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I am submitting herewith a dissertation written by B. Thomas Schuman entitled "Rulemaking and the Assumptions of Regulatory Theories: An Empirical Test of Influences on State Rulemaking Output." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Political Science.

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We have read this dissertation
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Associate Vice Chancellor and
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RULEMAKING AND THE ASSUMPTIONS OF REGULATORY THEORIES: AN EMPIRICAL TEST OF INFLUENCES ON STATE RULEMAKING OUTPUT

A Dissertation

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Doctor of Philosophy

Degree

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B. Thomas Schuman

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DEDICATION

This dissertation is dedicated to my wife and son

Linda G. Schuman

and

Benjamin J. Schuman

whose inspiration, perseverance, and support made this possible.

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ABSTRACT

The debate over legislative delegations of rulemaking power to unelected administrators has for the most part been framed within the assumptions of political, economic, and institutional theories of regulation. Each of this perspectives suggest the importance of the public interest, interest group power, and elected political actors in influencing administrative decisions. And, there has been considerable effort devoted to researching and explaining the effect of structural reforms, the choice of administrative procedures to constrain rulemaking decisions, and why rulemaking occurs.

There have, however, been only two attempts to model and empirically examine factors hypothesized to influence decisions by rulemakers. Each of these studies use measure that incorporate economic assumptions of agency "capture" and the importance of interest groups to the exclusion of other possible dimensions of decision choice.

This study seeks to extend our understanding of both non-institutional and institutional constraints on state administrative rulemaking. Relevant theories and research are evaluated to identify socioeconomic, political, and system variables hypothesized to constrain rulemaking decisions. A dependent measure of rule output that affords cross-state and cross-profession comparison is developed, and data on key independent variables is collected and analyzed to assess the degree to which hypothesized influences agree with the reality of state rulemaking. Finally, ordinal- and regression-based analysis is used to address such key questions about the state rulemaking process as: What is the nature of state rules to regulate the professions? Are there significant differences across the professions? Does ordinal analysis reveal any statistically significant relationships between rule output and the explanatory variables? Finally, multivariate analysis is used to test hypothesized relationships and to define the empirical model that most efficiently describes the state rulemaking process.

The findings reveal that rulemaking output does vary significantly across states, but do not support economic assumptions that powerful interest groups "capture" agency administrators. Calculation of Spearman Correlation Coefficients suggests the explanatory variables that significantly contribute to this variation include: state political culture; aggregate interest group strength; relative group strength; state legislative professionalism; state executive professionalism; the stringency of administrative procedures act requirements; the tendency of political actors to exercise institutional controls; and, bureaucratic professionalism.

Results of the comprehensive multivariate model of the occupational rulemaking process are significant but modest. Findings reveal the influences of aggregate group strength, administrative procedure act stringency, and bureaucratic professionalism significantly affect the nature of rulemaking output. This implies that increases in aggregate group strength contribute to increased pro-regulatee rulemaking output, and that more professional bureaucracies will exhibit less pro-regulatee rulemaking. Contrary to theory, the findings suggest that more stringent administrative procedures acts contribute to increased pro-regulatee rulemaking. As such, administrators in states with more formalized and restrictive rulemaking procedures are more likely to respond to the needs of the regulated interests.

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Chapter 1

Introduction

The growing importance of administrative rulemaking has become "one of the most significant developments" since the 1970's (Gellhorn and Boyer 1981, 237). While the practice has been evident since the first Congress, the driving forces behind this recent development have been increased federal delegation of policy functions to the states and a growing acceptance by state legislatures of the need for administrative rulemaking. The federal devolution of policy functions to the states over the last 15 years has served to increase the interest group, industry, and general public demands for state legislative action (Heffron and McFeeley 1983; Bonfield 1986; Kerwin 1994, 34). State legislators have, in turn, realized the inevitability and desirability of delegating policy formulation, adoption and implementation to unelected administrators (Lyons and Thomas 1978; Heffron and McFeeley 1983; Bonfield 1986).

These developments aggravate what has been described as a "crisis of public authority" (Houston 1991, 1). Expanded government regulation leads to expanded administrative power and activity. This growth in the number and activity of administrative agencies has led to more public contacts and larger and more complex agencies that become increasingly impersonal (Lyons and Thomas 1978, ix). And, for all of the good intentions, some critics contend that, "administrative power has been used arbitrarily, capriciously, and unconstitutionally by countless administrators and agencies" (Heffron and McFeeley 1983, 7).

The basis for arguments against legislative delegations of power to administrators lies with views that it violates constitutional concepts of nondelegability of delegated powers, separation of powers, and the rule of law (Heffron and McFeeley, 1983; Bonfield 1986; Bryner 1987; Kerwin 1994). The first argument suggests that legislative delegation of power to unelected administrators violates constitutional requirements for political accountability

(Heffron and McFeeley 1983; West 1985; Bryner 1986; Bonfield 1986; Kerwin 1994). Second, providing administrators with the legislative, executive and judicial powers to decide how to write, implement and enforce laws is said to violate separation of powers principles (Heffron and McFeeley 1983; West 1985; Bryner 1987; Bonfield 1986; Houston 1991; Kerwin 1994). Third, legislative delegations of power to administrators that are accompanied by meaningless or vague standards are disputed as violations of the fundamental standard of the rule of law. In a system of "laws, not men," laws must be uniformly interpreted, applied, and enforced. A system that allows, much less endorses, such widespread administrative discretion is viewed as an open door to arbitrary or capricious abuse (Heffron and McFeeley 1983).

History, legal interpretation, and practical necessity have combined to override critics and allow delegations of rulemaking power (Heffron and McFeeley 1983; Bonfield 1986; Kerwin 1994). Public dislike and distrust of administrative regulation have yet to undermine general public support of administrative regulation, or to change the conditions contributing to the growth of the administrative state (Heffron and McFeeley 1983, 8). These real-world conditions, however, are at the heart of questions concerning the legitimacy of *de facto* lawmaking by unelected administrative officials. Practical considerations require these grants of power to administrative agencies to bring legislated policies to efficient and effective life. Only over the last half-century, however, have political actors instituted formal procedural rulemaking requirements to further legitimize the practice.

As one of many administrative powers, "rulemaking is the single most important function performed by agencies of government" (Kerwin 1994, xi). It is through rulemaking that agency responsibilities are defined and specific requirements and procedures are detailed. As "quasi-legislation", rulemaking is also "the most visible and direct means of bureaucratic policymaking" (West 1985, 8). On one hand, the importance and visibility of rules leads to the expectation that rulemaking should be a rational, technical pursuit of defined goals. In turn, the

need for policy that reflects public desires, and the reality that legislatures pass vague and ill defined statutes reflects the need for a system that permits government action that is responsive and accountable (West 1985; Bonfield 1986).

These two very different values, rationality and responsiveness, have largely informed efforts to control and structure administrative rulemaking and the power delegated by elected representatives to non-elected administrators (West 1984; 1985, 9). In their effort to control administrative decisions, the federal and state governments have relied upon oversight and procedural mechanisms in constitutions, authorizing statutes and administrative procedures acts. In the states, however, attempts to constrain administrative rulemaking have evolved in a much more variable manner than at the federal level. As with the federal government, states to varying degrees have established institutional bodies to police agency compliance with their administrative procedures acts and enabling statutes (Simon and Grady 1996, 1). And "some states still adhere to relatively stringent versions [of APA's] that require detailed standards confining agency discretion...some states seem to have abandoned requirements for statutory standards altogether" (Gellhorn and Boyer 1981, 27).

This kaleidoscope of procedural and oversight methods for ensuring rational and responsive administrative rulemaking in the states is a challenge to any effort to understand the effects of these mechanisms on regulatory decisions. And, my review of regulatory theory and rulemaking literature suggests that understanding the state rulemaking process also requires our consideration of much more than simply the presence or absence of procedural and oversight constraints. Other factors influencing rulemaking output may include state legislative, executive, and judicial professionalism, and such non-institutional factors including interest group influence and public interest (Heffron and McFeeley 1983; West 1995).

The more influential explanations of regulatory decisions have been derived from public interest (or market failure) theories and interest group theories (Moe 1987; Graddy 1991;

Donabedian 1991; Jackson 1992; Xueguang 1993). From the view of market failure theory, regulatory bodies act objectively for the public welfare despite any influence that interest groups can bring to bear (Donabedian 1991). Legislators, executives, and/or administrators, in this view, employ regulation to correct markets that present the public with incomplete or incorrect information for purchase decisions, or are susceptible to "market externalities" that may threaten public health or safety. In the first instance, regulation is prescribed to enhance consumer information for more informed choice of services and providers. In the second rationale, regulation serves to establish higher standards of practice so unqualified practitioners have limited opportunity to endanger to public interest. In either rationale, political decision-makers objectively regulate the market with limited concern for organized public or market interests.

The interest group theories of economics and political science have been spun largely from pluralist explanations of public policy as a "response to the demands of those regulated who seek the benefits of regulatory protection" (Graddy 1991, 679). In this view, legislators, executives and/or administrators respond to organized interests seeking the benefits of regulation. These "captured" decision makers act in the interest of the regulatees by initiating regulation that restricts entry to the profession with direct or indirect costs imposed on hopeful practitioners, or by market regulation that increases practitioners' "economic rents." In this perspective regulation serves the regulated interests by limiting practitioner competition and/or enhancing practitioner income with no corresponding change in effort.

In both of these models, institutions are dismissed as "insignificant" or "mediating" influences that are a complicating overspecification for rigorous models seeking to explain public policy outputs (Moe 1987; Jackson 1992). As suggested by Terry Moe, however:

> There is little reason for accepting this claim...if decades of political research testify to anything at all, it is that public policy cannot be understood without systematic attention to the nature and dynamics of political institutions...While it may be convenient on technical grounds to forego all these complications, what is convenient does not necessarily explain very much (Moe 1987, 475).

Despite the "complications and inconvenience," some scholars have devoted a great deal of effort to researching and explaining the influence of structural reforms at the federal level. Questions as to the nature and the effect of institutional constraints on state administrative discretion, however, have been noticeably neglected (Heffron and McFeeley 1983; Bonfield 1986; Houston 1991; Kerwin 1994). Most studies have been directed at describing the procedural choices[1] made in the states and the political determinants of those choices.[2] Far fewer studies have been directed at assessing the effects of those procedural choices in the states.[3] And, those studies addressing the effect of reforms at either the federal or state level have been "grounded in implicit, loosely constructed hypotheses," and have employed "largely unconvincing" tests of those hypotheses in case study or anecdotal analyses yielding results that defy confident generalization (Magat, Krupnick, and Harrington 1986). These studies have also tended to assess the particular influence of legislative oversight, executive oversight, or due process controls on the rulemaking process, rather than as mutually interacting influences that cannot function separately (West 1995). Despite its shortcomings, however, this literature has made significant inroads into theoretical, conceptual, and empirical developments that have contributed to our understanding of institutions as explanations of public policy.

Purpose and Contribution of this Analysis

No one theory has evolved to adequately explain the growth in the number and type of government agencies and regulations (Heffron and McFeeley 1983, 2). However, the structures and procedures that have been implemented in federal and state agencies to constrain

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[1] These studies most often seek to explain or describe state variation in requirements for public comment; a written register; public right to petition; reference to statutory authority; legislative/executive review; legislative veto; substantial evidence; a rulemaking calendar; and annual review.

[2] See, for example: Williams 1975; Lyons and Thomas 1978; Hamm and Robertson 1981; Gellhorn and Boyer 1981; Levinson 1982; Entman 1983; Proffer 1984; Ethridge, 1984, 1985; Doyle 1986; Renfrow, West, and Houston 1986; Bonfield 1986; Renfrow and Houston 1987; Lester et al. 1989; Houston 1991; Epstein and O'Halloran 1996; Simon and Grady 1996; Schneider, Jacoby, and Coggburn 1997.

[3] See, for example: Shimberg, Esser, and Kruger 1972; Williams 1975; Leffler 1978; Shepard 1978; Leland 1979; Paul 1982; Ethridge 1984, 1985; Young 1986; Kilbane and Beck 1990; Donabedian 1991; Kerwin and Furlong 1992; Svorny 1992.

administrative discretion mirror both normative and practical assumptions about bureaucratic decision making. "Given this, it is useful to ask whether the models which provide the bases for administrative institutions jibe with reality" (West 1985). Addressing the applicability of those models requires elements of a rulemaking theory that answers, "at least three fundamental questions: Why does rulemaking occur? What determines the results of rulemaking? What are the implications for our constitutional system?" (Heffron and McFeeley 1983; Kerwin 1994, 272).

The public administration and rulemaking literature has been fairly thorough in addressing the political, legal, social, and economic reasons behind why rulemaking occurs at the federal and state levels of government.[4] Efforts to address what determines the results of rulemaking have, however, been relatively sparse. In the absence of any general rulemaking theory, the literature attempting to explain rulemaking outputs has been largely derived from a number of regulatory theories. Four theories that have evolved in the economic and social science literature are most relevant to this research: 1.) public interest theory; 2.) interest group (or, "capture") theory; 3.) principal-agent theory; and 4.) a comprehensive regulatory theory. Articles from these theoretical perspectives, identify a number of constraints to administrative decision-making, and present the rationale for political actors to implement system constraints on administrative discretion. To date, however, empirical assessments of influences on rulemaking output have been almost nonexistent. Only one attempt has been made to empirically assess the comprehensive influences assumed to affect federal bureaucratic rulemaking (Magat, Krupnick, and Harrington 1986). With the exception of tests of isolated influences on rule output (Ethridge 1984, 1984; Doyle 1986; Kerwin and Furlong 1992), there have been no comprehensive state-level studies.

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[4]e. g: Lyons and Thomas 1978; Gellhorn and Boyer 1981; Heffron and McFeeley 1983; Wilson 1984; Breyer and Stewart 1985; West 1985, 1995; Bonfield 1986; Bryner 1987; Chubb and Peterson 1989; Levine, Peters, and Thompson 1990; Kerwin 1994.

The relative absence of state-level rulemaking research is a barrier to our understanding of this important administrative function at all levels of government. The federal government employs fewer administrators than their state counterparts, "whose programs are at least as important to the average citizen" State governments are, in many program areas, the implementing agents of the federal government. The many similarities in the theory and practice of public administration at both the state and federal levels of government suggest that "an understanding of one system will advance understanding of the other" (Levine et al. 1990, 2).

