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

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
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By

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ABSTRACT

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, two or three provisions to protect captive ratepayers. The theory proposed in this research attempts to model this 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, they are not sufficient. Instead, they 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 protective device 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. One, 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. Two, 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.
Dedicated to my parents,

Mary and John
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapters</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>v</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>vi</td>
</tr>
<tr>
<td>Vita</td>
<td>ix</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xvi</td>
</tr>
</tbody>
</table>

1. Regulation in an Era of Conflict and Uncertainty | 1
   - Introduction | 1
   - The Regulatory Environment | 4
     - The Purpose of Regulation and the Goals of Regulators | 4
     - Theories of Regulatory Decision Making | 6
     - The Structural Theory Proposed | 6
   - Telecommunications Regulation After 1984 | 7
     - Background | 7
     - Evaluations of RBROR | 8
     - The Market, Industry Structure and Regulation | 12
     - Regulators vs LECs | 15
     - Regulators and Ratepayers | 17
     - Information, Commission Staff Ability and Ratepayer Protection | 18
   - Research Issues | 19
   - Value of This Research | 22
   - Study Outline | 23

2. Rationales for Regulation and Motivations for Regulators | 29
   - Introduction | 29
   - Rationales for Government Interference in Private Enterprise | 32
3. The Changing Landscape of Telecommunications

Regulation ........................................... 75
Introduction ........................................ 75
From Competition to Natural Monopoly .......... 76
    The Telegraph ................................ 76
    The Telephone ................................ 77
    Early Competition ............................ 78
    AT&T's Response to Competition .......... 79
Challenges to the AT&T Monopoly ............ 85
    The 1949 Antitrust Suite .................... 86
Divestiture and Industry Restructuring ....... 89
Costs, Pricing, Revenues and Competition ... 91
    Rate Regulation ............................ 91
    Pricing Concepts ............................ 93
    Pricing Distortions ......................... 96
Divestiture, Price Distortions, and
    Competition .................................. 97
    Competition and Regulation ................. 98
Alternatives to RBROR ......................... 101
Summary ........................................... 105

4. Structural Theories of Regulation .............. 113

Introduction ..................................... 113
Information ...................................... 118
Financial Resources ............................ 121
Agency Structure ................................ 124
    Method of Commissioner Selection .......... 129
    Commission Attributes ..................... 136
    Public Interest Orientation of
        Regulators ............................. 150
External Factors ................................ 153
    Demographic Factors ....................... 154
    Public Opinion ............................. 155
    Political Factors ........................... 158
Summary .......................................... 160
Conclusion ....................................... 163
5.  Theory, Conceptual Model and Hypotheses .... 176

   Introduction ................. 176
   Issues Facing State Commissions after the  
   Divestiture of AT&T ............ 179
   Changing Market Structure and Utility 
   Regulation .................. 181
   Alternative Forms of Regulation .... 184
   Price Structure ............... 185
   Revenue Retention ............. 185
   Possible Company Response to AFOR .... 186
   Preventing Monopoly Abuses in Transitional 
   Markets ..................... 187
   Dimensions of a Theory of Commission Decision 
   Making ...................... 194
   Central Issue: Fairness or Favoritism 194
   Sources of Influence: Within, Without or 
   Both 195
   Determining Commissioners' Motives - Only 
   Self-Interest? ............... 197
   The Basic Theory .............. 199
   Relevant Factors .............. 202
   Internal Factors .............. 203
   Resources .................. 210
   Abilities .................. 210
   Motives .................... 212
   Summary .................... 215
   External Factors .............. 216
   Conclusion .................. 222
   Issue Attributes Affecting Commission 
   Decision .................... 223
   Complexity .................. 224
   Public Scrutiny ............... 225
   Issue Attributes of Proposed Consumer 
   Safeguards .................. 227
   Rate Freezes/Price Caps ........ 227
   Quality of Service Standards .... 228
   Adoption of Plan Review ....... 229
   Summary .................... 230
   Assumptions and Hypotheses .... 230
   Summary .................... 235

6.  Operationalization and Measurement of Variables, Tests 
    of Hypotheses ................. 248

   Introduction .................. 248
   Selection of Commission Decision .... 249
   Classification of Freedoms Granted Company 250
   Classification of Restraints Placed on the 
   Company 256 
   Rate Freeze/Rate cap .......... 256
   Quality of Service Standards .... 257
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Effects of structural factors on utility rates and granted rates of return</td>
<td>137</td>
</tr>
<tr>
<td>5.1</td>
<td>Issue attributes of consumer safeguards</td>
<td>230</td>
</tr>
<tr>
<td>6.1</td>
<td>Index of commission decisions to grant companies greater freedom with regard</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>to setting rates and retaining revenues</td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>Index of restraints placed on company with regard to adoption of AFOR</td>
<td>259</td>
</tr>
<tr>
<td>6.3</td>
<td>Index of freedoms granted companies and restraints imposed</td>
<td>261</td>
</tr>
<tr>
<td>6.4</td>
<td>Descriptive statistics and frequency counts for Tables 6.1., 6.2, and 6.3.</td>
<td>262</td>
</tr>
<tr>
<td>6.5</td>
<td>Contingency table of level of freedom granted companies and number of</td>
<td>266</td>
</tr>
<tr>
<td></td>
<td>restraints imposed</td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>Contingency table showing relationship of years of rate freeze to</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>stringency of quality of service standards adopted when enacting AFOR</td>
<td></td>
</tr>
<tr>
<td>6.7</td>
<td>Relationship of level of rate freeze to stringency of quality of service</td>
<td>272</td>
</tr>
<tr>
<td></td>
<td>standards at low level of freedom granted to company</td>
<td></td>
</tr>
<tr>
<td>6.8</td>
<td>Relationship of level of rate freeze to stringency of quality of service</td>
<td>272</td>
</tr>
<tr>
<td></td>
<td>standards at medium level of freedom granted to company</td>
<td></td>
</tr>
<tr>
<td>6.9</td>
<td>Relationship of level of rate freeze to stringency of quality of service</td>
<td>273</td>
</tr>
<tr>
<td></td>
<td>standards at high level of freedom granted to company</td>
<td></td>
</tr>
<tr>
<td>6.10</td>
<td>Relationship between level of freedom granted utility and consumer</td>
<td>273</td>
</tr>
<tr>
<td></td>
<td>safeguards adopted</td>
<td></td>
</tr>
<tr>
<td>6.11</td>
<td>Hypothesized relationship of selected variables to adoption of restraints</td>
<td>295</td>
</tr>
</tbody>
</table>
6.12 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 .................. 300

6.13 Rank ordering of independent variables by probability of bivariate association with RES occurring by chance .................. 302

6.14 Rank ordering of independent variables by probability of bivariate association with QOS occurring by chance .................. 303

6.15 Rank ordering of independent variables by probability of bivariate association with FRZCAP occurring by chance .................. 304

6.16 Independent variables with high intercorrelations .................. 313

6.17 Full model multiple regression using adoption of consumer safeguards (RES) as the dependent variable .................. 318

6.18 Full model ordered probit model using adoption of consumer safeguards (RES) as the dependent variable .................. 319

6.19 Reduced model multiple regression using adoption of consumer safeguards (RES) as the dependent variable .................. 326

6.20 Reduced model ordered probit model using adoption of consumer safeguards (RES) as the dependent variable .................. 327

6.21 Full model multiple regression using adoption of more stringent quality of service standards (QOS) as the dependent variable .................. 329

6.22 Full model ordered probit using adoption of more stringent quality of service standards (QOS) as the dependent variable .................. 330

6.23 Reduced model multiple regression using adoption of more stringent quality of service standards (QOS) as the dependent variable .................. 336
6.24 Reduced model ordered probit using adoption of more stringent quality of service standards (QOS) as the dependent variable . . . . . . 337
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. This lack of consensus on the part of those most knowledgeable about the costs and benefits of regulation indicates a fundamental disagreement among experts about the current state of the industry and the role regulation can and should play within it.

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. Other markets which are showing
signs of increasing competition are message toll
service within the same area code as well as
competition for subscribers who are now with the local
exchange. [1] 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. 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, meaning that from their
perspective, the LEC remains a monopoly. So when LECs
are granted greater regulatory freedom, should
regulatory measures protect these ratepayers from
possible 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.

This study is unique in a number of ways. Earlier studies of commission decision making focused on gas and/or electric rates. More recent research on telecommunications decisions across the states have focused on the pricing of services and barriers to entry. This study examines regulatory decision making in the context of a larger social structure, and the results of those decisions are measured not in terms of what was given or withheld from the industry but, rather, in terms of what was granted to the consumer.

The next section of this chapter discusses the general environment in which regulatory decisions take
place and the assumptions underlying the dominant theories attempting to explain these decisions. This is followed by a brief overview of the specific context in which decisions to relax telecommunications regulations have been made and how that context has affected commission decisions to protect the captive ratepayer when granting the local exchange companies greater regulatory freedom.

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. Under such circumstances, “Duplication of facilities would ultimately be at ratepayers' expense, and low variable costs of providing service could lead to ruinous competition and eventually poor -- if any --service.” [2] 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 as well as make possible social goals such as the provision of essential services to the largest number of citizens at a reasonable price.
In close harmony with these justifications for regulation, regulators in state public service commissions see the goal of regulation as protecting the ratepayer against the potential for monopoly abuses while balancing the interests of both the consumer and the investor. [3]

This concern for the well-being of both the ratepayer and the utility has its foundation in the perception of the origins of regulation.

...the 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. [4]

Consequently, regulators feel a responsibility to protect the ratepayer from monopolistic abuse and the utility from economic harm.

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. In more concrete terms, this means that those most affected by regulatory decisions will engage in various activities to influence regulators and thus the outcome. Given the financial resources of the large utility companies and the vital financial stake they have in regulatory decisions, 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. These theories have emphasized the influence of factors external to the commissions and the commissioners, asserting that in many instances, regulatory decisions have 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.

The Structural Theory Proposed

The theory supporting this research is that while resources are necessary, they are not sufficient. Instead, the effects of these resources are 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. A discussion of pertinent research issues is also provided and an overview of the study concludes the chapter.

**Telecommunications Regulation after 1984**

**Background**

Traditionally, telecommunications companies have been regulated through a process known as rate-base, rate-of-return (RBROR). In hearings before regulatory commissions, both at the state and federal level, the regulator determines the value of the firm's capital
deployment (rate-base) and then establishes a set of prices that allows for recovery of operating costs and permits a fair rate of return on this investment. [5]

RBROR has offered regulators effective control of utilities. If the company did not provide adequate and timely service, the commission could reduce its allowed rate of return until specified improvements were made. Because infrastructure investments legitimately could be incorporated into the rate base, companies had an incentive to make those investments.

In this way, regulation attempted to make up for the failure of the marketplace to regulate price and quality of products through competition. In the ideal case, competition forces prices toward their marginal cost while forcing producers to provide some level of quality corresponding to prices and to the satisfaction of the consumers.

Evaluations of RBROR

The Bell Operating Companies/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.

...the principal difficulties, and inefficiencies, associated with current regulation result from the coexistence of competitive entry with the
continuation of traditional, public utility type regulation. [6]
LECs have been almost unanimous in their desire to discard RBROR. If regulation was in place to protect both the ratepayer and the utility, then RBROR was no longer protecting the company from competition. Further, companies maintained it was costing both the companies and the ratepayers more than was necessary in order to allay fears that regulated activities were not subsidizing competitive ones. [7] What LECs wanted was 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. [8] Overall, they felt no compunction in requesting and actively lobbying for the abandonment of RBROR.

The Regulators

For state regulators, the situation has not been so clear cut. 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..." [9]
The major weakness of RBROR for regulators is that it has sent the wrong signals to companies. ...some of the distorted incentives of rate of return regulation are that it encourages inefficiency and inhibits innovation by shifting costs from 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. [10]

While acknowledging the need to accommodate the 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. 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." [11] 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. This comment from a report by the Michigan Public Service Commission 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." [12]

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." [13] In 1987, The National Association of State Utility Consumer Advocates (NASUCA) stated in comments to the FCC that "[t]he conditions that led to rate of return regulation are essentially unchanged." [14] Eight years later, in 1995, in response to one of the early versions of the federal telecommunications legislation which would have eliminated the use of RBROR, NASUCA argued that "By 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." [15]

As regulators were confronted with demands by the LECs for regulation which would give them more flexibility in meeting the threat of competition, the positions of the two main contestants - the LECs and
the ratepayers - were almost diametrically opposed.
The problem for regulators was how to appease consumers while granting at least some of the LEC's demands. In addition, regulators were being asked to make decisions about new forms of regulation without a clear understanding of how such changes would affect either the LECs or the ratepayers.

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. In the ideal situation, as competition was introduced into a monopoly market, regulation of the former monopoly would lessen and eventually be discarded. Prices would fall or at worst, not rise, and service quality would be assured by competition in the market. But there is no certainty about either of those outcomes at the local level. 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. [16]

Since the divestiture of local Bell operating companies from AT&T in 1984, the concept of
telecommunications as a natural monopoly, in both the local as well as the long distance markets, has been temporarily set aside. This does not mean that there is any conclusive proof that any specific segment of the telecommunications market is a natural monopoly, only that a final conclusion has not yet been made.

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 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. [17]

The lack of knowledge about whether there are economies of scope and scale in providing telecommunications at the local level gives rise to other 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 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 believed that local service rates that local have been priced below cost. [18] AT&T claimed,
as do the local exchange companies 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. [19]

**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. [20]

The LECs were, understandably, dissatisfied with commission responses and visibly demonstrated this dissatisfaction by seeking political remedies for their 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 [21] (Such tactics have been tried in other states but rejected by legislative vote. [22]) One of the messages 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 because this is the group most at risk. Large business users have the leverage to negotiate deals in their own interests and telecommunications companies have had the legal right to make such contractual arrangements for many years.

The captive ratepayer is most at risk for monopoly abuses because s/he has no alternative provider of local service now or in the near future. [23] 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. In response, consumers can become angry and vote regulators or those who appointed them, out of office. Thus, between the LECs and the ratepayers, the regulators have found themselves between a rock and a proverbial 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 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.

In this high stakes, politically-charged
environment, many voices are clamoring to be heard.
Such a situation provides the commission with a variety
of information sources. But these information sources
are biased in support of particular stakeholders and
will most likely conflict on core issues. In order to
use it 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. 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 have been constructed as to what types of incentives are most likely to induce certain types of behavior. Ultimately, these theories rest on the same foundation as economic theory, i.e., utility maximization, which is being carried out 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 local exchange carriers. 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. Rational economic theory suggests that companies will seek to maximize their profits. If companies can do this through reduced infrastructure investment or service quality degradation with little or no risk of adverse effects, then they probably will.

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. [24] 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 local telephone companies should be 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. These provide the basis on which to evaluate the regulatory decisions currently being made to accommodate competition. Chapter 3 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 4 surveys the theoretical and empirical literature of the structural theory of regulation, providing a base on which to construct this structural theory. Chapter 5 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 6, the selected factors are operationalized, the multivariate models are explained and the results of the analysis presented. In conclusion, Chapter 7 summarizes the study and discusses the theoretical and practical implications of the findings.
CHAPTER 1

NOTES

1. In telephony, an exchange is defined as the local geographical service area established by the local exchange company 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.


3. Ibid., 14-15.


8. Masoner, 56.


10. Masoner, 60.

11. WA UTC NOI, Docket No. 87-1320-SI, (September 16, 1987), 1.


18. 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 Subsizing Whom?", Telecommunications Policy, vol. 19 (August 1995), 453-464; Consumer Federation of America, Basic Service Rates and Financial Cross-Subsidy of Unregulated Baby Bell Activities (October 1995).

19. 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).

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

22. Ibid.


CHAPTER 2

RATIONALES FOR REGULATION
and
MOTIVATIONS FOR REGULATORS

Introduction

“Regulation is a process consisting of the intentional restriction of a subject's choice of activity, by an entity not directly party to or involved in that activity.’ [1]

By Barry Mitnick's classic definition, regulation results in the restriction of some person or group of persons' freedom. More specifically, 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 chapter.
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.

Once the courts, aided by the philosophy of the public interest, had sanctioned the right of government to interfere in the market place [3], there has followed a running battle between commerce and government about the rules of the game. In the main, these conflicts have dealt with the circumstances under which government can interfere and how that interference is to be enacted. The courts have determined the parameters, economic theory has outlined the methodology [4] and the concept of the public interest has bathed such activity in an altruistic light. Clearly all three concepts have contributed to the establishment and maintenance of governmental regulation and the construction of the regulatory
commissions in a manner so intertwined that no one concept is the recognizably dominant force. In order to more clearly see the influence of each, they are discussed separately.

While public interest, legal, and economic rationales for regulation provide some understanding of why regulation was sanctioned in America, they provide little understanding of why regulators, i.e., the commissioners sitting on state and federal commissions, have made the regulatory decisions that they have. Theories of regulatory decision making, referred to here as motivational theories, are so named because they have postulated various motivations on the part of regulators. These motivations are intrinsically tied to theories about the origins of commissions as well as the basic rationales for regulation.

This chapter opens with a description of each of the rationales for regulation and an explanation of how these elements have affected regulation in America, specifically utility regulation. The chapter then provides a brief overview of the motivational theories of regulatory origin/decision making. The chapter concludes with a discussion of what these various elements, both the rationales for regulation and the motivational theories, indicate about the need for regulation in a monopoly or near monopoly market. It
is this type of market that currently exists for the provision of local telephone service in 1997.

**Rationales for Government Interference in Private Enterprise**

**The Public Interest Rationale**

There appear to be four recognized antecedents to the concept of the public interest [5], the most pervasive, persuasive and enduring rationale for regulation. The first was the doctrine of "just price" developed by the early church in opposition to the Roman law concept of "natural price". As Glaeser explains:

Regulation of private industry has been attempted by government from the earliest times. All attempts at such regulation owed much to a very ancient ideal of social justice, which, as applied to economic life by the early Church Fathers, became their very famous doctrine of *justum pretium*; i.e., "just price." They opposed this idea to the contemporaneous doctrine of *versum pretium*; i.e., "natural price," which the Roman law had derived from Stoic philosophy. As contrasted with the doctrine of natural price, which justified any price reached by agreement in effecting exchanges between willing buyers and willing sellers, the "just price" doctrine drew attention to the coercion which may reside in economic circumstances, such as a food famine where a buyer is made willing by his economic necessities. Hence, in order to draw the sting of coercion, the early Church Fathers, following St. Augustine, considered only that trading to be legitimate in which the trader paid a "just price" to the producer, and in selling, added only so
much to the price as was customarily sufficient for his economic support. There was to be no unjust enrichment. [6]

Glaeser also notes that Emperor Diocletian, in order to avoid revolution threatened by political and economic instability, adopted the notion of “just price” and set maximum prices for approximately 800 items. [7] This is one of the first instances of the concept of fairness being used to justify the interference of government in the private economic affairs of citizens. [8]

The second forerunner to the public interest concept grew out of the guild system of the middle ages. Under this system, a guild held a monopoly on the provision of specific services and products. In exchange for this monopoly status, guilds were required to render service at reasonable rates to whoever requested it. [9] This exchange of monopoly for some form of regulation foreshadows the form utility regulation would take in more modern times.

A third antecedent of the public interest concept was implicit in the early form of monopolies conferred on merchants by the monarch through royal charters and franchises. As Glaeser states:

Since franchises were royal grants, they conferred the special privilege of performing functions which the state itself, for various reasons, did not care to undertake, but which the mercantilist authorities conceived to be governmental in character. These grants of monopoly provided an
incentive for the investment of capital and the assumptions of risks. That they turned out, in many cases, to be extremely profitable to their grantees, and would in turn need curbing, should not conceal the fact that they were originated by the state as a means of attaining public objects.

The fourth antecedent of the public interest concept was the common law of England which specified certain occupations as “common callings”. The British common law overrode the authority of the guilds, manors and towns [11] in determining the duties and obligations of these occupations or callings which also enjoyed certain rights. Occupations such as surgeons, smiths, innkeepers, ferrymen, bakers, brewers, and others [12] were regulated by English Parliament because they sought public patronage. Why these occupations should be regulated in some way was clearly stated by King James' Lord Chief Justice Hale in his treatise, De Portibus Maris, The Ports of the Sea.

A man, for his own private advantage, may, in a port or town, set up a wharf or crane, and may take what rates he and his customers can agree for cranage, sharfage, housellage, pesage; for he doth no more than is lawful for any man to do, vis., makes the most of his own...If the king or subject have a public wharf, unto which all persons that come to that port must come and unlade or lade their goods as for the purpose, because they are the wharfs only licensed by the king,...or because there is no other wharf in that port, as it may fall out where a port is newly erected; in that case there cannot be taken arbitrary and excessive duties for cranage, wharfage, pesage, etc., neither can they be enhanced to an immoderate rate; but the duties must be reasonable and moderats, though settled by the king's license or
charter. For now the wharf and crane and other conveniences are affected with a public interest and they cease to be juris privati only; [13]

Justice Hale also wrote an opinion on the behavior of those businesses which were engaged in "common callings", elaborating on the above statement and providing a secure legal precedent for future government efforts to curb private enterprise. The situation which prompted this decision pitted the public against a monopoly provider of a necessary service; specifically, it pitted ordinary travelers against the providers of ferry boat service. These providers being the only such providers at specific points were able to charge rates viewed as excessive. The traveler had three options: pay the required fare, travel some distance away from the most efficient route or ford the body of water under his/her own resources. Unable as individuals to remedy the situation in a satisfactory manner, the matter was appealed to the King.

In response to this appeal, Lord Justice Hale issued his decision in a treatise titled "De Juris Maris" (The Rights of the Sea), in which he presented the core of his argument.

[The King has the] right of franchise or privilege, that no man may set up a common ferry for all passengers, without a prescription time out of mind, or a charter from the King. He may
make a ferry for his own use or the use of this family, but not for the common use of all the King's subjects passing that way; because it doth in consequence tend to a common charge, and is becoming a thing of public interest and use, and every man for his passage pays a toll, which is a common charge, and every ferry ought to be under a public regulation, viz.: that is give attendance at due times, keep a boat in due order, and take but reasonable toll; for if he fail in these he is finable. [14]

In this treatise, Lord Hale not only defended the right of government to interfere in commerce, he also supplied the conditions under which the power of the state was to be exercised and the manner in which it was to be done. Consequently, contained in this passage are the foundations which outline when and under what circumstances government may exercise control, and specifying that such control can be extended to the quality and quantity of service provided, the manner in which it is provided, the fees charged and the use of governmental authority to force compliance.

In summation, Mitnick suggests that these four antecedents of the public interest concept, “just price”, guilds, government monopolies and “common callings”, came into being because there was a need for the imposition of some societal instrumented values to achieve outcomes in opposition to what otherwise might result from the operation of the uncontrolled market place. [15]
The Legal Foundation

This concept of the right, even the obligation of the governing power to hold some economic power in check for the benefit of the ordinary citizen was a concept that came to America with the colonists. Jonathon Hughes suggests that so strong was this concept that there really never was a time of complete "economic freedom":

...the tradition of law from England gave government even at the lowest levels extensive power to establish, disestablish, and regulate economic activity of all kinds. As far as colonial America was concerned, there never was an absence of such controls, a time of complete economic freedom. The common law came over with the colonists. The power to control, which seemed natural enough in the early economy of medieval villages and incorporated boroughs...became formal and structured as economic life grew more complex over the centuries. [16]

This economic control by government of private enterprise was carried on by the Continental Congress in which "at least eight of the 13 states passed laws fixing the price of almost every commodity in the market." [17]

After the War of 1812, many of these restrictions were appealed or allowed to lapse as America developed an enthusiasm for individualism and economic autonomy at odds with governmental regulation. [18] In this revolution of ideas, competition and open markets were favored by ever increasing segments of society. [19]
The ideal of this period "was for liberty, for freedom from governmental and authoritarian restraints in economic and social life." [20] This ideal and its attendant system of social control was the subject of Adam Smith's *Wealth of Nations*, published in 1776. The underlying belief of this philosophy was that there were natural laws operating in the universe and evil arose when government interfered in the operation of those laws. In the classic language of Adam Smith:

> By preferring the support of domestic to that of foreign industry, he intends only his own security, and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention. [21]

This libertarian view persisted until the Civil War, when it began to erode. Several economists and historians have offered explanations of why this change took place. Michael Reagan has singled out John Maurice Clark, an economist and social theorist, as the one who opened the discussion of the causes of this change in his "pathbreaking text", *Social Control of Business*, published in 1926. In explaining why there was a movement to bring business under some type of social control, Clark pointed out that private business was no long private, but subject to many kinds of interference and control. [22]
The desire to control private enterprise was coming from many sources. The causes, though multitudinous, emanated from three events unique to the late 19th and early 20th centuries.

This many-sided movement toward control cannot be disregarded. Even those who are honestly opposed to it are bound to realize that they cannot simply forbid this tide to rise. It may be guided and directed, its movement made more informed and enlightened, but it cannot be stopped, and no one group can dictate its course. It is the inevitable result of many causes, centering, however, in three things. One is organized large-scale production, another is the growth of democracy, and the third is the growth of science and the changing attitude of the human mind itself toward the world at large and toward human organization in particular, especially the scientific attitude toward social institutions which has been developing slowly throughout the past hundred and fifty years. [23]

Along similar lines, Claire Wilcox saw the underlying causes for this new growth in government control in the growing complexity and interdependence of society.

A century ago controls were few and simple. In the economy of that day they were all that seemed to be required. In relation to its great resources the population of the country was small...The scale of industrial operations was small; the production of goods and services was scattered among many firms. Economic independence was the general rule...Now all of these conditions have changed...Ownership has been divorced from management, and labor has been organized...Economic relationships have steadily grown in complexity. Interdependence, rather than independence, has come to be the rule.

These changes have brought with them a host of new problems, and as these problems have arisen solutions have been sought through the extension of public controls. [24]
In contrast to the philosophic view taken by both Clark and Wilcox, Charles Phillips offers a more pragmatic view by pinpointing the direct cause of the public's request for government interference in private enterprise as people's response to abuse and fraud by big business.

