.5012
LEGDEM	0.23467 0.1561	-0.06060 0.7178	0.22027 0.1839	0.48108 0.0022	0.25500 0.1223	0.27424 0.0957	-0.11906 0.4765	0.11732 0.4830
LEGDEMS	0.52814 0.0007	-0.44427 0.0052	0.38470 0.0171	0.94029 0.0001	0.29364 0.0736	0.34026 0.0366	-0.26854 0.1031	0.06694 0.6897
LEGSL94	-0.13398 0.4226	0.45946 0.0037	0.00069 0.9967	-0.31317 0.0556	-0.30055 0.0667	-0.35039 0.0310	0.14133 0.3974	0.22368 0.1770
EARM	-0.17190 0.3021	0.27735 0.0918	-0.33402 0.0404	-0.29894 0.0683	-0.03188 0.8493	-0.02724 0.8710	0.01529 0.9274	-0.15104 0.3654
LARM	0.27987 0.0888	-0.25065 0.1291	0.10350 0.5363	0.38522 0.0169	0.06968 0.6777	0.31532 0.0538	-0.05488 0.7435	0.04830 0.7734
BOC	0.04283 0.7985	0.02371 0.8876	-0.17571 0.2913	-0.16916 0.3100	0.01008 0.9521	-0.01794 0.9149	-0.16203 0.3311	0.11068 0.5083
LARMBOC	0.24958 0.1307	-0.24711 0.1347	0.10712 0.5221	0.34348 0.0347	0.08319 0.6195	0.28744 0.0801	-0.04676 0.7804	0.07319 0.6623
EBOC	-0.13058 0.4346	0.30016 0.0671	-0.37964 0.0187	-0.32323 0.0478	-0.03118 0.8526	-0.02410 0.8858	-0.03414 0.8387	-0.09968 0.5516
BUS	-0.12055 0.4709	0.21065 0.2043	0.11392 0.4959	-0.26959 0.1017	-0.14591 0.3821	-0.40786 0.0110	-0.11888 0.4772	0.31124 0.0572
CONSUM94	-0.15932 0.3394	0.28231 0.0859	0.05719 0.7331	-0.32031 0.0499	-0.07788 0.6421	-0.26934 0.1020	-0.04596 0.7841	0.39268 0.0147
DCNSM94	0.06579 0.6947	-0.19957 0.2296	0.24120 0.1446	-0.07933 0.6359	-0.04994 0.7659	-0.25788 0.1180	-0.00138 0.9934	-0.02511 0.8811
URBINC	-0.14177 0.3958	0.45926 0.0037	-0.23220 0.1607	-0.39413 0.0143	-0.10188 0.5428	-0.24842 0.1326	-0.16711 0.3159	0.15311 0.3588
FREE	-0.24020 0.1463	-0.07581 0.6510	-0.04098 0.8070	-0.27951 0.0892	-0.08345 0.6184	-0.22907 0.1665	0.01924 0.9087	0.20816 0.2098
YR	-0.21693 0.1908	0.14198 0.3951	0.08381 0.6169	-0.17725 0.2871	-0.06930 0.6793	-0.14335 0.3906	-0.04862 0.7719	0.75286 0.0001

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	GOV	GOVS	LEGDEM	LEGDEMS	LEGSL94	EARM	LARM	BOC
QOS	0.09674 0.5634	-0.07480 0.6553	-0.17639 0.2895	0.01855 0.9120	0.27427 0.0956	0.00000 1.0000	-0.12037 0.4716	0.03681 0.8264
RES	-0.03044 0.8560	-0.21322 0.1987	-0.20379 0.2197	-0.19542 0.2397	0.19927 0.2304	-0.04079 0.8079	-0.24996 0.1301	-0.10410 0.5340
FRZCAP	-0.05014 0.7650	-0.40993 0.0106	-0.52527 0.0007	-0.51736 0.0009	0.15818 0.3429	0.21241 0.2004	-0.31743 0.0521	-0.13516 0.4185