The primary purpose of this research is to extend our understanding of non-institutional and institutional control of state administrative rulemaking. Relevant regulatory, decision-making and rulemaking theories and rulemaking and occupational regulation research are evaluated. Socioeconomic, political and system variables hypothesized to account for differences in rulemaking outputs across states are identified and assessed. A measure of rulemaking output that affords valid and reliable cross-state comparison is developed. I collected and analyzed data on these key independent variables to assess the degree to which the hypothesized influences agree with the reality of regulation in the states. To extend any findings beyond existing agency-specific or state-specific research, I incorporate a comparative analysis within the context of rulemaking output in 25 states during 1995. I confined the analysis to one of the few state-specific policy arenas: rulemaking output to regulate the professions. My findings are assessed with regard to the implications for democratic responsiveness and accountability in state government. The balance of this chapter includes a brief reprise of the literature defining rulemaking and clarifying reasons behind the increase in state-level administrative rulemaking. Then, a review of the regulatory theory and occupational regulation literature establishes the foundation for a comprehensive, comparative analysis of state rulemaking to regulate the professions.

The Definition, Origin, Evolution and Justification of Rulemaking

> A rule is the skin of a living policy...it hardens an inchoate normative judgment into the temporarily frozen form of words...Its issuance marks the transformation of policy from the private wish to public expectation (Colin S. Diver 1987, 199).

As one element of administrative law, Diver and other scholars have made several efforts to arrive at a substantive definition of administrative rulemaking. Some of these have included perspectives of rulemaking as "a second legislative process (Ripley and Franklin 1991, 12);" "a symbiotic relationship between the growth of government and the role of rulemaking (Kerwin 1994, 3);" and, "the promulgation of generally applicable requirements or standards governing future conduct (Breyer and Stewart 1985, 398)." While any one of these views of rulemaking might suffice, the definition presented in the Administrative Procedures Act of 1946 is preferable for the purposes of this study. To paraphrase, rulemaking is the use of delegated legislative authority by bureaucratic institutions to promulgate rules "of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy." As such, elected legislatures empower government agencies to engage in rulemaking to issue rules that carry the full weight of law (Kerwin 1994, 4).

Within this broad range of lawmaking, West (1985) identifies four general types of rulemaking that may be undertaken by administrative agencies: "supplementary, " "interpretive," "contingent," and "rules of agency practice and procedure." In this typology, supplementary rulemaking is the agency use of discretion to perfect or elaborate on a statute that provides few details as to how the legislated goals are to be implemented or achieved (West 1985, 40; Kerwin 1994, 6). Agency rulemaking may interpret law and policy that is well established or precise, but must be adapted in response to changing practices, technologies or other requirements. These interpretive rules are generated to adjust to changing circumstances and do not serve to "create policy in the same sense that supplementary rules do (West 1985, 40)." Agencies may also be delegated contingent rulemaking authority to generate policy

provided certain conditions or events occur, but administrative discretion is usually limited to determining if the required conditions exist (42). Finally, rules of agency practice and procedure serve to implement fully developed statutes that require no significant refinement. Generally these rules define the "internal mechanics" of agency processes and serve to inform administrators and the public of practices and procedures rather than create or elaborate on statutory law (West 1985, 42; Kerwin 1994, 5).

As indicated by Lyons and Thomas, this delegation of policy-making responsibilities to administrative agencies has become an accepted practice in our public law system. Elected legislators in Congress and state legislatures have increasingly permitted administrative discretion in the formulation, adoption, and implementation of public policies (ix). At the federal level, the first session of Congress delegated to the President the power to write rules directing trade with Indian tribes, and ensuing Congresses initiated the practice of delegating rulemaking authority to appointed executive branch officials (Kerwin 1994).

The trend of congressional grants of policy-making power to agency officials did not go unchecked. Throughout the 1800's, the courts held to the tradition of English common law which held that "an agent could not delegate the authority he had received from his principle" (Lyons and Thomas 1978, 2). Combined with the separation of powers doctrine, the courts interpreted this legal premise to mean that Congress, and Congress alone, could exercise its Constitutional powers. "Thus, the so-called non-delegation doctrine was premised on the belief that political power should be exercised only by the democratically responsible organs of government" (1978, 2). By the late 1800's, however, this doctrine came under increased pressure for change as congressional attention to domestic policy increased and federal activity expanded. Scholars as well as presidents began to suggest the impracticality of day to day congressional involvement in policy implementation. The courts rejected the rigid non-delegation doctrine, opting instead to

require that any statutory delegations of power from Congress to administrators include policy standards to guide their actions (Lyons and Thomas 1978; Kerwin 1994).

With the implementation of an unprecedented number of New Deal programs in the 1930's, federal "reliance on rulemaking and other forms of administration was near total" (Kerwin 1994, 9). This growth in administrative discretion was not uncontested. In three cases heard in 1935 and 1936 (Panama Refining Co. v. Ryan; Schecter Poultry Corp. v. US; and Carter v. Carter Coal Co.) the court found that statutory authority granted under New Deal programs was an unconstitutional delegation of power to the President, agency administrators, and other public officials and questioned how these powers were exercised (Kerwin 47-8). Of particular concern to the court were instances of rulemaking with "no advance warning, lack of consultation with affected parties, or being unpublished or unavailable to regulated parties" (48). The principle of delegation, however, was upheld as "constitutionally sound," and the struggle was refocused on "the role of the courts in reviewing administrative decisions and on reform of administrative procedures" (Ethridge 1985, 19). The federal response, enactment of the Administrative Procedures Act of 1946, signaled a victory of delegation proponents over "conservative forces that stressed common law and judicial process as the best way to protect private property, individual rights, and capitalism" (Kerwin 1994, 50). The APA satisfied many legal objections to administrative rulemaking, and by institutionalizing rulemaking procedures and indirectly endowing agency decisions with added visibility and legitimacy, "may have led to an easier expansion of administrative power" (Ethridge 1985, 19).

By the 1970's, increased Congressional delegations of authority and the "general political environment" contributed to ever more broad, accelerated and conflicting delegations of rulemaking authority, greater complexity of rule substance and procedures, more complex and difficult rulemaking processes, and the growth of intergovernmental relationships that spurred rulemaking in the states (Kerwin 1994, 15). And, despite later initiatives by the Carter, Reagan,

and Bush administrations to reform and control federal rulemaking, by the end of the 1980's, agencies were deleting fewer and issuing more rules than at the beginning of the decade (Kerwin 1994).

Congress has relied on Constitutional interpretation to rationalize delegation of its powers. At the state and local levels, it is the public utility and police power concepts of regulation, predating the U. S. Constitution by hundreds of years, which have served as the justification for state-level administrative rulemaking in all its forms (Heffron and McFeeley 1983, 25). Government's power to regulate public utilities was long accepted under British Common Law, and in turn entered the American legal tradition. While application of the concept lacked clarity and uniform application, an 1877 Supreme Court ruling determined that businesses were a public concern when "used in a manner to make it of public consequence, and [it] affects the community at large" (Heffron and McFeeley 1983, 26). While providing little direction, the ruling was broadened over time such that, once a business was deemed to affect the public interest, it was subject to government regulation that may include regulation of rates, service quality or quantity, and the methods of production. The concept of police power recognized government's interest in protecting the public welfare, health, safety, and morals, and served as the foundation for regulation of occupations, working conditions, public health standards, "blue laws," and local zoning (26).

The response of state legislatures to societal demands and the inability to incorporate in statute the detail needed to regulate an increasingly complicated industrial state was to create agencies with the delegated power to deal with complex issues. State courts, however, were less inclined than their federal counterparts to accept this delegation (Lyons and Thomas 1978; Heffron and McFeeley 1983). As late as the 1940's, state courts invalidated many of these delegations of power. These rulings reflected a fundamental principle in constitutional law: "That no part of the legislative power can be delegated by the legislature to any other department

of the government, executive or judicial" (Dowling v. Lancashire Insurance Co., 92 Wis. 63, 68, 65 N. W. 738 31 1. R. A. 112 (1896)).[5]

Over time, as state courts came to see the need for such delegations, they justified them with "legal fictions." These fictions included the quasi-power concept and the requirement of legislative standards:

> In defining quasi-powers, state courts used certain "true tests" to distinguish between those 'truly' legislative or judicial powers which could not be delegated, and those merely administrative powers which could be entrusted to agencies. The 'merely' administrative powers came to include the whole range of legislative and judicial authority.
>
> State courts have also insisted on standards to guide agency exercise of delegated power. Some state laws have been struck down due to no standards to guide the regulation of substantial personal or property rights. Similar to federal courts, state courts have accepted minimal, vague, or meaningless standards. (Heffron and McFeeley 1983)

With this expanded view of administrative powers and of minimal standards, state courts have gradually found ways to accommodate constitutional limitations with the reality of the administrative state. Today, delegations of rulemaking power are almost always permitted. In turn, the tendency for state legislatures to increasingly delegate policy formulation and implementation powers to state agencies has evolved into an environment in which, "in most states today, the body of law created by the rule-making process matches or exceeds the statutory law of those states" (Hamm and Robertson 1981). The procedural and substantive reforms to insure public representation, participation and accountability that were embedded in the federal APA were, to varying degrees, adopted at the state level. States have enacted their own Administrative Procedures Acts (SAPA's) and other regulatory review statutes. The goal of these reforms has been to control the way administrative agencies translate vague statutory

[5]See also, Whitten v. California State Board of Optometry, 8 CAL.2d 444, 65 p. 2d 1296, 115 A.L.R.1 (1937); Reid v. Smith, 375 ILL. 147, 30 N.E. 2d 908, 132 A.L.R. 1286 (1940); and, In re Opinion of the Justices, 87 N.H. 492, 179 Atl. 344, 110 A.L.R. 819 (1935).

directives into precise programs, rules, and standards to ensure that the rulemaking process is an accountable surrogate for the legislative process it replaces (Bonfield 1986).

What is evident from review of the role and evolution of administrative rulemaking is that federal- and state-level administrative decision-making now encompass a significant part of the public policy process. Despite this increasing significance, the limited body of rulemaking research has left several key questions to be addressed. Kerwin (1994) argues that public agencies have become major political actors in all phases of the policy process, and that their organization, division of labor, culture, and work routine affect decisions. He also contends that rulemaking is subjected to all of the external and internal influences that affect administrative decision-making. With these various sources of influence on administrative decision makers, it is reasonable to expect that law and policy embodied in agency rules will differ across states and from what would be developed by legislatures, executives, or the courts (Kerwin 1994, 5). Existing research has contributed little to our understanding of these potential differences. There has been little systematic study of the influence of institutions on the rulemaking process (Bonfield 1986, 492). And, while the role of bureaucracy in the policy process is widely acknowledged, it has seldom been subjected to direct scrutiny, particularly at the state level (Schneider, Jacoby, and Coggburn 1997, 247).

Regulatory Theory, Occupational Regulation, and Rulemaking in the States

Scholars have generally drawn on the perspectives of one or another of several general regulatory theories to explain state policy outputs. Within this body of state-level research, several studies have focused on state efforts to regulate the professions. The concentration on occupational regulation presents several advantages to researchers attempting to understand the forces behind state policy output. First, occupational regulation is a policy area that is almost exclusively in the domain of state or local governments, permitting analysis that can focus on the state regulatory process with limited consideration of federal influences (Meier 1985). Second,

occupational regulation is an occasionally controversial public policy area with widely disparate public and academic views of its functions (Xueguang 1993).

Two forces have fueled this interest in occupational regulation: There has been a striking increase in the number of occupations seeking and obtaining regulation. This has made occupational regulation more visible to the public and its consequences more prevalent. In the past twenty years many studies have documented the social costs of increased service price and reduced service access resulting from entry restrictions, and the consequences of practice limitations (Graddy 1991). Finally, occupational regulation has a broad scope with approximately 800 occupations regulated somewhere in the United States (Meier 1985). As such, this policy area offers the potential for relatively concise models to test relevant regulatory theories and hypotheses.

The foundation for this research stems largely from three dominant theories of regulation. Prior to the 1960's, "public interest" theory, also known as market failure theory, held that regulatory bodies acted objectively in the public interest to correct market failures (Oster 1980; Donabedian 1991; Graddy 1991). From the perspective of occupational regulation literature, there are two rationales for government intervention: information asymmetry and negative externality (Leffler 1978). The information asymmetry rationale justifies state regulation of a profession with the view that consumers lack the information needed to purchase a complex, rarely purchased good (Leffler 1978). As Graddy suggests, "If information asymmetry is its source, regulation should provide consumers with sufficient information to assess service quality" (1991). Certification, licensure, and advertising requirements may be deemed appropriate interventions when they reduce consumer information search costs and enhance consumer ability to assess a needed service and the consequences of their choice (Moore 1961). Intervention to correct negative externalities in the market is deemed appropriate with the view that some occupations have a direct impact on public health and safety, and that without

regulation the public is unprotected from incompetent practitioners (Shimberg et. al. 1973). In this perspective, an unregulated profession may not consider all of the private and public costs of production, leading to overconsumption of the good or service that may have a negative social impact. This suggests, for example, the scenarios of consumers choosing the services of less competent and less expensive plumbers or physicians with no regard for potential harm to the community water supply or the spread of disease (Shimberg, Esser, and Kruger 1973; Graddy 1991). In this view professional regulation offers a solution by regulating providers' outputs and forcing all costs to be included in the transaction such that higher standards of practice may be expected when the public need for quality is greater. Whether motivated by information asymmetry or negative externality rationales, "benefits to the regulated were ignored, and any failure to protect the public was regarded as the result of incompetence" (Graddy 1991, 679).

Other underlying, and not wholly altruistic, motivations for government regulation of professions did not go ignored. Social scientists and economists followed Adam Smith's early criticism of craft guilds with the view that professional regulation was evidence that occupational groups pursued their own interests when pressuring the state to restrict entry to the profession at the expense of the public interest (Shimberg, Esser, and Kruger 1973; Xueguang 1993). In the 1970's, Stigler (1971, 1984) and Peltzman (1976) articulated this critique as an economic theory of regulation. In Stigler's view, "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit" (1984, 68). Motivated and organized groups use the currency of votes and money to overcome the costs of obtaining regulation in a majoritarian democracy, costs that are diminished by the discretion of elected representatives and an uninterested public. In this supply and demand framework for regulation, regulatory output reflects the domination of a small group over larger, more diffuse interests.