Following the war between the states, the doctrine of public interest was revived. Competition did not prove to be so perfect as economic theory had indicated. As agriculture became less important in the total economic activity of the country, and as technological changes resulted in the growth of corporate concentration, competition in business enterprise began to disappear. Financiers, too, used various devices to bring rival companies under common control., culminating in the great merger movement of 1898 to 1902. And management frequently seized the opportunities at hand to increase profits. Gradually, the liberal tradition was modified. Railroad companies were the first to feel this change. [25]

**Beginning of Government Regulation**

Because of their widespread importance to the general economy, oversight of rail traffic opens the history of modern American regulation. The development of the railroads heralded the true industrial revolution. By providing relatively safe and inexpensive transportation, the railroads opened the door to prosperity for many sectors of the economy, including small rural farmers.

With the building of grain elevators for storage at strategic rail locations, farmers were able to
transport their product to more profitable markets. In the east, railroads competed for portage business. But in the mid-West, the railroads and grain elevators were geographic monopolies. Farmers in the mid-West like many Americans, were distrustful of big business, clinging instead to the earlier American ideal of individual enterprise and economic independence. Robert Horwitz labels this period the "Granger public interest perspective" and explains how that perspective led to early railroad regulation.

The Granger movement did not have a coherent political program, but its demands reflected the farmers' distrust of business. Believing that carriers and middlemen robbed them of their just compensation, farmers argued that railroads and grain elevators should be placed under public authority. The agitation of these movements in the early 1870s helped induce local and state legislation to regulate railroad, warehouse, and grain elevator rates (emphasis original). [26]

Munn vs. Illinois

By 1874 railroad commissions had been established in many mid-Western states [27]. Illinois was one such state and in 1871, the Illinois General Assembly passed a law setting maximum rates for grain storage. Opposed by the railroads, the case was decided by the United States Supreme Court (Court) in 1877 in the famous case, Munn vs. Illinois. In delivering the Court's opinion, Chief Justice Waite affirmed the public's
right to regulate private business when that business is affected with a public interest [28].

The question to be determined in this case is whether the general assembly of Illinois can, under the limitations upon the legislative power of the States imposed by the Constitution of the United States, fix by law the maximum of charges for the storage of grain in warehouses at Chicago and other places in the State having not less than 100,000 inhabitants...

This brings us to inquire as to the principles upon which this power of regulation rests, in order that we may determine what is within and what is without its operative effect. Looking, then, to the common law from whence came the right which the Constitution protects, we find that when private property is "affected with a public interest it ceases to be juris privati only" (emphasis original).

...Property does become clothed with a public interest when used in a manner to make it a public consequence and affect the community at large. When, therefore, one devotes his property to use in which the public has an interest, he, in effect, grants to the public an interest in that use and must submit to be controlled by the public for the common good to the extent of the interest he has thus created. He may withdraw his grant by discontinuing the use; but, so long as he maintains the use, he must submit to the control... [29]

This court case is important because it set a number of precedents in government regulation of private enterprise. First, the Supreme Court began setting forth the specific conditions under which a private enterprise was so affected with the public interest that it was forced to forego the "privileges of private property [and] give way to the duties
attached to public service." [30] The Court established that the control of the grain elevators by nine companies, which met periodically to agree on rates [31] might make this industry a "virtual monopoly." [32]

Because of this monopolistic characteristic and the importance of grain elevators to the way of life of the majority of the area's populace, the Court decided that the business of grain elevators had become clothed with a public interest. One of the justices who concurred with the majority opinion in the Munn case made this comment about it in another Court opinion.

The inquiry...was as to the extent of the police power in cases where the public interest is affected; and we held that when an employment or business becomes a matter of such public interest and importance as to create a common charge or burden upon the citizens; in other words, when it becomes a practical monopoly, to which the citizen is compelled to resort, and by means of which a tribute can be exacted from the community, it is subject to regulation by the legislative power. [33]

Thus, the economic principle of monopoly was established as a condition for imposing regulation.

Commenting on the case and its importance, Shepherd laments this introduction of monopoly as a criteria for regulating a business.

The decision set the general precedent that regulation can be applied wherever a public interest can be perceived. Yet it fatefuly set monopoly as the prime target of regulation, and that still persists in the orthodox image. (emphasis original) [34]
The second precedent the Munn decision set established that a service or product which was a "necessity" was further evidence that the enterprise was of public interest and possibly subject to regulation.

The third precedent was that the owners of the enterprise to be regulated were to receive reasonable compensation for the use of their property.

Following the Munn decision, the Court, in 1890, upheld the principle of judicial review of the "reasonableness" of rates established by regulatory authority. [35] Six years later the establishment of state railroad commissions was upheld by the Supreme Court. This decision also indicated that not just the "reasonableness" of rates but the process by which rates were determined could come under judicial review. [36]

The Public Utility Concept

The concept of an industry or service that was affected with a public interest provided the rationales for the government to impose controls on private enterprise. However, as several regulatory historians, have noted, the concept is an ambiguous one which provides little guidance as to what enterprises should
and should not be regulated. But the concept of a public utility, which should be regulated, had been, to some extent, defined.

Public utility status is, furthermore, generally conferred for two reasons, which can be seen as elaborations of the public protection elements of the definition: 1) The services regulated are viewed as necessary or essential, and the regulation itself is essential in assuring adequate provision of these services; and 2) utility plants possess "technical characteristics leading almost inevitably to monopoly or at least to ineffective forms of competition" i.e. leading to "natural monopoly," so that regulation is necessary to protect the public from exploitation while permitting the public to enjoy the efficiency of the monopoly form under these conditions. [37]

Establishment of Regulatory Commissions

Overall, the Court decisions helped legitimize the commission form of regulation during its early days. The Court supported the authority of the Interstate Commerce Commission (ICC), stating that "The findings of the Commission are made by law 'prima facie' true, and this court has ascribed to them the strength due to the judgments of a tribunal appointed by law and informed by experience." [38] Softening its earlier position that the Court could review the methods commissions used to establish rates, by 1912 the Court strengthened the power of the ICC, reaffirming the finality of the commission's orders unless they were beyond its constitutional authority, beyond its statutory power, or based upon a mistake of law. [39]
Regulatory commissions were firmly established by the 1930s, having taken on the task of regulating such enterprises as railroads, electric and gas companies, telephone companies, water works, and steam heating companies, classifying all these enterprises as public utilities.

The Court continued to support the authority of regulatory commissions to set rates and as in the ICC decision, declined to interfere in the ratemaking process. In 1933, the Court contended that "legislative discretion" must be extended to a commission regarding the methods used to arrive at a decision as well as the decision itself, so long as "constitutional limitations are not transgressed." [40] In the following year, the Court refused to review a state commission decision regarding the calculation of rates, remarking "It is enough that the rates have been established by competent authority and that invalidity has not been satisfactorily proved." [41]

Nebbia vs. New York

Generally, the courts had supported the regulation of those industries which could be classified as public utilities. But there were other industries that various segments of the public wanted to see regulated and that
appeared to be candidates for regulation because of their economies of scale. However, this was an issue to be decided by the Court.

In 1933, the concept of monopoly or virtual monopoly as a necessary condition for government regulation was abandoned by the Court in the case of Nebbia v. New York. In this instance, the concept of the public interest was paramount.

The case challenged the constitutionality of a state setting or fixing prices for an industry that was not monopolistic and had none of the characteristics of a public utility. In 1933, the New York legislature declared the milk industry to be affected with a public interest and set up the Milk Control Board to oversee prices and trade practices of producers and distributors. The price of milk was fixed at $.09 a quart. When a Rochester grocer named Nebbia sold the milk at the fixed price (two quarts for $.18) but included a loaf of bread, he was promptly sued for violation of the law and the case went to the Supreme Court.

While the Court acknowledged that milk production was not a monopoly nor dependent on public grants or franchises, there was no constitutional principal barring the state from fixing prices in order to avert "harm to the producers at one end of the series and the consumer at the other." [42]
In discarding monopoly as a prerequisite for regulation in the public interest, the principle of imperfect competition, which covered both monopoly and excessive competition, was substituted. [43] In applying the concept of the public interest, the Court asserted that "a state is free to adopt whatever economic policy may reasonably be deemed to promote public welfare, and to enforce that policy by legislation adopted to its purpose." [44]

**Summary of Legal Precedents**

As this brief examination of the legal record shows, the Court has not been fully consistent in its determination of what kinds of enterprises can be legitimately brought under government regulation. While the concept of an enterprise "affected with a public interest" provides the foundation of such decisions, the economic status of the enterprise is left open ended. Although operation as a monopoly, whether by grant, franchise or acquisition still, in general, justifies regulation, other economic conditions may provide a legitimate rationale.

Even though such a situation would appear to allow almost any industry or service to be regulated, the process of bringing an industry or service under government supervision requires a legislature to mandate
such regulation and a court to confirm the constitutionality and due process of such an act.

Although several industries were considered legitimate targets for regulatory control, the courts often denied the constitutionality of legislative mandates. As Nebbia v. New York makes clear, the concept of the public interest is paramount in setting legal precedent and guiding legal opinion. But the legislative decisions being judged by the courts must also be nonarbitrary, non-discriminatory and be demonstrably a necessary interference in individual liberty in order to maintain the public welfare. [45]

**Economic Rationales**

The concept of the public interest provided the impetus for implementing regulation. The courts with the assistance of legislatures, confirmed the constitutionality of government interference in private enterprise. Economic theory has provided a more scientific explanation of how regulation can be used to enhance the public interest and proposed the methods to be used to achieve this goal.

**Market Failures**

The economic rationale for regulation of private enterprise is explained in economic parlance as a
response to market failures. Economic theory is predicated on the assumption that in a competitive market, consumers will rationally select the market 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. In much the same way that Adam Smith explained how the satisfaction of individual desires would culminate in the increased well-being of society as a whole, economists postulate that if each individual maximizes his or her own economic utility, the optimal allocation of society's resources will be achieved. History suggests that this goal may not be reached for a number of reasons.

Generally, society avails itself of the regulatory option when one or more of three situations makes it impossible to achieve this preferred outcome. Michael Reagan categorizes these as externalities, inadequate information, and natural monopolies. [46]

Externalities

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 that fall on a third party not directly involved in the
transaction. The acknowledgment of externalities, most often negative, provides the rationale for most social regulation, such as environmental protection of air, water and land.

The logic of regulating activities which can result in externalities proceeds along the following lines. In a highly competitive market, the costs to reduce or remove the externalities which cause pollution will probably not be voluntarily borne by the producer. This is because the market is driven by self-interest and by definition, externalities are usually viewed as "other-interests rather than self-interests." [47] Regulation recognizes the need to reduce these externalities and provides a mechanism for doing so, either through private or public monies.

Inadequate Information

Inadequate information refers to the situation in which consumers do not have adequate information about the quality of goods and services. Reagan predicts that the amount of regulation enacted because of this rationale will increase because of the "increasing technological complexity in the products we consume." [48] This rationale has already provided for consumer product safety regulation and food and drug regulation.
Natural Monopolies

The absence of competition which allows the formation of monopolies is the primary rationale for utility regulation. Society has long recognized the potential harm a monopoly provider can do when left unchecked. At best monopolies limit customer choices and at worst, may take advantage of their situation by charging excessive prices and over earning. While monopolies are viewed as undesirable by economists, there are a number of reasons why there has been little or no competition in the provision of such services as electric power, natural gas, telephone and water. Foremost of these is the belief, espoused by some and (more recently) eschewed by others, that utilities are "natural monopolies." [49] As to why utilities are classified as natural monopolies, 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 resources because it involves unnecessary duplication of tracks, of cables, of substations, etc. [50]
Thus, the primary reason for according utilities monopoly status and then regulating them is that they exhibit economies of scale which make it economically inefficient to allow duplication, particularly of their transmission apparatus.

**Economies of Scale**

Economies of scale refers to the condition in which the long-run average costs are decreasing as production increases, rather than the condition faced by competitive firms in which costs remain constant or are increasing. [51] Competition in a declining-cost industry could lead to bankruptcy if firms were to price services below their current costs in order to attract more of the market. [52] Such competition could be "ruinous," [53] to quote one of the early advocates of regulation for the benefit of the industry.

But even if competition were not financially perilous, it would require the duplication of facilities. Thus, instead of one electric line to a home, there might be two or three; also more than one telephone line and more than one gas line. Such duplication raises the costs for each company in the industry and wastes society's resources to achieve an outcome more efficiently procured through provision by a monopoly controlled by regulation.
A third economic characteristic of utilities is that they are capital intensive. Phillips suggests that this is often true of enterprises which enjoy economies of scale.

Economies of scale often require large-scale plants. Such plants, in turn, require large fixed investments. Indeed, an important economic characteristic of public utilities (bus, highway freight, and water carriers are exceptions) is their heavy investment in durable equipment; and investment which is largely fixed (and, hence, unchanging irrespective of how many units are sold) and which represents a high percentage of total costs. [54]

From the economic perspective, to duplicate such investment with no appreciable benefits to society is allocatively inefficient.

A final economic characteristic of public utilities is that they must have the generation, production and distribution facilities to deliver the maximum that their customer base periodically demands, even though such "peak" demand only occurs for a fraction of any service period. Utility services, such as electric, gas and telephone service cannot be purchased and then stored for future use. These services must be delivered on demand and demand fluctuates. For electricity, it may peak in the summer when air conditioners are running both in homes and businesses. Gas may peak during a cold spell in winter. Telephone services may peak on such days as Christmas and Mother's Day. Because of the fluctuation, utilities
must be prepared to accommodate the peak demand of users and build facilities accordingly. Provision for such demand is capital intensive and again, underscores the reasoning for limiting such investment to one provider.

The requirement that utilities be prepared for peak demand is based on the premise that services provided by utilities are necessities, not luxuries. To be deprived of such services would impose a hardship on consumers because such services are an essential facet of modern life and most customers have no alternative providers for these services. If they are unhappy with the quality or quantity of product delivered, they cannot choose another supplier.

Overall, the two most distinguishing characteristics of 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. Prevention of such abuses has been the economic rationales for regulation of utilities' rates and revenues.

Summary of Rationales

The potential harm, generally through pecuniary means, that a monopoly provider of an essential service
or product can do to a society was recognized more than a thousand years ago. The need to curb the avariciousness of monopoly providers for the benefit of the general populace provided the impetus for some of the earliest forms of regulation, i.e. the establishment of guilds and royal charters. In like manner, regulation in American was originally enacted to halt the abuses of monopolies, must notably in the railroads.

The use of regulation has since been applied to situations where a market is not sufficiently competitive, provides inadequate information, produces externalities or presents the possibility of "ruinous" competition. Government regulation of private enterprise has been justified in America on the grounds that it is in the public interest because it restrains the action of monopolies, which would engage in price gouging, discriminatory pricing, and indifferent service quality were regulation not authorized. Regulation has also been justified on the economic grounds that a monopoly is the most allocatively efficient means of providing certain services because of economies of scale. Under this rationale, the objective of regulation is to act as a substitute for competition by holding prices to the level of marginal costs and overseeing the quantity and quality of the service provided. The courts have provided the sanction to use
force, through the threat of legal action or financial penalties, to support this governmental interference in private enterprise.

Michael Reagan discusses the different perspectives of regulatory scholars before and after the 1960s. He asserts that while today's writings about regulation are dominated by economists and economic principles, and a concern about whether regulation of a monopoly is the most efficient method of providing public utilities, earlier writings about regulation reflected political concerns. As such, these writings examined how successful regulation was at providing relief to those who felt victimized by the power of big business and had used their political power to strengthen and broaden it. [55] Such a change of focus suggests the acceptance of big business as an essential part of the social fabric, while remaining distrustful of it. Regulation was viewed as an accepted policy response on the part of government to the potential abuses of big business and no longer needed to be justified philosophically, but rather its specific workings explained in terms of its impact economically.

Motivational Theories of Regulators

Having discussed the reasons why regulation in general should exist, this section now offers a brief
review of the major theories of why regulation does exist and the relationship between such theories and possible motivations of regulatory decision makers. What these theories have in common is their emphasis on the incentives that cause members of various interest groups, representing the utilities, government, the consumers, and big business to seek regulatory outcomes that favor their specific concerns. Thus, each of the participants in the regulatory arena is assumed to be motivated to achieve specific outcomes.

Some regulatory scholars have organized their explanations by reference to the incentives of politicians, producers, consumers, and regulators. For example, Barry Mitnick in his extensive review of regulatory origins, discusses various theories under the headings of "public interest" and "private interest". [56] In a similar manner, Paul Joskow and Roger Noll review "legislative" and "bureaucratic" theories, with the former focusing on the incentives of politicians and the latter on those of regulators.[57]

For each of the theories discussed below, the focus is on the motivations of the main combatants and how those may have influenced commission decisions.
Public Interest Theories

The public interest theories of regulatory origin are based on the concept that regulation was established in response to public interest objectives. More than any other theory, these objectives reveal the goals ascribed to regulation, which are:

1) Protection of the general public from the abuses of monopoly.

2) Protection of the utility from costly competition.

3) Achievement of specific national goals, such as equity and fairness, rather than merely efficiency.

4) Provision of economic stability for the benefit of both producers and consumers.

Regulation in this theory can be understood as a form of social contract between regulators, acting as agents for the public, and the utility. In this theory of regulation, utilities have certain rights as well as obligations. [58] Their obligations are to serve all who request service, provide safe and adequate service, serve all classes of customers on equal terms and charge reasonable rates. In return, they are promised that the rates they receive and the conditions under which they operate will be reasonable, that they will be granted a
monopoly for their service territory and will have the right of eminent domain.

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. Their motivations are assumed to be, basically, altruistic.

**Life Cycle/Capture Theories**

While these two theories arrive at the same place, i.e., that of commissions which operate primarily for the benefit of the industries they were established to regulate, they begin with different though related premises. The life cycle theory originated in opposition to the public interest theory, offering an alternative, plausible explanation of regulatory behavior. This was partly because it was apparent to many regulatory scholars and historians that whatever their current relationship, several commissions such as the ICC were created to serve industry's interests, not the public's. [59]

The life cycle theory, primarily advanced by Marver Bernstein, hypothesized that an agency experiences
variations in its energy, interest and outputs in a manner analogous to the stages of human life. [60] Thus, the agency has a vigorous "youth", characterized by aggressive industry regulation, followed by a more mellow "maturity" in which the industry and the agency are generally in accord, and ending with "old age", in which the industry "captures" the agency. [61]

Anthony Downs is also well-known for his life cycle theory of bureaucracy, which he postulated as the result of rational bureaucrats motivated by self-interest. [62] Those who are passionate about the mission of the agency, the "zealots," push it into a confrontation and if successful, help it build a reputation and acquire resources. [63] Once established, the zealots are no longer needed and indeed, may be discouraged because of possible political repercussions, i.e., reduction of budget and other resources because of the lobbying of legislative bodies by industry. Thus the bureau settles into complacency and conservatism with age.

The second theory of capture, separate from the life cycle theories, and advanced by Gabriel Kolko and others [64], was that some agencies were created to serve the private interests of industry and were thus "captured" at birth. Indeed, several agencies, such as the Interstate Commerce Commission (ICC) and Civil Aeronautics Board (CAB), were created specifically to
help industry and protect them from "ruinous" competition.

Regardless of which theory dominates the perspective on regulatory behavior, essential to both is the view that regulators are not independent in their thinking and consequent decision making with regard to utility regulation. Instead, regulators are "captured" by their concern for the well-being of their industry charge and that concern is prompted by their self-interest.

This concern of the regulators was predicated on several features common to regulators in the past, primarily with regard to employment within the regulated industry. Many regulators have come from the ranks of those employed by the industry, either directly or from affiliated law firms. This has raised concerns on the part of the public and regulatory scholars about the conflicts of interest such "revolving door" employment implies.

Stephen Breyer elaborates on why such conflicts of interest may arise.

Popular wisdom identifies a partial cause of regulation's failure with the fact that many regulators have a financial stake in the well-being of the industry of firms that they regulate. This stake may consist of the ownership of stock in companies affected by the regulatory action. It may arise out of hoped-for future employment, for many commissioners and agency staff leave the agency for work in regulated industry or law firms or other professional groups that serve industry.
Or it may arise out of past associations and
loyalties, because staff and commissioners often
come from regulated companies or their law firms. [65]

While such a theory has intuitive appeal, it does
not account for several anomalies and leaves many
questions unanswered. As a theory it is more
descriptive than explanatory, inadequately specifies an
empirical model and lacks empirical support. [66]

Kenneth Meier and John Plumlee, in a study
examining the relationship of agency age to political
support, interest relationships, and organizational
rigidity, conclude that "Clearly, age is not fundamental
to the decline of regulatory agencies." [67]

Phillips cites the work of Noll and Owen, who
suggest there are a variety of factors which operate
against the capture of an agency:

1. the protection against it afforded by the
   constitutional design of the government.  2. the
   continuing scrutiny of regulatory policy by
   scholars in economics, law, and political science,
   and (3) the nature of government service. With
   respect to the third factor, they point out:
   "Regulators have no direct financial incentive to
   operate as efficient cartel managers." [68]

Nonetheless, the idea of capture, while lacking in
empirical support, offers a perspective useful in
identifying certain aspects of regulatory behavior in
apparent conflict with the public interest.
Interest Group Theories

As with the other two theories already discussed, the interest group theories focus on the behavior of regulators as demonstrated by commission decisions. However, unlike the public interest theory or the life cycle/capture theories, these theories postulate that regulators continually respond to the changing political climate as manifested by the pressures exhibited by various groups.

Economic/Interest Group Theory

This theory was originally proposed by George Stigler and subsequently formalized and extended by Sam Peltzman. Stigler argued that regulation can be viewed like any other commodity in that there is a demand (mostly by producers) for regulation and a supply of it by government. Rather than viewing regulation as captured, it is purchased. The price of regulation is the maximization of regulators' utility in the form of increased political power, i.e., votes. [69]

Peltzman states that "what is basically at stake in regulatory processes is a transfer of wealth." [70] Recognized methods for achieving a transfer of wealth to producers is through barriers to entry, suppression of substitutes, restrictive tariffs and product pricing. Because groups of producers are generally small, and
have a direct and large stake in regulatory outcomes, they are more motivated and better prepared to influence the regulatory process than more diverse and less affected groups, such as consumers.

The extent to which the regulatory commission grants the demands of the producers and consumers depends on the regulators’ perception of the point at which his/her utility is maximized. Thus, s/he will balance the demands of the two groups at a point which maximizes the gains to be received from both groups.

While both parsimonious and intuitively appealing, the economic theory fails to suggest a set of testable hypotheses. Its basic difficulty is in attempting to explain political processes with an economically based theory.

**Interest Group Theory**

While Phillips notes that this theory has also been called the economic theory, it does differ in that it emphasizes the importance of political coalitions in creating and influencing the regulatory behavior. Posner suggests that the difference between economic theory and interest group theory is:

- economic theory is more precise and hard-edged -- easier to confront and test with a body of data -- than the political theory. Moreover, the economic theory is committed to the strong assumption of economic theory generally, notably that people seek
to advance their self-interest and do so rationally. [71]

The interest group theory shifts the focus from two players - the producer and the consumer - and expands it to encompass all organized participants in the regulatory process. As Trebing points out, regulators can be viewed as arbitrators between the many special interest groups vying for regulatory favor.

Regulation is not perceived as a means for curbing monopoly abuses, nor is it a pawn, vulnerable to capture or manipulation. Instead, it emerges as an institutional form that seeks political support by redistributing wealth in favor of its constituency. [72]

Like the economic theory, influence on regulators is largely a function of the resources groups bring to the process. Regulation is perceived as a good to be sold by those in power in return for political wealth, i.e., votes.

However, like the other theories, it has shortcomings. They are best summed up by Trebing: "the theory provides little basis for judging the circumstances under which regulation enhances the general welfare of society...In practice, the theory can say very little about the conditions which will promote the public interest because it describes a system which is inherently indeterminate. [73]
Conclusion

This chapter has provided explanations both 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.

While the rationale of the public interest indicates that America was prepared to accept regulation, the dominance of "laissez faire" capitalism, given eloquence and credibility by Adam Smith, permeated American capitalism until the late 1800s and weakened support for regulation. The abuses of the railroads and later other segments of industry provided the impetus for politicians to enact some type of restraints to provide consumer protection.

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. [74]
The catalogue of abuses of the public welfare for private gain has made it clear that unless there is sufficient competition, commerce will not and cannot act in the public interest. History suggests that the tactics of industry and commerce will be unethical, possibly illegal, and not economically efficient. Thus, regulation exists.

As to why such governmental interference is allowed, a provocative and unique rationale is offered by E. B. 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 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. [75]

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. [76]

Supporting this thought are state regulators who, even in a period of regulatory reform, are concerned with countervailing power. They want to unleash the positive power of competition but intend to do so by enacting constraints that protect consumers and promote competition.

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.
CHAPTER 2

NOTES


2. Infra, 6-8.


4. The major decisions affecting the valuation of utility assets and how those decisions have affected both regulators and utilities is offered in the following: Kenneth Rose, An Economic and Legal Perspective on Electric Utility Transition Costs (Columbus, OH: The National Regulatory Research Institute, 1996), especially Chapter 3.


7. Ibid.

8. Mitnick, 244.

9. Ibid.

10. Glaeser, 201.


12. Ibid.


14. Ibid.

15. Mitnick, 245.

17. Phillips, 84.

18. Ibid.

19. Glaeser,

20. Ibid., 203.

21. Ibid.


23. Ibid., 5.


29. Ibid.


32. Ibid.


37. Mitnick, 248-249.


42. Phillips, 102.


47. Reagan, 39.


50. Bonbright, 11.

51. Bonbright, 12.

52. Bonbright, 94.


55. Reagan, 27.
56. Mitnick, 248-249.


61. The major drawback of this theory is that it does not take into account the influence of incoming personnel, particularly high-ranking personnel, who may arrive in the agency's "old age" and have visions of the agency as a vigorous entity.