COMRES	-0.16918 0.3099	-0.21105 0.2034	-0.37365 0.0208	-0.27808 0.0909	0.60734 0.0001	-0.02751 0.8698	-0.24676 0.1353	-0.11053 0.5089
COMCAPA	-0.04415 0.7924	-0.37209 0.0214	-0.05522 0.7420	-0.28724 0.0804	0.27676 0.0925	0.07308 0.6628	-0.06786 0.6856	0.28860 0.0789
STFSL94	0.08163 0.6261	-0.39329 0.0146	-0.25326 0.1250	-0.38948 0.0156	0.42089 0.0085	0.33806 0.0379	-0.25325 0.1250	0.11696 0.4844
EVA	0.04817 0.7740	0.58718 0.0001	0.41896 0.0088	0.73149 0.0001	-0.30418 0.0633	-0.38730 0.0163	0.31964 0.0504	0.03464 0.8364
NUMCOM	-0.14395 0.3886	-0.15090 0.3658	-0.13357 0.4240	0.00337 0.9840	0.27368 0.0964	0.02077 0.9015	0.06044 0.7185	-0.18989 0.2535
COMTEN	0.09610 0.5660	0.39985 0.0129	0.23467 0.1561	0.52814 0.0007	-0.13398 0.4226	-0.17190 0.3021	0.27987 0.0888	0.04283 0.7985
COOLOFF	-0.05322 0.7510	-0.37279 0.0212	-0.06060 0.7178	-0.44427 0.0052	0.45946 0.0037	0.27735 0.0918	-0.25065 0.1291	0.02371 0.8876
DEM	0.35149 0.0305	0.29544 0.0717	0.22027 0.1839	0.38470 0.0171	0.00069 0.9967	-0.33402 0.0404	0.10350 0.5363	-0.17571 0.2913
DEMS	0.12892 0.4405	0.74533 0.0001	0.48108 0.0022	0.94029 0.0001	-0.31317 0.0556	-0.29894 0.0683	0.38522 0.0169	-0.16916 0.3100
BUSINESS	-0.26809 0.1037	0.13535 0.4178	0.25500 0.1223	0.29364 0.0736	-0.30055 0.0667	-0.03188 0.8493	0.06968 0.6777	0.01008 0.9521
POLI	-0.01836 0.9129	0.19894 0.2311	0.27424 0.0957	0.34026 0.0366	-0.35039 0.0310	-0.02724 0.8710	0.31532 0.0538	-0.01794 0.9149
CONSUMER	-0.18604 0.2634	-0.21550 0.1938	-0.11906 0.4765	-0.26854 0.1031	0.14133 0.3974	0.01529 0.9274	-0.05488 0.7435	-0.16203 0.3311

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	GOV	GOVS	LEGDEM	LEGDEMS	LEGSL94	EARM	LARM	BOC
AFOR	0.14852 0.3735	0.11253 0.5012	0.11732 0.4830	0.06694 0.6897	0.22368 0.1770	-0.15104 1.3654	0.04830 0.7734	0.11068 0.5083
GOV	1.00000 0.0	0.40524 0.0116	0.17700 0.2878	0.15806 0.3432	0.04074 0.8081	0.21320 0.1987	-0.15176 0.3631	0.10162 0.5438
GOVS	0.40524 0.0116	1.00000 0.0	0.44361 0.0053	0.80428 0.0001	-0.25177 0.1273	-0.20365 0.2201	0.21430 0.1964	-0.01198 0.9431
LEGDEM	0.17700 0.2878	0.44361 0.0053	1.00000 0.0	0.54826 0.0004	-0.20138 0.2254	-0.25129 0.1280	0.36153 0.0257	0.15829 0.3425
LEGDEMS	0.15806 0.3432	0.80428 0.0001	0.54826 0.0004	1.00000 0.0	-0.33952 0.0370	-0.34460 0.0341	0.52989 0.0006	-0.12352 0.4600