> To summarize the argument, the size of the dominant group is limited by the absence of something like market-dollar voting in politics. Voting is infrequent, concerned with packages of issues. On particular issues, voters must spend resources to get information

> about implications for their personal wealth, how politicians are likely to stand on which side of an issue. This information cost will have to offset prospective gains and the voter won't incur it. So, the numerically large, diffuse group is unlikely to become an effective bidder, and policy going against the interests of a numerical majority will not automatically be rejected. (Peltzman 1976, 213)

Stigler's model suggests that regulatory agency outputs will exclusively serve, or be "captured" by, economic interests. Peltzman's version suggests that there is an added effect of opposition by excluded groups and the political and monetary costs needed to accommodate those interests. These costs of using the political process mean that the "winning" group will be unable to obtain the full benefit of political action, and that "political entrepreneurship" will result in a coalition that includes members of the losing group (1976, 213, 221). This extension to Stigler's theory expands the focus on interest group dominance to suggest that the underlying power relationships serve to "shape the regulator's utility function," and act as a constraint on regulatory behavior (240). Peltzman, however, continues the focus on interest group power over the regulatory process. He holds that because the more concentrated groups have lower organization costs and greater stakes in the regulatory outputs, they provide more support to vote-maximizing politicians. The hypothesized result is that regulatory benefits will disproportionately (although not exclusively) go to "predatory" producers at the expense of consumers (Weingast 1981).

In a related vein, there has been an ongoing political science debate over who or what controls the bureaucracy. The economic theory of Stigler and Peltzman suggests that agencies are created to serve the regulated interests. Niskanen (1971) and Lowi (1984) assert that these captured agencies control regulatory output through grants of delegated authority, possession of expertise and information, and a lack of legislative resources or incentive to monitor and control administrative decision-makers (Kerwin 1994).

Several factors contributed to the search for a new regulatory policy perspective in the 1980's. These included mixed results from empirical tests of the "public interest" and economic theories of regulation, a sense that these theories as well as the bureaucratic dominance model were overly simplistic, and the fact that none of the models accounted for the increase in deregulation at the federal level (Weingast 1981; Bryner 1987; McCubbins, Noll, and Weingast 1987; Kerwin 1994). Building on a line of rational choice theory exploring the role of institutional rules and structures in shaping policy choices (e.g. Shepsle 1979, 1986; Weingast 1979; Shepsle and Weingast 1981, 1983, 1984; Denzau and Mackay 1983), several authors articulated a theory of congressional control suggesting the importance of institutional constraints on political control, democratic responsiveness, and administrative performance (Fiorina 1981; Weingast 1981, 1984; Weingast and Moran 1982, 1983; McCubbins and Schwartz 1984; McCubbins 1985; McCubbins, Noll, and Weingast 1987). In their critique of public interest and economic theories of regulation, they suggest that investigators have virtually ignored the role of institutional constraints in attempts to explain how political actors can control policy-making administrators. To McCubbins and other academics, "the puzzle is, if politicians cannot control administrative decisions, and therefore, policy outcomes, their preferences and those of constituents are irrelevant" (McCubbins, Noll, and Weingast 1987). In this model, the "principals" are the elected legislators and executive (to date the theoretical focus has been on Congress and the White House). The "agents" are the administrators charged with carrying out the directives of elected officials and, in the nature of representative democracy, the will of the electorate.

The authors contend that administrators have personal preferences that conflict with those of elected officials. In turn, the policy choices of elected officials are disciplined by reelection concerns that require seeking periodic ratification by constituents. The policy choices of administrators, however, are not subject to electoral concerns. Without oversight, then,

administrative choices are likely to reflect personal preferences, "derived from some combination of private political values, personal career objectives, and aversion to effort" (McCubbins, Noll, and Weingast 1987, 247.) Faced with the possibility that agency policy preferences may override democratic preferences, elected representatives must balance the effort needed to assure compliance with the effort used to ensure it. In this principal-agent relationship, it is suggested that principals will find methods to ensure that delegations of authority to unelected administrators will be more beneficial than costly (248).

In seeking methods to alter their "agent's" incentives, legislators may devise mechanisms for monitoring agent performance and compliance. These may be combined with a system of rewards and punishments, and may impose administrative procedures requirements to constrain and limit agency decision-making. McCubbins, Noll and Weingast (1987) suggest that the most common forms of oversight - monitoring and sanctions - assess costs to legislators that exceed the potential benefits. In turn, judicial review is limited in its ability to constrain administrative discretion due to broad and vague legislative mandates. Through administrative procedures, elected representatives can design controls of the decision-making process to improve their access to information (by requiring agencies to collect and publicize relevant information). These controls can also act to channel decisions toward program outputs preferred by those who were intended to benefit from the policy. From this perspective, administrative procedures acts are a mechanism by which, "politicians can then be responsive to their constituencies without knowing the details of policy outcomes" (244). In essence, then, principal-agent theory suggests that legislators employ an extensive range of subtle, powerful prospective constraints to effectively curtail administrative discretion and ensure accountability (Kerwin 1994). To Terry Moe, this theory's significance derives from its extension of "the institutionalist logic to fundamental questions of political control, democratic responsiveness, and bureaucratic

performance," and is a "move toward a coherent general theory of political institutions" (1987, 476).

This research focuses on critiques of existing principal-agent theory that suggest it is an underspecified model of the regulatory process. While conceding the importance of Congress (and by extension other legislative bodies contending with issues of administrative discretion), these assessments imply that a comprehensive perspective that includes the influence of executives, courts, interest groups and the agencies themselves is needed to understand the regulatory process (Moe 1987; Clingermayer 1991). As Moe contends:

> ...the extent to which Congress controls a particular agency can hardly be ascertained by riveting attention on the relationship between that agency and one legislative committee. In fact, the agency finds itself surrounded by multiple principles: various authorizing and appropriations committees in both houses of Congress, the Office of Management and Budget, the president and members of his White House staff, and departmental units in the executive branch. These principals compete for influence over the agency... (Moe 1987, 482)

Ogul and Rockman (1990) concur with Moe's observation, adding, "The notion of many principals competing for control of administrative agents has a greater degree of empirical validity than the notion of pure committee/subcommittee dominance" (11). To expand on Keith Leffler's (1978) observation, "An analysis of regulation that tests" the public interest hypothesis, capture hypothesis, or the principal-agent hypothesis "in isolation may generally provide incomplete and misleading answers" (186).

Understanding Influences on Regulatory Output

A review of relevant economic, social science and occupational regulation literature offers insight into factors shaping regulatory outputs and institutional constraints on administrative decision-making. These works also serve as a guide in the development of a model of state rulemaking to address the question, "What factors affect the character of rulemaking?" With some overlap, the literature falls into two general categories: 1.) Direct or

peripheral tests of dominant regulatory theories, and 2.) Studies directly or peripherally relevant to an analysis of rulemaking outputs for regulating state professions. With the theoretical work previously addressed, both of these areas of research suggest and provide theoretical justification for inclusion of various socio-economic, political, and institutional variables in a comprehensive model of state rulemaking to regulate occupations.

Tests of Regulatory Theory

In one of the earlier tests of public interest theory, Thomas Moore (1961) conducted an analysis of occupational and business regulation in Illinois to address differing views of licensure. Using an order and timing measure of licensing (where Y is the median year in which a particular occupation was licensed), Moore used a series of regression analyses to assess hypothesized public welfare and pro-practitioner influences on licensure. His findings suggested that, "legislatures seem to license those occupations which it is most in the public interest to regulate, and in doing so, establish certain regulations" which also happen to benefit practitioners (117). There is, Moore argued, truth in the view that "the intent of the...law was primarily to protect the public against quacks, shysters, and inexperienced persons" (117).

Skeptical of public interest theory, Shepard (1978) constructed an empirical test to assess how licensing practices by state boards influence the availability of dental services. He argued that, like most state regulatory authorities, state dental boards enjoyed a great deal of discretion, usually functioned independent of other health agencies, seldom faced legislatures, and included board members who were dental practitioners nominated by members of the profession they were charged with regulating. Using a dental services price index as a dependent variable, Shepard tested the effects of reciprocity and non-reciprocity agreements on fees and dentist income. The results confirmed Shepard's working hypotheses that where boards restrict entry, dental services will be more expensive. This finding supports his contention that occupational regulation serves the interests of the regulated over the public interest.

Leffler (1978) assessed Peltzman's assertion that regulatory agencies will not exclusively serve single interests. He constructed a model to test the hypothesized influence of financial returns on physician training, net present value of a career as a physician, and other "circumstantial" (166) evidence of monopoly returns on the restrictiveness of physician licensure. Results suggest that differences in licensing standards were consistent with the consumer-demand rationale for minimum quality standards. His findings also supported the view of regulators as maximizers subject to the pressures of a variety of self-interested groups. Leffler suggests that the findings raise doubt as to the "singular relevance of either the efficient or cartelization results of regulations" (166).

Oster's (1980) study focused on an econometric model to explain the variation across states in the choice to regulate four areas of consumer regulation. The model assessed the costs and benefits to particular groups and the power of each of those groups to explain a state's choice to enact regulation. Separate measures of consumer pressure, industry pressure, and ease of coordination were developed for the regulatory decision in each of the four policy areas, and estimates for the choice to regulate were determined with logit and maximum likelihood methods. The findings suggested that both consumers and interest groups played a role in the choice to regulate or not regulate. They also suggest that the characterization of a consumer versus industry regulatory process may be oversimplified.

In a study relevant to occupational regulation, Paul (1982) took exception to Peltzman's view of the vote-maximizing regulator who reaps political support but is a member of neither the winning or losing group. Paul suggests that the regulator's "wealth function" should be considered in any estimation of the regulatory process in which the regulators are members of the benefiting group. He uses OLS to test the empirical effect of the method of state licensing board selection on physician incomes with the expectation that physician incomes will be higher in states where licensing boards are controlled by the profession. Paul's findings confirmed that

physician earnings were higher in states where boards are directly controlled by the medical profession than in those states where the governor appoints board members. He concludes that government organized regulators will be less than perfect brokers for group interests and will balance marginal political benefits against marginal political costs to maximize their wealth.

To address the question of how Congress exerts control over administrative choice of policy options, McCubbins (1985) developed a theoretical model of the design of institutional structures through which Congress tries to control administrative policymaking. He argues that Congress attempts to retain control of agencies through the use of structural and management arrangements. The degree of control hinges on the level of uncertainty and instability. As principals, legislators define the institutional setting for their agents' regulatory activity, prescribe the scope of agency authority to constrain the range of regulatory targets, and define the "legal tools" an agency may use to implement policy (726). They also specify the procedural requirements for agency decision-making through administrative procedures acts that limit the range of agency policy alternatives, set informational requirements to overcome any principal-agent information asymmetry, and define the voting rules that channel administrative policymaking. The implication for administrative decisions, McCubbins suggests, is that regulatory outputs will reflect the degree of legislative constraints imposed by legislators to overcome the uncertainty and instability of a given policy environment.

Berry's (1984) study of state utility commissions employed a comparative analysis of factors hypothesized to determine state regulatory commission rate-setting policy of electric utilities. In this explanation of regulatory decisions, Berry contends that characteristics of the commission and its regulatory environment constrain commission decisions. While assuming that commissioners have two major policy objectives - setting "service-at-cost" rates and remaining in office - he suggests that the importance of these goals varies by commissioner and across commissions. Using cross sectional data from 1967 and 1974, Berry uses OLS and

nonrecursive causal models to assess the hypothesized influence of the actual production cost of electric power, the presence or absence of a government appointed consumer advocate during commission proceedings, and the extent to which proceedings were open to the public. The empirical results confirmed that specific characteristics of individual commissioners do affect regulatory outcomes, and suggest the need for recognizing commissioner goals and resources in attempts to explain the regulatory process. The findings also suggest the importance of public participation and commission professionalism on policy outcomes. Citing the need for examination of other alternatives to capture theories of regulation, Berry calls for further studies in other regulatory contexts to assess other factors hypothesized to influence regulatory decisions.

Young (1986) examined the economic effects of licensing laws in public accountancy to assess the validity of public interest claims that licensure enhances service quality. From interviews with insurers covering both non-certified and certified accountants, he found that certification does not influence premium charges because certification is not a predictor for determining if an accountant will be sued by a client or third party (14-5). This suggests to Young that higher service quality implied by certification may not be needed by businesses serviced by non-CPAs. Young found that, if licensure harms non-CPAs or small businesses, it is by restriction of the use of occupational titles. In restrictive states, unlicensed practitioners are at a disadvantage in attracting clients who may need no more than the limited quality of an unlicensed accountant. Since unlicensed practitioners cannot legally advertise their lower rate structure for comparable services, businesses opt for CPAs and needlessly pay higher fees. Young concluded the restrictions reduce the information available to consumers and thereby limit informed choice.

To test Peltzman's general economic theory of regulation, Becker (1986) suggests that Peltzman's statement "that the profession does not always prevail is equivalent to the statement

that the public interest is sometimes protected" (224). Becker suggests two testable hypotheses derived from the view that groups' preferences (other than those of "predator" interest groups) may influence legislative decision-making. First, the interests of uninformed voters count less than those of informed voters and second, as public political activity increases, the likelihood that the public interest is protected increases (225). Referring to Shepard's earlier study of reciprocity regulation for dentists, Becker notes that the "capture" of state dental boards happened in only some states. To more fully explain this variation, Becker specified an OLS model that incorporated Shepard's interest group influences as well as hypothesized public interest variables. The empirical results confirmed the voting strength of the "capturing" group as well as the expected influence of public political activism and informed voters on legislative support. "While predator strength is decisive, the public interest can be and is maintained in many states" (230). Becker contends this finding clearly supports the view of a rational legislator paying heed to both public and professional interests.

Elizabeth Graddy suggests in a 1991 study that interest group theories have gained such acceptance that little attention is given to the role of public interest in regulation. She contends this runs counter to a widespread public belief that occupational regulation serves the public interest and the view that "the public interest justifies all occupational regulation" (677).[6]

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[6]Providers benefit from increased regulation that increases the value of their human capital and restricts competition, while the opposite is true for competitors. The value of regulation for consumers and public interest groups depends on the degree of complexity in evaluating service quality. The net demand for regulation of an occupation, as reflected by political support, depends on the size and cohesiveness of each group (operationalized as the number of professional association members as a percentage of total employed persons in the state; the number of professional competitors as a percentage of total employed persons in the state; and, a categorical reflecting the institutional/individual consumer mix), the type of regulation (categorized as no regulation, certification, and licensure), and the information asymmetry (operationalized as a dummy variable with the value of 1 if there is a public interest rationale for regulation; an index of information asymmetry with higher values reflecting more asymmetry; entry level educational requirements for professional certification; and, a dummy variable assigning a value of 1 if regulation restricts access to the occupation) in the unregulated market (682). Factors that constrain the legislatures ability to supply regulation include the volatility of the political market (operationalized as proportion of the legislature held by the majority party and the amount of turnover), legislative philosophy (using the Council of State Governments measure of consumer orientation), and legislative resources (reflecting limitations on session length and the number of staff per legislator) (Graddy 1991).