63. Ibid., 18.


68. Phillips, 185.


73. Trebing, 27.

74. Wilcox, 8.


76. Ibid., 121.
CHAPTER 3

THE CHANGING LANDSCAPE OF TELECOMMUNICATIONS REGULATION

Introduction

Chapter 2 briefly explored, in general terms, the normative and positive reasons for government regulation of private enterprise. This chapter focuses on the specific case of telecommunications regulation, tracing its history from the late 1800s until 1994.

The purpose of this chapter is to explain, briefly, how AT&T became a vertically integrated monopoly supplier of both local and long distance service, how early pricing decisions were made and why those decisions opened the door for competition. Most importantly, this chapter explains how divestiture of the local exchange services from long distance services dramatically changed regulation of telephone service at the state level.
From Competition to Natural Monopoly

The Telegraph

Although the Bell system originated with the issuance of a patent to Alexander Graham Bell in 1876, the telecommunications industry in the United States dates from the invention by Samuel B. Morse in the 1830s. [1] The telegraph remained undeveloped until 1843, when Congress passed the Telegraph Act. [2] This Act led to the development of a federally owned facility operating between Washington, D.C. and Baltimore in 1844. But Congress refused to purchase the patent rights for $100,000 and left the telegraph to be developed through private funds. [3]

By 1859, as many as fifty small telegraph companies were in operation in various parts of the country. [4] In 1851, Western Union was formed and by the end of the Civil War, Western Union had become this nation's first industrial monopoly and its biggest corporation. [5] Although there were several political leaders, including President Grant, labor leader Samuel Gompers and even Morse himself who strongly recommended that Congress declare all electronic communications a
government monopoly, such nationalization did not occur and Congress did not choose to regulate this industry until 1910. [6]

The Telephone

In 1876, Alexander Graham Bell received his first patent for the telephone, just ahead of Elisha Gray, a rival inventor. [7] In 1877 Bell received a second patent for improvements to the original design but he and his financial backers did not meet with commercial success. The group even offered the patent to Western Union for the sum of $100,000 but Western Union declined. [8]

By 1878, the Bell Telephone Company was formally incorporated in the state of Massachusetts [9] and Western Union soon found the Bell Telephone Company a significant competitor. Moving to counter this threat, Western Union acquired the patents of Bell's rival, Elisha Gray [10] and the summer of 1878 saw direct competition between Bell Telephone and Western Union in such cities as Chicago, Cincinnati, and New Haven. [11] The competitive bloodletting was stemmed in 1879 by a negotiated settlement between Western Union and Bell. Overall, both companies agreed to stay out of each
other's business and stick to their own specific enterprises. This agreement established the basic monopoly structure of both Western Union and the Bell companies for the next 100 years. [12]

...Western Union would not experience significant entry into its telegraph business until its public message telegraph (or "telegram") service would be opened to competition by the FCC in 1979. And, AT&T's Bell System would not relinquish its predominant monopoly position in the telephone market until the familial ties were severed on January 1, 1984 as part of the "Modification of Final Judgment" (MFJ) settlement of a pending antitrust suit. [13]

**Early Competition**

Since Bell had vigorously prosecuted patent infringements, there was little competition for telephone business other than what had come from Western Union until the expiration of the patents. But with the expiration in 1893 and 1894 of the basic patents issued to Bell, Bell competitors, then as now referred to as "independents" [14] began operations in earnest, particularly in areas where service was absent or unsatisfactory.

By 1902, of the 1,051 incorporated cities in the United States with a population of more than 4,000, 1,002 were provided with telephone facilities. Independent companies had exclusive service in 137 of these cities, the Bell interest served 414 cities and the remaining 451 cities were served by both independent and Bell interests. [15]
Although spread out among over two thousand small companies, the independents controlled 38 percent of the phone lines installed. [16] Initially, the independents had gained momentum because they offered service in territories not yet serviced by Bell. But when competing head to head with Bell, they won customers by offering lower prices.

In the 1890s typical Bell charges had been between $125 and $150 a year for a business telephone and around $100 a year for a residence telephone, although this varied widely between cities. The independents offered service at considerably lower rates, some as low as $40 a year...[17]

In the many cities where there were two companies, customers of one company could not reach customers of the other so people were often customers of both in order to reach the largest number of people. [18] This fragmentation of telephone service was referred to as "dual service." [19] Competition between the two exchanges was often welcomed by users and public officials in order to control rates being charged by the Bell companies. [20]

AT&T's Response to Competition

The growth of the independent telephone companies posed a threat to the Bell company and it responded with a program to maintain its position of superiority
in the industry. Bell made use of patent infringement suits and reduced prices to restrain competitors. [21] But its main weapon was the acquisition of independents as well as major rivals. [22] Early in 1901, this acquisition policy was inaugurated by Theodore Vail, who became general manager of the Bell System in 1877. By 1907, the Bell Company was then known as American Telephone and Telegraph (AT&T) and in a joint venture with Morgan banking interests began a period of buying out independent companies. [23]

Indeed, between 1907 and 1910 the Bell system acquired control of 495,000 Independent company telephones. This marked the beginning of a merger movement which reduced the number of Independent operating companies from more than 9,000 in 1922 to 4,114 in 1957... [24]

One of the reasons AT&T was so successful in acquiring independent companies was because the independents did not have access to distant exchanges. 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." [25] It is worth noting that similar problems exist today. Competitors for customers in the local exchange, having signed interconnection agreements with
the BOCs, are finding the BOCs resistant to compliance and are taking their grievances to the state commissions as well as the courts. [26]

**Competitors Respond**

The aggressive acquisition policy of AT&T, though successful, aroused resistance.

AT&T's competitors petitioned the Justice Department for relief from conditions of market concentration. Indeed, the 1912 Presidential campaign of Woodrow Wilson revealed a growing public sentiment favoring restraints on monopoly practices. [27]

In response to these complaints, investigations were started by the Justice Department, and followed by the Interstate Commerce Commission, the agency given jurisdiction over interstate telephone, telegraph, and cable rates in 1910. On July 24, 1913 the Justice Department filed an antitrust suit against AT&T. [28] Unwilling to risk legal action that could prove adverse, the Bell system entered into negotiations with the Attorney General in December of 1913. This led to a letter, sent to the Attorney General, which resulted in a consent decree and an out-of-court agreement with the Justice Department in 1913, known as the Kingsbury Commitment. In this agreement, AT&T agreed to stop buying competing telephone companies and to allow
interconnection of the independent companies to AT&T's long distance lines. (It is interesting to note that the barrier to entry imposed by lack of interconnection is still effective in the 1990s, as indicated by note 26.)

This prosecution of AT&T in 1913 was, according to Peter Temin in *The Fall of the Bell System: A Study in Prices and Politics*, the logical result of the distrust most Americans and their representatives felt toward large businesses. [29] The Kingsbury Commitment was meant to soothe these feeling of disquiet. But with the coming of WWI in 1914, "concern about the preservation of competition shifted to a concern for achievement of efficiency" [30] The telephone industry was placed under the Postmaster General during World War I and effectively nationalized. He sought the elimination of competition and the unification of service whenever possible. [31]

At the end of the War, many independents felt the Kingsbury Commitment limited their opportunity for a profitable merger. In addition, many customers complained about the situation created by having competing phone companies.

In many cities of the United States, and in rural communities as well, there are dual and competing
telephone systems, doing both local and long-distance business. Wherever there are such dual systems...patrons...are put to endless annoyance and increased expense. [32].

Consequently, in 1921, Congress passed the Willis-Graham Act, which exempted the telephone industry from antitrust action in the matter of consolidation and mergers, if such were found to be in the public interest by the ICC.

Although the Kingsbury Commitment prevented Bell from completely taking over the telephone market, it did accomplish the goal of reducing competition between Bell and the independents. [33] It allowed both Bell and the independents to purchase property from each other in order to consolidate geographical monopolies [34] while slowing down the acquisition of independents by AT&T. Such a situation eliminated price competition and reduced the independents' hostility toward Bell.

The Beginning of Telephone Regulation

Vail had 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. The second was to embrace regulation with the intention of using it for the benefit of the company. [35] 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. [36]

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. [37]

To achieve this goal of using regulation to benefit his company, Vail began to publicly tout the benefits of regulation in 1907. [38]

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. [39]

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, could probably not have been achieved without the presence and by implication, sanction, of regulation. By 1932, Bell's market share was 79%.

Challenges to the AT&T Monopoly

The states began to formally regulate intrastate telephone rates following WWI and the 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. [40]

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. [41]
To remedy some of these problems, Congress passed the Communications Act in 1934, creating the Federal Communications Commission. Its mandate was a formalized version of Vail's universal service objective. [42]

...to 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...

[43]

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. [44]

The 1949 Antitrust Suit

Although AT&T successfully repudiated this first attack on its monopolistic practices, the political climate following WWII gave new life to anti-monopoly prosecution. [45] 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." [46] Again, political pressure from changing presidential administrations forced the Justice Department to settle in a manner favorable to AT&T. The Consent Decree of 1956 permitted AT&T to keep Western Electric but prohibited AT&T from entering markets other than regulated telecommunications. [47]

After AT&T had settled the case with the Justice Department, the FCC began an investigation into the allocation of electromagnetic spectrum for private microwave use in the provision of long-distance service. In 1959, in what is known as the "Above 890 Decision," the FCC opened a new band of microwave for use and allowed the granting of frequency rights to firms wishing to build a private line system. [48]

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. [49] In 1971, the authority granted to MCI was extended to
specialized common carriers by the FCC. But in order to realize the promise of this new opportunity, these specialized companies would need to connect with their customers through AT&T.

True to form, AT&T responded to the new competitors by trying to eliminate them. AT&T's strategy took several forms. First, AT&T undercut competitors prices through discounted prices on services such as Wide Area Telephone Service (WATS). Second, AT&T resisted requests from MCI and others to interconnect with AT&T's local customers. Third, AT&T tried to render the FCC's ruling regarding competition from specialized carriers moot by seeking passage of a bill that would have barred competition from the long-distance market. [50] Although none of these responses on the part of AT&T was ultimately successful, they did slow down the entrance of competitors into the long-distance market.

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. [51]

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. [52]

The acceptance by the FCC and the courts of competitors in the long distance market signaled the end of the AT&T monopoly. Once the new carriers gained de facto acceptance, it would have been virtually impossible to banish them from the market for switched services. [53]

**Divestiture and Industry Restructuring**

In 1974, the Justice Department had again brought an antitrust suit against AT&T.

The 1974 Justice Department suit was based on AT&T conduct in the late 1960s and early 1970s, but it sought many of the same goals as the 1949 suit. Justice asked for a dissolution of AT&T with separate companies for Western Electric (equipment manufacturing), Long Lines (long-distance service), and operating companies (local service). AT&T responded that it was immune to antitrust
prosecution because of regulation, and that its actions had been taken in accord with a regulatory scheme inconsistent with the antitrust laws in order to further the public interest. [54]

From 1974 until 1978, AT&T and the Justice Department engaged in legal maneuvering over discovery procedures and jurisdiction. [55] There then followed another two years of discovery and exchange of stipulations, with the trial actually beginning on January 15, 1981. [56]

The Justice Department "specifically pointed to Bell's anticompetitive conduct in service and customer premise equipment markets and the entity's inherent ability to wield economic power." [57] Bell, though publicly stating it was willing to commit $100 million dollars to its defense [58], conceded the battle and entered into negotiations for settlement of the suit. On January 8, 1982, AT&T and the Justice Department filed a Modification of Final Judgment (MFJ) which would vacate the 1956 Decree. [59] The MFJ was approved on August 24, 1982 and required that AT&T divest itself of its twenty-two wholly owned operating companies, known today as the Bell Operating Companies, or BOCs. This separation of long distance from local service is now referred to as divestiture.
Costs, Pricing, Revenues, and Competition

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 no regulation of rates. [60] This occurred for a number of reasons. [61] 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, including companies operating in multiple states, the rental but not sale of customer equipment and the fact that the manufacturing company, Western Electric, was a subsidiary of AT&T but not regulated, 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. [62]

In addition to no real rate regulation, there was little regulation of any phone activities from 1876 until the 1920s. [63] After the Kingsbury Commitment, the main concern of both the state commissions and the ICC, once formed, was AT&T and its activities with regard to acquisitions and interconnection. [64] Rates were set at the state level until the early 1920s through competition. [65] 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. [66] Two, by WWI, costs for long distance declined because of technological progress. [67]
By 1925, competition at the local level had been eliminated and regulation by rate-base, rate-of-return (RBROR) had been established in almost every state. [68] 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 company of its predetermined rate-of-return.

Under RBROR, costs and revenues were determined in total, meaning that the prices charged for individual services had little or no relation to the costs of providing that service.

Other than in the aggregate, prices were not related to particular costs. Through an indirect route the costs helped determine the prices, but given the arbitrary nature of elements in various divisions and pooling of costs and revenues, and because multiple services may share the use of the same equipment, it was nearly impossible to tie individual costs to individual services. In other words, you couldn't trace the price of most services back to actual costs for equipment, maintenance, overhead and construction. [69]

**Pricing Concepts**

But only determining the overall costs and revenues of the company 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 local exchange service and how much from long distance service? The debate over how to answer this question began among state regulator 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. [70]

The concept under which companies were operating was referred to as board-to-board. Under this philosophy, "the interconnection of local and toll plant served as a boundary; once a call entered the local plant, it became a local call." [71] Thus, board-to-board proponents argued that the cost of a long distance call only involved the cost of carrying the call from one exchange [72] to another and that the operating costs of the local exchange, i.e the costs of providing telephone access through lines and connecting trunks and switches, should be recovered from local users.

A new philosophy which was being proposed was referred to as station-to-station. The station-to-station proponents argued that long-distance calls must include charges for use of the local exchange since the local exchange was used in
originating and completing a long-distance call. This newer philosophy called for recognizing that both local and toll calls shared the same plant and thus, toll calls should pay some portion of the local plant.

This argument was formalized in the case of Smith v. Illinois, which asked for a shift from the board-to-board philosophy to the station-to-station one. The case went to the Supreme Court and was settled in favor of the station-to-station concept in 1930. [73]

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. [74] Their reasoning was that if some effort was not made to apportion costs to inter and intrastate jurisdictions, the local exchange would bear an undue burden of the costs. [75]

Although this decision was made in 1930, no real changes in the operation of the telephone industry were made until the early 1940s. [76]

Partly in response to the Smith v. Illinois decision, a joint board of federal and state regulators met in 1943 and devised a formula for allocating local plant costs between federal and state jurisdictions.
The agreed-upon formula was based on minutes of use. 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. [77]

Pricing Distortions

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. [78]

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." [79] This cross-subsidy resulted in a decline of the average monthly rate for single-line residential phone service from $15.86 in 1955 to $8.60 in 1980, measured in constant 1980 dollars. [80]
This distortion of long-distance call pricing beckoned competitors. [81] 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;
4) moderate and light users of the local exchange charged the same rate as heavy users. [82]

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**

The Consent Decree required AT&T to divest itself of its 22 local telephone service companies, 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. [83]

The 1982 AT&T consent decree, approved by the U.S. district court, initially prohibited the BOCs from (1) providing long-distance services, (2) manufacturing or providing telecommunication equipment, (3) manufacturing customer premises equipment, (4)
providing information services, and (5) providing non-telecommunications products or services, such as operating a cafeteria on company premises. [84] [85]

Subsequently, the twenty-two BOCs were organized into the existing seven regional holding companies. [86]

The BOCs also filed new local exchange areas, known as local access and transport areas (LATAs). The Modified Final Judgement proposed criteria for these areas, i.e. that they serve common social, economic, and other purposes and that every point served by the divested operating companies be included within a LATA. Also, except with court approval, no LATA could cross states lines. In addition, the proposal sought to preserve existing local calling areas as well as nonoptional extended area service arrangements. [87] Thus, the Modified Final Judgment left the local exchange companies unable to carry long-distance traffic between LATAs, though they could carry toll traffic within LATAs.

**Competition and Regulation**

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. For example, if a large business user used long distance extensively in its operations, it could reduce some of its costs by having access to long distance carriers (interexchange carriers, IXCs) over a private network that would route its calls to and from the IXC without using the local exchange carrier (LECs), which in most instances is the BOC. Thus, it would avoid paying the high access charges for origination and termination of long distance calls on the local exchange network. Such has happened in several large metropolitan areas through the use of competitive access providers (CAPs). Since about 1 percent of all business locations generate more than 25 percent of all toll revenues, this fear was real. However, as a 1994 report from the Government Accounting Office (GAO) shows, even in 1994 CAPs had attracted only about $250 million out of $27 billion in long-distance access business. [88]

With the FCC encouraging competition in the long distance market, states began to consider introducing competition into the toll markets intrastate, both interLATA and intraLATA. As early as 1983, the Massachusetts Commission was discussing how to introduce competition into
the intraLATA market. By 1994, 39 states allowed competition between LATAs within the state and 43 allowed competition for the toll traffic within LATAs. [89]

This threat of competition in the once protected environment of monopoly left the BOCs vulnerable. Although they control, on average, approximately 80% of the access lines in most states (exceptions are Alaska, Connecticut, Hawaii, Nebraska, Nevada and North Carolina), under rate-base rate-of-return (RBOR) regulation, they had no flexibility in pricing of services. This is because under RBOR, rates are determined only after the commission has done a full review of a company's costs and revenues and set the "fair" rate of return the company is entitled to earn. The rates set by the commission remain in effect until the company or some intervenor comes before the commission and requests a rate change.

As a result of this process, the settling of rate cases was and is a slow process. Cases could be before a Commission for longer than a year before being settled. Given this lengthy and relatively inflexible method of setting rates, the BOCs and their respective regional holding companies (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 firm's 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. [90]

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**

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 services, discretionary services, 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 alternative form of regulation 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. [91]

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 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). [92]
Summary

This brief history of telecommunications regulation has traced the development of the Bell system from its inception to its position as the monopoly provider of both local and long distance service. It has also 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 into the 1970s from governmental demands that it desist from using its monopolistic powers to gain and retain its market dominance. That such dominance could only have been maintained with some governmental support is also apparent.

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. [93]

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 be continue to be concerns of regulators and if so, how are 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 alternative forms of regulation, 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.

The following chapter opens this discussion with a review of the major theories propounded to explain regulatory decisions.
CHAPTER 3

NOTES


2. Ibid.


4. Ibid.

5. Bolter et al., 74.

6. Ibid., 74.

7. Ibid., 75.


9. Ibid.

10. Bolter et al., 75.


12. Bolter et al., 75.

13. Ibid.


17. Weinhaus et al., 8.


20. Brock, 112; and Weinhaus et al., 6.


22. Bolter et al., 75; Brock, 115; and Weinhaus et al., 8.

23. Brock, 119.

24. Bolter et al., 75.


27. Bolter et al., 76.


30. Temin, 11.


33. Brock, 158.

34. Ibid., 156.

35. Ibid., 155.

36. Ibid.

37. Ibid.

38. Bolter et al., 82.
40. Bolter et al., 82.
41. Ibid.
42. Ibid., 83.
44. Crandall, 18.
45. Ibid.
46. Ibid., 19.
47. Ibid.
50. Ibid., 21.
51. Phillips, 767; and Brock, 217.
52. Phillips, 767.
53. Crandall, 22.
54. Brock, 297.
55. Ibid., 298.
56. Bolter et al., 93.
57. Ibid.
58. Brock, 300.
59. Bolter et al., 93.
60. Brock, 159.
61. Ibid., 160.
62. Ibid.
63. Brock, 159-160; and Bolter et al., 75-77.
64. Bolter et al., 76.


68. Mueller, 14.

69. Weinhaus, et al., 52.

70. Mueller, 16.

71. Weinhaus et al., 53.

72. In telephony, an exchange is defined as the local geographical service area established by the local exchange company 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.

73. Mueller, 16.

74. Weinhaus et al., 61.

75. Ibid, 62.

76. 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.

77. Mueller, 16.

78. Ibid., 17.

79. Ibid.

80. Ibid.

81. Ibid.; and Weinhaus et al., 138.

82. Adapted from Crandall, 23.


84. Ibid.
85. Restrictions (4) and (5) were lifted in 1991 and 1987, respectively.

86. The seven regional Bell Holding Companies and the states that comprise each of them are listed in Appendix A.


89. Vivian Witkind Davis, Breaking Away from Franchises and Rate Cases: A Perspective on the Evolution of State Telecommunications Policy (Columbus, OH: National Regulatory Research Institute, 1995).


91. State Telephone Regulation Report 15, nos.6 and 7 (March 20 and April 3, 1997).


93. For a review of the arguments, both pro and con, regarding pricing of services, see both Boiter et al., 375-381, and Weinhaus et al. For an economically derived argument in favor of the current pricing structure, see David Gabel, "Pricing Voice Telephony Services: Who is Subsidizing Whom?" Telecommunications Policy 19 (August 1995): 453-64.
CHAPTER 4

STRUCTURAL THEORIES OF REGULATION

Introduction

The motivational theories discussed in Chapter 2 are so-named because they attempt to account for the origin of regulatory agencies and the participation of the key players. Motivational theories, which rest on the assumption that all participants are rational, utility maximizers, provide a powerful analytic tool. They "offer an elegant and parsimonious way of explaining a great deal of human behavior." [1]

Although motivational theories can explain a great deal of observed behavior, other theories account for factors that are not considered in motivational theories. For example, the knowledge that regulatory participants are motivated by often clearly discernible goals does not mean that those motivations will be manifested in policy decisions. The life cycle theories of Anthony Downs and Marver Bernstein reflect a recognition of this. [2] These descriptive theories suggest that over some period of time, the regulatory
agency's decisions no longer reflect the motives of the agency's original creators. There has been enough visible evidence of this observation that these theories have gained credence. [3]

Structural or institutional theories are based on the premise that regulatory decisions reflect more than just the outcome of the contest among competing interest groups. While acknowledging the influence of interest groups on commission decisions, they consider the influence of other factors, 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 [3]. As William Berry states:

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) [4]

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. An understanding of the means by which motivations are translated into policy is also necessary in order to formulate a complete theory of regulatory decision-making.

The view of agencies as bureaucratic structures or organizations underlies the structural approach and offers another means of explaining regulatory behavior, as Francis Rourke suggests.

One approach to public bureaucracy which has won increasing favor in recent years is to look upon government agencies as part of the family of organizations - sharing common problems with churches, factories, trade unions, and a host of other private institutions. The emergence of an organization theory with a scope as wide as society itself has had an enormously stimulating effect upon the study of public administration. It has introduced a whole new range of explanatory concepts as a guide to understanding the behavior of public officials. [5]

Viewing regulatory agencies as organizations is positive political analysis. [6] Such a perspective
provides a framework with which to examine the "black box" of agency decision making. This approach 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 bureauocratic 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 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) [7]

In accordance with basic economic theory, all participants in the regulatory contest can be assumed to be motivated, rational actors attempting to maximize their personal utility. Structural theory suggests
that such attempts will be modified by the existing agency structure through the various means available for such motivations to be expressed in terms of policy. Indeed, several theorists have postulated that agency structure can hinder or facilitate the impact of external influences on agency decisions. [8] More specifically, Douglas Anderson's theory rests on the premise that, when an agency has inadequate resources, manifested as a need for external support, it is a prime candidate for "capture." [9]

Most of the research in structural theory is empirically based. This chapter reviews the arguments which regard control of information and available resources as the central means of influencing agencies, organized under the headings Information and Financial Resources. A review of the theoretical and empirical work contributing to available knowledge about structural theory is organized under the headings of Agency Structure and External Factors. Other research providing empirical evidence of various determinants of regulatory policy are also reviewed. In the concluding section, the theoretical foundations for an empirically-based structural theory are summarized. The following chapter develops the theory more fully and specifies the testable hypotheses.
Information

Unless it is assumed that regulatory decisions are largely determined by industry influence or personal ideology, the central role of information in decision making must be acknowledged. In the past decade, commission decisions have dealt with increasingly complex technical material. Without the necessary information, the commission is unable to make the most efficient or equitable decision. [10] Accepting this basic premise is key to understanding the manner in which structure mediates motives to determine policy outcomes.

In Douglas Anderson's theory, because agencies rarely have sufficient resources to operate autonomously, they are constantly bidding for external support. [11] One of the three types of external support that agencies seek and receive is information. [12] Information is necessary both for decision making and to establish legitimacy. As Anderson explains,

"Because they [regulators] are not elected, their democratic legitimacy is indirect; they therefore tend to seek technocratic legitimacy to bolster their position. External groups that supply good information help the agency not only with the decision-making task at hand but also with the agency's underlying legitimacy." [13]

If information is crucial to regulatory decisions, the control of information - in terms of quality and
quantity - offers a means of influencing decisions. In Barry Mitnick's model of regulatory decision making, industry's preferences for protection biases the information the industry provides the agency. This bias, coupled with the complexity of the information, can lead to a situation in which the agency is "captured." How subtly this can be accomplished is elaborated by Mitnick.