LEGSL94	0.04074 0.8081	-0.25177 0.1273	-0.20138 0.2254	-0.33952 0.0370	1.00000 0.0	0.08800 0.5993	-0.33537 0.0396	0.16442 0.3239
EARM	0.21320 0.1987	-0.20365 0.2201	-0.25129 0.1280	-0.34460 0.0341	0.08800 0.5993	1.00000 0.0	-0.55709 0.0003	0.26606 0.1064
LARM	-0.15176 0.3631	0.21430 0.1964	0.36153 0.0257	0.52989 0.0006	-0.33537 0.0396	-0.55709 0.0003	1.00000 0.0	0.00119 0.9943
BOC	0.0162 0.5438	-0.01198 0.9431	0.15829 0.3425	-0.12352 0.4600	0.16442 0.3239	0.26606 0.1064	0.00119 0.9943	1.00000 0.0
LARMBOC	-0.09793 0.5586	0.24216 0.1430	0.38271 0.0177	0.49615 0.0015	-0.33096 0.0424	-0.54976 0.0003	0.98686 0.0001	0.06217 0.7108
EBOC	0.18244 0.2729	-0.23010 0.1646	-0.25935 0.1159	-0.36126 0.0259	0.11078 0.5079	0.97703 0.0001	-0.54429 0.0004	0.39208 0.0149
BUS	0.11711 0.4838	-0.22629 0.1719	0.09155 0.5846	-0.30819 0.0598	0.68556 0.0001	-0.03067 0.8550	-0.23648 0.1529	0.27840 0.0906
CONSUM94	0.01506 0.9285	-0.28114 0.0873	-0.31670 0.0527	-0.31388 0.0550	0.54629 0.0004	0.01643 0.9220	-0.12825 0.4429	0.01388 0.9341
DCNSM94	0.00724 0.9656	-0.12442 0.4567	-0.21269 0.1998	-0.01692 0.9197	0.12160 0.4671	-0.06788 0.6855	0.26472 0.1082	-0.08239 0.6229
URBINC	0.07375 0.6599	-0.44516 0.0051	-0.27372 0.0963	-0.47673 0.0025	0.54473 0.0004	0.36531 0.0241	-0.39593 0.0139	0.28002 0.0886
FREE	0.01352 0.9358	-0.08704 0.6033	-0.43442 0.0064	-0.22769 0.1692	-0.00082 0.9961	-0.15499 0.3528	-0.03576 0.8312	-0.18653 0.2622
YR	0.13238 0.4282	-0.11871 0.4778	-0.09832 0.5570	-0.19951 0.2298	0.29615 0.0710	0.12671 0.4484	-0.22432 0.1758	-0.02018 0.9043

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	LARMBOC	EBOC	BUS	CONSUM94	DCNSM94	URBINC	FREE	YR
QOS	-0.15180 0.3629	0.05722 0.7329	0.19754 0.2345	0.15651 0.3481	-0.00880 0.9582	0.32248 0.0483	0.22650 0.1715	0.40083 0.0126
RES	-0.27932 0.0894	-0.02847 0.8653	0.25731 0.1189	0.15348 0.3576	0.00277 0.9868	0.40973 0.0106	0.31094 0.0574	0.08994 0.5913
FRZCAP	-0.30497 0.0626	0.19645 0.2372	0.11340 0.4979	0.42108 0.0085	0.25337 0.1248	0.35668 0.0279	0.59517 0.0001	0.28800 0.0795
COMRES	-0.27227 0.0982	-0.04063 0.8086	0.23764 0.1508	0.43198 0.0068	0.02929 0.8614	0.44362 0.0053	0.01781 0.9155	-0.05665 0.7355
COMCAPA	-0.06384 0.7034	0.13299 0.4261	0.19235 0.2473	0.03931 0.8147	0.12072 0.4703	0.33172 0.0419	0.13421 0.4218	0.01482 0.9296