Graddy's model focuses on determinants of the choice to license or certify an occupation by building on the Stigler/Peltzman economic theory of regulation and incorporating the role of legislative decision-makers. Graddy contends that three groups have a vested interest in occupational regulation and possess the political potential to influence legislators: service providers, consumers and public interest groups, and professional competitors. "The nature of the regulatory benefit for a particular group," Graddy argues," depends on the type of regulation and the extent of information asymmetry in the market" (679). The analysis of five state occupations was pooled to produce a data set of 250 observations in a binary choice model using logit estimation. The results suggest that interest group organization, political market volatility, legislative resources, information asymmetry, and access affected the choice to regulate an occupation, and lend credence to the claim that models focused exclusively on interest group force mistakenly underestimate the influence of public interest variables (693-4).

In an effort to examine McCubbins' (1985) claim that legislatures will introduce more procedural mechanisms as uncertainty increases, Clingermeyer (1991) constructed a constituency service model to predict the presence of administrative controls in the states. While the model specified the hypothesized influence of bureaucratic professionalism, divided partisan control, gubernatorial power, and legislative professionalism on mechanisms for legislative control, there was only "modest support" for the proposition that uncertainty influences the choice to use administrative controls. Clingermayer suggests that the weak findings likely indicate the need to incorporate the influence of interest groups, governors, and bureaucracies in addition to legislative characteristics.

Jackson (1992) constructs a sophisticated analysis of factors hypothesized to mediate, facilitate, or impede the "translation" of constituency preference into policy outputs (31). Controlling for both socioeconomic context and preferences, his results suggest that if citizens of a state have a conservative orientation, an increase in legislative liberalism has no affect on

policy. If citizens have a liberal orientation, a comparable increase in legislative liberalism translates into more liberal policy outputs. This interaction supports the argument that state legislatures do not operate in a vacuum...members recognize public preference before producing policy. These findings also provide some support for the socialization model of linkage. Legislators do not make policy without consulting the ideological orientation of the electorate. The more general conclusion to emerge from Jackson's study is that the relationship between citizen preferences and state policy is not mediated significantly by a wide variety of political system characteristics. But, estimates from Jackson's models suggest there are significant non-mediatory effects on outputs for legislative professionalism, turnout, political culture, and interest-group system and party organizational strength. States with more professionalized legislatures and active electorates produce more liberal policies. Other significant independent variables included interest group and party organizational strength, and political culture. Jackson concludes that public opinion exerts a strong influence on policy liberalism, and suggests that "the original models used in state policy literature may not have been conceptually inappropriate" (45).

As evidenced by this review, research linked to one or another of the dominant public interest, economic, or principal-agent theories has suggested the importance of various socio-economic, political and system variables on occupational regulation output. At the same time, a recurring theme in the findings of many of these empirical tests is a dissatisfaction with the focus on a singular influence (whether it is public interest, interest group, or legislative control variables), and their ability to explain the regulatory process. This lack of agreement and the repeated calls for further research to respecify the regulatory models lends credence to Moe's call for a "move toward a coherent general theory of political institutions" (1987, 476).

Rulemaking, Oversight, Administrative Procedures Acts, and Occupational Regulation

The remainder of this chapter reviews a number of studies dealing with general rulemaking, oversight, administrative procedures acts, and occupational regulation. These inquiries are also the basis for understanding the influence on rulemaking output of such factors as institutional structure, markets, legislative-administrative relations, the restrictiveness of state administrative procedures acts, political influences, and interest group influences. As such, these efforts provide a foundation for the comprehensive model employed in this study to assess state-level rulemaking to regulate professions.

In an effort to assess the importance of structural factors on the legislative oversight process, Lyons and Thomas (1978) constructed a two-level model of the oversight process and employed survey data from legislators in three states to test the hypothesis that as states become better structured for oversight, more oversight would be conducted, or would be "perceived" as occurring (100). Their findings confirmed that institutional structure does influence legislative review of policy implementation, and supported views that internally imposed structures affect legislators' participation in the review process.

Leland (1979) developed a formal model of markets exhibiting asymmetric information to examine the conditions under which minimum quality standards are desirable, and whether self-imposed standards will be socially optimal or will be set restrictively to benefit the regulated group. The author's results suggest that unregulated markets exhibit an under- or over-supply of goods relative to socially optimum levels. Leland's findings also suggest that minimum quality standards are always desirable when opportunity costs decrease with the suppliers quality level. If a professional group is self-regulating, standards are more likely to be set too high.

Ethridge (1984) employed a three-state study to assess how changes in legislative-administrative relations affect policy outcomes. Using review committee records from each of three states, he compiled data on standing committee review of 286 agency proposals including

the committee action, substance of the proposal, and dates of submission and of committee action. Ethridge used discriminant analysis to assess the independent influence of agency type, rule restrictiveness, agency size, and presence of a public hearing prior to committee review. The results revealed that, in all three states, rule restrictiveness was the primary indicator of committee objection, and that many of the disapproved proposals in two states were from small agencies and boards. Ethridge also argues that administrators proposing stringent regulation of private business activity are likely to meet with disapproval by the review committee, while there was evidence that review committees are likely to approve more restrictive occupational licensing board proposals to restrict entry. Ethridge suggests that oversight committees increase access by regulated interests. He concludes that a stronger legislative role in the decision process contributes to reduced rule stringency and that oversight powers are not used to correct "captured" administrators. In a follow-up study of five states (1985) Ethridge employs a similar methodology to again assess the influence of legislative participation in implementation. Key findings of this analysis included: 1.) Review committees are likely to object to new prohibitions or requirements imposed on regulated interests, while adjustments to distributive policies and occupational regulations were rarely opposed. 2.) Where independent review committees are not under direct supervision of higher political actors, they "may become part of an antiregulatory subsystem made up of interests and legislators generally opposed to aggressive regulation" (151).

Renfrow, West, and Houston (1986) and Renfrow and Houston (1987) identify ten key features of state administrative procedures acts. To assess the variation in rulemaking constraints incorporated in APAs across states, the authors use Guttman scaling to devise a restrictiveness index summing the number of APA provisions adopted in each state. In their 1986 study, Renfrow, West, and Houston model this index as a dependent variable to test hypothesized influences of the size and activity of state government, bureaucratic

professionalism, political culture, voter turnout, interest group activism, and legislative professionalism on differences in state rulemaking discretion. Empirical findings suggested that states with more professional administrators will have less restrictive APA provisions; states adopting performance budgeting criteria will have more restrictive APA provisions; and, as state legislative professionalism increases, the stringency of APA provisions increase.

In an effort to address the lack of consensus on how agencies make rules, Magat, Krupnick, and Harrington (1986) developed a method to examine how federal social regulatory agencies issue technical rules. As the only study of its kind unearthed by my review of academic literature, this study is unique in its empirical effort to determine what factors influence rulemaking outcomes. Magat, Krupnick, and Harrington employ a rigorous design and sophisticated analysis to test various explanations for levels of pollution control mandated by the Environmental Protection Agency's guidelines. They identified seven independent variables hypothesized to influence the stringency of the proposed technical standards. Using comparative statics and OLS, they found that the quality of information the agency gathered to inform its rulemaking increased the likelihood of more stringent standards. Increased political influences, measured as a function of industry association budgets and firm profitability, decreased the probability of stringent standards.

Donabedian (1991) constructed a causal logit model to identify local economic forces influencing the stringency of certified public accountant licensing. With the hypothesis that licensing stringency varies with local demands for CPA services, he constructs a categorical, ordered dependent variable of overall stringency of CPA experience requirements, and two binary variables to index the stringency of minimum education requirements. Independent measures of the demand for CPA expertise, the training level of the local labor pool, and the excess supply of CPAs are regressed to assess their influence on the rule stringency measures. The empirical tests of the hypothesis tended to confirm that CPA licensing stringency increases

with increased demand for accounting expertise. "In particular, licensing seems to be stricter in states where large businesses are concentrated" (98). Donabedian concludes that, "Whatever the motive and function of licensing, it seems...to be responsive to some demands of local constituents" (98).

In a comparative analysis of 48 states, Xueguang (1993) assesses the influence of occupational power, state capacities, and institutional processes on the diffusion of occupational licensing of 30 professions from 1890 to 1950. The author employs "event history methods to incorporate the timing of licensing, prior licensing history, and time-varying covariates into model estimation" (544). Results suggest that the more powerful and resourceful a profession, the greater the probability of licensing requirements. The findings also confirm the influence of state capacities in the person and business sectors: High state revenues increase the number of person sector licensing regulations, but decrease business sector licensing legislation. The author contends that this result suggests that the greater a state's capacity, the more effective its resistance to demands for licensure. Xueguang argues that the major finding of this study is that the more states license a given occupation, the sooner the occupation will be licensed by remaining states. However, the number of occupations licensed within a state has no significant effect on the licensing rate for a particular occupation. This indicates, Xueguang contends, "that the spread of occupational licensing is influenced more by the nationwide institutional environment surrounding specific occupations rather than the political environment within the state" (549).

Simon and Grady (1996) conducted a national survey and selective interviews with state officials to develop a descriptive analysis of the structure and function of formal and informal rule review mechanisms in the states. The authors' preliminary findings suggest that there are "a diversity of structures, functions, procedures, actors, and powers in play across the states in regard to rulemaking and oversight" (18). The authors also provide one example as insight into

differences between practices required by a state's APA and actual compliance. Among the general tendencies uncovered by the survey were the role of joint bipartisan committees as the most common vehicles for rule review and oversight. In many states, "entities other than the legislature have the authority to bar or veto a proposed rule" (19); agencies proposing rules are most often the providers of any requested analyses; and, the public has opportunities to affect the rulemaking process, and these forms of access vary considerably across states. Grady and Simon (1997) supplemented and expanded on Renfrow and Houston's (1987) research with insight gained from mail, telephone and personal surveys of 126 individuals involved in the rule review process across the 50 states. As a key element of their study, Grady and Simon shifted the focus from "required" oversight mechanisms in state Administrative Procedures Acts to an inquiry into what formal rules review processes were "available" through the APA, executive order, or other statutes. Coupled with survey data as to which governmental bodies actually conducted reviews, and the nature of their powers in the rulemaking process (3), they develop an index scoring states on the bases of the formal powers available to "political actors involved in the rulemaking process" (5). This index was included in their analysis to assess the relationship between variations in bureaucratic restraint and other state political culture, economic, institutional, and political characteristics. Their findings suggest a strong relationship "between Republican gains in state legislatures and increased control over rulemaking either by citizen access or institutionalized control." And, "moralistic cultures provided for more access to the rulemaking process while individualistic cultures placed greater roadblocks in the way of rulemaking" (13).

While not an empirical study, Bonfield's (1986) explication of the Model State Administrative Procedures Act provides the basis for understanding the assumptions reformers suggest will positively affect rule outcomes. The focus of Bonfield's work is on the extent to which agencies should be required to make their law in the form of rules (as opposed to more extensive and more specific policymaking by legislatures), and the procedures to govern how

these rules are made. In his justification of the 1981 MSAPA as a statute applicable to state circumstances, Bonfield also suggests several variables expected to influence the rulemaking process in the states.[7] Ultimately, he details the structural and procedural reforms that are assumed to lead to rulemaking outcomes that are legal, technically sound, politically responsible, conducted with adequate notice, maintain only justifiable rules, and are fair to affected parties.

A Brief Outline of this Thesis

This review of the relevant regulatory and rulemaking literature clarifies the debate over constitutional and rational justifications for administrative rulemaking. It also lays the foundation for understanding non-institutional and institutional factors hypothesized to influence rule outputs. This literature serves as the basis for my effort to explore factors influencing rule outputs and occupational regulation in the states. While this record of academic inquiry is far from unified in theory or method of investigation, it does define the parameters for a comprehensive model of state occupational regulation that seeks to identify and test influences on rule outputs. I identify and discuss the public interest, interest group and principal-agent theories of regulation. In addition, the institutional reform theory suggested by Bonfield and the comprehensive theory of regulation forwarded by Moe are presented. I then review research derived from these theories with an emphasis on identifying factors hypothesized to influence administrative rule output.

Chapter Two considers the definition and identification of rules issued to regulate the professions in the states and describes a method for operationalizing a measure of rule output. In

[7]As Bonfield suggests, the differing circumstance between state and federal agencies include: size of constituency; bureaucratic professionalism; nature of the agency relationship/structure to represent their clientele; agency funding levels and federal conditions on federally provided agency funds; technical expertise and resources; socioeconomic status of agency clients; and, the economic value of matters in controversy. Suggested differences in the legal environment of the administrative process include the requirement that states answer to both state and federal constitutions; the nature of legislative and executive powers; the presence or absence of executive veto; the presence or absence of several empowered executive officials; and, legislative professionalism.

addition, relevant independent variables are identified, the test hypotheses are specified, and a general model of the rulemaking process is proposed. Chapter Three details some of the problems and limitations confronting the development and analysis of a comprehensive model of the state rulemaking process. Chapter Four presents results and analysis of hypothesis tests, and Chapter Five summarizes the empirical findings, discusses the implications of the findings, and offers recommendations for future research.

Chapter 2

Rule Output Measures and Decision-Making Constraints

The literature on public interest, "capture," principal-agent, and reform theories is clear about specific factors that affect administrative rulemakers. However, there have been few specific attempts to model and empirically examine these factors at either the state or federal level. These studies have tended to reflect a reliance on the economic assumptions of capture theory and an emphasis on tests of the isolated influences of public interest, interest groups, and legislatures.

Analysis of the states can help to explain and understand the complex comparative effects of various constraints on rulewriting and to address such questions as: Do rulemaking outputs bear out the assumptions and assertions of relevant regulatory theories?; Are there differences in rule outputs across states?; and, Can political, socio-economic, and institutional differences across states help us to identify factors that do and do not constrain rulewriting decisions? Finally, study of state-level rulemaking can help to define and explain the state of legislative delegations of power to state administrators, and the degree to which administrative rulemaking agrees with legislative intent. This can help to address questions about how the realities of state rulewriting compare with our understanding of the democratic responsiveness of state administrators? To address these research questions I compare rule output across states and assess several models derived from regulatory theory to analyze the impact of various influences on rulemaking output.