Industry control of information in regulation can permit the industry a measure of control over regulator rewards in such areas as friendship and convenience. By doing the regulators "favors" and satisfying everyday job performance needs through supplying information, the industry can ease regulators' work loads (i.e., increase their level of "convenience") and create friendships between industry members and agency personnel. Industry control over the information needed by regulators can lead to shared regulator-industry perceptions of industry problems and appropriate solutions. Information can, of course, be supplied selectively to the regulators or distorted with an industry bias. Through control of information, the industry can succeed in co-opting the regulators, i.e., in making the regulators perceive the regulatory task through an informational framework and orientation provided by the industry. [14]

Agencies often require external support in acquiring information because it is costly and difficult to acquire [15] and the more complex the industry process being regulated, the greater the informational advantage of the regulated utility over the commission. [16] However, this external support does not come without a price. Anderson suggests that the agency will pay for information and other forms of
external support "by sharing control over decision-
making with its suppliers." [17] Other theorists have
postulated that an agency's autonomy is affected by the
amount of information it is able to acquire about the
firms it regulates [18] and that the acquisition,
accuracy and quality of the information significantly
affect commission decisions. [19] 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 the office of consumer advocates. [20]
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." [21]

In summation then, the argument for the importance
of information in relation to the outcome of regulatory
decisions is that it is one of the basic elements upon
which commission decisions are based. Its accuracy,
availability, timeliness and adequacy are critical in
determining the scope and direction of regulatory
decisions. When an interest group can control
information flows, it will, in essential ways, control
commission decisions.
Financial 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 internal structure of the commission, which determine the ease with 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. [22] Such a situation makes it more likely that the agency will be able to operate with a greater degree of autonomy than when it is resource poor. Regulation scholars frequently address the decision making capacity of agencies in terms of their available resources. [23] However, Anderson points out internal resources are generally inadequate, forcing an agency to seek external support and, consequently, leaving it open to outside influence. [24]

The connection between adequacy of resources and susceptibility of commissions to outside influence was recognized in much earlier work seeking to understand regulatory decision-making behavior. [25] Several pioneering researchers attributed regulatory failure to underfunded and understaffed commissions, which lacked
adequate expertise 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 that 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. [26] "Protecting the taxpayer" is still used by governors as an argument for reducing state utility commission staff, according to one staff person at a state utility commission interviewed by the National Regulatory Research Institute during the summer of 1995. The staffer also offered the opinion that such a position was quite likely inspired by requests from the major utilities. [27]

Economic theorists have suggested that greater resources enable a group to "purchase" regulation favorable to its own interests. [28] According to Mancur Olson's theory of collective action, small groups, which will receive large benefits per member by virtue of a specific policy will expend greater effort and resources than large groups which will receive small per-member benefits. [29] Utilities being the group with the fewest members and the greatest resources, particularly relative to captive ratepayers,
are prepared to expend greater resources to acquire more favorable regulatory decisions. As R. A. Katzman points out, the "disproportionate possession of resources by various economic interests results in an inordinate exercise of political power." [30] One reason resources enhance a participant's ability to influence the regulatory process is, in part, because such resources make it possible for that participant to present valuable and needed information to regulators. Joskow and Noll note that "Arguing one's case in a congressional, regulatory, or judicial hearing is expensive, so organized groups that possess resources to expend in this manner can be expected to influence policies to the extent that the outcomes depend upon the information presented in these processes." [31]

Clearly, both access to relevant information and the resources to present it effectively are factors affecting regulatory decisions. For many regulatory scholars these factors provide the means by which interest groups are able to influence regulators. However, while there is no doubt that the utilities have the greatest resources and, thus, are expected to wield the most influence in regulatory decisions, they do not always triumph. Other interests, with fewer resources, are heard and are able to influence policy decisions. Structural theory suggests that the
structure of the agency as well as the environment in which it operates modify the impact of information and resources on the decision making process.

Agency Structure

Theories of regulation can be broadly categorized as theories of regulatory origin or regulatory process. Theories of regulatory origin address the broad question of why choices are made to regulate certain industries or industry segments. Examples of these theories are the public interest theory and the capture theory. Theories of regulatory process "seek to explain how regulatory agencies make decisions, in other words what factors determine or explain their decisions." [33]

Theories of regulatory process have generally attempted to explain regulatory decision makers' behavior in terms of what group or groups benefitted from the decisions. Such theories assume that the benefitted group was able to "purchase" a favorable decision by supplying a reward to regulators. Chapter 2 explored theories of regulatory origin and examined the motivations of the various participants. Structural theories attempt to explain the methods and processes by which the motivations of the participants are translated into policy.
In assessing the impact of a commission's structure and environment on its regulatory decisions, resources and information provide the basic foundation for theoretical understanding. An agency's resources, both financial and political, its access to information and its analytical capabilities, can vary across states as well as issues and affect the autonomy of regulatory decisions. The greater an agency's resources and analytical capabilities, the less vulnerable it may be to outside influences. However, structural factors and environmental conditions can predispose agencies towards certain policy solutions. Several theories have postulated such relationships.

Barry Mitnick suggests that behavior in the regulatory process can be understood in terms of the "incentive system" approach. [34] In this model "the sender may transmit an 'incentive' message regarding specific behaviors and contingent rewards to the receiver within the structure of the sender-receiver relation." [35] The relationship is not necessarily a formal one and senders and receivers are presumed to be rational actors.

The receiver will process the message and act rationally upon it. The sender will then receive information on the receiver's action and release the reward to him. The incentive transaction may not always occur in this basic way, of course; the transfers may be simultaneous, for example, and the transaction may not always be completed. The transaction will be affected by organizational
variables in the sender's and in the receiver's organizational setting (e.g., organization structure, technology and climate, communications patterns, roles, norms, and so on) and by factors in the wider environment (e.g., aspect of cultural, political, economic, and social conditions). [36]

In the study of regulatory decision making, the concept of incentive messages being affected by structural variables is useful. One could assume that those with greater resources and strong incentives to influence the process would be more successful in motivating regulators than those with fewer resources and weaker incentives. This is the underlying assumption of the "capture" theory. But how successful such incentives are in affecting the decisions depends on the motivations of the commissioners and the structure of the commission. That structure is a mediating factor in the sending and receiving of incentive-reward messages and in the response of regulators has been recognized by some regulatory scholars.

Empirical theories of regulation in the past three decades have explored structural and environmental determinants of regulatory behavior in addition to modeling the influence of various interest groups. This inclusion of factors has produced multivariate explanations, often drawn from more than one theoretical perspective. The empirical approach to
regulation was initiated by George Stigler and Claire Friedland in their classic study, which attempted to answer the question, "What can regulators regulate?" [37] They hypothesized that since regulation had been instituted to protect the public from monopoly abuse, there should be a difference in electricity prices in states where utilities had once operated without regulation but were now being regulated. They concluded that with regard to rates, regulation had made no difference. Some twenty years later, David Kamerschen and Richard Wallace replicated the Stigler/Friedland study using the number of agency staff and the amount of agency expenditures to determine the "degree" of regulation and reaffirmed the finding that regulation had no impact. [38]

Since this original study which viewed the variation in electric rates as an indicator of the quality of regulation, several studies have used this measure as a dependent variable. The relationship between regulation and its effect on rates has been extensively modeled in attempts to identify the determinants of regulatory decisions.

Among the structural variables that have been examined are commission size, commission resources and professionalism, number and political affiliation of commissioners, with special attention focused on the
method of commissioner selection. External factors considered relevant are market conditions of demand and supply, production costs, socioeconomic indicators, the political party affiliation of governors and the party dominant in the state legislature. Until approximately 1985, most empirical work used electricity rates as the dependent variable. A few others have attempted to model the determinants of allowed rates of return and measures of regulatory "climate."

However, since the divestiture of the local operating companies from AT&T in 1984, there has been a growing body of work focused on telecommunications regulatory decisions. These studies have attempted to explain variations in rate structures, regulatory frameworks, levels and types of allowed and existing competition, and the amount of infrastructure investment proposed and accomplished. Explanatory variables have included commission budgets, commissioner selection method, level of staff professionalism, measures of consumer advocacy, availability of computers, average access loop costs and Wall Street analysts' ratings of regulatory climate, among others.

The results of these various studies, both theoretical and empirical, are presented below, categorized according to identified structural variables.
Method of Commissioner Selection

In 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 or less specifically, not favoring the utility's interests. The underlying rationale for this interest has been the recognition of commissioners as utility maximizing actors. Where commissioners are elected, they, like other elected officials, must stay in touch with the wishes of their constituents. 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. [39] That consumers also perceive 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." [40] As to whether elected commissioners are more responsive to the needs of
ratepayers than those of the utilities and demonstrate that concern by holding down rates is a subject still open to examination, despite the extensive empirical research done in this area. The following discussion reviews past research on how the method of commissioner selection affects regulatory decisions regarding rates and allowed rates of return. These findings are summarized in Table 4.1, beginning on page 137.

Mark Crain and Robert McCormick published one of the first studies of the relationship between elected commissioners and utility rates in a working paper in 1978. [41] Basing their model on the economic theory of regulation, Crain and McCormick postulated three competing interest groups each trying to maximize its own welfare: 1) regulators; 2) consumers; 3) producers and politicians combined. Using state data from 1976, and controlling for factors of supply and demand, the authors show that residential and industrial electricity rates are somewhat lower in states with elected commissioners. Patrick Mann and Walter J. Primeaux, using data from 1979, also produce some evidence that elected commissioners hold down rates for residential and large industrial users, but not for commercial users. [42]

Other studies have shown no support for the theory that elected commissioners are associated with reduced
rates. Thomas Pelsoci examined the effects of commissions' institutional characteristics on electricity rates and found that higher electric rates are associated with elected commissioners, less educated commissioners, higher fuel costs, higher per capita income, lower market competition and lower commission resource levels. [43]

Unconventionally, he operationalizes commission resources as the ratio of staff per major utility in the PUC's jurisdiction. The finding that higher rates are associated with elected commissioners surprised him. His rationalization for the result is that elected commissioners are, on average, less educated and less professionally oriented than their appointed counterparts and are more susceptible to industry influence. [44] Similarly, Malcolm Haris and Peter Navarro find no statistically significant impact of elected commissioners on electric rates. [45]

A study by William Boyes and John McDowell tested two relationships: one, between rates and method of commissioner selection and two, between rates and the degree of monitoring of commissioners by their constituents. The authors hypothesized that the smaller the constituency, the more intense the scrutiny of the commissioners' actions and, consequently, the lower the rates. [46] Using prior theoretical and empirical
work, the authors determined it is more costly for voters to obtain information about the behavior of appointed commissioners than elected ones and more difficult for a large group to affect an election outcome through the formation of coalitions. Thus, they hypothesized that the size of the polity commissioners may be more of an influence on rates than the method of selection. They suggest that commissioners elected by district and commissioners appointed by governors and subject to legislative confirmation are more similar than commissioners elected state-wide and commissioners appointed by the governors but not subject to confirmation.

Since both consumer and producer groups wish to influence regulation, and regulators need the political support of both groups, regulators will engage in vote-trading, i.e., allowing some increase in rates dependent on the perceived overall amount of political support gained. Thus, regulators elected by district and regulators subject to confirmation should increase rates less than regulators elected state-wide or not subject to confirmation. Their empirical results support their hypothesis that "the more narrowly defined is the consumer-voter group, everything else the same, the lower is the rate set by the PUC." [47]

Other studies have examined the effects of
commissioner selection methods on factors instrumental in determining rates, such as the rate of return on equity and measures of the state's regulatory climate by Wall Street investment analysts. An important and extensive study by Robert Hagerman and Brian Ratchford examined the economic and political variables affecting allowed rates of return. [48] They find that debt/equity ratios, utility size, the method of valuing the rate base, interest rates and length of commissioner terms affect allowed rates of return. There is a positive relationship between length of commission term and rates of return, suggesting that commissioners with shorter terms are more influenced by public pressure. However, in states with elected commissioners, allowed rates of return are higher, though not by a statistically significant degree. The authors conclude that the method of commissioner selection is not significant, but remark that such a finding is "inconsistent with the conventional wisdom that elected commissioners are responsive to the public interest, i.e., give lower returns." [49]

A further development in this debate was provided by Homayoun Hajiran, David Kamerschen and John Legler. [50] They investigated the relationship between the rate of return a regulated firm will request and the rate it will be granted in a formal hearing, using an
extension of a model specified by Paul Joskow. [51] The authors used data from twenty-seven major rate cases before the Georgia Public Service Commission over the period 1970-1981. As Georgia has elected commissioners, they hypothesized that utilities are influenced by that fact and consequently, do not file in a time frame that would force the commission to decide a rate case immediately preceding an election. The data support their hypothesis, as during 1970-1981, only two out of twenty-seven rate increase cases were filed within the pre-election period. As to why Hagerman and Ratchford found no effect for elected commissioners, the authors offer this explanation.

The point is that because utilities recognize the importance of the political variable and offset its effects (by filing outside the preelection period), there is rather low public pressure on elected commissioners. This low pressure is comparable to that of appointed-commissioner states. Therefore, the commissioners are not compelled to make a lower-return decision, and they behave as in an appointed-commissioner state. [52]

Measures of the regulatory climate in individual states are issued by Wall Street investment analysts. [53] These ratings reflect the financial community's perception of the willingness of commissioners to assure the financial well being of the utility. The determinants of these Wall Street ratings have been studied by Peter Navarro, who developed a model accounting for political, ideological and institutional
variables, including the effect of commissioner election. [54] Using a multinomial logit model, he found that elected commissioners, a below-average salary structure and expenditure level, a heavy reliance on general revenue funding and a high percentage of Democratic commissioners are more likely to produce an "unfavorable climate," measured by low analyst ratings. To a lesser degree, lack of professional qualifications, short terms, and heavy oil dependence in states with automatic adjustment clauses also adversely affect regulatory climate. [55] The argument goes that the end result of lower ratings is higher prices for electricity because the lower ratings raise the cost of capital for the utility.

Stephen Archer also analyzed regulatory climate to test the assumption that agency ratings are related to the cost of capital. [56] He suggests that the tendency of regulators to grant only a portion of a utility's requested rate increase is a key indicator of the restrictiveness of an agency. His findings generally support his hypothesis that utilities have lower capital costs in states that are less restrictive. [57]

In 1984 Kenneth Costello re-estimated the models of Mann and Primeaux, Crain and McCormick and Pelsoci, using more recent data. [58] His results suggest that
for each model, the method of commissioner selection is
not statistically significant, although he does find
that states with elected commissioners are associated
with lower rankings from financial investment houses.
[59] He concludes that "The general impression of
investment analysts is that elected PUCs are more
unpredictable and allow lower rates of return on
equity." [60] This conclusion is clearly consistent
with the theory that the structure of commissions
affects regulatory decisions, mediating the influence
of industry.

Commission Attributes

Size

One of the areas that varies across the states and
within the federal government has been both the number
of commissioners and the length of their terms. In
studying these elements, researchers have arrived at
diverse conclusions.

In 1942, James Fesler examined factors that
affected the ability of utility commissions to render
independent and efficient decisions, and he discussed
the number of commissioners. He first summed up the
arguments for larger commissions.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year Published</th>
<th>Research Question</th>
<th>Dependent Variable</th>
<th>Structural Factor(s) Studied</th>
<th>Research conclusions</th>
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<tbody>
<tr>
<td>Crain and McCormick</td>
<td>1978</td>
<td>Are residential and industrial electricity rates lower in states with elected commissioners?</td>
<td>Electricity Rates</td>
<td>Method of commissioner selection</td>
<td>Electricity rates somewhat lower in states with elected commissioners</td>
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<td>Mann and Primeaux</td>
<td>1983</td>
<td>Are residential, commercial, and industrial electricity rates lower in states with elected commissioners?</td>
<td>Electricity Rates</td>
<td>Method of commissioner selection</td>
<td>Electricity rates for residential and large industrial users smaller in states with elected commissioners, but not for commercial users</td>
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<tr>
<td>Pelsoci</td>
<td>1979</td>
<td>How has the rate for residential electricity been affected by cost, demand, administrative and political variables?</td>
<td>Residential Electricity Rates</td>
<td>a) Method of commissioner selection b) Number of commissioners c) Staff capacity d) State per capita income</td>
<td>a) Rates higher with elected commissioners b) Rates higher with larger numbers of commissioners c) Rates lower with larger staffs d) Rates higher with higher per capita income</td>
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Table 4.1: Effects of structural factors on utility rates and granted rates of return
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<td>Elected Commissioners have no significant impact on electricity rates</td>
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<td>Boyes and McDowell</td>
<td>1989</td>
<td>Are electricity rates affected by method of selection and size of polity?</td>
<td>Electricity rates</td>
<td>a) Method of Commissioner Selection</td>
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<td>b) Length of term</td>
<td>a) The smaller the polity, whether commissioner is elected or appointed the lower the rates.</td>
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<td>c) Number of commissioners</td>
<td>b) Length of term not significant</td>
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<td>d) Size of budget</td>
<td>c) More commissioners positively correlated with higher rates</td>
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<td>d) Larger budgets positively correlated with lower rates</td>
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| Boyes and McDowell | 1989           | Are electricity rates affected by method of selection and size of polity?          | Electricity rates | a)Method of Commissioner Selection  
   b)Length of term  
   c)Number of commissioners  
   d)Size of budget | a)The smaller the polity, whether commissioner is elected or appointed the lower the rates.  
   b)Length of term not significant  
   c)More commissioners positively correlated with higher rates  
   d)Larger budgets positively correlated with lower rates |

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| Navarro   | 1982           | What are the determinants of the ranking of a state's regulatory climate by the financial community? | Measure of regulatory climate by Wall Street | a) Method of commission selection  
b) Length of term  
c) Salaries  
d) Budget  
e) Qualifications of Commissioners  
f) Political party of commissioner | Unfavorable climate associated with elected commissioners, short terms, below average salary, and high Democratic representation.  
Favorable climate associated with states requiring professional qualifications |
| Costello  | 1984           | Are residential, commercial, and industrial electricity rates lower in states with elected commissioners? | Electricity Rates and Rankings by investment houses | Method of Commissioner Selection | Method of commissioner selection has no significant effect on rates but does have negative effect on financial ranking |
The argument for a larger number of commissioners is that for decisions as far reaching as those of utility commission the deliberation of a number of men is desirable, that the larger number permits a greater variety of specialized minds to participate in decisions, that expedition is achieved by having many commissioners among whom to distribute hearings work, and that the larger number protects the individual commissioners by forcing critics to scatter their fire. The analogies of both legislatures and the higher courts bolster the argument. [61]

Fesler then went on to discuss the merits of smaller commissions.

For the smaller number it may be argued that such a commission will do less pussyfooting and will take definite stands - because of the greater ease of getting agreement among a few men than among many, that adequate specialization can be obtained on the smaller commission, or, alternatively, that specialized knowledge can be furnished by the staff if such knowledge is not on the commission itself, that the greater concentration of responsibility implied in a small commission evokes a higher concept of public service and integrity in the individual members, that work can be expedited through the delegation of hearing work to examiners and through the reduction of the time required to get a few members to reach decisions, that other things being equal, the state profits by saving salaries that would otherwise be paid additional commissioners, or alternatively, that in a small commission salaries can for the same total compensation item be higher than in a large one, and that this will tend to attract a higher type of man to the job. [62]

Emmette Redford offers an argument against large numbers of commissioners not mentioned by Fesler. His concern is that their individual insulation from the public's scrutiny provides independence from the will of the people, and creates a truly bureaucratic, rather than a democratic government. [63] There is also the
added cost of supporting more rather than fewer
commissioners as well as the attendant delay of greater
members.

In the study done by Hagerman and Ratchford, they
tested the hypothesis that large commissions are more
likely to raise rates than smaller ones. The rationale
for this theory is that raising rates is unpopular with
the general public but larger numbers of commissioners
are better able to diffuse the political consequences
of such a decision. Hagerman and Ratchford find a
negative but statistically insignificant relationship
between commission size and the raising of rates. [64]
Boyes and McDowell also tested this hypothesis and find
that the greater the number of commissioners, the
higher the price level; they also find that the larger
the commissions' budgets the lower the price levels for
electricity. [65]

**Ideology**

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. Researchers
have examined the utility-maximizing incentives and
political party affiliation of commissioners as a
group; commissioners have been surveyed to more accurately determine their individual philosophies about work and specific issues; even commissioners' commitment to the public interest has been considered a possible cause of regulatory decision-making. The results of several of these studies are presented below.

Berry hypothesized that commissioners have two objectives: 1) remain in office and 2) set rates commensurate with the cost of service. [66] He has suggested that the strength of these objectives varies across state commissions and commissioners, with the most significant variation coming from the events surrounding the individual cases. His research findings indicate that electricity rates will be lower where there is a greater possibility of public scrutiny of commission decisions, through open proceedings and consumer intervention. He explains that this finding supports his theory that "participation in regulatory proceedings by nonindustry actors changes the incentive structure influencing the decisions of commissioners." [67]

William 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. [68]

Robert Miles and Arvind Bhambri examined the actions and attitudes of regulatory executives in an effort to understand the role of leaders in regulatory decisions, specifically executives at state insurance commissions. [69] The authors conceptualize these individuals as the "black box" of regulation, whose specific philosophies of their role in the agency guide their regulatory decisions. They categorize agency executives as one of two very different types of individuals, classifying them as either "activists" or "arbiters."

Activist regulatory executives are advocates of the public interest. They see themselves as agents of the underdog, and they perceive a clear dichotomy between "the needs of the public" and "the needs of the industry." [70]

The arbiters among our regulatory executives, in contrast, see both the industry and the public as important constituencies. To them the interests of the public and the industry are not in direct conflict. Therefore, these interests are amenable to mediation by the regulatory executive. [71]

Miles and Bhambri conclude that these two types "differ fundamentally in the meanings they attach to the concept of the 'public interest' and, consequently,
in the manner in which they conceive and enact the process of government regulation of business." [72] David Mazmanian and Paul Sabatier hypothesized that commissioners' attitudes toward environmental protection would affect their decisions to issue landuse permits in protected coastal zones. [73] Their theory was that "the stronger a commissioner's commitment to environmental protection and the more salient the issue to him or her, the greater the propensity to deny permits." [74] Their results support their theory.

Finally, the impact of the professional norms of regulatory personnel on their objectives, and consequently, the nature of policy outcomes, have been studied. Paul Culhane attempted to understand the policies of the U.S. Forest Service and the Bureau of Land Management by understanding "the dictates of the collective knowledge of the agencies' professionals, dictates to which the agencies' officers conform largely because of their professionalism." [75] Robert Katzman examined how professional attitudes and outlooks affect the decisions of agency personnel through a case study of the Federal Trade Commission. [76] His study revealed the competition between the lawyers and the economists for the commissioners'
approval of each group's viewpoint and how that competition affected the manner in which the agency chose its case load.

Professionalism

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." [77] Francis Rourke maintained that a bureaucracy both fashions and fosters expertise in policy areas because of its method of subdividing a problem and having several experts concentrate on small pieces of it over some considerable length of time. "This sustained attention which bureaucrats can devote to specific problems gives them a decided advantage in framing policy decisions over political officials who deal with a wide variety of problems and confront each issue of public policy only at sporadic intervals." [78]

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. [79] But Mitnick sees greater agency staff expertise as providing a means of industry influence. Because regulated industries have more to offer in the nature of financial incentives than agencies, these personnel "may also be more subject to rewards mediated (and possibly manipulated) by the regulated industry." [80] In a further development of this concept, 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 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 [81] found that commissioners were more responsive to staff members than governmental consumer advocates. 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.

[82]

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" by choosing from among the alternatives presented to them by their staff.

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. William Berry explored the relationship between level of staff professionalism [83] 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 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." [84]

Teske looked across states at decisions to change rate structures and allow competition in the telecommunications market, using two different models of state decisions. He compared the interest group model with the institutional factors model and concluded that

Having shown that state regulatory decisions are not merely a function of interest group pressure, the regulatory budget is the most potent explanatory variable in decisions to change rate structures. Larger staff more fully analyze regulatory choices and find more evidence to change rates than to maintain the status quo, which gives commissioners a vital resource to oppose self-interested group arguments. [85]

Determining the impact of resources and staff professionalism on policy decisions is complicated by the evidence that the effects appear to vary across issues. In an affirmation of the theory of interest
group pluralism, Gormley finds that resource-rich commissions are more likely to grant rate increases for utilities while also implementing rate designs which place a greater financial burden on industrial and business users than on residential consumers.

[T]he same resource-rich P.U.C.s that approve relatively large rate increases for all consumers also approve rate designs that benefit residential consumers at the expense of industrial consumers. If this combination of policies has mixed implications for responsiveness, that is because regulatory resources provide insulation from political pressure when issues are complex enough to enhance the stature of those who possess vital expertise...Perhaps this helps explain why scholars have reached such different conclusions about the relationship between regulatory resources and policy responsiveness. [86]

Public Interest Orientation of Regulators

Many regulatory scholars have evaluated commission performance from the perspective of how commission decisions affect the captive ratepayer. Several assumptions underlie this concern; chief among them is the view that greater resources, particularly financial ones, pave the way for more favorable regulatory decisions. Decisions favoring captive ratepayers, who are often unorganized and lacking resources, suggests a willingness to protect such ratepayers out of a sense of fairness or "public interest" rather than having to be "paid" for such concern. Indeed, in the opinion of some critics, the reverse, the neglect of the
residential consumer, indicates a failure of commissions to operate in the public interest.

While much of the recent theoretical work guiding regulatory commissioners' decision-making behavior is based on a rejection of the public interest theory in favor of the economic theory of maximizing one's self-interest, research has shown that a legislator's perception of his/her position as a public trust, does influence his/her decisions [87] in legislative bodies. Kalt and Zupan remark that "approaches which confine themselves to a view of political actors as narrowly egocentric maximizers explain and predict legislative outcomes poorly." [88]

Given that serving the public interest is postulated as one of the main reasons for the creation of regulatory agencies, regulatory scholars have devised various methods to test whether regulatory decisions are just the result of interest group influence or are, in whole or in part, the response of regulators to their perception of the public interest.

Two studies published in 1993 specifically pitted the public interest theory of regulation against the economic and capture theories of regulation. [89] Caudill et al. report the economic theory superior to all others. But the public interest theory, operationalized as commission decisions reflecting
staff recommendations regarding the setting of rates, achieved an $R^2$ of .62 while the economic theory model, which included the variable for public interest, achieved an $R^2$ of .72. [90] Thus, the economic theory explained approximately 52% of the variation in commission rate decisions and the public interest theory explained a little over 38% of the variation. While a 14% difference certainly indicates that the economic theory outperforms the public interest theory, the difference is not overwhelming. Indeed, the results suggest that the public interest theory comes close to matching the performance of the economic theory.