STFSL94	-0.25903 0.1163	0.38710 0.0164	0.13870 0.4063	0.22853 0.1676	-0.05308 0.7516	0.46603 0.0032	0.10129 0.5451	0.35993 0.0264
EVA	0.31297 0.0557	-0.36745 0.0232	-0.18195 0.2743	-0.32679 0.0452	-0.08764 0.6008	-0.37485 0.0204	-0.30196 0.0654	-0.08016 0.6324
NUMCOM	0.02314 0.8903	0.02429 0.8849	0.10862 0.5163	0.17508 0.2931	0.15090 0.3658	0.17539 0.2922	-0.02956 0.8601	0.36960 0.0224
COMTEN	0.24958 0.1307	-0.13058 0.4346	-0.12055 0.4709	-0.15932 0.3394	0.06579 0.6947	-0.14177 0.3958	-0.24020 0.1463	-0.21693 0.1908
COOLOFF	-0.24711 0.1347	0.30016 0.0671	0.21065 0.2043	0.28231 0.0859	-0.19957 0.2296	0.45926 0.0037	-0.07581 0.6510	0.14198 0.3951
DEM	0.10712 0.5221	-0.37964 0.0187	0.11392 0.4959	0.05719 0.7331	0.24120 0.1446	-0.23220 0.1607	-0.04098 0.8070	0.08381 0.6169
DEMS	0.34348 0.0347	-0.32323 0.0478	-0.26959 0.1017	-0.32031 0.0499	-0.07933 0.6359	-0.39413 0.0143	-0.27951 0.0892	-0.17725 0.2871
BUSINESS	0.08319 0.6195	-0.03118 0.8526	-0.14591 0.3821	-0.07788 0.6421	-0.04994 0.7659	-0.10188 0.5428	-0.08345 0.6184	-0.06930 0.6793
POLI	0.28744 0.0801	-0.02410 0.8858	-0.40786 0.0110	-0.26934 0.1020	-0.25788 0.1180	-0.24842 0.1326	-0.22907 0.1665	-0.14335 0.3906
CONSUMER	-0.04676 0.7804	-0.03414 0.8387	-0.11888 0.4772	-0.04596 0.7841	-0.00138 0.9934	-0.16711 0.3159	0.01924 0.9087	-0.04862 0.7719

Pearson Correlation Coefficients / Prob > |R| under H_0: Rho = 0 / N = 38

	LARMBOC	EBOC	BUS	CONSUM94	DCNSM94	URBINC	FREE	YR
AFOR	0.07319 0.6623	-0.09968 0.5516	0.31124 0.0572	0.39268 0.0147	-0.02511 0.8811	0.15311 0.3588	0.20816 0.2098	0.75286 0.0001
GOV	-0.09793 0.5586	0.18244 0.2729	0.11711 0.4838	0.01506 0.9285	0.00724 0.9656	0.07375 0.6599	0.01352 0.9358	0.13238 0.4282
GOVS	0.24216 0.1430	-0.23010 0.1646	-0.22629 0.1719	-0.28114 0.0873	-0.12442 0.4567	-0.44516 0.0051	-0.08704 0.6033	-0.11871 0.4778
LEGDEM	0.38271 0.0177	-0.25935 0.1159	0.09155 0.5846	-0.31670 0.0527	-0.21269 0.1998	-0.27372 0.0963	-0.43442 0.0064	-0.09832 0.5570
LEGDEMS	0.49615 0.0015	-0.36126 0.0259	-0.30819 0.0598	-0.31388 0.0550	-0.01692 0.9197	-0.47673 0.0025	-0.22769 0.1692	-0.19951 0.2298
LEGSL94	-0.33096 0.0424	0.11078 0.5079	0.68556 0.0001	0.54629 0.0004	0.12160 0.4671	0.54473 0.0004	-0.00082 0.9961	0.29615 0.0710
EARM	-0.54976 0.0003	0.97703 0.0001	-0.03067 0.8550	0.01643 0.9220	-0.06788 0.6855	0.36531 0.0241	-0.15499 0.3528	0.12671 0.4484