Rule Output Measures in Existing Research

Comparison of rule output across the states requires the development of a valid and reliable measure of rule output. Moore (1961) contended that some regulations are established in the public interest, "while others have a tenuous connection, if any, with the welfare of consumers" (93). While recognizing that any determination of what constitutes a pro-consumer

regulation or pro-regulatee regulation is "somewhat a matter of personal judgement," (95) he presents some decision rules for that determination consistent with the dominant regulatory theory perspectives. In his study of occupational licensure in Illinois, Moore constructs the general argument that regulations increasing the cost of entry to a profession benefit the practitioners in a profession at the time the regulation goes into effect. Regulations imposing standards for entry, such as fees, education, apprenticeship, examinations, citizenship, "good character", or minimum age requirements, establish costs to an entrant above those in an unregulated occupation. Whether in the form of opportunity costs during schooling or apprenticeship, the potential costs associated with being denied entry to the profession, or other costs never recouped as a practicing member of the profession, regulations imposing these standards on entrants raise the cost of entry. To be sure, candidates for entry to the profession view these costs as an investment that is expected to generate a return, so as entry costs rise, occupational income must rise (111). As Moore contends:

> For the same number of practitioners to be willing to enter the occupation, *cetus paribus*, the discounted value of the rise in income must equal the rise in the cost of entry. For example, let the rise in the cost of entry be R dollars, let r be the interest rate, and let N be the number of years practitioners remain in the occupation. Then $B = rR/[1-(1+r)^{-N}]$; B measures the amount the supply curve must shift upward. The larger the rise in the cost of entry, the greater will be the return to practitioners already in the industry, *cetus paribus*...Since supply and demand must tend toward equality, the price of the service and consequently the income of the licensed practitioners must rise until equilibrium is reached. (Moore 1961, 111-12)

Moore's study also addressed the possibility that licensure can serve the public interest, and presents rationales suggesting that regulation can address information asymmetry and market failure. In these perspectives, licensure to address information asymmetry "increases information by establishing minimum standards for entrants," and may prevent or reduce fraud (104). As Moore argues, however, licensure in and of itself establishes standards only for entrants, and there is even "less reason to believe that practitioners' having met certain conditions helps the consumer evaluate the probability of being defrauded" (105). By implication, however,

Moore leaves open the possibility that licensure or regulation that imposes requirements or costs on practitioners to overcome information asymmetry and market failures may serve the public interest. "The least restrictive and the least persistent type of regulation," he contends, "seem to have been primarily established for the benefit of the public" (101).

The essence of Moore's research question was to test why occupations are licensed. He discussed a measure of licensing stringency, but waives the effort to develop this measure in favor of an "order and timing measure" more suitable to his research question. However, in opting out of the licensing stringency measure Moore points out the difficulty of developing a measure that captures the multidimensional nature of licensing, and the problems with evaluating the measures within those dimensions. Within this context, he warns that researchers should, "consider the problem of evaluating the degree of restriction of the formal training requirement for two different occupations. One occupation may require twice the formal training of the other. Yet it is possible the one that requires less formal training may be the more restrictive" (101-2).

The only two subsequent attempts in the literature to assess the degree to which administrative rules reflect pro-consumer or pro-regulatee intent have generally been couched in Moore's concepts of the restrictiveness or stringency of the regulations. Both opted for very different methods to operationalize their measures. Building on a three-state study published in 1984, Ethridge (1985) conducted a five-state study to empirically assess whether and in what way legislative committee rule review could be predicted by policy-related variables. Among three independent "policy-related" variables, he included a "rule restrictiveness" variable derived from a content analysis of agency proposals. Agency proposals were assigned a score of 1 to 4 based on coder determination of the degree the agency rule was "perceived to involve restrictions or requirements burdensome to private activity" (91). In Ethridge's operationalization, proposed agency rules were assigned to categories as:

4 - Proposals relating to major aspects of private business activity
3 - Proposals relating to minor aspects of private business activity
2 - Proposals relating to regulation of private personal activity
1 - Proposals relating to regulation of government personnel or procedures (91)

Following assumptions of economic (or capture) theories of regulation, coders followed decision rules that directed them to assign a 4 to a rule that would increase regulated or clientele group operating costs or expenses; a 3 to rules that were of similar, but less significant, intent; a 2 to rules regulating "private personal activity" (such as fishing regulations); and a 1 to procedural rules insignificant to any organized interest (92-3). These decision rules were then applied to rules proposed by regulatory, mixed, and service type agencies to operationalize this "restrictiveness" variable. In concert with other policy-related variables, Ethridge conducted discriminant analysis to predict whether and in what way these variables could predict legislative committee support or opposition.

As a broadly applicable measure of rule output by several "types" of state agencies, Ethridge's categorical measure served to address his research question. However, with a broader perspective of the policy process this measure is open to question on grounds of both validity and reliability. In accepting capture theory assumptions, the measure singularly taps the pro- or anti-regulatee nature of an agency proposal affecting organized interests, omitting another possible dimension of administrative rules. Ignoring the possibility that regulations may be written with the intent of benefiting the public interest may lead to a measure that does not adequately reflect the concept in question (e.g. Moore 1961; Leffler 1978; Graddy 1991; Kerwin 1994). As suggested by Moore and others, the restrictiveness of a rule may serve either the interests of the regulated or the public. For example, a rule restricting entry to a profession may benefit practitioners by limiting competition, while a rule imposing restrictions or added costs on practitioners to remedy information asymmetry or market dysfunction is assumed to be in the public interest. This multidimensionality confounds Ethridge's restrictiveness measure, and

suggests the difficulty and problems related to the application of a single "stringency" measure across several policy areas with singularly unique outputs.

Second, Ethridge cites Holsti (1969) to justify the moderate level of intercoder reliability (pi = .43) for the restrictiveness variable saying, "some reliability must often be sacrificed when dealing with complex concepts; the results may be more useful despite the lower reliability of the coding" (135). In his own evaluation of the reliability of the data, Ethridge notes there was 60 percent agreement between coders, and that coder disagreements over 30 percent of the cases were concerned with adjacent categories. Despite 40 percent disagreement between coders, he suggests that the process indicates an identifiable dimension in the data set (135). The problems Ethridge encountered are indicative of long-standing critiques of Likert-type scales. As an ordinal-level scale, his restrictiveness index should distinguish between each of the four categories and rank each relative to the others (Mannheim and Rich 1986). The moderate coder reliability score and 40 percent disagreement over rankings suggests the need for greater specificity and possible respecification of the scale to enhance the reliability of the measure.

Seeking a more systematic approach to understanding technical rulemaking at the Federal level, Magat, Krupnick, and Harrington (1986) used statistical techniques to assess a large, representative sample of industrial effluent standards set by the Environmental Protection Agency (EPA). In seeking to explain how EPA administrators write rules, the authors used comparative statics and OLS methods to assess influences on rule outputs at three key stages of the rulemaking process: at the publication of contractor recommendations; the publication of the agency's proposed rules; and, at the publication (i.e. promulgation) of the final rules. Measures of rule output were derived from Best Practicable Technology (BPT) rules proposed over a five-

year period (1973-77).[1] Recognizing that the stringency of standards across all three stages of the rulemaking process were not independent (e.g.: the stringency of contractor recommendations are assumed to affect proposed standards, which in turn influence promulgated standards), Magat, Krupnick, and Harrington constructed "equations for a general linear recursive system" characterized by the three equations (93):

$$S^C = a_o + a_1x_1 + a_2x_2 + ... + a_Mx_M + \varepsilon_1 \qquad (2.1)$$

$$\Delta S^{C,P} = b_o + b_1x_1 + b_2x_2 + ... + b_Mx_M + b_{M+1}S^C + \varepsilon_2 \qquad (2.2)$$

$$\Delta S^{P,R} = c_o + c_1x_1 + c_2x_2 + ... + c_Mx_M + c_{M+1}S^C + c_{M+2}\Delta S^{C,P} + \varepsilon_3 \qquad (2.3)$$

Where S^C, S^P, and S^R are the discharge standards issued at the contractor (C), agency proposal (P), and promulgated (R) stages of the process. Changes in a standard from the

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[1] Magat, Krupnick and Harrington operationalized these independent influences as:

I. Direct External Signals:

NC = Number of "significant issues" in the Federal Register arguing for weaker standards.

TAB = Size of the trade association budget.

II. Industry Characteristics:

CR4 = A four-firm concentration ratio to measure industry homogeneity and concentration.

ROR = Rate of return on equity derived from Internal Revenue Service 1972 enterprise data.

NSP = The number of small plants in an industry affected by proposed regulations.

NPAR = The number of plants expected to incur costs to implement a new standard.

PPAR = The percentage of plants expected to incur costs to implement a new standard.

RAW = A proxy for relative heights of abatement cost functions explaining variations in pounds of solid waste pollutant per pound of output produced standards, measured as pounds of pollution per dollar of sales. (Continued on next page.)

FLOW = A proxy for relative heights of abatement cost functions explaining variations in wastewater standards, measured as pollutant concentration per dollar of sales.

III. Industry Impacts:

NEMP = Projected levels of industry unemployment.

CLOSE = Projected number of plant closings.

PI = Projected percentage price increases.

INV = Projected investments to implement new standard.

ANNUAL = Projected costs expected to result from new standard.

IV. Internal Variables:

TURN = Replacement of an EPA project officer for an industry during the rulemaking process.

ORDER = The chronological order in which the industry standards were promulgated.

DDQUAL = The quality of the development documents, measured as a dummy variable indicating the consistent presence or absence of critical standard setting information.

EAQUAL = The quality of economic analysis reports, measured as a dummy variable indicating the consistent presence or absence of critical standard setting information.

POLL = The number of pollutants regulated by the standard. (Magat et. al. 1986, 102-10).

contractor to the proposal stage are indicated by $\Delta S^{C,P}$, and changes from the proposal to promulgation stage are denoted by $\Delta S^{P,R}$. Each equation incorporates $_M$ as the net level of external signals anticipated or received by the agency as derived from:

$$_M = n\, f\, [v(s)] - m\, e\, h\, [t(s/m)] \qquad (2.4)$$

Where n equals the number of citizens who benefit from the regulatory action; s equals the aggregated industry discharge standard; m equals the number of firms that create the regulated hazard; e equals the relative signal strength of a representative firm and citizen; v as a function of total damage to a representative citizen; t as a function of compliance costs of a representative firm; f as a function of an agency's perceived probability of citizen support; and h as a function of an agency's perceived probability of firm opposition (59). As developed by these authors, the independent variables $x_1, x_2, \ldots, x_M$ could differ in each equation with changes in hypothesized influences on any given stage of the rulemaking process and relevance of the standard to certain pollutants (93). The analysis incorporated data on four general types of independent variables. These included direct signals from participants that are transmitted to the agency; industry characteristics hypothesized to influence EPA perceptions of the response they could expect to receive after standards were issued; expected economic influences of the standards; and, internal influences expected to affect the decision process.

Their econometric analyses tested 13 hypotheses derived from models of decision-making and information-based theories of administrative behavior. The results revealed no, or only moderate support for hypotheses suggesting a relationship between the number of plants at risk (NPAR), comments arguing for weaker standards (NC), and the economic impacts of standards (CLOSE, UNEMP, and PI) and rule stringency. Results for the PPAR variable (percentage of plants in an industry at risk of incurring compliance costs) were statistically significant, and confirmed the hypothesis that more homogenous industry groups send stronger signals, therefore receiving less stringent regulations. However, in the change equations the

PPAR coefficients revealed no pattern across the two periods of the rulemaking process (145-7). The hypothesis that more concentrated industries (CR4) receive weaker standards was not supported by the analysis, while industries represented by more influential trade associations (TAB) were found to receive lower standards. There was modest support for the hypothesis that higher projected investment costs (INV) were related to lower standards, and results confirmed the hypothesis that smaller plants receive less stringent regulations. Results provided mixed, modest support for the hypothesis that variations in the relative heights of compliance cost curves were a significant influence on the stringency of standards, and the regression confirmed that more profitable industries (ROR) received weaker standards. The tests of the internal hypotheses strongly supported the hypotheses that better development documents and economic analyses result in stronger standards, and that turnover of critical EPA personnel during the rulemaking process contributes to weaker standards. Results supported the rejection of the hypothesis that rules issued early in the BPT process will be less stringent than those promulgated later in the process. Finally, there was modest support for the hypothesis that weak standards in the first proposal period contributed to less weak, and possibly more stringent, standards in later periods of the rulemaking process (141-54).

As these authors concede, the results provide "reasonable, but not overwhelming, support for this model of the effluent guidelines rulemaking process" (164). In contrast to Ethridge's broad ordinal measure of rule outputs applied across a wide variety of agency types, Magat, Krupnick, and Harrington construct a rule output variable specific to the EPA's technical standards and the federal rulemaking process. Their focus on external signals theory is intended to "ignore organizational factors that may influence agency decisions" (50). Their effort, however, does demonstrate the value of systematic, empirical analysis of the rulemaking process. As Magat, Krupnick, and Harrington suggest, statistical analysis may reveal subtle, important influences on the complicated rulemaking process that a case study might overlook. This

systematic analysis of a large number of regulations can also help to identify and separate "idiosyncratic" factors in the rulemaking process. The larger sample sizes and enhanced potential for replication of statistical analyses provide for greater confidence in study conclusions.

Constructing a Valid, Reliable Rule Output Measure

The comprehensive model of regulatory policy developed in this study largely relies on perspectives forwarded by public interest, capture, principal-agent, and institutional reform theories to explain why agencies make decisions to promote rules that impair some groups but not others (e.g. Moore 1961; Stigler 1975, 1984; Peltzman 1976; McCubbins, Noll and Weingast 1987; Moe 1987; Bonfield 1986). As explained in Chapter 1, these theories suggest that administrative decision-making may be constrained by public interest, interest group, legislative, or legal/institutional influences. Depending on the theoretical perspective, rule outputs may serve either the interests of the public or of the regulated groups.

Akin to Ethridge's (1985) analysis, this study employs an index of rule output as a dependent measure of the administrative rulemaking process. I construct the index to reflect the degree to which rules favor either the public interest or the regulated group. The index is intended to capture the subjective effect of the text of rules, and any objective, quantitative costs or standards imposed by rules (an alternative to measures derived only from rules that set numerical performance standards, but may fail to capture the effect of the text of a rule). The result is a continuous, finite; ordinal indicator suitable for regression based analysis. I resolved that content analysis was appropriate due to the nature of rules as a physical record of communication by rulewriting administrators. A total of 25 states are represented in the analysis based on availability of rules on file at the Library of Congress. The rules assessed included those regulating professions that were originated, rewritten or amended in 1995 as indicated in

the "administrative history" record of the rule.[2] The choice of this policy area was influenced by several factors: 1.) Occupational regulation is one of the few policy areas remaining almost exclusively in the domain of state government, 2.) It is a policy area conducive to tests of dominant regulatory theories seeking to explain questions of who benefits from regulation and why, and 3.) In a policy area often deemed to serve the private interests of the regulated groups, if it is found that state rules regulating the professions benefit the public interest, it is not imprudent to assume that other state regulatory agencies issue rules in the public interest.