Clifford Nowell and John Tschirhart addressed the question of whether regulators try to promote policies they perceive to be in the public interest, not just policies which will maximize their own narrow self-interests. [91] They determine that, while the public interest theory of regulatory behavior cannot be supported on its own by existing evidence, it is not possible to dismiss the public interest theory. The reason is that when the interests of the public coincide with those of special interest groups, it is not possible to distinguish the rationale of the regulators' behavior. The authors conclude that ...

regulators do respond to the public interest as well as political pressure when the former can be
identified. But in cases when the public interest can not be identified, regulators respond primarily to political pressure. One explanation is that regulators use political pressure as a proxy for the public interest, because economists or other experts cannot agree on what is in the public interest. [92]

**External Factors**

There seems to be ample evidence, both theoretical and empirical, that agency structure can affect regulatory decisions. But the significance of this finding is overshadowed by research showing the high level of correlation between the costs of energy production and the energy rates approved by commissions. [93] As William Berry explained when determining the main objectives of commissioners, "it is likely that all commissioners are motivated to set prices based at least partially on the policy objectives of service at cost. Thus, as a general rule, higher costs of production should prompt commissioners to establish higher prices for electricity." [94]

Having acknowledged the obvious fact that economic forces can significantly affect policy decisions, other external factors, loosely grouped under the headings demographic factors and political factors, required consideration.
Demographic Factors

The demographics of a geographic area are of interest because of what they convey about the attitudes and behaviors of the residents. Political demographers have recognized that these facts are generally the best predictors of policy outputs. [95] Mazmanian and Sabatier summarize the fundamental premise of political demography:

[T]he public policies arrived at by a community are best understood as a function of its needs and resources, which can usually be measured by socioeconomic characteristics such as income, education, industrialization, urbanization, and population...[96]

In 1965, Richard Hofferbert proposed to test whether variables indicative of the political structure relevant to a policy area were more likely to explain policy outcomes than socioeconomic ones. His results strongly supported the explanatory power of socioeconomic variables. [97]

Updating this perspective, in 1994, Sanford Berg and Dean Foreman presented a paper which analyzed the link between incentive regulation and the performance of telecommunications companies and reviewed other recent research efforts focusing on telecommunications. [98] One of the factors common to several of these studies is that measures of state demographic conditions and political environments seem to have
significant impact on the choice of regulatory regimes, other policy choices and service prices. Berg and Foreman suggest that no matter what utility function a regulator is postulated as maximizing, factors accounting for demand, cost, the political environment and the demographics of the geographic area are germane to explanations of regulatory choices and should be included. [99]

Public Opinion

Socioeconomic factors are relevant in regulatory decisions because of what they convey about the likes and dislikes of a specific polity. Public officials respond to the implicit as well as explicit wishes of their public for a variety of reasons, the most obvious being that unless they stay in touch with their constituency, they are not representing them and may not be re-elected.

What is pleasing to one group may be quite displeasing to another, and much of this difference arises from differences in socioeconomic indicators. For example, students of politics expect representatives from largely rural states to espouse different issues than representatives from urban states. Public opinion is the response of a group to specific actions and/or general conditions of the
environment it inhabits. For public agents it is probably the most potent force impacting their decisions. Several theories of regulatory behavior have attempted to model potential public responses to regulatory decisions as a determinant in regulatory decisions.

Sharon Oster analyzed interstate differences in the degree to which consumer products were regulated. [105] She determined the potential political power each affected group represented by virtue of its numbers within the state and concluded that just by their presence groups of consumers, as well as the specific industries, affect policy decisions just by their presence. Mazmanian and Sabatier measured public preferences for specific policies by ascertaining the percentage of the public which had voted in favor of a similar policy and found a high correlation between the decisions of commissioners and the expressed voting preference of the relevant public. [101]

There are two other contexts in which public opinion has been shown to exert influence in commission decisions. The most direct has to do with the expression of consumer preferences in rate cases. Paul Joskow, in examining the determinants of allowed rates of return, found that the inclusion of intervenor testimony had a negative effect on the allowed rate.
Gormley found a positive relationship between consumer advocacy and rates but explained this relationship by noting that it is the existence of high rates which initially cause the participation of consumer advocates. [103] To examine whether participation of public advocates suppressed rates requires a more sophisticated statistical method. Berry examined this relationship using a non-recursive two-stage least squares model and found a negative relationship between advocacy and rates, i.e. that the presence of a consumer advocate did result in rates lower than when a consumer advocate was not present.

The second way in which public opinion can affect regulatory outcomes is related to the presence of public observers at the hearings and the amount of publicity and controversy surrounding the matter being decided. Wamsley and Zald noted that a public organization responds to variations in its environment partially as a function of the amount of scrutiny it receives. [105] Based on the incentive to remain in office Berry hypothesized the greater the extent to which regulatory proceedings were open to the public, the lower the price of electricity. His empirical results support this theory. [106]
David Kaserman, John Mayc and Joseph Flynn examined the underlying causes for regulator support of higher long-distance rates which subsidized local rates. [107] Using the interest group model, the authors assume that residents can cast ballots but businesses can finance campaigns and provide post-commission employment so both groups have the potential to influence the decision. They determined that residential customers are viewed as the politically dominant group, which is why local rates are kept low. Because this appears to contradict the Stigler-Pelzman hypothesis that regulatory decisions will be dominated by small, well-organized groups, they reason that "Changes in local telephone rates are widely publicized and highly visible and they directly affect the wealth of voters. As a result, regulators tend to favor residential users in making their decisions." [108]

**Political Factors**

Potentially the most direct and most explicit external influence on regulatory commissions comes from the political environment. Regulatory commissions, as well as other established agencies, need financial and political support in order to survive, both of which come primarily from the top elected official, i.e., the governor or the president, and the legislature. In
many instances, regulatory commissions were created to operate largely independently of political influence, so that often members must come from both political parties, terms are overlapping and longer than that of the elected official who appointed them. Yet as Fesler has discussed, there are problems with commissions making policy independently of elected representatives. [109]

And there is also the problem of how to control the actions of agencies so that they are in line with the desires of the political leaders of the time. While several reasons have been postulated for how and why regulatory agencies would "shirk", i.e. pursue personal ideological goals at the expense of the public interest, Roger Noll questions whether agencies do shirk and if so, how much. [110] As Barry Weingast and Mark Moran pointed out in their seminal article, Congress can control agencies through a system of incentives which eliminates the need for direct monitoring. [111] Noll points out that legislative bodies with political oversight of an agency can influence its decisions through control of the its budget, its mandate and its procedures. Such control over state regulatory commissions has been exercised by state legislatures with regard to telecommunications in the years since divestiture.
David Kasesman, John Mayo and Patricia Pacey include state legislatures as one of three interest groups affecting regulatory commission decisions to deregulate intrastate long distance. [112] They model this influence as being the decision by the legislature to pass laws that allow deregulation, but do not go so far as to demand commissions to deregulate specific companies or services. [113] Not surprisingly, they find that "the presence of explicit pro-deregulation legislation in the state significantly increases the likelihood of deregulation. This result lends support to the congressional dominance theory of regulatory agency behavior. That is, regulatory decisions are influenced by the expressed preferences of the legislature." [114] Clearly, in fashioning a theory to explain commission decisions, the relationship of the commission to the legislature must be included.

Summary

As the preceding discussion indicates, there is conflicting evidence about the effects of structural factors on commission decisions, particularly the effects of commissioner selection, commission size and length of term. Overall, the results suggest that in terms of rates, there is no significant difference between elected and appointed commissioners. However,
while elected commissioners may not hold down all electric rates, they appear to be more responsive to residential ratepayers than any other group. Consequently, residential rates may rise less and may rise less quickly than those of commercial or industrial customers.

In addition, the theoretical foundation for assuming that elected commissioners are more responsive than appointed ones to public pressure to keep rates low has received support. If companies bring a request for a rate increase in to elected regulators in the time period just prior to an election, regulators are more likely to listen to the arguments of the intervenors and grant the company less of a rate increase than if the request were made outside of that time period.

Giving further support to this theoretical underpinning, it appears that the smaller the constituency of commissioners, whether elected or appointed, the more likely rates are to be lower. The aspect of electing commissioners which led theorists to believe that they would be more responsive to consumers was partly based on the view that there is a direct connection between the commissioner and the ratepayer. Where commissioners represent a specific geographic area, either through election or legislative
confirmation, they are more likely to keep rates lower than if their constituency were the whole state. This is, presumably, because their actions are more closely monitored by their constituents.

Lastly, method of commissioner selection does appear to lead to a "poor regulatory climate" rating by investment analysts. The reason for this relationship is that analysts see elected regulators as allowing a lower rate of return [115] and generally as acting less predictably that appointed commissioners.

With regard to the number of commissioners, the evidence tends to support the finding that larger commissions are more likely to raise rates than smaller ones. Similarly, the length of the commissioner's term also appears to be a factor in commissions' decision making. Commissioners with longer terms are more likely to raise rates than commissioners with shorter terms. The rationale for this is that longer terms allow the commissioners greater freedom from public opinion and attendant political pressure.

With regard to the personal preferences, political leanings, and professional experience and training of commissioners, all appear to significantly affect regulatory decisions. What is not so clear is the way such intangible factors affect decisions. The issue under consideration, as well as the amount of attention
it receives from the public, does appear to interact with the personal motivations of the commissioners.

Finally, elements of commission structure which affect its ability to acquire and analyze information, such as the number of staff, staff's access to computers, the size of the commission budget, even the manner in which staff are organized, have been shown to affect commission decisions. Overall, structural factors appear to have significant impact on commission decisions.

**Conclusion**

While theories of regulatory decision making that emphasized the motives of the participants have contributed to our understanding of the regulatory process, scholars focusing on the means by which these motives are translated into policy decisions have helped explain as well as illuminate relationships among and between the participants. There are three contributions to regulatory behavioral theory from this literature. The first is the role information plays in determining the autonomy of a commission. When commissions are dependent on the utilities or any outside group for information necessary to regulatory decision making, they are subject to capture.
This leads to the second theoretical contribution which is the connection between the resources at a commission's disposal and its ability to use information effectively in decisions making. Commissions with inadequate resources (in terms of budget, staff, and corresponding analytical capabilities) are vulnerable to outside influence when making decisions about complex, technical matters, particularly when there is uncertainty surrounding the consequences of those decisions. The disproportionately large amount of resources commanded by utilities in comparison to commissions gives them an advantage in the decision making process.

Third, the way in which a commission is structured theoretically affects its decisions. More specifically, certain structural components, are predicted, on average, to lead to certain types of commission decisions. Consequently, structural components, by their presence or absence, can open a commission to external influence and the subjugation of the public interest for private gain.

The many empirical studies of regulatory commissions have examined the relationship of various factors to regulatory performance, most often the setting of utility rates. Scholars, as a group, seem to have determined that the capture theory no longer
provides the most accepted rationale for agency performance. Rather, the economic theory, as demonstrated by multiple interest groups competing for the commission's favors, has become the more dominant theory explaining commission behavior. In conjunction with the acceptance of multiple interest groups peddling influence, regulatory scholars have recognized that differences in various aspects of commission structure and organization, such as the method of commissioner selection, the political party currently dominant, the number of commissioners, the number of staff and the professional diversity they represent, may all influence the regulatory outcome. And in addition to the recognition of the potential explanatory power of structural factors, environmental factors have been recognized as influencing regulatory decisions.

While the number of factors identified as potentially influencing commission decisions has dramatically increased, those structural factors most salient to commissions and their decision making ability are not known because there has been no systematic study of them. Moreover, some regulatory scholars have determined that environmental factors and interest groups can account for the variations in regulatory outcomes and that agency structure is not
important. As a consequence, regulatory reformers have suggested that the way to reform regulation is to change market structures and other environmental conditions.

Although writing off structure as a potential influence in regulatory performance would be premature, the lack of any overarching framework in which to place these numerous structural and environmental factors has impeded research. Consequently, the approach to including structural factors has been piecemeal. The same is also true of environmental factors, if they are included at all. Lastly, to determine the impact of these factors by examining only decisions about rates greatly narrows the scope of the research, both in conceptualizations and theoretical arguments. Commissions make decisions on several other issues which affect producers and consumers, though not as directly or as dramatically as do rates.

These criticisms are directly related to the disparate and sometimes contradictory empirical findings about the relevance of structural factors to commission decisions. The central question is: Does commission structure matter? If it does, how does it matter and under what circumstances? The theory and conceptual framework advanced in the next chapters draw on prior theoretical and empirical work, and a more
systematic and comprehensive approach is advanced. The resulting analysis is intended to provide a new perspective on the role of structure in state public utility regulation.
CHAPTER 4

NOTES


2. Downs, and Bernstein.

3. For a general discussion of agencies whose histories are reflective of the life cycle theory, see Phillips, 183-185.


7. Mitnick, 76.


11. Anderson, 12.

12. Anderson, 13-14. The other two resources are political and polemical. Political resources exist in the form of client group influence over political leaders. Polemical resources, also offered by client groups but often unintentionally, allow the agency to take the moderate middle ground, and appear reasonable when client groups advocate extremist positions.

14. Mitnick, 211, references omitted.


17. Anderson, 16.

18. Magat et. al., 53.


20. Gormley,


22. Gormley, 29; Mitnick, 212.


27. Opinions were offered by staffer as off the record remarks during interview conducted by author while employed at NRRI.

28. Stigler, 3-21; Posner, 343; and Peltzman, 213.


32. Magat, et. al., 47.
33. Ibid., 48.
34. Mitnick, 156.
35. Ibid.
36. Ibid., 156-157.
39. Gormley,
40. Ibid., 535.
42. Patrick J. Mann and Walter J. Primeaux, "Elected versus Appointed Commissioners: Does It Make 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. Of the 30 regression models estimated, only five showed the hypothesized sign for elected commissioners at a statistically significant level.
44. Ibid., 111.

47. Ibid., 10.


49. Ibid., 54.


52. Hagerman and Ratchford, 46.


54. Ibid., 125.

55. Ibid., 137.


57. Ibid., 39.


59. For a list of factors considered by investment houses in determining a state's rating, see Costello, 101-102.

60. Costello, 102.

61. Fesler, 4-5.
62. Ibid.


64. Hagerman and Ratchford, 54.

65. Boyes and McDowell, 8.

66. Berry, 528-529.

67. Ibid., 542.


70. Ibid., 183.

71. Ibid., 186.

72. Ibid., 9.


74. Ibid., 448.


78. Rourke, 41.

79. Mitnick, 212; Berry, 543.

80. Mitnick, 212.

82. Ibid.

83. 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.


85. Teske, 151.


88. Kalt and Zupan, 279.


90. Caudill, et. al., 258.


92. Ibid., 664-665.

93. Costs of production as a significant determinant of utility rates has been emphasized by: Costello, 102; Pelsoci,; Hagerman and Ratchford, 54; Joskow, 118-40; and Stigler and Friedland, 1-16.


96. Mazmanian and Sabatier, 445.


98. Sanford Berg and Dean Foreman paper presented at the Michigan State University Institute of Public Utilities Twenty-Sixth Annual Conference in Williamsburg, Virginia, November 29, 1994.

99. Ibid., 19.


102. Joskow, "The Determination of the Allowed Rate of Return," 632-44.


108. Ibid., 237.


113. Exceptions here are Nebraska and Michigan, in which the legislature deregulated the industry, in whole or in part, by law. The Nebraska legislature deregulated the entire industry in 1986, leaving the commission to oversee service quality and respond to customer complaints. The Michigan Telecommunications Act of 1991 deregulated certain services, although basic service was left under the direction of the commission.

114. Kaserman, Mayo and Pacey, 59.

115. Costello, 102.
CHAPTER 5

THEORY, CONCEPTUAL MODEL AND HYPOTHESES

Introduction

As discussed in Chapter 3, 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 Bell Operating Companies (BOCs) requesting greater freedom from regulatory commissions, particularly in the area of pricing. Given that one of the primary rationales for regulation of utilities is to protect consumers from monopolistic or opportunistic behavior, an attendant concern of commissions and other regulatory participants such as consumer advocates, has been how companies might operate in a less restrictive regulatory environment. Specifically, would all ratepayers benefit? Many participants in the regulatory arena firmly believe that with the enactment of alternative forms of regulation, 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]

This research attempts to model the policy responses of commissions to protect consumers at the time they enacted alternative forms of regulation in their state. Although a few studies have endeavored to determine the reasons states adopted alternative forms of regulation [2], and Paul Teske and Jeffrey Cohen have modeled specific policy responses of states to conditions arising from divestiture [3], emphasis on a policy response to a specific situation is relatively unique.

However, the research presented here hopes to do more than offer an interesting examination of a particular case or policy environment. Instead, this research attempts to add to the body of knowledge concerning the policy making process by expanding upon
a theory of accepted policy making that emphasizes the relationship of resources to influence.

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.

In the sections to follow, the policy problem posed by enactment of alternative forms of regulation for telecommunications companies is outlined; the underlying theory, assumptions and conceptual model are explained; and the relevant factors, both within and outside the commission, are discussed. Testable hypotheses are specified at the end of the discussion. However, the operationalization of the hypotheses, the
methodology and the accompanying empirical tests are presented in the following chapter.

**Issues Facing State Commissions after the Divestiture of AT&T**

Chapter 3 discussed the divestiture of AT&T from the BOCs, made final in 1984, and the intended separation of competitive long distance service from local service. In order to apportion traffic between long distance carriers (IXCs), and local exchange carriers (LECs), the territories of the BOCs have been carved up into Local Access and Transport Areas (LATAs). [4] Since 1984, BOCs are authorized to carry traffic within the boundaries of their LATAs and IXCs are authorized to carry traffic between LATAs.

This splitting up of AT&T from the local exchange service gave state regulatory commissions two new tasks in telecommunications. The first task concerned the financial health of the BOCs and the pricing of basic local service. As explained in Chapter 3, AT&T, and subsequently the BOCs, maintained that rates for basic local service were kept artificially low, [5] i.e. that the true cost of providing local service was higher than the price being charged. When AT&T was both a local and long distance carrier, the difference had
been made up by the profit on long-distance calls. Since the BOCs were being cut out of the lucrative long-distance market, state commissions had the job of determining how to ensure the BOCs financial health while maintaining reasonable rates for basic local service.

The immediate response of both the BOCs and the state commissions to this first task was to increase revenues through higher rates for basic services. [6] Consequently, in the early 1980s, BOCs applied for and commissions granted modest rate increases for basic services. These rate increases were reasonable and explained to the public as overdue increases, mandated by high inflation and the lack of a rate increase in a number of years. [7]

The second response to of state commissions to this first task, the plight of the BOCs, was the setting of access charges for intrastate, interLATA long distance. These charges are ultimately paid by the customer but are collected by the BOCs from the long distance carrier. Because the prices charged for access have been substantially above the costs for providing access, competitors have been attracted to this market segment. [8]

The attraction of supra normal profits and above marginal cost pricing has led to the second task
imposed on the state commissions by divestiture, wrestling with how to accommodate competition in the local exchange market. The trick has been to handle this second task while carrying out the first task of maintaining low basic rates and financially healthy BOCs.

State regulatory commissions have struggled to perform these new duties force on them by divestiture, duties which have demanded new regulatory options. Since divestiture was a federal act, it created a situation in which all states were facing similar regulatory decisions.

**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. [9] Where competition is not deemed feasible, public policies such as regulation have been enacted to correct possible market inefficiencies or failures. Traditionally, utilities were granted exclusive franchises and regulated through the rate case process.

However, changes in technology and demand patterns have changed the regulatory landscape in electricity and gas as well as telecommunications. [10] 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.

In 1984, the National Association of Regulatory Utility Commissioners began to include information about "bypass" and the effects of competition on the local exchange company in the Annual Report on Utility Carrier Regulation. [11] Bypass or the use of a network other than that of the LEC to carry telephone traffic, often to connect a caller to their long distance carrier and thus bypass the LEC, posed a threat to the LECs. [12]

The introduction and 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 (SNET) to request some flexibility in setting prices, something not available under RBROR.

Under this form of regulation, "a regulated firm must be permitted to set rates that will both cover operating costs and provide an opportunity to earn a reasonable rate of return on the property devoted to
the business." [13] The accepted formula for determining a company's revenue requirement is:

\[ R = C + (V-D)r \]

where

- \( R \) is the total revenue required
- \( C \) is the operating costs
- \( V \) is the gross value of the tangible and intangible property
- \( D \) is the accrued depreciation of the tangible and reproducible property
- \( r \) is the allowed rate of return [14]

As explained in Chapter 3, both the utilities and the commissions were dissatisfied with RROR.

Utilities, because they wanted greater freedom with regard to pricing and state commissions because of the lack of efficiency incentives. The states' position is captured in this statement made by the California commission in 1989.

We believe that the incentive-based regulatory framework adopted today is superior to the traditional rate base rate-of-return method of setting rates for local exchange carriers...

Because rates will be set in a manner independent of utility actions, the new framework creates a strong profit-driven incentive for the utility to manage its operations in the most efficient manner possible. [15]

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?" [16] To accomplish this transition, companies have proposed and states have adopted various forms of regulation other than RBROR, referred to as alternative forms of regulation or AFORs. Several of these were described in some detail in Chapter 3.

**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 categorizing services by the level of competition such services face. [17] 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. [18]

Revenue Retention

Incentives to improve efficiency center on increasing the amount of money companies can earn and retain. The primary reason for providing this incentive system is to encourage companies to operate more efficiently and, in the process, hold down or even
reduce prices. Under RBROR, earnings are restrained to some percent return on rate base 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. It is believed that AFORs with such incentive structures will correct many of the problems of RBROR.

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 enactment of AFOR. [19] In Strategy One, 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 Strategy Two, the company does everything listed in strategy one 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 Strategy Three, in which companies are induced not just to cut costs but to cut corners. [20] In a recent publication, Barbara Alexander, Chair of the NARUC Staff Subcommittee on Consumer Affairs and Director of the Consumer Assistance Division of the Maine PUC, suggested that when a company can increase profits by slashing its costs for operation and maintenance, degraded service quality is likely to occur. [21] For example, companies may cut personnel costs through layoffs, reducing the workforce available to maintain and repair equipment. [22] 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: 1) ensure a competitive market so that consumers have more than one choice; or 2) hold down prices for basic 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. Each has its own whole or partial network and nationwide access. In addition to these three, there are numerous other participants, many of whom are resellers, operating at the market fringe. [23] Despite the large number of competitors with varying amounts of market share, several scholars maintain that the long distance market is an oligopoly. [24] The profits of the three major companies are high and none of them wants to lower prices significantly in order to increase market share. However, in a survey of state utility commissions done by NRRI in 1995 [25], few states monitor the service provided by long distance carriers. This is because if a customer is dissatisfied with one carrier, they 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." [26] This market is also not monitored for service quality by PUCs 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 is virtually no competition in any local market for residential service. The exception is New York, where a 1989 commission ruling allowed competition in the provision of local exchange service. [27] By the fall of 1995, 26 companies had filed tariffs to provide local exchange services. [28] Even so, full competition is not a reality in New York, said Jerry Salemme, AT&T's vice president for federal regulatory affairs. [29] Consequently, while the threat of competition is growing from cable television companies, wireless
communications providers such as cellular, satellite and PCS, and some utility companies installing fiber optic cable [30], 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. [31] 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 utility. Since the commission sets and controls rates through the regulatory process, companies have no opportunity to change them on their own initiative.

Through RBROR the commission has a less direct impact on service quality. Instead two different financial incentives act to maintain high service quality. The first is that 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.

The second financial incentive controlling service quality results from the relationship between the
utility and the commission. The commission has the authority to set the rate of return for the utility. Should the company not meet the established service quality standards, the commission can, as a punishment, reduce the allowed rate of return.

In the alternative forms of regulation 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 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. As a result, some commissions have imposed rate freezes of five years while others have imposed rate freezes of less than three years. A few states such as Delaware and California have imposed no
rate freeze, allowing basic service rates to be set by a pre-determined formula devised under price cap regulation.

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.

Perhaps in deference to the power of public opinion, companies have generally accepted rate freezes, even embraced them. For example, in requesting an AFOR, some companies have included a rate freeze on basic rates. [32] Where the company may be at odds with the commission and/or consumer advocates is the length of an imposed rate freeze.

Quality of Service Standards

With the lessening of commission control over telecommunications companies which accompanies the implementation of AFORS, several knowledgeable participants in the regulatory debates - consumer advocates, regulatory scholars and commission staff - 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.

The length of time in which the plan will be in effect is chosen to give the plan a chance to be established and operate independently of previous regulatory frameworks so a realistic appraisal of its effects can be made. The decision to assess the plan prior to its ending date is made in order to protect against unforeseen adverse effects. While a negative review would not necessarily end the plan, some revisions could be enacted, based on these early reports.
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

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. Although there are numerous opinions about what is "fair" in any specific case, if commission decisions are perceived as favoring any one party at the expense
of others, there is a general perception of bias and favoritism, suggesting that decisions are being made for the benefit of personal or self interest, not the interest of the public as a whole. 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. Consequently, one of the primary reasons for examining the decisions of regulatory commissions has been to determine in whose interest a decision was made and what factors appear to have influenced the decision.

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). [33] Within these theoretical models, variations within 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 [34] or differences in the training and ideology of the institution's leaders [35] account for some appreciable amount of variation in regulatory outcomes. Joskow and Noll in their oft-cited review of the regulatory behavior literature acknowledge the value of studying regulation within an organizational context because "what regulatory agencies attempt to do and how they go about it are influenced by political and bureaucratic processes which economists rarely, if ever, considered in suggesting regulatory policies to deal with market imperfections." [36]
Determining Commissioner’s 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. [37] Thus, the selection of such factors often appears arbitrary and piecemeal. This is partly because no compelling theoretical rationale is offered for regulators' motives other than self-interest.