LARM	0.98686 0.0001	-0.54429 0.0004	-0.23648 0.1529	-0.12825 0.4429	0.26472 0.1082	-0.39593 0.0139	-0.03576 0.8312	-0.22432 0.1758
BOC	0.06217 0.7108	0.39208 0.0149	0.27840 0.0906	0.01388 0.9341	-0.08239 0.6229	0.28002 0.0886	-0.18653 0.2622	-0.02018 0.9043
LARMBOC	1.00000 0.0	-0.53714 0.0005	-0.22385 0.1767	-0.11606 0.4878	0.26124 0.1131	-0.40639 0.0113	0.00511 0.9757	-0.20651 0.2135
EBOC	-0.53714 0.0005	1.00000 0.0	-0.00147 0.9930	0.01766 0.9162	-0.09904 0.5541	0.44733 0.0049	-0.18605 0.2634	0.10039 0.5487
BUS	-0.22385 0.1767	-0.00147 0.9930	1.00000 0.0	0.43299 0.0066	0.14241 0.3937	0.58644 0.0001	-0.02759 0.8694	0.34495 0.0339
CONSUM94	-0.11606 0.4878	0.01766 0.9162	0.43299 0.0066	1.00000 0.0	0.42144 0.0084	0.43996 0.0057	0.33170 0.0419	0.46344 0.0034
DCNSM94	0.26124 0.1131	-0.09904 0.5541	0.14241 0.3937	0.42144 0.0084	1.00000 0.0	0.01744 0.9172	0.30512 0.0625	-0.01204 0.9428
URBINC	-0.40639 0.0113	0.44733 0.0049	0.58644 0.0001	0.43996 0.0057	0.01744 0.9172	1.00000 0.0	-0.10120 0.5455	0.17935 0.2813
FREE	0.00511 0.9757	-0.18605 0.2634	-0.02759 0.8694	0.33170 0.0419	0.30512 0.0625	-0.10120 0.5455	1.00000 0.0	0.35744 0.0276
YR	-0.20651 0.2135	0.10039 0.5487	0.34495 0.0339	0.46344 0.0034	-0.01204 0.9428	0.17935 0.2813	0.35744 0.0276	1.00000 0.0

APPENDIX F
INDICES CATEGORIZING INTERVAL VARIABLES

MAFOR	0 = 0 1-25 = 1, 25-50 = 2, 50-75 = 3, 76-100 = 4
MBOC	<70 = 1, 70-80 = 2, 81-85 = 3, 86-90 = 4, 91-95 = 5, 95+ = 6
MBUS	20% = 1, 21-25% = 2, 26-30% = 3, 30%+ = 4
MBUSI	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4
MCNSUM94	0 = 0, <1,000,000 = 1, 1,000,000-4,000,000 = 2, >4,000,000 = 3
MCOMRES	Mean = 0, >Mean = 1
MCOMTEN	2 = 1, 2-5 = 2, 5+ = 3
MDEM	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4
MDEMS	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4
MFRZ	Dichotomizes FRZCAP so that if FRZCAP 4, it is scored as 0; if FRZCAP >4, it is scored as 1.
MLEGSL94	Mean = 0, >Mean = 1
MPOLI	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4
MRES	Dichotomizes RES so that if RES 2, it is scored as 0; if RES >2, it is scored as 1.
MSTFSL94	Mean = 0, >Mean = 1
MURB	<Mean = 0, >Mean = 1
MLEGDEM	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4
MLEGDEMS	0 = 0, 25% = 1, 26-50% = 2, 51-75% = 3, 76-100% = 4