Applicability of the rule was recorded to indicate which individuals, groups or professions were governed by the rule. General rules in a code (a section of rules concerning a general topic or policy area) usually specify this information in a specific rule that applies to the entire code. Unless specifically stated otherwise, all rules in that code apply to the same regulated interests. Each administrative rule includes one, some, or all of several characteristics. The coding process required a three-step determination.[3] First, it was determined if the intent of the rule was to bestow direct or indirect benefits or costs on any regulated interest or to the general public. The second step was to assess the intended effect of the rule. Rules limiting competition by restricting the entry of new practitioners[4], restricting interstate competition[5],

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[2] Arkansas, Delaware, Hawaii, Mississippi, New Mexico, Ohio, Oklahoma and South Dakota did not publish an Administrative Code as of August, 1996 when data was being collected. The supplement for 1995 rules issued by Alaska, Connecticut, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire and Texas had not yet been received/filed as of August 1996. The West Virginia Administrative Code was unavailable during the data collection period. No explanation was offered by Library of Congress staffers for the absence of South Carolina Administrative Codes. Administrative code records from Colorado, Iowa and Minnesota precluded identification and coding of specific rules or sections of rules that went into effect during 1995.

[3] Detailed coding instructions and a sample coding sheet are included in Appendix A.

[4] As suggested by Moore (1961) and others, these rules impose direct or indirect costs on individuals interested in entering the regulated profession. Such costs may include direct expenses for tuition and books related to minimum education requirements for the profession, or for registration/certification/ licensing fees imposed on new entrants to the profession. Indirect costs may include the opportunity costs incurred (e.g., time) to meet qualification requirements in lieu of income potential that may have been earned in some unregulated activity.

[5] In particular, restricting the practice of registered/certified/licensed professionals in neighboring states. Assessment of 1995 rules revealed few states that totally forbid cross-state practice. Restrictions, when evident, usually take the form of requiring out-of-state practitioners to demonstrate proficiency by passing a state-specific written or oral examination acceptable to the state board.

enabling practitioners to limit market or service information available to consumers[6], or directly rewarding regulated practitioners with state funds or assistance[7] were deemed to function in the interest of those being regulated. In general, rules favoring the public interest take two forms. First, some rules impose direct or indirect costs on practitioners that might not otherwise be incurred in a free market environment. Such directives may include the imposition of continuing education requirements or of standards of practice or procedure.[8] Second, some rules seek to correct market imperfections by enhancing information available to consumers[9], competition in the marketplace (e.g., simplified/less costly entry to the profession and reciprocity), and opportunities for public and/or board oversight and prosecution.

Finally, each rule was assigned a numerical code based on an assessment of the degree to which the rule was in the public interest, regulatee interest, or had neutral effect [See Table 2.1]. Rules that separately favored both public and regulatee interest (e.g. imposed continuing education requirements on practitioners and, in the same rule, grandfathered existing practitioners to exempt them from the standards; or, imposed licensing requirements in one section of a rule and permitted reciprocity privileges in another), were coded as two distinct

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[6] The most obvious, and most absent, example of this restriction would be prohibition of advertising among professionals. However, rules that restrict consumer access to their own records or to aggregate records of practitioner performance/consumer satisfaction also serve to limit information available to the public.

[7] Firefighters were the only profession revealed in this study to receive direct financial benefits from the state. Most often, indirect benefits to the regulated were in the form of limits on the number of practitioners (e.g., guides in Montana), and grandfather clauses excluding practicing professionals from requirements being imposed on new and future practitioners.

[8] Rules of this form serve the classic public interest intent. Continuing education, practice and procedure standards establish a minimum standard of practice that would be absent in a free market. Moore's (1961) example of regulation of plumbers makes the point. In an unregulated market, less qualified plumbers may appeal to cost-conscious consumers as an alternative to better trained, more professional (and more expensive) "licensed" plumbers. The threat to the public interest lies in the potential for the less qualified plumber to "botch" the job. Not only does this directly affect the consumer, but the negative externalities extend to the potential to pollute the community water supply. (A similar "negative externality" metaphor is often employed to demonstrate the risk of an unqualified physician misdiagnosing a patient and threatening the public with communicable disease.)

[9] Evident most often in rules encouraging/regulating the fair use of advertising, and in rules providing access to service performance records of practitioners.

Table 2.1 Decision Rules for Categorizing Rule Outputs

Step	Description
1:	Determine if the rule bestows direct or indirect benefits or costs on the public or a regulated interest that would not be required in a free market of professions.
2:	Determination of the pro-consumer, neutral, or pro-regulatee intent of the rule should be made on the following basis: Pro-Consumer Regulation - Generally reflects an intent to correct information asymmetry or market dysfunction by enhancing consumer access to service or cost information, promoting market competition, enhancing practitioner standards of practice, and strengthening consumer protections against fraud. In general, rules favoring the public interest take two forms. First, some rules impose direct or indirect costs on practitioners that might not otherwise be incurred in a free market environment. Such directives may include the imposition of continuing education requirements or of standards of practice or procedure. Second, some rules seek to correct market imperfections by enhancing information available to consumers, competition in the marketplace (e.g., simplified/less costly entry to the profession and reciprocity), and opportunities for public and/or board oversight and prosecution. Neutral Regulation - These may include statements, directions or instructions that regulate government personnel or procedures. Many rules also include procedural elements that apply to both the governing agents and those being governed without conferring benefits to any party. Pro-Regulatee Regulation - Generally reflect an intent to restrict entry to the occupation through direct or indirect financial costs levied on potential practitioners; to otherwise limit competition by exclusion of unlicensed/uncertified or out-of-state practitioners; to limit dissemination of pricing, service, and performance information to consumers; or to otherwise confer direct or indirect financial benefits to regulated practitioners.
3.	Categorizing Rule Outputs: Category 1 - Rules strongly favoring the public interest. Extrapolating from Moore's (1961) subjective estimate of $50.00 as a cutpoint between low and high direct or indirect financial costs, this study uses Bureau of Labor Statistics Consumer Price Index data to arrive at a 1995 cutpoint of $250.00 per year, either as a one-time expense or an annual outlay.[i]

Table 2.1 Decision Rules for Categorizing Rule Outputs (Continued)

Step	Description

Rules deemed in Step 1, above, to be issued in the public interest and imposing estimated direct or indirect financial costs of $250.00 or more on regulated practitioners are categorized as a '1'.[ii]

Category 2 - Rules moderately favoring the public interest.
Rules deemed in Step 1, above, to be issued in the public interest and imposing estimated direct or indirect financial costs of less than $250.00 on regulated practitioners are categorized as a '2'.[iii]

Category 3 - Rules having neutral impacts.
Rules deemed in Step 1, above, to incur no costs or benefits on either consumers or practitioners are categorized as a '3'.[iv]

Category 4 - Rules moderately favoring regulatee interests.
Rules deemed in Step 1, above, to incur estimated direct or indirect financial costs less than $250.00 on potential entrants to the occupation, or to confer other competitive, service, or performance benefits to practitioners estimated to be less than $250.00 are categorized as a '4'.[v]

Category 5 - Rules strongly favoring regulatee interests.
Rules deemed in Step 1, above, to incur estimated direct or indirect financial costs greater than $250.00 on potential entrants to the occupation, or to confer other competitive, service, or performance benefits to practitioners estimated to be greater than $250.00 are categorized as a '5'.[vi]

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[i] Using CPI data where 1967 = 100, 1961= 89.6, and 1995 = 456.5, the comparable value of $50.00 in 1961 was equal $254.74 in 1995. To simplify the decision rules, the 1995 figure is set at $250.00.

[ii] For both Category 1 and Category 2 rules, the key elements of indirect financial costs are the time, effort, and/or loss of self-determination imposed on practitioners by the rule. Generally, these costs may include the effort required by a regulatee to satisfy continuing education requirements; to satisfy reporting deadlines; to complete any of a variety of registration, report or record requirements. Other indirect costs include restrictions or more stringent standards of professional activities; limits on reinstatement; threats of disciplinary action; requirements to provide financial or auditing reports; enhanced agency, commission or board authority over a regulated interest; reciprocity agreements with other states; and provision removing restrictions on advertising by the profession.

Categorization of rule outputs imposing direct financial costs is considerably less subjective. Rules assessing fines, penalties, and fees are immediately apparent. In these cases, the decision rule for an assessment of "some" or "significant" costs is a breakpoint at $250/year, either as a one time expense or as a scheduled annual outlay. Costs below $250 are coded as a 2; those above are coded as a 1. This study assumes that up to a point, professional fees, penalties or fines are accepted as "normal" costs of doing business. Less obvious direct costs are included in rules requiring dividend payments; requiring audits, financial reports, records, etc.; or requiring use, maintenance, repair or replacement of physical assets to

Table 2.1 Decision Rules for Categorizing Rule Outputs (continued)

comply with the rule. Again, the decision rule requires an estimation as to whether or not these costs will exceed $250/year. Costs below $250 are coded as a 2; those above are coded as a 1.

Examples of Category 1 rule outputs include:

TN 0480-1-.10 - Provides that dispensing opticians may not fit contact lenses except under direct supervision of a licensed optometrist or ophthalmologist. (This rule is deemed to protect the consumer interest by providing for "expert" supervision of this professional practice, with a substantial estimated indirect market cost to the dispensing optician exceeding $250.)

TN 0480-1-.12 - Defines continuing education requirements for licensed dispensing opticians. (This rule is deemed to protect consumer interest by enhancing the professional skills of the practitioner, while imposing estimated direct and indirect costs in excess of $250.)

TN 0460 -3-.02 - Defines and authorizes reciprocity procedures for dental hygienists licensed in other states. (The rule is deemed to protect consumer interest by simplifying entry to the profession and imposing estimated direct and indirect costs to practitioners in excess of $250.)

TN 0460-4-.04 - Establishes restrictions and requirements on practicing dental assistants performing coronal polishing. (Deemed in the public interest by imposing stringent performance standards on practitioners with estimated direct and indirect costs exceeding $250.)

[iii] Examples of Category 2 rule outputs include:

TN 0480-1-.13 - Establishes a code of ethics for dispensing opticians. (Deemed to set a standard of performance and ethics in the consumer interest, but imposing direct or indirect costs on practitioners less than $250.)

TN 0460-3-.07 - Sets standards of compliance and fees for license renewal by practicing dental hygienists. (Deemed to provide some degree of oversight over practitioners. Imposes cost of $70.)

[iv] Examples of rules having neutral impacts (Category 3), include:

TN 0880-3-.06 details procedures to be followed by the State Board of Medical Examiners.

TN 0880-3-.13 details procedures for the board to enforce the ethics code. (Continued)

TN 1020-1-.02 provides definitions of terms used in the code.

TN 0780-1-67-.01 details the legislative authority under which rules in the code were written.

[v] Examples of Category 4 rule outputs include:

TN 0460-1-.04 - Outlines board of dentistry procedures for application review, approval, denial, and interviews. (Deemed as a benefit to regulatees through restriction of entry to the profession, with estimated related indirect costs of less than $250 to potential practitioners.)

TN 1175-3-.03 - Establishes procedures, requirements for a certified private investigator certificate. (Deemed as a benefit to regulatees through restriction of entry to the profession, with estimated direct and indirect costs of less than $250 to potential practitioners.)

[vi] Examples of Category 5 rule outputs include:

TN 0480-1-.03 - Requires licensure of dispensing opticians, and specifies privileges granted based on licensure. (Deemed as a benefit to regulatees through restriction of entry to the profession and limits to competition, with related benefits to practitioners exceeding $250.)

TN 0460-1-.02 - Sets fees to be assessed for licensure as a dentist, dental hygienist, and dental assistant. (Deemed a benefit to regulatees through restriction of entry to the profession, with related costs of entry exceeding $250.)

TN 0480-1-.21 - Requires each and every licensed dispensing optician establishment to have a duly licensed dispensing optician on duty. (Deemed as a benefit conferred on regulatees with potential direct financial benefits exceeding $250.)

rules. Although incorporating some of the effects of rule stringency in the decision rules, this scale has the advantage of capturing at least two dimensions of state rules regulating the professions while being broad enough in interpretation to encompass rules issued in any state. Rule outputs were categorized according to a scale as follows:

1 = Rules strongly favoring the public interest

2 = Rules moderately favoring the public interest

3 = Rules having neutral effect

4 = Rules moderately favoring the regulatee interest

5 = Rules strongly favoring the regulatee interest

Although, determining what is in the public interest is somewhat subjective, these five categories are consistent with concepts developed in the relevant regulatory theories discussed in Chapter One. Generally, occupational regulations in the public interest should reflect the intent to correct information asymmetry or market dysfunction. As such, rules supportive of advertising by professions, easing entry requirements, imposing more stringent operating or training requirements on practicing professionals, or promoting professional reciprocity between states would all be deemed in the public interest. Rules favoring the regulated professions should reflect: 1.) The intent to restrict entry with imposition of direct fees for licensure, certification or registration, direct and indirect education and/or experience costs, or age requirements; 2.) The intent to otherwise limit competition by such means as limits on inter-state reciprocity, limits on competitive advertising, or standards for identification as a "regulated" professional; and 3.) Possibly, albeit rarely, conferring direct or indirect financial

benefits on the regulated group. Procedural rules regulating government personnel or procedures, with no perceived benefits to the public or regulatees are deemed to have a neutral impact. [10]

Independent Variables and Hypothesized Influences

Chapter 1 identified prior research and theoretical perspectives suggesting factors that may influence state rule outputs. In seeking to test a comprehensive model of the state rulemaking process, this study incorporates data on four forms of independent variables: 1.) public interest variables; 2.) interest group and political variables suggested by capture theories of regulation; 3.) variables suggested by principal-agent theory; and 4.) legal/institutional variables suggested by reform theories of regulation. An additional independent variable related to occupational regulation in the states is also defined.

Public Interest Constraints on Administrative Rulemaking

Two variables have been suggested in the literature to tap the hypothesized influence of public interest constraints on administrative rulewriting: public political activism (Becker 1986; Jackson 1987) and political culture (Jackson 1987). From this theoretical perspective, a more politically active electorate serves to inform agency rulewriters, and their political overseers, of the importance of taking the public interest into account. Operationalized as voter turnout as a percentage of registered voters (indicated as *TURN*) during the presidential election (1992) immediately prior to the effective year of this study (1995), variation across states should reveal a related difference in rule outputs. This suggests:

Hypothesis 1: As voter turnout (*TURN*) increases, pro-regulatee rule outputs will decrease.

Another variable that is included as an explanation of state rule outputs is Elazar's (1984) concept of political culture (*CULT*). The notion of moralistic political culture suggests greater

[10]Intercoder reliability was run on the coding scheme using two randomly selected rules from each state. The resulting Cronbach's Alpha was .907.

popular participation and control over government processes. This leads to expectations that administrative rulewriters would be more likely to incorporate those external signals into their decision making, with a resulting increase on pro-consumer rule outputs.