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 [38] have all presented research findings suggesting commissioners act on less self-serving and more public-spirited motives than the capture or economic interest group theory assumes. 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. [39]
Even Heather Campbell's recent work which attempts to model the strategic behavior of telecommunications utilities in requesting rate increases includes organizational attributes of the state commissions only as factors potentially influencing the firm's behavior. Her assumption about the behavior of regulators is a restatement of the economic interest group theory, that regulators wish to balance the competing goals of the various parties, including the firm, the ratepayers and intervenors. "Balance" appears to be that which causes the least amount of public scrutiny. Policy preferences of regulators independent of other influential external factors are not assumed. [40]

Jeffrey Cohen offers the most theoretically integrated structural theory which does assume that regulators have distinct policy preferences which they can and do exercise. However, he provides no theoretical rationale of what those policy preferences might be. [41]

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 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.
The 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

In the regulatory arena, the major participants are the commission, the utilities, the ratepayers, large industrial users and politicians. 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. The groups recognized as being influential in the policy making process have these three attributes.

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 all the above named groups 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. [42] Whether commissioners are elected by the public or the legislature, or appointed by a governor with or without legislative approval, there are financial interests supporting or challenging potential candidates. The decisions of utility commissioners and the consequences of those decisions, particularly if they appear to adversely affect the ratepayer, are often subject to public debate and barbed journalistic criticism, from representatives of such diverse groups as consumers and major interexchange carriers. Consequently, commissioners have been the object of media coverage, academic study and public scrutiny.

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 or outright hostile, 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. As discussed in Chapter 1, if utilities are seriously displeased they may lobby the legislature to cut a commission’s budget or limit its authority. And governors can put pressure on commissioners should the commission act in a manner not desired. Given this diverse array of powerful participants in the regulatory contest who can seriously 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 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 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 is not to suggest that regulators are not interested in maximizing their self-interest, only that they are also concerned with equity and fairness. 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. This accounts to a large degree for the numerous studies using rate levels and rate structures as the dependent variable when analyzing commission decisions. [43] 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**

The greatest resource of commissions to ensure
that both utilities and consumers are treated equitably
is their ability to acquire and analyze information.
This ability functions as both a shield and a sword in
the contentious arena of utility regulation.

The large local exchange carriers, which are
usually the Bell operating companies (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, an
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.

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.

An example of the type of situation just described was the alternative regulatory plan introduced by Ameritech in Ohio in March of 1993. The company stated in their Notice of Intention "as part of Advantage Ohio Plan, Ohio Bell [soon to be Ameritech] will commit to invest $1.6 billion in communications infrastructure expenditures over the next five years." [44]

In the spring of 1993, the National Regulatory Research Institute (NRRI) was contracted by the Public Utility Commission of Ohio to provide technical assistance in helping to analyze portions of the Ameritech Advantage Ohio plan. Through data requests to the company, NRRI produced evidence that the much publicized $1.6 billion investment was not dependent on the implementation of the price cap plan but in fact was the level of infrastructure investment the company
would be making in the normal course of business. And of that $1.6 billion, only $476 million would actually be spent on new technology. [45]

In essence, the company sought to justify a requested rate increase for some services through the touting of its $1.6 billion investment. [46] In the final commission order, these rate increases were rejected, in part because the amount the company planned to invest was, upon examination, far less than the amount the company had claimed.

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. [47] It also reconfirms the conclusions of Chapter 4 about the contributions made by structural theory that commissions with inadequate resources and corresponding analytical capabilities are vulnerable to outside influence. Without the ability to analyze and interpret factual information, the commission may be unable to challenge the utility's counter proposals 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 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 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

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 judgments. [48]

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

Organizational complexity refers to an agency's specialization. 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." [49] 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. 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." [50]

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." [51] In choosing factors to measure the professionalism of regulatory commissions, Berry borrowed from indices developed by John Grumm in 1971. [52] 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 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 jobs as full time or close to it, and regard their legislative role as a professional one. [53]

While aspects of the professionalism of the organization are being measured in the financial resources available to the commission and its access to computers, 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. [54]

Motives

The most studied aspect of commissioner ideology is method of selection (appointed versus elected)
followed by political party affiliation. Both of these 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 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, Hagerman and 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. [55]
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 Regional Bell Holding Company. There are seven such companies in the United States, excluding Alaska and Hawaii. The Regional Bell Holding Companies and its member states are listed in Appendix A. 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 can be motivated by direct industry influence is affected 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 length of the "cooling off" period and the personnel to whom it applies.

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, consisting of the governor and the legislature, 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. [56] Since the company is almost always better organized, motivated and financed than any other group, it is expected to dominate the regulatory process. [57] 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 mis-information, 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. [58]

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 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, possibly putting some pressure on regulators on their own or through elected representatives. [59]

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 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. [60] However, the enactment of alternative forms of regulation 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. [61]
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. [62] 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.

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.

220
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. [63] 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.

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. [64]

While the linkage between a community's makeup and its public policies is unclear, Eulau and Prewitt suggest that a community's characteristics set the boundaries for what is possible in terms of policy, rather than dictating specific policy solutions. [65] 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. [66] 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. [67]

Conclusion

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 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. [68] 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.

**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 William Gormley points out, this is not a unidirectional
relationship. [69] Theodore Lowi, in his seminal piece "Four Systems of Policy, Politics and Choice," [70] 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. [71]

**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. [72] Gormley defines a complex issue as one requiring technical expertise to analyze relevant data and formulate options. [73] The way in which 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. [74] The issue attribute he has determined to be most salient 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. [75] 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. [76] When such issues are before a commission, commissioners are more likely to make decisions favorable to the consumer.
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 in the threat of 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 allow 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 NARUC standard for companies performing adequately is one complaint per 1000 lines annually. [77] 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. [78]

Commissions have varied in their treatment of quality of service standards, 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. What also varies is 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.

The three decisions commissions could have made to protect captive ratepayer have now been categorized with regard to complexity and public scrutiny. The following table summarizes this discussion.
<table>
<thead>
<tr>
<th>Commission Decision</th>
<th>Complexity</th>
<th>Public Scrutiny</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Freeze</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Quality of Service Standards</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Time and Focus of Plan Review</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Table 5.1: Issue attributes of consumer safeguards.

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. As Berg and Foreman note "The penalties of regulation are such that regulators dare not withdraw from the field before they are confident that politically powerful consumer groups are, indeed, protected from the exercise of residual market power." [79]

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. [80]

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 commandeering 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, both within the utilities and the legislature, exists. 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 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 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. William 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. [81] 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 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 at least 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 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 5
NOTES


5. See Chapter III of this document. Also, Bolter, McConnaughey, and Kelsey, 377-381. Bolter et al. argue that the notion of a toll subsidy to local service is an illusion due "entirely to the method used to make jurisdictional assignment of nontariff sensitive costs". For a fuller discussion of the costs included in determining the cost of basic local service, see Roger Noll, "State Regulatory Responses to Competition and Divestiture in the Telecommunications Industry," in Antitrust and Regulation, ed. Ronald Grieson (Lexington, MA: Lexington Books, 1986).


12. For a fuller explanation of bypass, including the economics of it, a definition of terms, and the BOCs response, see Walter G. Bolter, James W. McConnaugher and Fred J. Kelsey, Telecommunications Policy for the 1990s and Beyond (Armonk, NY: M. E. Sharpe, 1990).


14. Ibid., 177.


17. Lawton et al., Measuring the Impact; 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).


19. 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.


22. Ibid.

23. 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.


29. "Full Competition in All Telecom Markets about Two Years Down the Road," Washington Telecom Week (February 9, 1995), 12.


37. Cohen, 89; Sanford V. Berg and R. Dean Foreman, "Incentive Regulation and Telco Performance," prepared for the MSU Institute of Public Utilities Twenty-Sixth Annual Conference, Williamsburg, Virginia, December 13, 1994. 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 5 as having no underlying theory. Of the remaining 7, 6 are based on economic interest group theory. The seventh relies on utility maximization as the motive for regulators in combination with public interest.

38. 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; Gormley; Mazmanian and Sabatier; Miles and Bhambri; Teske.


41. Cohen, 89.


43. For a more detailed account of several of these studies, please refer to the previous chapter, Chapter 4. For more recent studies examining alternative regulation in telecommunications, see Berg and Foreman.
44. The Ohio Bell Telephone Company, Notice of Intention (March 23, 1993), 2.


46. Ibid.

47. Gormley, 31; Mitnick.

48. Berry; Campbell; Gormley. 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.

49. Cohen, 90.


53. Ibid., 309.


56. 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.

58. Mitnick.

59. 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, 170.

60. Cohen, 80-81; Gormley, 85-88.

61. 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 Regulatory Reform — A Nationwide Summary, Issues No. 1-17, Atlanta, GA: BellSouth Telecommunications State Regulatory, 1987-1995.


63. Wenders, Chapter 8.


66. Mazmanian and Sabatier.


69. Gormley, 152.


72. Gormley, 212.

73. 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.

74. Berry, 542.


76. Berry, 531.


78. 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 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, 170.)


CHAPTER 6

OPERATIONALIZATION AND MEASUREMENT OF VARIABLES,

TESTS OF HYPOTHESES

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 of 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 alternative forms of regulation 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 alternative form of regulation for the large telecommunications companies, usually the Bell Operating Companies. The number of such decisions analyzed in this research is 38, representing 34 states and the District of Columbia. In this context, an alternative form of regulation 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.

In the main, commissions made decisions to adopt plans that applied to a specific company, since the companies were the parties submitting the plans. [1]

The dates of the commission decisions under study are the dates of the commissions' first decisions to adopt an alternative to RBROR rather than the date of
later extensions or renewals of those first plans. This is because what is being analyzed is the decision of state commissions to protect captive customers from possible abuses by the local exchange carriers based on data available at the time of the initial decision rather than on data available following experience with the plan.

However, in three cases, New Jersey, New York and Rhode Island, commission decisions are analyzed twice. For these three states, the first form of alternative regulation they adopted allowed increased freedom in the setting of rates (for some services) and the retention of earnings but retained parts of RBROR. Subsequently, these three states adopted price cap regulation, a regulatory form allowing the company more freedom than the previous one chosen. Thus, both decisions are included in the sample.

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. While similar in construction to those designed by Jeffrey Cohen, [2] there is no precedent for this type of measurement. 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 6.1, on page 255, lists the commissions whose decisions are being analyzed, the RBOC to which the state BOC belongs, the year the decision to adopt 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.

With regard to these categories, the following qualifications are offered.

1. Where a state has regulated the rates for all services except those deregulated by the FCC, such as inside wire and customer premise equipment (CPE), that state is placed in category 1.
2. In category 2 there is no attempt to measure the amount of pricing flexibility allowed, only to indicate that the commission has allowed some.
3. There is no uniform definition for basic services but this category always includes access to the local exchange, a directory listing, and access to an interexchange carrier.
4. There is no uniformity in the manner in which commissions determine the amount of competitiveness in a market. Some commissions have adopted a method of computing the level of competition for a service; other commissions have left it as an issue to be decided on a case-by-case basis at their discretion.

**Freedom to Retain Earnings**

Under RBROR, rates were established after the rate base and allowed rate of return on that rate base had been determined. With few exceptions, prior to adopting an AFOR commissions have required companies to go through the process of defining and defending a rate base 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 pre-determined 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.
<table>
<thead>
<tr>
<th>OBS</th>
<th>STATE</th>
<th>RBOC</th>
<th>YR</th>
<th>RATES</th>
<th>EARN</th>
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</thead>
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Table 6.1: Index of commission decisions to grant companies greater freedom with regard to setting rates and retaining revenues. (Descriptive statistics and frequency counts in Table 6.4, p. 262.)
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 rate base, rate of return 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.

**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 6.2, on page 259 under PRZCAP.
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 (QOS) standards. In measuring this variable, commissions were rated from 0 to 2. As with the indices described for rates on page 250 with regard to the creation of the indices for rates and earnings, these do not claim to be interval, only ordinal data. 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 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 6.2 on page 259, 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 4 years of the plan; others set no plan review. The raw data scores for these two variables can be found in Table 6.2, 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, 3 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 6.2.
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Table 6.2: Index of restraints placed on company with regard to adoption of AFOR. (Descriptive statistics and frequency counts in Table 6.4, p. 263.)
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 6.3 on page 261 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.
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<td>2</td>
</tr>
<tr>
<td>38</td>
<td>DC</td>
<td>BA</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 6.3: Index of freedoms granted companies and restraints imposed. (Descriptive statistics and frequency counts in Table 6.4, p. 262.)
<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATES</td>
<td>38</td>
<td>2.6789</td>
<td>0.9693</td>
<td>1.000</td>
<td>4.000</td>
</tr>
<tr>
<td>EARN</td>
<td>38</td>
<td>2.2532</td>
<td>1.2452</td>
<td>1.000</td>
<td>4.000</td>
</tr>
</tbody>
</table>

Frequency counts for:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATES</td>
<td>1 = 14</td>
</tr>
<tr>
<td></td>
<td>2 = 9</td>
</tr>
<tr>
<td></td>
<td>3 = 13</td>
</tr>
<tr>
<td></td>
<td>4 = 2</td>
</tr>
<tr>
<td>EARN</td>
<td>1 = 16</td>
</tr>
<tr>
<td></td>
<td>2 = 5</td>
</tr>
<tr>
<td></td>
<td>3 = 8</td>
</tr>
<tr>
<td></td>
<td>4 = 9</td>
</tr>
</tbody>
</table>

**Descriptive statistics and frequency counts for Table 6.1.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRZCAP</td>
<td>38</td>
<td>3.2105</td>
<td>1.7577</td>
<td>0</td>
<td>7.000</td>
</tr>
<tr>
<td>QOS</td>
<td>38</td>
<td>0.8421</td>
<td>0.8229</td>
<td>0</td>
<td>2.000</td>
</tr>
<tr>
<td>PLNLN</td>
<td>38</td>
<td>4.000</td>
<td>2.2056</td>
<td>1.000</td>
<td>10.000</td>
</tr>
<tr>
<td>PLNSEE</td>
<td>38</td>
<td>1.4474</td>
<td>1.5413</td>
<td>0</td>
<td>5.000</td>
</tr>
<tr>
<td>PLAN</td>
<td>38</td>
<td>2.6053</td>
<td>0.9165</td>
<td>1.000</td>
<td>5.000</td>
</tr>
</tbody>
</table>

Frequency counts for:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRZCAP</td>
<td>0 = 4</td>
</tr>
<tr>
<td></td>
<td>1 = 16</td>
</tr>
<tr>
<td>QOS</td>
<td>0 = 16</td>
</tr>
<tr>
<td></td>
<td>1 = 12</td>
</tr>
<tr>
<td>PLNLN</td>
<td>2 = 7</td>
</tr>
<tr>
<td></td>
<td>3 = 13</td>
</tr>
<tr>
<td>PLNSEE</td>
<td>4 = 6</td>
</tr>
<tr>
<td></td>
<td>5 = 5</td>
</tr>
<tr>
<td>PLAN</td>
<td>6 = 7</td>
</tr>
<tr>
<td></td>
<td>7 = 1</td>
</tr>
<tr>
<td></td>
<td>10 = 3</td>
</tr>
</tbody>
</table>

**Descriptive statistics and frequency counts for Table 6.2.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREE</td>
<td>38</td>
<td>4.3421</td>
<td>1.6928</td>
<td>2.000</td>
<td>8.000</td>
</tr>
<tr>
<td>RES</td>
<td>38</td>
<td>2.2895</td>
<td>0.6538</td>
<td>1.000</td>
<td>3.000</td>
</tr>
</tbody>
</table>

Frequency counts for:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREE</td>
<td>1 = 0</td>
</tr>
<tr>
<td></td>
<td>4 = 6</td>
</tr>
<tr>
<td></td>
<td>7 = 6</td>
</tr>
<tr>
<td>RES</td>
<td>1 = 4</td>
</tr>
<tr>
<td></td>
<td>2 = 9</td>
</tr>
<tr>
<td></td>
<td>5 = 5</td>
</tr>
<tr>
<td></td>
<td>8 = 1</td>
</tr>
<tr>
<td></td>
<td>3 = 6</td>
</tr>
<tr>
<td></td>
<td>6 = 5</td>
</tr>
</tbody>
</table>

**Descriptive statistics and frequency counts for Table 6.3.**

Table 6.4: Descriptive statistics and frequency counts for Tables 6.1, 6.2, and 6.3.
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 6.3.

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).

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. While determining the bivariate correlation between these two measures would at first glance appear the most obvious test, the Pearson product-moment correlation coefficient is not the most appropriate measure of association to use because it "requires scores which represent measurement in at least an equal-interval scale." [3] Since the indices FREE and RES do not make any claim to providing interval measures, only ordinal ones, a better measure of association is the construction and interpretation of contingency tables. To facilitate the understanding and interpretation of these tables, the variable FREE was indexed to indicate whether the amount of freedom allowed the companies was low, medium or high. Each category was determined on the following scale.

L  If the original score on FREE was 3 or less, the score was assigned to the category low or L.

M  If the original score on FREE was 4, 5, or 6, the score was assigned to the category medium or M.

H  If the original score on FREE was 7 or 8, the score was assigned to the category high or H.
Table 6.5 on page 266 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% of companies granted the highest levels of freedom also had the greatest amount of restriction imposed on them. In contrast, slightly less than 27% of companies granted the least amount of freedom were given the greatest amount of restriction. This is a difference of approximately 30%. Second, no company given the highest levels of freedom were given 0 or even just one restriction.

Although convincing, these percentages do not necessarily demonstrate the extent or direction of association between freedoms and constraints. The test often used to determine significance is the chi-square test. However, the chi-square test requires that the expected frequencies in each cell be of reasonable size and in no case should more than 20% of the expected cell frequencies be less than 5. The data in Table 6.5 do not meet that requirement.

But a test that is suitable to the type of data displayed in Table 6.5 is Kendall's tau, which offers a measure of statistical significance for ordinal data. Tau is defined “as the excess of the concordant pairs
<table>
<thead>
<tr>
<th>Level of freedom granted</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (Free=2,3)</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>7.89</td>
<td>21.05</td>
<td>10.53</td>
<td>39.47</td>
</tr>
<tr>
<td></td>
<td>20.00</td>
<td>53.33</td>
<td>26.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>75.00</td>
<td>42.11</td>
<td>26.67</td>
<td></td>
</tr>
<tr>
<td>Medium (Free=4,5,6)</td>
<td>1</td>
<td>8</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2.63</td>
<td>21.05</td>
<td>18.42</td>
<td>42.11</td>
</tr>
<tr>
<td></td>
<td>6.25</td>
<td>50.00</td>
<td>43.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.00</td>
<td>42.11</td>
<td>46.67</td>
<td></td>
</tr>
<tr>
<td>High (Free=7,8)</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>7.89</td>
<td>10.53</td>
<td>18.42</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>42.86</td>
<td>57.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>15.79</td>
<td>26.67</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>19</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>10.53</td>
<td>50.00</td>
<td>39.47</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 6.5: Contingency table of level of freedom granted companies and number of restraints imposed.
over discordant pairs divided by the square root of the maximum number of possible pairs." [4]

Following the calculations explained in detail in Appendix B, 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 calculations for this procedure are also shown in Appendix B. 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% 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 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 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.
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 on page 270, Table 6.6, 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%) provided for no rate freeze or cap, while 34 (89.5%) of the sample did. With respect to quality of service standards, 22 decisions, 57.9% of the sample, enacted stricter quality of service standards. For the overall sample, this is a difference of more than 30%. Overall, commissions were more likely to include price freezes or caps than they were to include quality of service standards in their AFOR decisions.

But before rejecting the null hypothesis, the level of freedom granted companies must be taken into account in comparing the adoption of quality of service standards and rate freezes/rate caps. To facilitate this comparison, the categories of rate freeze/rate cap were condensed 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>
<thead>
<tr>
<th>Years of rate freeze</th>
<th>Increased Strength of Quality of Service Standards</th>
<th>N = 38</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Some</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Total (percent of 38)</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42.11</td>
</tr>
</tbody>
</table>

Table 6.6: Contingency table showing relationship of years of rate freeze to stringency of quality of service standards adopted when enacting APOR.
Sorting the data by the level of freedom granted the company, as shown in Table 6.5, page 266, the contingency tables for the variables are displayed for short, medium and long levels of freedom. They are labeled respectively, Table 6.7, Table 6.8, and Table 6.9. Table 6.7 and 6.8 are located on page 272. Table 6.9 is on page 273.

Table 6.7 indicates that at the low level of regulatory freedom, 12 commissions have imposed a rate freeze or cap while only 6 have adopted more stringent quality of service standards. At the medium level, of freedom granted the companies, shown in Table 6.8, 15 commissions enacted rate freezes, but only 11 adopted more stringent quality of service standards. And at the high level of freedom, Table 6.9, 7 commissions adopted rate freezes and 5 adopted more stringent quality of service standards.

In terms of percentages, Table 6.10 makes clear the differences between adoption of a rate freeze and adoption of more stringent quality of service standards. 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.
<table>
<thead>
<tr>
<th>Years of rate freeze</th>
<th>Quality of Standards</th>
<th>Service Standards</th>
<th>N = 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>1</td>
<td>3 20.00</td>
</tr>
<tr>
<td></td>
<td>Some</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total (percent of 15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>8</td>
<td>4</td>
<td>12 80.00</td>
</tr>
<tr>
<td>Some</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total (percent of 15)</td>
<td>9</td>
<td>6</td>
<td>15 100.00</td>
</tr>
</tbody>
</table>

Table 6.7: Relationship of level of rate freeze to stringency of quality of service standards at low level of freedom granted to company.

<table>
<thead>
<tr>
<th>Years of rate freeze</th>
<th>Quality of Standards</th>
<th>Service Standards</th>
<th>N = 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>0</td>
<td>1 6.25</td>
</tr>
<tr>
<td></td>
<td>Some</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total (percent of 16)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td>10</td>
<td>15 93.75</td>
</tr>
<tr>
<td>Some</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Total (percent of 16)</td>
<td>5</td>
<td>11</td>
<td>16 100.00</td>
</tr>
</tbody>
</table>

Table 6.8: Relationship of level of rate freeze to stringency of quality of service standards at medium level of freedom granted to company.
<table>
<thead>
<tr>
<th>Years of rate freeze</th>
<th>Quality of Service Standards</th>
<th>N = 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Some</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total (percent of 7)</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 6.9: Relationship of level of rate freeze to stringency of quality of service standards at high level of freedom granted to company.

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

Table 6.10: Relationship between level of freedom granted utility and consumer safeguards adopted.
service standards. The least difference between adoption of a rate freeze and quality of service standards is 25% at the medium level of freedom. The greatest difference is at the low level of freedom, at 40%. However, even at the high level of freedom, the difference is over 28%.

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

**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.

**Resources**

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

**Professionalism of Staff**

Based on the discussion of professionalism in Chapter 5, 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 possible then, that commissions with total resources and staff below the mean may be able to compensate their staff at a level, on average, above the mean. Given Berry’s research findings, which showed a positive relationship between professionalism and concern for the least economically advantaged ratepayer, 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 four variables into an index modeled on those employed by both Berry and Gormley. [5] Like both Berry and
Gormley, this index is a linear, summative index which assumes all four variables are equally important. The index was constructed using the following four indicators.

(a) Annual expenditures of commission (EXPEND). This measures the total budget of the commission for the particular year, including salary figures. (Access to reliable budget figures without salary figures was not available). To facilitate comparisons, all dollar figures used in computations are converted to 1994 dollars.

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

(c) Average commissioner salary (COMSAL). This measures the average 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.

(d) 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.

(a) A dichotomous measure of whether the commission has a research library (LIB). If the commission has a research library it receives a score of 1. While a more precise measurement would be provided by knowing the budget for research materials and the number of research staff, such information was not readily available.

(b) A dichotomous measure of whether a commission has a telecommunications staff (TELSTF). A determination of
whether the commission had a separate telecommunications staff was made in the following manner. Using information provided in the Annual Report on Utility and Carrier Regulation of the National Association of Regulatory Utility Commissions, a commission was categorized as having a telecommunications staff if there was either a divisional head listed for telecommunications or a box on the organizational chart designated as telecommunications. A consistent measure of the size of such staff was not available.

(c) A dichotomous measure of whether the majority of senior staff is protected by civil service (JOBP). The reason for including this aspect of commission staff is given by Gormley.

Historically, the classification of administrative positions promoted professionalism by encouraging the transition from a 'spoils system' to a 'merit system.' By requiring job applicants to meet specified criteria for employment, it eliminated payoffs by machine politicians; by protecting administrative officials from arbitrary dismissal, it ensured that capable people could not be fired for partisan reasons. [6]

Whether high ranking staff were covered by civil service was determined by reviewing the section of the Annual Report on Utility and Carrier Regulation of the National Association of Regulatory Utility Commissions, that gives salary information for the key commission officials and senior staff. If more than half of the
division heads were protected by civil service, then the commission received a score of 1.

(d) 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. 

(a) Elected versus appointed (EVA). In this sample of 38 commission decisions, 8 commissions are elected. Seven are elected by voters and one is elected by the legislature. In the other 30 commissions, commissioners are appointed by the governor, usually with confirmation by the legislature. Although past research [7] has shown no significant differences between elected and appointed commissioners in the adoption of rates, this research hypothesizes that elected commissioners may be more willing to adopt restraints.

(b) 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. Past research detailed in Chapter 4 suggests that larger commissions are more willing to make decisions that are unpopular with the public. But the rationale was that with regard to rates, an unpopular decision would ultimately benefit the consumer by assuring that the utility remained healthy. Sound financial standing would reduce the cost of borrowing money for the utility and lead to greater
rate stability in the long run. But in terms of making a decision specifically for the consumer and possibly in opposition to the utility, there is no indication in which direction a larger commission would move as opposed to a smaller one. Consequently, this research makes no prediction about the relationship between commission size and adoption of restraints.

(c) 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. According to Berry "Long tenure is considered to be indicative of experience and therefor high professionalism." [8] Based on this statement, this research predicts longer service will result in the adoption of more restraints.

(d) 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.
Commissioner 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.

(a) 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 [9], 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 [10] 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.
(b) Past professional experience (POLI, BUSINESS, CONSUME). Working on the premise that past occupational experience is likely to have an effect on current behavior [11], three dimensions of commissioners' past professional experience were measured by determining the percentage of commissioners who had such 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). Campbell suggests that such past experience will make commissioners "more sensitive to political pressure both because they have been sensitized to the importance of political interaction and perhaps because they are more likely to wish to be politicians in the future." [12] 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. As
Campbell notes, "it seems that people are more likely to be sympathetic toward interests of which they have been a part." [13] 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. This could happen because of the opportunity of those commissions adopting AFORs later rather than earlier to examine these decisions and attendant arguments and, in some cases, to witness the effects of those decisions.
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. As explained in discussing the political affiliation of commissioners, 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 [14] no prediction is made about the coefficient of this variable. It is included as a control in observing the behavior of Democratic and Republican governors.

Legislatures

State legislatures were also coded with regard to party affiliation by measuring the average percentage of Democrats and Independents in both houses (LEGDEM). Operating on the same reasoning applied to governors and commissioners, 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 5 on pages 218 and 219, legislatures take more of an interest in the policy decisions of commissions rather than in the specific decisions determining rates. Jeffrey Cohen maintains that the ability of a legislature to successfully contend with the bureaucracy of the commission is highly correlated with its institutional resources. [15] This is because resources offer some indication of the level of professionalism, with more professional legislatures more likely to intercede in the decisions of commissions. However, 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% of the phone lines in the states and 100% in the District of Columbia. [16] Although an analysis of the BOCs' lobbying expenses in the states would provide more precise information about the resources the POCs used in opposing the commissions' action with regard to the adoption of restraints, such information was not available on a state-by-state basis. Since the only consistent measurement of the presence of the BOCs is the percentage of lines within the state which they control, 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.

**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). Since businesses, depending on their size, might or might not be financially impacted by the adoption of restraints on the BOCs, particularly price freezes for basic local service as well as price caps for emerging competitive services, it is possible they would support such actions. However, 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. [17] 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, 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 was explained on pages 252 to 254 of this chapter and is identified as FREE. FREE 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 6.11 on page 295.
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 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.
<table>
<thead>
<tr>
<th>Variables of Interest</th>
<th>Hypothesized Relationship with Adoption of Restraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>STFSL94 - Average Staff salary</td>
<td>(+)</td>
</tr>
<tr>
<td>COMRES - Index of commission resources</td>
<td>(+)</td>
</tr>
<tr>
<td>COMCAPA - Index of commission capabilities</td>
<td>(+)</td>
</tr>
<tr>
<td>EVA - Elected commissioners (comms)</td>
<td>(+)</td>
</tr>
<tr>
<td>NUMCOM - No. of comms</td>
<td>not specified</td>
</tr>
<tr>
<td>COMTEN - Tenure of comms</td>
<td>(+)</td>
</tr>
<tr>
<td>COOLOFF - Cooling off period required</td>
<td>(+)</td>
</tr>
<tr>
<td>DEM - % comms Dem or Ind</td>
<td>(+)</td>
</tr>
<tr>
<td>DEMS - % comms Dem or Ind in South</td>
<td>not specified</td>
</tr>
<tr>
<td>POLI - % comms with political experience</td>
<td>(-)</td>
</tr>
<tr>
<td>BUSINESS - % comms with bus. experience</td>
<td>(-)</td>
</tr>
<tr>
<td>CONSUMER - % comms with consumer protection experience</td>
<td>(+)</td>
</tr>
<tr>
<td>AFOR - % states in same RBOC with AFOR</td>
<td>(+)</td>
</tr>
<tr>
<td>GOV - Governor is Democrat</td>
<td>(+)</td>
</tr>
<tr>
<td>GOVS - Governor is Democrat in South</td>
<td>not specified</td>
</tr>
<tr>
<td>LEGDEM - % of Dems in state congress</td>
<td>(+)</td>
</tr>
<tr>
<td>LEGDEMS - % of Dems in Southern state congress</td>
<td>not specified</td>
</tr>
<tr>
<td>LEGSL94 - Salary of state legislators</td>
<td>not specified</td>
</tr>
<tr>
<td>BARM - If comm reports to governor</td>
<td>not specified</td>
</tr>
<tr>
<td>BOC - % access lines controlled by BOC</td>
<td>(-)</td>
</tr>
<tr>
<td>BUS - % business access lines</td>
<td>not specified</td>
</tr>
<tr>
<td>CONSUM94 - Budget of consumer council</td>
<td>(+)</td>
</tr>
<tr>
<td>URBINC - Index of socioeconomic factors</td>
<td>(+)</td>
</tr>
<tr>
<td>FREE - Amount of freedom granted co.</td>
<td>(+)</td>
</tr>
</tbody>
</table>

Table 6.11: Hypothesized relationship of selected variables to adoption of restriants.
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. [18]

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.
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: 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 can be demonstrated.

**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. Appendix F shows the correlations of all variables used in this analysis. Table 6.12, on page 300, 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 test. Although chi-square tests of significance are often used, such tests are only
<table>
<thead>
<tr>
<th>Variables</th>
<th>Bivariate corr - QOS &amp; Non0 Prob</th>
<th>Contingency Table - Kendall’s Tau &amp; Non0 Probability - QOS</th>
<th>Bivariate corr - RES &amp; Non0 Prob</th>
<th>Contingency Table - Kendall’s Tau &amp; Non0 Probability - RES</th>
<th>Bivariate corr - FRZCAP &amp; Non0 Prob</th>
<th>Contingency Table - Kendall’s Tau &amp; Non0 Probability - FRZCAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMRES (Index of Comm resources)</td>
<td>11/53</td>
<td>164/24</td>
<td>44/01</td>
<td>370/07</td>
<td>23/16</td>
<td>202/59</td>
</tr>
<tr>
<td>COMCAPA (Index of Comm capabilities)</td>
<td>17/30</td>
<td>165/78</td>
<td>21/21</td>
<td>229/03</td>
<td>25/13</td>
<td>160/08</td>
</tr>
<tr>
<td>STFSI.94 (Average staff salary)</td>
<td>57/0002</td>
<td>404/02</td>
<td>35/07</td>
<td>101/72</td>
<td>17/29</td>
<td>159/68</td>
</tr>
<tr>
<td>EVA (Comms executive)</td>
<td>10/55</td>
<td>089/78</td>
<td>-23/16</td>
<td>-208/26</td>
<td>-51/0001</td>
<td>-423/0005</td>
</tr>
<tr>
<td>NUMCOM (No of Comm)</td>
<td>18/29</td>
<td>112/52</td>
<td>-15/36</td>
<td>-134/04</td>
<td>-24/15</td>
<td>-150/67</td>
</tr>
<tr>
<td>COMTEN (Tenure of Comms)</td>
<td>05/78</td>
<td>097/70</td>
<td>-38/02</td>
<td>-251/78</td>
<td>-53/0006</td>
<td>-372/035</td>
</tr>
<tr>
<td>COOLGff (Comm has cooling off policy)</td>
<td>-07/67</td>
<td>-066/91</td>
<td>15/36</td>
<td>173/27</td>
<td>28/09</td>
<td>231/34</td>
</tr>
<tr>
<td>DEM (% Dem Comms)</td>
<td>15/53</td>
<td>134/66</td>
<td>-13/44</td>
<td>-224/59</td>
<td>-29/08</td>
<td>-221/33</td>
</tr>
<tr>
<td>DEMS (% Dems on So Comm)</td>
<td>09/57</td>
<td>069/95</td>
<td>-19/25</td>
<td>-162/67</td>
<td>-56/0003</td>
<td>-468/0009</td>
</tr>
<tr>
<td>BUSINESS (% Comm w/bus experience (exp))</td>
<td>-19/25</td>
<td>-384/88</td>
<td>-06/70</td>
<td>-048/75</td>
<td>-14/41</td>
<td>-148/99</td>
</tr>
<tr>
<td>POLI % (Comm w/political exp)</td>
<td>15/37</td>
<td>142/44</td>
<td>-13/45</td>
<td>-109/27</td>
<td>-09/58</td>
<td>-099/81</td>
</tr>
<tr>
<td>CONSUMER (% Comm w/consumer exp)</td>
<td>-22/19</td>
<td>-165/89</td>
<td>-02/92</td>
<td>000/52</td>
<td>01/96</td>
<td>-006/58</td>
</tr>
<tr>
<td>AFORE (% state in RBOC w/AFORE)</td>
<td>44/01</td>
<td>334/24</td>
<td>02/92</td>
<td>-029/08</td>
<td>02/95</td>
<td>-021/45</td>
</tr>
<tr>
<td>GOV (Governor is Dem)</td>
<td>10/56</td>
<td>083/65</td>
<td>-03/86</td>
<td>-013/72</td>
<td>05/77</td>
<td>-038/63</td>
</tr>
<tr>
<td>GOVS (So Governor is Dem)</td>
<td>-07/66</td>
<td>081/58</td>
<td>-21/20</td>
<td>-218/32</td>
<td>41/01</td>
<td>-342/02</td>
</tr>
<tr>
<td>LEGDEM (% Dems in State congress)</td>
<td>-18/29</td>
<td>-119/50</td>
<td>-20/22</td>
<td>-197/34</td>
<td>-53/0007</td>
<td>-533/000</td>
</tr>
<tr>
<td>LEGDEMS (% Dems in So state congress)</td>
<td>02/91</td>
<td>099/431</td>
<td>-20/24</td>
<td>-134/55</td>
<td>-91/901</td>
<td>-454/0005</td>
</tr>
<tr>
<td>LEGSL94 (Legislators' salary)</td>
<td>27/10</td>
<td>162/54</td>
<td>20/23</td>
<td>130/46</td>
<td>16/34</td>
<td>182/40</td>
</tr>
<tr>
<td>EARM (Comm reports to governor)</td>
<td>0/100</td>
<td>-015/46</td>
<td>-04/81</td>
<td>-044/00</td>
<td>21/20</td>
<td>.116/78</td>
</tr>
<tr>
<td>LARM (Comm reports to legislature)</td>
<td>-12/47</td>
<td>-12/71</td>
<td>-25/13</td>
<td>-232/24</td>
<td>-32/05</td>
<td>-257/33</td>
</tr>
<tr>
<td>BOC (% access lines controlled by BOC</td>
<td>03/83</td>
<td>027/75</td>
<td>-10/53</td>
<td>-026/72</td>
<td>-14/42</td>
<td>-039/85</td>
</tr>
<tr>
<td>LARMBOC (BOC lines where Comm reports to legislature)</td>
<td>-15/36</td>
<td>-149/26</td>
<td>-28/09</td>
<td>-252/54</td>
<td>-31/06</td>
<td>-234/50</td>
</tr>
<tr>
<td>EBOC (BOC lines where Comm reports to governor)</td>
<td>06/73</td>
<td>072/38</td>
<td>-03/87</td>
<td>-02/80</td>
<td>20/24</td>
<td>085/57</td>
</tr>
<tr>
<td>BUS (% business lines in state)</td>
<td>20/23</td>
<td>326/48</td>
<td>26/12</td>
<td>217/49</td>
<td>11/50</td>
<td>151/81</td>
</tr>
<tr>
<td>CONSUM94 (Budget of Consumer Council)</td>
<td>16/35</td>
<td>097/97</td>
<td>15/36</td>
<td>091/96</td>
<td>42/01</td>
<td>296/49</td>
</tr>
<tr>
<td>URBINC (Index of socioeconomic factors)</td>
<td>32/65</td>
<td>244/08</td>
<td>41/01</td>
<td>423/01</td>
<td>36/03</td>
<td>190/22</td>
</tr>
<tr>
<td>FREE (Freedom granted company)</td>
<td>23/17</td>
<td>207/51</td>
<td>31/96</td>
<td>264/58</td>
<td>60/0001</td>
<td>418/02</td>
</tr>
<tr>
<td>YR (Year AFORE adopted)</td>
<td>40/01</td>
<td>327/10</td>
<td>09/59</td>
<td>042/39</td>
<td>29/08</td>
<td>228/41</td>
</tr>
</tbody>
</table>

Table 6.12: 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.
appropriate for a larger sample size relative to the size of the various contingency tables. [19] The results of the contingency table analysis are shown in Table 6.12, alongside the results of the tests of correlation. Appendix G shows the division of the continuous variables into categories so contingency tables could be constructed.

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 6.13, 6.14 and 6.15. These tables are located on pages 302, 303, and 304, respectively.

Test Results of Correlation and Contingency Table Tests

The most notable result from Tables 6.12, 6.13 and 6.14 is the high level of significance of the
<table>
<thead>
<tr>
<th>Variable</th>
<th>Possibility of correlation occurring by chance</th>
<th>Variable</th>
<th>Possibility of contingency table association occurring by chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMRES - Index of Comm resources</td>
<td>0.01</td>
<td>URBINC - Index of socioeconomic factors</td>
<td>0.01</td>
</tr>
<tr>
<td>URBINC - Index of socioeconomic factors</td>
<td>0.01</td>
<td>CONCAPA - Index of Comm capabilities</td>
<td>0.01</td>
</tr>
<tr>
<td>COMTEN - Tenure of Comm</td>
<td>0.02</td>
<td>LARMBOC - % BOC lines in state where Comm reports to legislature</td>
<td>0.04</td>
</tr>
<tr>
<td>FREE - Freedom granted company</td>
<td>0.06</td>
<td>NUMCOM - No. of Comm</td>
<td>0.04</td>
</tr>
<tr>
<td>STFSL94 - Avg staff salary</td>
<td>0.07</td>
<td>COMRES - Index of Comm resources</td>
<td>0.07</td>
</tr>
<tr>
<td>LARMBOC - % BOC lines in state where Comm reports to legislature</td>
<td>0.09</td>
<td>AFOR - % states in RBOC adopted AFOR</td>
<td>0.08</td>
</tr>
<tr>
<td>BUS - % business lines</td>
<td>0.12</td>
<td>LARM - Comm reports to Legislature</td>
<td>0.24</td>
</tr>
<tr>
<td>LARM - Comm reports to Legislature</td>
<td>0.13</td>
<td>EVA - Comms elected</td>
<td>0.26</td>
</tr>
<tr>
<td>EVA - Comms elected</td>
<td>0.16</td>
<td>POLI - % Comms with political exp</td>
<td>0.27</td>
</tr>
<tr>
<td>GOVS - Governor is Southern Democrat</td>
<td>0.20</td>
<td>COOLOFF - Comm has cooling off period</td>
<td>0.27</td>
</tr>
<tr>
<td>CONCAPA - Index of Comm capabilities</td>
<td>0.21</td>
<td>GOVS - Governor is Southern Democrat</td>
<td>0.32</td>
</tr>
<tr>
<td>LEGDEM - % Dems in state Congress</td>
<td>0.22</td>
<td>LEGDEM - % Dems in state Congress</td>
<td>0.34</td>
</tr>
<tr>
<td>LEGSL94 - Legislators' salary</td>
<td>0.23</td>
<td>YR - Year AFOR adopted</td>
<td>0.39</td>
</tr>
<tr>
<td>LEDEMS - % So Dems in state Congress</td>
<td>0.24</td>
<td>LEGSL94 - Legislators' salary</td>
<td>0.46</td>
</tr>
<tr>
<td>DEMS - % So. Democratic Comms</td>
<td>0.25</td>
<td>BUS - % Bus lines</td>
<td>0.49</td>
</tr>
<tr>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>0.36</td>
<td>CONSUMER - % Comms with Consumer</td>
<td>0.57</td>
</tr>
<tr>
<td>COOLOFF - Comm has cooling off period</td>
<td>0.36</td>
<td>LEGDEMS - % So. Dems in state Congress</td>
<td>0.55</td>
</tr>
<tr>
<td>NUMCOM - No. of Comms</td>
<td>0.36</td>
<td>FREE - Freedom granted company</td>
<td>0.58</td>
</tr>
<tr>
<td>DEM - % Dem Comms</td>
<td>0.44</td>
<td>DEM - % Dem Comms</td>
<td>0.59</td>
</tr>
<tr>
<td>POLI - % Comms with political exp</td>
<td>0.45</td>
<td>DEMS - % So Democratic Comms</td>
<td>0.67</td>
</tr>
<tr>
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<td>BOC - % access lines controlled by BOC</td>
<td>0.72</td>
</tr>
<tr>
<td>YR - Year AFOR adopted</td>
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<td>GOV - Governor is Dem</td>
<td>0.72</td>
</tr>
<tr>
<td>BUSINESS - % Comms with business exp.</td>
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<td>STFSL94 - Avg staff salary</td>
<td>0.72</td>
</tr>
<tr>
<td>EARM - Comm reports to governor</td>
<td>0.81</td>
<td>BUSINESS - % Comms with business exp.</td>
<td>0.75</td>
</tr>
<tr>
<td>GOV - Governor is Dem</td>
<td>0.86</td>
<td>COMTEN - Tenure of Comm</td>
<td>0.78</td>
</tr>
<tr>
<td>EBOC - Comm reports to governor</td>
<td>0.87</td>
<td>EBOC - Comm reports to governor</td>
<td>0.80</td>
</tr>
<tr>
<td>CONSUMER - % Comms with consumer exp</td>
<td>0.92</td>
<td>EARM - Comm reports to governor</td>
<td>0.81</td>
</tr>
<tr>
<td>AFOR - % states in RBOC adopted AFOR</td>
<td>0.92</td>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Table 6.13: Rank ordering of independent variables by probability of bivariate association with RES occurring by chance.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Possibility of correlation occurring by chance</th>
<th>Variable</th>
<th>Possibility of contingency table association occurring by chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>STFS194 - Avg. staff salary</td>
<td>0.002</td>
<td>STFS194 - Avg. staff salary</td>
<td>0.02</td>
</tr>
<tr>
<td>AFOR - % states in RBOC adopted AFOR</td>
<td>0.01</td>
<td>URRINC - Index of socioeconomic factors</td>
<td>0.08</td>
</tr>
<tr>
<td>YR - Year AFOR adopted</td>
<td>0.01</td>
<td>YR - Year AFOR adopted</td>
<td>0.10</td>
</tr>
<tr>
<td>URRINC - Index of socioeconomic factors</td>
<td>0.05</td>
<td>COMRES - Index of Comm resources</td>
<td>0.24</td>
</tr>
<tr>
<td>LEGSL94 - Legislators' salary</td>
<td>0.10</td>
<td>AFORE - % states in RBOC adopted AFORE</td>
<td>0.24</td>
</tr>
<tr>
<td>FREE - Freedom granted company</td>
<td>0.17</td>
<td>LARMBOC - % BOC lines in state where Comm reports to legislature</td>
<td>0.26</td>
</tr>
<tr>
<td>CONSUMER - % Comms with consumer expense (exp)</td>
<td>0.19</td>
<td>EBOC - Comm reports to governor</td>
<td>0.38</td>
</tr>
<tr>
<td>BUS - % business lines</td>
<td>0.23</td>
<td>LEGDEMS - % So. Dems in state Congress</td>
<td>0.40</td>
</tr>
<tr>
<td>BUSINESS - % Comms with bus exp</td>
<td>0.25</td>
<td>POLI - % Comms with political exp.</td>
<td>0.44</td>
</tr>
<tr>
<td>NUMCOM - No. of Comms</td>
<td>0.29</td>
<td>EARM - Comm reports to governor</td>
<td>0.46</td>
</tr>
<tr>
<td>LEGDEM - % Dems in state Congress</td>
<td>0.29</td>
<td>BUS - % business lines</td>
<td>0.48</td>
</tr>
<tr>
<td>COMCAPA - Index of Comm capabilities</td>
<td>0.30</td>
<td>LEGDEMS - % Dems in state Congress</td>
<td>0.50</td>
</tr>
<tr>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>0.35</td>
<td>FREE - Freedom granted company</td>
<td>0.51</td>
</tr>
<tr>
<td>LARMBOC - % BOC lines in state where Comm reports to legislature</td>
<td>0.36</td>
<td>NUMCOM - No. of Comms</td>
<td>0.52</td>
</tr>
<tr>
<td>POLI - % Comms with political exp.</td>
<td>0.37</td>
<td>LEGSL94 - Legislators' salary</td>
<td>0.54</td>
</tr>
<tr>
<td>LARM - Comm reports to legislature</td>
<td>0.47</td>
<td>GOVS - Governor is Southern Dem</td>
<td>0.58</td>
</tr>
<tr>
<td>DEM - % Dem Comms</td>
<td>0.53</td>
<td>GOV - Governor is Democrat</td>
<td>0.65</td>
</tr>
<tr>
<td>COMRES - Index of Comm resources</td>
<td>0.53</td>
<td>DEM - % Dem Comms</td>
<td>0.66</td>
</tr>
<tr>
<td>EVA - Comms are elected</td>
<td>0.55</td>
<td>COMTEN - Tenure of Comms</td>
<td>0.70</td>
</tr>
<tr>
<td>GOV - Governor is Democrat</td>
<td>0.56</td>
<td>LARM - Comm reports to legislature</td>
<td>0.71</td>
</tr>
<tr>
<td>DEMS - % Comms Southern Dems</td>
<td>0.57</td>
<td>BOC - % access lines controlled by BOC</td>
<td>0.75</td>
</tr>
<tr>
<td>GOVS - Governor is Southern Dem</td>
<td>0.66</td>
<td>EVA - Comms are elected</td>
<td>0.78</td>
</tr>
<tr>
<td>COOLOFF - Comm has cooling off period</td>
<td>0.67</td>
<td>COMCAPA - Index of Comm capabilities</td>
<td>0.78</td>
</tr>
<tr>
<td>EBOC - Comm reports to governor</td>
<td>0.73</td>
<td>BUSINESS - % Comm with bus exp</td>
<td>0.88</td>
</tr>
<tr>
<td>COMTEN - Tenure of Comms</td>
<td>0.78</td>
<td>CONSUMER - % Comms with consumer exp.</td>
<td>0.89</td>
</tr>
<tr>
<td>BOC - % access lines controlled by BOC</td>
<td>0.83</td>
<td>COOLOFF - Comm has cooling off period</td>
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</tr>
<tr>
<td>DEMS - % Comms Southern Dems</td>
<td>0.83</td>
<td>LEGSL94 - Legislators' salary</td>
<td>0.95</td>
</tr>
<tr>
<td>EARM - Comm reports to governor</td>
<td>1.00</td>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>0.96</td>
</tr>
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</table>

Table 6.14: Rank ordering of independent variables by probability of bivariate association with QOS occurring by chance.
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>Possibility of correlation occurring by chance</th>
<th>VARIABLE</th>
<th>Possibility of contingency table association occurring by chance</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREE - Freedom granted company</td>
<td>.0001</td>
<td>LEGDEM* - % Dems in state Congress</td>
<td>.0003</td>
</tr>
<tr>
<td>DEMS - % Comms Southern Dems</td>
<td>.0003</td>
<td>LEGDEMS - % So Dems in state Congress</td>
<td>.0005</td>
</tr>
<tr>
<td>COMTEN - Tenure of Comms</td>
<td>.0006</td>
<td>EVA - Comms are elected</td>
<td>.0005</td>
</tr>
<tr>
<td>LEGDEM - % Dems in state Congress</td>
<td>.0007</td>
<td>DEMS - % Comms Southern Dems</td>
<td>.0009</td>
</tr>
<tr>
<td>EVA - Comms are elected</td>
<td>.0011</td>
<td>FREE - Freedom granted company</td>
<td>02</td>
</tr>
<tr>
<td>LEGDEMS - % So. Dems in state Congress</td>
<td>.0011</td>
<td>GOVS - Governor is Southern Dem</td>
<td>02</td>
</tr>
<tr>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>.01</td>
<td>COMTEN - Tenure of Comms</td>
<td>.035</td>
</tr>
<tr>
<td>GOVS - Governor is Southern Dem</td>
<td>.01</td>
<td>COMCAPA - Index of Comm capabilities</td>
<td>.08</td>
</tr>
<tr>
<td>JRBINC - Index of socioeconomic factors</td>
<td>.03</td>
<td>URBINC - Index of socioeconomic factors</td>
<td>22</td>
</tr>
<tr>
<td>LARM - Comm reports to legislature</td>
<td>.05</td>
<td>LARM - Comm reports to legislature</td>
<td>.33</td>
</tr>
<tr>
<td>LARMBOC - % BOC lines in state where</td>
<td>.06</td>
<td>DEM - % Dem Comms</td>
<td>.33</td>
</tr>
<tr>
<td>Comm reports to legislature</td>
<td></td>
<td>COOLOFF - Comm has cooling off period</td>
<td>.34</td>
</tr>
<tr>
<td>DEM - % Dem Comms</td>
<td>.08</td>
<td>LEGSL94 - Legislators' salary</td>
<td>.40</td>
</tr>
<tr>
<td>COOLOFF - Comm has cooling off period</td>
<td>.09</td>
<td>YR - Year AFOR adopted</td>
<td>.41</td>
</tr>
<tr>
<td>COMCAPA - Index of Comm capabilities</td>
<td>.13</td>
<td>AFOR - % states in RBOC adopted AFOR</td>
<td>.55</td>
</tr>
<tr>
<td>NUM COM - No. of Comms</td>
<td>.15</td>
<td>CONSUM94 - Budget of Consumer Council</td>
<td>.40</td>
</tr>
<tr>
<td>COMRES - Index of Comm resources</td>
<td>.16</td>
<td>LARMBOC - % BOC lines in state where</td>
<td>.50</td>
</tr>
<tr>
<td>EARM - Comm reports to governor</td>
<td>.20</td>
<td>Comm reports to legislature</td>
<td></td>
</tr>
<tr>
<td>EBOC - Comm reports to governor</td>
<td>.24</td>
<td>EBOC - Comm reports to governor</td>
<td>.57</td>
</tr>
<tr>
<td>STFSL94 - Avg. staff salary</td>
<td>.29</td>
<td>CONSUMER - % Comms w consumer exp.</td>
<td>.58</td>
</tr>
<tr>
<td>LEGSL94 - Legislators' salary</td>
<td>.34</td>
<td>COMRES - Index of Comm resources</td>
<td>.59</td>
</tr>
<tr>
<td>BUSINESS - % Comms with bus exp</td>
<td>.41</td>
<td>GOV - Governor is Democrat</td>
<td>.63</td>
</tr>
<tr>
<td>BOC - % access lines controlled by BOC</td>
<td>.42</td>
<td>NUMCOM - No. of Comms</td>
<td>.67</td>
</tr>
<tr>
<td>BUS - % business lines</td>
<td>.50</td>
<td>STFSL94 - Avg. staff salary</td>
<td></td>
</tr>
<tr>
<td>POLI - % Comms with political exp.</td>
<td>.58</td>
<td>EARM - Comm reports to governor</td>
<td></td>
</tr>
<tr>
<td>GOV - Governor is Democrat</td>
<td>.77</td>
<td>BUS - % business lines</td>
<td></td>
</tr>
<tr>
<td>AFOR - % states in RBOC adopted AFOR</td>
<td>.95</td>
<td>POLI - % Comms with political exp.</td>
<td></td>
</tr>
<tr>
<td>CONSUMER - % Comms w consumer exp</td>
<td>.96</td>
<td>BOC - % access lines controlled by BOC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BUSINESS - % Comms w bus exp</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.15: Rank ordering of independent variables by probability of bivariate association with PRZCAP occurring by chance.
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 6.13, 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 high in public scrutiny (rate freeze and rate cap), this result gives support to Hypothesis 3.