Hypothesis 2: A more moralistic political culture (*CULT*) leads to decreased pro-regulatee rulemaking.

Interest Group Constraints on Administrative Rulemaking

With the perspective of capture theories of regulation, this analysis incorporates three measures to assess interest group influence on the rulemaking process. The first is the rule's applicability to regulated interests. Applicability represents the number of individuals, groups or industries impacted by the rule. The variable (*PROF*) is operationalized as the number of individual professionals regulated by any given rule as a percentage of the total state workforce (Graddy 1991).[11] From the perspective of capture theories of regulation, this suggests:

Hypothesis 3: As the percentage of regulated professionals (*PROF*) relative to the total state workforce increases, pro-regulatee rule outputs will increase.

A second interest group variable proposed by Graddy (1991) is the volatility of the political market (denoted as *VOL*).[12] This variable suggests that interest group influence on the political process will be enhanced in more stable political environments conducive to consensus building. This independent influence (*VOL*) is operationalized as the proportion of the state legislature held by the majority party.

Hypothesis 4: As political stability (*VOL*) increases, pro-regulatee rule outputs will increase.

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[11]Data for this variable is derived from 1995 Equal Employment Opportunity reports.

[12] Graddy (1991) suggests that an interest group's ability to obtain benefits from the political "market" is limited in more competitive legislatures, and is enhanced when there is a strong, stable majority that may unilaterally negotiate with regulated interests to retain its advantage.

Finally, "because rulemaking is specialized, it allows groups to focus their attention and use their resources to influence decisions they know will affect their members. Groups often have ready access to the information agencies need to write rules. This gives groups considerable leverage in rule development" (Kerwin 1994, 34). The expected result is that in states with stronger interest groups, rule output will be more likely to benefit the regulated interests. This analysis includes two measures suggested to capture this hypothesized influence: the Gray and Jacob (1996) categorization of the overall impact of interest groups in the states (*AGST*), and the Hrebenar and Thomas (1990) ranking of the forty most influential interests in the states (*IGST*).[13] These measures are included to test the following hypotheses:

Hypothesis 5: As the aggregate strength of organized interest groups (*AGST*) in the states increases, pro-regulatee rule outputs will increase.

Hypothesis 6: As interest group strength (*IGST*) increases, pro regulatee outputs will increase.

Principal-Agent Constraints on Administrative Rulemaking

As viewed by principal-agent theory, the nature of administrative rules may also be a reflection of the quality and intensity of oversight by other state level political actors, in particular, legislative actors (McCubbins and Schwartz 1984; McCubbins 1985; McCubbins, Noll, Weingast 1987). One traditional measure of state legislative influence is Squire's 1988 index of legislative professionalism (Squire 1992, from Mooney 1994). In theory, more professional state legislatures (*LEG*) will be better paid, have more fiscal and material resources, and be better educated. The resulting increase in resources, time and information is also expected to increase legislative attention to rule review and oversight.

Moe (1987) maintains that administrators are accountable to other political actors in addition to legislators. To assess these added constraints to the rulemaking process, I have

[13]Operationalization of these two interest group measures is discussed in greater detail in Chapter Three.

included the Gray and Jacob (1996) categorical measure of governor power (*EXEC*) as a measure of governors' inclination and ability to exercise oversight. To reflect any influence of more reformed state judiciaries on the degree of rule stringency, the model also includes Caldiera's (1985) reputational index for state supreme courts (*JUD*). In each instance, better funded, better-organized, more professional participants in the political environment are expected to influence the nature of rule outputs.

Hypothesis 7: As state legislative professionalism (*LEG*) increases, pro-regulatee rule outputs will decrease.

Hypothesis 8: As governors' personal and institutional powers (*EXEC*) increase, pro-regulatee rule outputs will decrease.

Hypothesis 9: As judicial professional (*JUD*) increases, pro-regulatee rule outputs will decrease.

Institutional Constraints on Administrative Rulemaking

As previously discussed, APA reformers contend that one of the benefits of formalized procedural and oversight requirements is a greater opportunity for public participation in rulemaking and more avenues for public influence through various review and oversight mechanisms in the legislature, executive and the courts (Bonfield 1986). The hypothesized influence in this reform view is that a greater degree of reform will contribute to more politically representative rulewriting. In short, the existence of institutional constraints may decrease pro-regulatee rule outputs by permitting increased representation of both regulated and client interests.

As a "prescription" for the rulemaking process, the MSAPA suggests that formal, institutional requirements (or "constraints") are the foundation for administrative rulewriting that satisfies the two-pronged objective of rational and responsive rules. Broadly, these constraints on administrative rulemaking discretion come in two forms. First are defined procedural

requirements for agency decision making in the form of notice and comment, and technical analysis requirements. To ensure bureaucratic accountability to elected officials, the MSAPA also imposes oversight mechanisms in the form of legislative, executive and judicial oversight and review.

A few scholars have attempted to comprehensively define variations in state APA provisions. A series of studies by Renfrow, Houston and West (Renfrow, West, and Houston 1986; Renfrow and Houston 1987; Houston 1991) served to identify variation in the presence or absence of key procedural and oversight mechanisms in state APA's. That research found that there is considerable variation between the states in the diverse requirements of their APA's, and that the "common element" to all of those provisions is the intent to impose constraints on bureaucratic action (Renfro, West, and Houston 1986, 366). To measure this variation, the authors employed Guttman scale analysis to devise a "Restrictiveness Index" as a typology of the degree of APA constraint (Renfrow and Houston 1987).[14] The resulting 10-point scale is not a perfect measure of the degree of state APA restrictiveness as some provisions have more important effects than others. However, this problem is lessened with the finding that variation between states tends to be cumulative along the single dimension of restrictiveness (Renfrow, West, and Houston 1986, 368). State APA's that impose the "least common" procedural provisions also tend to impose the least common review and oversight provisions. The authors' summary measure of this pattern, the coefficient of reproducibility, supports the cumulative pattern of these provisions (Renfrow and Houston 1987, 661).[15]

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[14]The Renfro/Houston (1987) scale analyzed 49 states to determine if there is a cumulative pattern in the presence or absence of 10 APA provisions. APA provisions incorporated in their analysis included requirements for express terms, public comment, right to petition, statutory authority, rule publication, legislative/executive review, legislative/executive veto, economic impact analysis, annual rules review, and a rulemaking calendar (1987, 661).

[15]The result from their 1986 APA data was a coefficient of reproducibility of .91. As a measure of the error within the data matrix, the benchmark for accepting a cumulative pattern is .90 (Renfrow and Houston 1987).

My analysis incorporates the Renfrow/West/Houston APA typology as one measure of institutional constraints on rulemaking. Updated to reflect 1995 provisions, this key independent variable of interest is expected to capture the cumulative influence of state-level APA reforms, and their influence on rule output.[16] These variations in state efforts to constrain administrative rulemaking should be directly related to the rule output measure used in this analysis.

Hypothesis 10: As the restrictiveness of state APA provisions (APA) increase, pro-regulatee rule outputs will decrease.

A second measure suggested to tap the formal restraints on administrators during rulemaking is the index of institutional control stemming from Grady and Simon's 1997 study of state administrative procedures acts. This index ranks states according to "the formal powers available to state political actors involved in the rulemaking process" (1997, 5). From their review of all state APA's, and interviews with individuals knowledgeable of each state's rules review and oversight, the authors incorporated all possible combinations of executive, legislative, and independent rules review restraints into an index ranging from 2 to 19 points. The suggested advantage of this index over the Renfrow and Houston scale is that, rather than relying on textual analysis of rulemaking statutes, the institutional control index reflects the actual practice of rule review and oversight in the states. As a measure of systematic differences in rulemaking constraints across states, this variable is incorporated in this study as:

Hypothesis 11: As rule review and oversight (*INTCON*) increases, pro-regulatee rule outputs will decrease.

Internal Decision-making Constraints on Rulemaking

This analysis incorporates one additional independent variable (e.g. Moore 1961; Ethridge 1985; Magat, Krupnick, and Harrington 1986). Various authors have implied that the

[16] The updated Guttman scale and a copy of the telephone survey used to update this information are included in Appendix B.

professionalism of state bureaucracy (*BUR*) may influence rule outputs.[17] More professional, better paid, better trained administrators are expected to be more inclined to approach rulemaking as a technical enterprise rather than rely on political referents to influence their rule output. With this training to maintain rational standards for rulemaking, increased professionalism also suggests a heightened awareness of the need for rulemaking that is responsive to legislative intent as well as other parties affected by the rules.

As suggested by Barrilleaux, Feiock and Crew (1992), comparative measures of administrative professionalism have many potential pitfalls. Differences across states in the composition of the workforce, fringe benefits, price levels and living conditions confound many measures of administrative professionalism. The measure of relative private sector/public sector pay within a state developed by Gold and Ritchie (1993) does tap a dimension of administrative professionalism comparable across states. The measure "varies considerably from state to state and reflects the relative competitiveness of the public sector to the private sector. To the extent that quality professionals are attracted to relatively higher wages within a labor market, this variable taps professionalism" (Grady and Simon 1997, 11).

Hypothesis 12: As administrative professionalism (*BUR*) increases, pro-regulatee rule outputs will decrease.

A Comprehensive Regulatory Theory

To summarize the preceding discussion, the twelve independent variables and their hypothesized effects on rule output can be included in the model:

Rule Output = $TURN + CULT + PROF + VOL + AGST + IGST + LEG + EXEC + JUD + APA + INTCON + BUR + u_i$

Chapter Three discusses the methodological challenges and issues complicating the estimation of this general model. Chapter Four presents results and analysis of hypothesis tests

[17] For example, see Simon and Grady 1997.

stemming from the discussion in this chapter. Chapter Five summarizes the empirical findings, and offers recommendations for future analyses and policy considerations.

Chapter 3

Methodological Issues and Challenges

There are several issues that complicate the development of a comprehensive model of the state rulemaking process. Problems included unavailable data, inconsistent independent measures of theoretical concepts, and aggregation problems. Other issues include recognizing the limitations inherent in cross-sectional analysis and data transformation.

The challenges of collecting and using data in a cross-sectional statistical analysis of occupational rulemaking in the states include: 1.) Unavailable or nonexistent administrative codes, 2.) Inconsistencies between the available administrative codes, and 3.) The use of aggregate data.

Unavailable Data

I had hoped to find enough state documents to satisfy the requirement for at least 30 observations.[1] The Library of Congress in Washington, D. C. was found to be the closest, and possibly only, central repository for state administrative codes. However, during data collection I found that eight states did not publish an administrative code and that the 1995 updates for fifteen other states had yet to be published or received at the library. Data provided in the administrative codes of three other states failed to provide sufficient information to identify those rules that went into effect during 1995. I was left with 25 state administrative codes that had the necessary data.

[1]As suggested by Gujarati (1995), "near micronumerosity" exists when the number of observations barely exceeds the number of parameters to be estimated. In turn, this contributes to difficulty in getting estimates with small standard errors and variances, and warrants "our treating it as a violation of the classical linear regression model" (326).

Inconsistent Data

Of the 25 states included in the study, the administrative codes of 21 states specifically detail additions and changes to the rules. In these cases, the administrative history identified the effective date of changes or additions made at the chapter, section, subsection, and in some cases the sub- subsections of the administrative code. However, four states (Maine, Utah, Vermont and Wyoming) provided the date that changes were made to a particular chapter (rather than identifying specific changes to a section or subsection) in their administrative code. For these states, the sections of chapters that were changed during 1995 were coded as individual rule changes. The number of observations and the results of the coded rule output for each of these four states failed to differ significantly from that in the other 21 states.

A second "rule-related" problem infrequently arose with rules that addressed two or more different subjects within the same subsection. For example, Tennessee Administrative Code 1730-1-.04 regulating veterinarians 1.) stipulates the requirements for licensure (coded as a rule output of '4', or strongly pro-regulatee), 2.) provides for interstate reciprocity to practice the profession (coded as a rule output of '0', or strongly pro-consumer), and 3.) provides for reciprocity for foreign veterinarians (coded as a rule output of '0', or strongly pro-consumer). In these situations, the judgement was made to separately identify and code the output of each of the rule subsections. Across the 25 states included in the study, this situation arose with only 17 rules.

Another challenge was contending with differences in the occupations regulated and identified by the rules and the categorization of professions presented in the 1991 Equal Employment and Opportunity Commission database. The EEO database provides occupational categories and the number of working members of each occupation in each state, a variable employed in this analysis as a proxy for occupational group influence. However, while state administrative codes may, for example, specifically regulate psychological examiners, licensed

professional counselors, marriage and family therapists, and pastoral counselors, the EEO database provides for only one category for psychological examiner professions. Another difficulty arose when rules in a state administrative code were written, for example, to collectively regulate construction trades or licensed geologists, engineers, and landscape architects, but the EEO database provided specific categories and employment numbers for each of the specific occupational groups. When the first type of inconsistency occurred, (rules regulating specific occupations not provided a separate EEO category), the occupation was coded in an aggregate EEO category that would include the occupation. The aggregated employment figure was used to reflect the number employed in that state. With the second form of inconsistency (rules regulating a group of occupations, each with its own specific category in the EEO database) the occupations were coded under an aggregate EEO category that included all of occupations and the separate employment figures were added to arrive at the number employed in that state. This compromise to resolve data inconsistency was deemed acceptable given that differences across the variable to be extracted from this effort (the number of members of an occupation in a state as a percentage of the total state workforce, multiplied by 10,000) were likely to be very small.

Problems with Aggregate Data

Aggregation problems presented several challenges for this study. The relevant regulatory theories suggest that rule output is the result of an administrator's decision making process subject to a variety of internal and external constraints. Although the goal is to explain the behavior of individual decision-makers, the available data reflects aggregations across several levels. This posed several challenges to deriving an explanatory multivariate model of rulemaking output stemming from a database representing 2,864 rules regulating 42 professions in 25 states.

For example, when aggregating the data at the level of rule output, this dependent variable reflects the values obtained from the coding of 2,864 rules. In the multivariate model, there are 12 independent variables. Eleven of these independent variables are aggregated at the state level, and one is aggregated at the level of occupations.[2] Multivariate analysis and hypothesis testing of a model aggregated at the level of rule output is unrealistic because it involves a number of violations of the assumptions of ordinary-least-squares (OLS) and maximum likelihood (ML) methods. With rule output as the unit of measurement, analysis of the error terms of each independent variable suggests several problems, including an abnormal distribution of the error terms of the independent variables; the presence of heteroscedasticity (or unequal variance of the error term), and, serial correlation (Gujarati 1995).[3] Taken separately, these conditions may often be accommodated to permit estimation and hypothesis testing.[4] In combination, however, these problems suggest that results of the model to assess the influence of twelve independent variables on the 2,864 rules that went into effect during 1995 will be unreliable and invalid.