In Table 6.14, 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 6.15 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 6.12, 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, elected southern democratic commissioners were negatively related to the length of the rate freeze as were 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 6.15 on page 311 indicates that these three measures are highly correlated, with the central factor being the method of commission 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) Modest support for the capture theory is supplied by the negative relationship of both the length of commissioner tenure (COMTEN) and 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 who are particularly in need of financial contributions become more sympathetic to the company's interests.

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 relationship between the variables LARMBOC EBOC and adoption of restraints.

The bivariate analyses supports this hypothesis, but only for LARMBOC. In Table 6.13, the measure of association between LARMBOC and overall adoption of restraints (RES) is negative and significant at the 5% 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 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. 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.

Summary

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 that simultaneously consider 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 disprove 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 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.

1) 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.

2) 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 are listed in Table 6.16, which is shown on page 313.
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 4, 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 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
<table>
<thead>
<tr>
<th>VARIABLE OF INTEREST</th>
<th>YR .75 (Year AFOR adopted)</th>
<th>BUS .69 (Legislators’ salary)</th>
<th>URBINC .59 (Index of socioeconomic factors)</th>
<th>LEGSL.94 .61 (Legislators’ salary)</th>
<th>COMRES (Index of Comm resources)</th>
<th>COMTEN .61 (Comms elected)</th>
<th>DEMS .60 (% Dem Comms)</th>
<th>COOLOFF (Comm has cooling off policy)</th>
<th>EVA .58 (Comms elected)</th>
<th>DEMS .78 (Comms elected)</th>
<th>GOVS .75 (Governor is So. Dem)</th>
<th>COMTEN .60 (Tenure of Comms)</th>
<th>EARM .98 (Comm reports to Gov.)</th>
<th>EARM .98 (Comm reports to Gov.)</th>
<th>EVA .78 (Comms elected)</th>
<th>GOVS .59 (Governor is So. Dem)</th>
<th>COMTEN .61 (Tenure of Comms)</th>
<th>COOLOFF .58 (Comm has cooling off policy)</th>
<th>LARM .56 (Comm reports to legislature)</th>
<th>LARMBOC .55 (Comm reports to legislature)</th>
<th>LARM .99 (Comm reports to legislature)</th>
<th>LARM .99 (Comm reports to legislature)</th>
<th>COMRES .61 (Index of Comm resources)</th>
<th>BUS .69 (% of business lines)</th>
<th>CONSUM94 .55 (Budget of Consumer Council)</th>
<th>BUS .59 (% of business lines)</th>
<th>YR (Year AFOR adopted)</th>
<th>AFOR .75 (% states have adopted AFOR)</th>
</tr>
</thead>
</table>

Table 6.16: Independent variables with high intercorrelations.
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)

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
counsels 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 + B1COMRES + B2COMCAPA + B3STFSL94 + B4EVA +
B5NUMCOM + B6DEM + B7BUSINESS + B8POLI + B9CONSUMER
+ B10AFOR + B11GOV + B12LEGDEM + B13LEGDEMS + B14BOC +
B15LARMBOC + B16CONSUM94 + B17URBINC + B18FREE

QOS= a + B1COMRES + B2COMCAPA + B3STFSL94 + B4EVA +
B5NUMCOM + B6DEM + B7BUSINESS + B8POLI + B9CONSUMER
+ B10AFOR + B11GOV + B12LEGDEM + B13LEGDEMS + B14BOC +
B15LARMBOC + B16CONSUM94 + B17URBINC + B18FREE

These models were first tested using ordinary
multiple regression and then ordered probit. The
results are displayed in Tables 6.17 and 6.18 for RES
and 6.21 and 6.22 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 6.19 and 6.20 for RES and Table 6.23 and 6.24 for QOS.

**Results - Hypothesis 3 - Full Model Analysis**

The first analysis, using all 18 independent variables with RES as the dependent variable is shown in Tables 6.17 and 6.18 on pages 318 and 319, respectively. 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 (CONS)
### Analysis of Variance

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<tr>
<th>Source</th>
<th>DF</th>
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<th>Mean Square</th>
<th>F Value</th>
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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 H0: Parameter=0 | Prob > |T| |
|----------|----|--------------------|----------------|------------------------|--------|
| 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 |
| STFSLS94 | 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  | -0.0000000128      | 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 |

Table 6.17: Full model multiple regression using adoption of consumer safeguards (RES) as the dependent variable.
Class Levels Values

RES 3 3 2 1

Number of observations used = 38

Weighted Frequency Counts for the Ordered Response Categories

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<td>2</td>
<td>19</td>
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Log Likelihood for NORMAL -14.39549523

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</table>

Table 6.18: Full model ordered probit model using adoption of consumer safeguards (RES) as the dependent variable.
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% 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% to 95%, 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
going 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.  
[20]
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." [21]

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 decisions, 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 - 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 a 10,000 (.015%). The log likelihood of the probit procedure was -17.6845, with a probability of occurring by chance 1 in a 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 6.19 and 6.20, shown on pages 326 and 327.
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 - 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
### Analysis of Variance

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- 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 H0: Parameter=0 | Prob > |T| |
|-----------|----|--------------------|----------------|------------------------|--------|
| 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 |

Table 6.19: Reduced model multiple regression using adoption of consumer safeguards (RES) as the dependent variable.
Probit Procedure
Class Level Information

Class Levels Values
RES 3 2 1

Number of observations used = 38

Dependent Variable=RES

Weighted Frequency Counts for the Ordered Response Categories

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Log Likelihood for NORMAL -17.68456427

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Table 6.20: Reduced model ordered probit model using adoption of consumer safeguards (RES) as the dependent variable.
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 6.21 and 6.22, pages 329 and 330, 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)
### Analysis of Variance

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<th>Source</th>
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<td>25.05263</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

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 H0: Parameter=0 | Prob > |T| |
|----------|-----|--------------------|----------------|-------------------------|--------|---|
| 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   | -0.403636          | 0.24895292     | -1.622                  | 0.1213 |
| LEMDEM   | 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 |

Table 6.21: Full model multiple regression using adoption of more stringent quality of service standards (QOS) as the dependent variable.
Number of observations used = 38

Dependent Variable=QOS

Weighted Frequency Counts for the Ordered Response Categories

<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
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<tr>
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<td>1</td>
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<td>0</td>
<td>16</td>
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Log Likelihood for NORMAL -14.73068455

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Estimate</th>
<th>Std Err</th>
<th>ChiSquare</th>
<th>Pr&gt;Chi Label/Value</th>
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</thead>
<tbody>
<tr>
<td>INTERCPT</td>
<td>1</td>
<td>-15.716854</td>
<td>6.136195</td>
<td>6.560439</td>
<td>0.0104 Intercept</td>
</tr>
<tr>
<td>COMRES</td>
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<td>0.667597</td>
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<td>COMCAPA</td>
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</tr>
<tr>
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<td>NUMCOM</td>
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<td>POLI</td>
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<td>CONSUMER</td>
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<td>0.025568</td>
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</tbody>
</table>

Table 6.22: Full model order probit using adoption of more stringent quality of service standards (QOS) as the dependent variable.
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 5, 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% 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.

Southern legislators are, on average, paid less than 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 - 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 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 6.23 and 6.24 on pages 336 and 337.

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% in the reduced ordered probit model, and little better than 10% 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, who, 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
### Analysis of Variance

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<td>25.05263</td>
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</tbody>
</table>

Roct MSE  0.50345   R-square  0.7268  Dep Mean  0.84211   Adj R-sq  0.6257  C.V.  59.79482

### Parameter Estimates

| Variable | DF | Parameter Estimate | Standard Error | T for HO: Parameter=0 | Prob > |T| |
|----------|----|--------------------|-----------------|-----------------------|--------|
| INTERCEP | 1  | -2.034207          | 0.57465043      | -3.540                | 0.0015 |
| COMRES   | 1  | -0.158401          | 0.14182497      | -1.117                | 0.2739 |
| STFSLO94 | 1  | 0.000053148        | 0.00001118      | 4.752                 | 0.0001 |
| EVA      | 1  | 1.107110           | 0.31782784      | 3.483                 | 0.0017 |
| BUSINESS | 1  | 0.0112260          | 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 |

Table 6.23: Reduced model multiple regression using adoption of more stringent quality of service standards (QOS) as the dependent variable.
Probit Procedure
Class Level Information

Class      Levels   Values
QOS        3         2 1 0

Number of observations used = 38

Weighted Frequency Counts for the Ordered Response Categories

<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>12</td>
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<tr>
<td>0</td>
<td>16</td>
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Log Likelihood for NORMAL -16.40103449

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<th>Variable</th>
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</table>

Table 6.24: Reduced model ordered probit using adoption of more stringent quality of service standards (QOS) as the dependent variable
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 are 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

NOTES

1. The state plans being scrutinized in this study are those adopted for the BOCs, with two exceptions. The first is Nevada, which adopted a generic plan and applied it to the specific companies that requested alternative regulation. The second is Connecticut, which has no BOC but has telephone service provided by Southern New England Telephone (SNET).

2. Jeffrey Cohen created additive numerical indices to measure the number of characteristics of each state commission, such as its licensing powers and research resources. Jeffrey Cohen, The Politics of Telecommunications Regulation (Armonk, NY: M.E. Sharpe, 1992), 92-93. Like the indices created by Cohen, each component of the index is equally weighted because there is no empirical evidence or theoretical rationale for weighting any one more than another.


7. See Chapter 5.


10. Gormley, 73.
12. Ibid.
13. Campbell, 411.
14. Cohen, 103; Campbell, 411.
15. Cohen, 97.


CHAPTER 7

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 thirty-eight commissions to protect captive ratepayers when granting a LEC greater regulatory freedom were analyzed. Before discussing the conclusions of this research, it is necessary to place regulatory decisions in general and these in particular in their proper context.

Rationales for Regulation

While regulation has been enacted in order to achieve both equity and efficiency, its primary rationale has been protection of the broader idea of the public interest. This phrase has been used to cover a multitude of different and divergent actions.
but its intention is clear in the abstract, if sometimes a bit less so in the realization. The intent is, at its best, to better the common good, or the overall conditions in which a society operates. At worst, its intention is to prevent further or greater harm than what currently persists in the status quo.

In order to achieve these ends, regulatory commissions have been established at both the state and federal level to act as quasi-judicial and quasi-legislative bodies. Their direct charge has been to insure that the rates charged by the industries for which they are responsible are just and reasonable and non-discriminatory, that the quality of service provided meets some specified standard and that reasonable provision is made to maintain such quality. [1] In return, the industries have been promised exclusive franchises and the opportunity to earn a fair return on their investment. This balance of responsibilities and privileges for both consumers and producers is referred to as the "regulatory compact." Within these parameters, regulators are expected to balance the demands of both the company and the consumer in such a manner that neither is unduly penalized or rewarded at the expense of the other.
Motivations for Regulators

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. [2] 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 utility lobbying on 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, i.e. 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 formally 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, who, 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% 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 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% level, there is enough to conclude 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 4 indicates there is no significant difference between rate decisions made by elected and appointed commissioners, the belief that elected commissioners are more inclined to befriend the ratepayers than appointed commissioners is borne out. 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, as shown in the literature reviewed in Chapter 4. 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 abuses by a utility. Whether the commission made the decision in favor of the consumer or the company was clear and did not have to be
interpreted from other data. 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 make 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 strive 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 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. Thus 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. [2] 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, this research 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 affects 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 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. [4] 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, most notably Nebraska, Delaware, and Michigan, legislatures have taken back from commissions certain regulatory powers with regard to telecommunications, leaving them with less oversight responsibility. These actions have been, by all accounts, instigated and supported by the utilities. [5] 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 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 to 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.

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 fewer 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 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 1997, 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.
CHAPTER 7

NOTES


2. See Chapter 2 above.

3. See Chapters 4 and 5 above.


APPENDIX A
TERRITORIAL DIVISION OF REGIONAL BELL HOLDING COMPANIES

**AMERITECH**
- Illinois
- Indiana
- Michigan
- Ohio
- Wisconsin

**SOUTHWESTERN BELL**
- Arkansas
- Kansas
- Missouri
- Oklahoma
- Texas

**BELL ATLANTIC**
- Delaware
- Maryland
- New Jersey
- Pennsylvania
- Virginia
- Washington, D.C.
- West Virginia

**U.S. WEST**
- Arizona
- Colorado
- Idaho
- Iowa
- Minnesota
- Montana
- Nebraska
- New Mexico
- North Dakota
- Oregon
- South Dakota
- Utah
- Washington
- Wyoming

**BELL SOUTH**
- Alabama
- Florida
- Georgia
- Kentucky
- Louisiana
- Mississippi
- North Carolina
- South Carolina
- Tennessee

**NYNEX**
- Maine
- Massachusetts
- New Hampshire
- New York
- Rhode Island
- Vermont

**PACIFIC TELESIS**
- California
- Nevada
APPENDIX B

DETERMINING KENDALL'S TAU AND STATISTICAL SIGNIFICANCE

\[ \tau = \frac{P - Q}{(P + Q + Y_0)(P + Q + X_0)} \]

where
\( P \) = number of concordant pairs
\( Q \) = number of discordant pairs
\( X_0 \) = number of tied pairs on column variable
\( Y_0 \) = number of tied pairs on row variable

"A concordant pair of observations occurs when one of the pair members is higher on both variables under consideration than the other pair member." (P. 288)
"A discordant pair of observations occurs when one of the pair members is higher on one variable and lower on another." (p. 288)
"A tied pair of observations occurs when both members of the pair are tied on at least one of the variables." (p. 288)

Referring to Table , the following calculations were made:
\[ P = (3)(8+3+7+4) + (8)(7+4) = 154 \]
\[ Q = (4)(8+3+1+0) + (8)(1+0) = 52 \]
\[ X_0 = (3)(8+4)+(8)(4)+(1)(8+7)+(8)(7)+(0)(3+4)+(3)(4) = 151 \]
\[ Y_0 = (3)(1+0)+(1)(0)+(8)(8+3)+(8)(3)+(4)(7+4)+(7)(4) = 135 \]
\[ \tau = \frac{154 - 52}{357 \times 341} = .292 \]

With a sample size greater than 10, in which both variables are independent, than the distribution of \( \tau \) approximates the normal curve. It is then possible to determine the statistical significance of \( \tau \) through the determination of the Z value of the achieved \( \tau \). (P. 291)

\[ Z = \frac{\tau - \text{mean}}{\text{SE}_\tau} \]
mean of \( \tau = 0 \) \( \text{SE}_\tau = \frac{2(2N+5)}{9N(N-1)} \)
\[ \text{SE}_\tau = \frac{2((2\times38)+5)}{(9\times38)(38-1)} = \frac{162}{12654} = .1131 \]

\[ Z = .292 - 0 / .1131 = 2.582 \]
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 .0049 level.

## APPENDIX C

### VARIABLES USED IN ANALYSIS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFOR</td>
<td>The percentage of states within the RBOC that have adopted AFOR prior to the decision by the state specified in the observation.</td>
</tr>
<tr>
<td>BOC</td>
<td>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.</td>
</tr>
<tr>
<td>BUS</td>
<td>Percentage of business phone lines in the state.</td>
</tr>
<tr>
<td>BUSINESS</td>
<td>Percentage of commissioners with background in business.</td>
</tr>
<tr>
<td>CNVRT</td>
<td>Factor used to convert dollar amounts to 1994 dollars.</td>
</tr>
</tbody>
</table>
| 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. |
<p>| 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 |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMTEN</td>
<td>Average length of time commissioners as a group have served on commission.</td>
</tr>
<tr>
<td>CONSUM94</td>
<td>Budget of consumer advocate's office, corrected to 1994 dollars. If there was no such office in the state, the amount shown is 0.</td>
</tr>
<tr>
<td>CONSUMER</td>
<td>Indicates percentage of commissioners who have some background in consumer protection.</td>
</tr>
<tr>
<td>COOLOFF</td>
<td>Dichotomous measure indicating whether commissioners are restrained from working for industry for some time after leaving commission.</td>
</tr>
<tr>
<td>DEM</td>
<td>Percentage of commissioners who are democrats or independents.</td>
</tr>
<tr>
<td>DEMS</td>
<td>Percentage of commissioners who are southern democrats.</td>
</tr>
<tr>
<td>EVA</td>
<td>Indicates whether a commissioner is elected or appointed. If elected, scores as 1; if appointed, scored as 0.</td>
</tr>
<tr>
<td>EARM</td>
<td>Dichotomous measure of whether state commission reports to the governor.</td>
</tr>
</tbody>
</table>
| 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. |
<p>| EBOC | Interaction term composed of EARM x EOC. Measures presence of BOC in states where commission is answerable to governor. |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREE</td>
<td>Summation of the scores RATES and EARN.</td>
</tr>
<tr>
<td>FRZCAP</td>
<td>Number of years for which a rate freeze or rate cap is to be in effect.</td>
</tr>
<tr>
<td>GOV</td>
<td>Dichotomous measure of political party affiliation of state governor. 1 = Democrat, 0 = Republican</td>
</tr>
<tr>
<td>GOVS</td>
<td>Measure of both party affiliation and regional identity of state governor. Regular Democrat and Republican = 0, and Southern Democrat = 1.</td>
</tr>
<tr>
<td>JP</td>
<td>Whether the majority of senior staff are protected by civil service.</td>
</tr>
<tr>
<td>LARM</td>
<td>Dichotomous measure of whether commission reports to legislature.</td>
</tr>
<tr>
<td>LARMBOC</td>
<td>Interaction term composed of LARM x BOC. Measures presence of BOC in state where commission answerable to legislature.</td>
</tr>
<tr>
<td>LEGDEM</td>
<td>Indicates average percentage of democrats in both houses in state legislature.</td>
</tr>
<tr>
<td>LEGDEMS</td>
<td>Indicates average percentage of southern democrats in both houses in state legislature.</td>
</tr>
<tr>
<td>LEGSL94</td>
<td>Average legislative salary, measured in 1994 dollars.</td>
</tr>
<tr>
<td>LVLFRE</td>
<td>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.</td>
</tr>
<tr>
<td>LVLFZR</td>
<td>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.</td>
</tr>
<tr>
<td>NUMCOM</td>
<td>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</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>PLAN</th>
<th>Variable constructed by taking the lesser of PLNLN or PLNSEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLNLN</td>
<td>Indicates length of time in years plan is to be in effect</td>
</tr>
<tr>
<td>PLNSEE</td>
<td>Indicates length of time in years plan is to be in effect before being reviewed.</td>
</tr>
<tr>
<td>POLI</td>
<td>Indicates percentage of commissioners with background in politics.</td>
</tr>
<tr>
<td>QOS</td>
<td>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</td>
</tr>
<tr>
<td>RATES</td>
<td>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</td>
</tr>
<tr>
<td>RBOC</td>
<td>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</td>
</tr>
<tr>
<td>RES</td>
<td>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.</td>
</tr>
<tr>
<td><strong>STATE</strong></td>
<td>Alphabetical listing of states, using 2 letter abbreviations, in which decision was made by commission to adopt AFOR.</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>STFSL94</strong></td>
<td>Average staff salary plus benefits corrected for 1994 dollars.</td>
</tr>
<tr>
<td><strong>URBINC</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>YR</strong></td>
<td>Year in which decision was made to adopt AFOR.</td>
</tr>
</tbody>
</table>
## APPENDIX D
### DESCRIPTIVE STATISTICS OF VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Sum</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>QOS</td>
<td>38</td>
<td>0.842105</td>
<td>0.822860</td>
<td>32.000000</td>
<td>0</td>
<td>2.000000</td>
</tr>
<tr>
<td>RES</td>
<td>38</td>
<td>2.289474</td>
<td>0.653799</td>
<td>87.000000</td>
<td>1.000000</td>
<td>3.000000</td>
</tr>
<tr>
<td>FRZCAP</td>
<td>38</td>
<td>3.210526</td>
<td>1.757730</td>
<td>122.000000</td>
<td>0</td>
<td>7.000000</td>
</tr>
<tr>
<td>COMRES</td>
<td>38</td>
<td>0.001054</td>
<td>0.704084</td>
<td>0.041577</td>
<td>-1.049223</td>
<td>1.892498</td>
</tr>
<tr>
<td>COMCAPA</td>
<td>38</td>
<td>2.131579</td>
<td>1.094731</td>
<td>81.000000</td>
<td>0</td>
<td>4.000000</td>
</tr>
<tr>
<td>STFSL94</td>
<td>38</td>
<td>43715</td>
<td>9396.039965</td>
<td>1661167</td>
<td>25329</td>
<td>67203</td>
</tr>
<tr>
<td>CVA</td>
<td>38</td>
<td>0.210526</td>
<td>0.413155</td>
<td>8.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>NUMCOM</td>
<td>38</td>
<td>3.973684</td>
<td>1.283720</td>
<td>151.000000</td>
<td>3.000000</td>
<td>7.000000</td>
</tr>
<tr>
<td>COMTEN</td>
<td>38</td>
<td>5.130000</td>
<td>3.220850</td>
<td>194.940000</td>
<td>1.160000</td>
<td>16.000000</td>
</tr>
<tr>
<td>COOLOFF</td>
<td>38</td>
<td>0.657895</td>
<td>0.480783</td>
<td>25.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>DEM</td>
<td>38</td>
<td>66.105263</td>
<td>27.305865</td>
<td>2512.000000</td>
<td>0</td>
<td>100.000000</td>
</tr>
<tr>
<td>DEMS</td>
<td>38</td>
<td>22.105263</td>
<td>39.253018</td>
<td>840.000000</td>
<td>0</td>
<td>100.000000</td>
</tr>
<tr>
<td>BUSINESS</td>
<td>38</td>
<td>44.315789</td>
<td>21.749315</td>
<td>1684.000000</td>
<td>0</td>
<td>100.000000</td>
</tr>
<tr>
<td>POLI</td>
<td>38</td>
<td>47.605263</td>
<td>30.348908</td>
<td>1809.000000</td>
<td>0</td>
<td>100.000000</td>
</tr>
<tr>
<td>CONSUMER</td>
<td>38</td>
<td>4.684211</td>
<td>16.467725</td>
<td>176.000000</td>
<td>0</td>
<td>33.000000</td>
</tr>
<tr>
<td>AFOR</td>
<td>38</td>
<td>33.421053</td>
<td>27.544197</td>
<td>1270.000000</td>
<td>0</td>
<td>86.000000</td>
</tr>
<tr>
<td>GOV</td>
<td>38</td>
<td>0.578947</td>
<td>0.500355</td>
<td>22.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>GOVS</td>
<td>38</td>
<td>0.184211</td>
<td>0.392859</td>
<td>7.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>LEGDEN</td>
<td>38</td>
<td>61.846053</td>
<td>17.070840</td>
<td>2350.150000</td>
<td>30.000000</td>
<td>100.000000</td>
</tr>
<tr>
<td>LEGDEMS</td>
<td>38</td>
<td>20.105263</td>
<td>34.408272</td>
<td>764.000000</td>
<td>0</td>
<td>98.200000</td>
</tr>
<tr>
<td>LEGSL94</td>
<td>38</td>
<td>23204</td>
<td>78599</td>
<td>881736</td>
<td>158.394931</td>
<td>73728</td>
</tr>
<tr>
<td>EARM</td>
<td>38</td>
<td>0.500000</td>
<td>0.506712</td>
<td>19.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>LARM</td>
<td>38</td>
<td>0.236842</td>
<td>0.430851</td>
<td>2.000000</td>
<td>0</td>
<td>1.000000</td>
</tr>
<tr>
<td>BOC</td>
<td>38</td>
<td>81.478947</td>
<td>15.236180</td>
<td>3096.200000</td>
<td>30.400000</td>
<td>100.000000</td>
</tr>
<tr>
<td>LARMBOC</td>
<td>38</td>
<td>19.305263</td>
<td>35.586886</td>
<td>733.600000</td>
<td>0</td>
<td>99.800000</td>
</tr>
<tr>
<td>EBOC</td>
<td>38</td>
<td>42.739474</td>
<td>44.331451</td>
<td>1624.100000</td>
<td>0</td>
<td>100.000000</td>
</tr>
<tr>
<td>BUS</td>
<td>38</td>
<td>27.334211</td>
<td>7.217145</td>
<td>1036.700000</td>
<td>19.400000</td>
<td>65.200000</td>
</tr>
<tr>
<td>CONSUM94</td>
<td>38</td>
<td>1423148</td>
<td>1625213</td>
<td>54079641</td>
<td>0</td>
<td>5304689</td>
</tr>
<tr>
<td>CONSNSM94</td>
<td>38</td>
<td>0.815789</td>
<td>0.392859</td>
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APPENDIX G
INDICES CATEGORIZING INTERVAL VARIABLES

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