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[2]The state-level measures are voter turnout (*TURN*); political culture (*CULT*); political volatility (*VOL*); interest group strength (AG*INT*); occupation political influence (*PROF*); legislative professionalism (*LEG*); executive reform (*EXEC*); judicial reputation (*JUD*); APA restrictiveness index (*APA*); institutional control (*INTCON*); and bureaucratic professionalism (*BUR*). The measure of group effectiveness (*IGST*) is aggregated at the level of the occupations.

[3]Abnormally distributed error in the independent variable(s) makes estimation using the *t* and *F* statistics unreliable (as the error terms may no longer follow the *t* and *F* distribution) (Gujarati 1995, 317). The assumption of homoscedasticity is that there is equal variance in the error term "conditional on the chosen values of the explanatory variables" (355). It is likely that the use of several categorical independent measures as well as the presence of outliers contributed to the heteroscedasticity of this model. The problem of serial correlation is, for purposes of this analysis, defined as "correlation between members of series of observations ordered...in space [as in cross-sectional data]" (400-1). Again, the use of categorical independent variable data aggregated at a level different than that of the rule output unit of measurement suggests dependence in the error term of one observation and the error term of another observation.

[4]As suggested by Gujarati, abnormal error distribution contributes to unreliable hypothesis testing in that the *t* and *F* test statistics are no longer reliable. The presence of unequal variance in the error terms leads to coefficient estimates that are not "efficient" or "best" (362). Finally, a disregard for serial correlation leads to an underestimation of the true variance, overestimation of R^2, and invalidates the usual *t* and *F* tests. In other words, results of an analysis when serial correlation is present underestimates the error in the model, and makes it more likely that we will accept the test hypothesis when in fact it is false (411).

I ruled out multivariate analysis and hypothesis testing of a model aggregated to state-level data due to an insufficient number of observations (less than 30). The most acceptable option was a multivariate model using data aggregated to the level of the 40 occupations included in this study. This choice, however, also presents several challenges. In particular, transforming data from one unit of measurement to another may lead to violations of statistical standards regarding levels of measurement and to problems of interpretation. Aggregating the categorical rule output measure to the level of occupations results in a measure of the average rule output score for that particular profession. Similarly, aggregation of the state-level measures for voter turnout, political culture, political volatility, interest group strength, occupational political influence, legislative professionalism, executive reform, judicial reputation, APA stringency, institutional control, and bureaucratic professionalism results in averages across the occupations. The focus of this analysis is to estimate and test the comprehensive effect of political, socio-economic, and institutional characteristics hypothesized to constrain rulemaking decisions. To the extent that individual administrators are aware of, or responsive to these constraints, these aggregate measures are likely to be appropriate predictors of rulemaking output. By accepting this degree of aggregation, however, there must be compromises in the interpretation of the results. For example, average voter turnout in this model represents the average across the professions, not the states. While inconsistent with the original measure for voter turnout in the state, the resulting coefficient for voter turnout in the estimated regression serves the purpose of this analysis - it reflects the direct change in rule output score for each percentage increase or decrease in voter turnout while holding the effects of other independent variables constant.

Benefits and Limits of Cross-section Analysis

As exploratory research, this study employs a cross-section design using 1995 rule output data for the dependent measure and independent variable data for the same time frame.[5] Examination of the 10 independent state-level variables reveals that the difference between mean or median scores for the 25 states included in the study sample and the 50-state population is insignificant (See Table 3.1). Across the 25-state sample, two of the independent variables - judicial reputation and bureaucratic professionalism - did result in scores significantly different from the population scores. Despite these differences, it was deemed that *a priori* expectations suggested by theory warranted the inclusion of these variables in the analysis. It is noted, however, that any significant results related to these variables are subject to question as unrepresentative population measures. Although a state's inclusion in the database was dictated by availability of data, the overall representativeness of the resulting sample provides the basis for a cross-section design that permits description of the population and explanation of relationships between the variables in this population (Mannheim and Rich 1986).

This study reflects several of the limitations inherent to cross-sectional research designs. Specifically, the measure of rule output is derived only from those rules that went into effect during 1995 to regulate the professions. All of the other rules that went into effect prior to 1995 were not included in this study. Second, this cross-section analysis provides a "freeze-frame" image of state rulemaking that limits our understanding of, and conclusions about, the causes and future development (or prediction) across time of the relationships being tested. Future longitudinal studies have the potential for more confident conclusions. Finally, without

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[5]This is a useful approach for constructing a model in which naturally occurring measures of the independent variables form quasi-experimental and quasi-control groups. The measure of rule output can then be used "to assess differences between the quasi-experimental and quasi-control groups" (Johnson and Joslyn 1991, 118). In the multivariate model, then, the theoretical assumptions described in Chapter One provide some grounds for explaining hypothesized causal affects on rule output.

Table 3.1 Range of Sample Scores (for 25-state sample) vs. Range of Aggregate Explanatory Variables Across 50 States

Explanatory Variable	Sample Range, by State (Mean) or [Median] n = 25	Variable Range, by State (Mean) or [Median] n = 50
Voter Turnout (TURN)	.42 - .69	.42 - .69
	(.5532)	(.5534)
Political Culture (CULT)	1- 7	1 – 7
	[2]	[3]
Political Volatility (VOL)	.5 - .83	.49 - .88
	(.611)	(.609)
Aggregate Group Strength	1- 4	1 – 4
(AGST)	[3]	[3]
Interest Group Strength	11 - 40	Not Calculated
	(16.1787)	
(IGST)*	.47 - 8.18	Not calculated
	(3.957)	
Profession Influence (PROF)*	.06 - .63	.04 - .63
	(.2176)	(.2202)
Legislative Professionalism	15 - 29	15 – 29
	[6.75]	[6.5]
(LEG)	-74.7 - 354.6	-74.7 - 354.6
	(21.43)	(5.35)
Executive Reform (EXEC)	1 - 46	1 –49
	[24.5]	[25]
Judicial Reputation (JUD)	2 - 19	2 – 19
	(10.48)	(10.07)
APA Stringency (APA)	2 - 40	1 – 50
	(21.68)	(25.5)
Institutional Control		
(INTCON)		
Bureaucratic Professionalism		
(BUR)		

the random assignment of states or occupations as experimental and control groups, differences between these groups may be due to factors not considered in this model. As suggested above, contending with the lack of data across time requires a reliance on theoretical assumptions about cause and effect. Third, the multivariate analysis used in this study provides a statistical method of controlling for factors other than those included in the model. It also enables me to separate out and identify relationships between the independent variables and rule output. The caveat to this and other methods of statistical controls concerns the difficulty in controlling for all relevant independent influences. This is certainly problematic in an exploratory study that has incorporated a number of proxy variables to explain rule outcomes. The assumptions about the correct specification of the model are drawn from the body of regulatory theory that precedes this study, but the adequacy of the independent measures as true indicators of the characteristics they are meant to measure is always open to debate.

As an extension of prior regulatory and state-level literature, this research includes the independent measures for voter turnout, political culture, interest group strength, aggregate group strength, political influence of professions, legislative professionalism, executive reform, and judicial reputation. The use of these measures is consistent with similar studies. (For example see Shepard 1978; Berry 1984; Becker 1986; Clingermeyer 1991; Graddy 1991; Jackson 1992.)

As research to test comprehensive regulatory theory, I have included the independent measures for APA stringency, institutional control, and bureaucratic professionalism. The performance of these measures will add to our understanding of their validity and influence on the rulemaking process.

The Method of Choice and Specification of the Dependent Variable

The choice of a method to test the hypotheses generated in Chapter Two was largely prescribed by the nature of the dependent measure of rule output. Multivariate analysis at the

level of measurement of rule output was problematic due to a lack of variation in median scores across the states and professions, and the aggregation problems discussed earlier in this chapter. For these same reasons, the model originally stated as

$$\textbf{Rule Output} = TURN + CULT + PROF + VOL + AGST + IGST + LEG + EXEC + JUD + APA + INTCON + BUR + u_i$$

was restated as follows to reflect the necessary transformations to the level of occupations as the unit of measurement:

$$\textbf{RULEOUT_1} = TURN_1 + CULT_1 + PROF_1 + VOL_1 + AGST_1 + IGST_1 + LEG_1 + EXEC_1 + JUD_1 + APA_1 + BUR_1 + u_i$$

With this transformation, the dependent measure represents the average rule output score across a range of 0 - 4 for each of the 45 occupations included in this analysis. Examination of the distribution (see Figure 3.1) and the Kolgmogorov-Smirnov (K-S) test of normality confirm the normal distribution of this transformed variable.[6] Given these dependent variable characteristics and the linear associations with the independent variables suggested by theory, the multivariate analysis employs ordinary least squares methods to test the hypothesized relationships. Further examination of rule output distribution also reveals extreme values for two of the occupational groups: forestry occupations [number 32 in Figure 3.1] and asbestos/insulation workers (number 39 in Figure 3.1). The first case represents one Maryland and two Georgia rules with an average rule output score of 1.0. The second case is one Florida rule coded as a 4. As the goal of the regression analysis is to obtain dependable estimates of the population regression coefficients and make inferences from them, I decided to exclude these extreme cases from the study. The list of included occupations, the number of rules promulgated

[6]The null hypothesis under the Kolmogorov-Smirnov test is that there is no difference between the observed distribution and the normal distribution. In this case, the resulting .0976 probability suggests that the null of normality cannot be rejected.

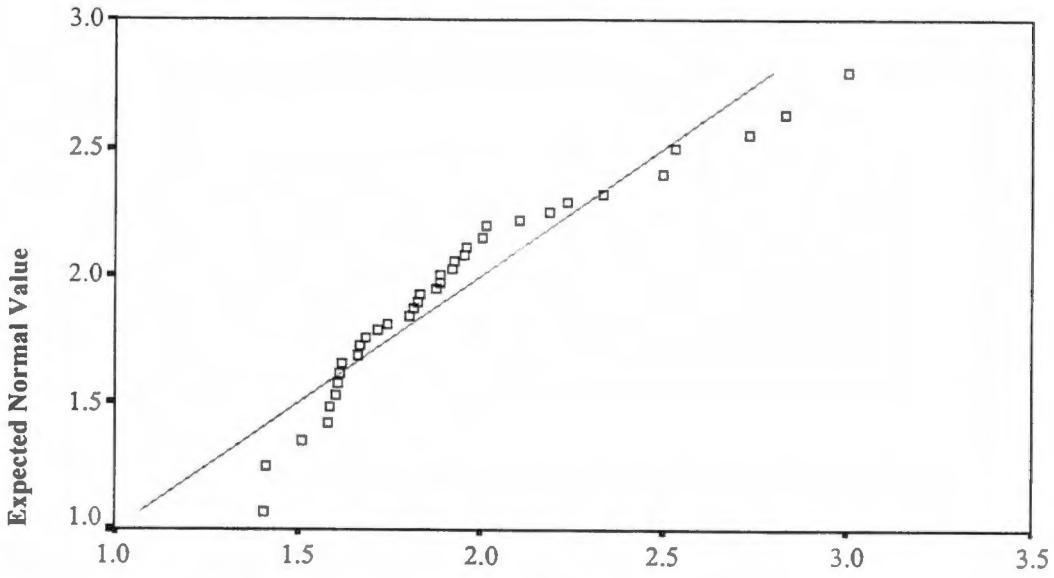

Figure 3.1 Observed vs. Expected Values of Rule Output, n = 42

Observed Value
Kolmogorov-Smirnov Z = 1.2287, p = .0976

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in 1995 for each profession, and the number of states in which this rulemaking occurred are detailed in Table 3.2.

Independent Variables

The independent influences suggested to constrain administrative rulemaking are identified in Chapter One. Chapter Two briefly identifies measures to be used to test the hypotheses of this comprehensive model of the rulemaking process. Based on public interest, interest group, and principal-agent theories, and the comprehensive rulemaking model suggested by Moe (1987), I collected data on four types of independent measures: 1.) measures reflecting public interest in the state political process; 2.) measures reflecting interest group strength in the states; 3.) measures reflecting the professionalism/strength of separate institutional actors; and 4.) comprehensive measures of institutional constraints.

Table 3.2 Professions included in the analysis

Profession	Number of Rules Put Into Effect During 1995, N= 2864	Number of States with 1995 Rulemakings, this Profession
1. Engineers/Architects	189	16
2. Designers	19	4
3. Accountants/Auditors	111	11
4. Appraisers	81	9
5. Social/Welfare Workers	24	5
6. Misc.Professional/ Technical Occupations	65	5
7 Psychologists	122	13
8. Physicians/Surgeons	238	16
9. Dentists	145	14
10. Veterinarians	107	11
11. Pharmacists	103	14
12. RN's/CRN's	164	14
13. Therapists	164	12
14. Dieticians	49	8
15. Medical/Dental Technologists	207	17
16. Medical/Health n.e.c.*	206	18
17. Medical Service Clerks	32	6
18. Real Estate Salespersons/ Brokers	105	9
19. Sales/Service Occupations n.e.c.*	21	4
20. Auctioneers	57	4
21. Barbers/Cosmetologists/ Related Professions	102	8
22. Funeral Directors/ Embalmers	160	6
23. Gambling Hall Attendants	16	1
24. Guides	17	2
25. Birth Attendants/LPN's	70	9
26. Attendants, hospital, related services n.e.c.*	2	1
27. Misc. Personal Service Occupations n.e.c.*	10	1
28. Security Guards, Corrections officers	1	1
29. Fire Fighters	15	1
30. Detectives, Police in Private Service	56	5
31. Protective Service Occupations n.e.c.*	4	1
32. Forestry Occupations	3	2

Table 3.2 (Continued)

33. Optical Instrument Repair, Fabrication	39	3
34. Surgical/Medical/Dental Instrument Repair, Fabrication	54	3
35. Opthalmic Goods Repair, Fabrication	2	1
36. Electricians	9	4
37. Construction Occupations n.e.c.*	67	6
38. Plumbers/Gas Fitters	15	5
39. Asbestos/Insulation Workers	1	1
40. Boilermakers	1	1
41. Large Appliance Repair	5	2
42. Hoisting/Conveying Occupations	6	1

* n.e.c. = "not elsewhere classified"

The two "public interest" variables are measures of state political culture (*CULT_1*) and voter turnout (*TURN_1*) for the 1992 election. The political culture variable is derived from Daniel J. Elazar's (1984) characterization of eight combinations of moralistic, traditionalistic or individualistic state cultures that are reflective of the attitudes and beliefs about government and politics held by state citizens.[7] The second public interest measure is voter turnout, by state, during the 1994 general election.[8]

Four measures of interest group influence are used in the full multivariate model. At the state level, the measure (*PROF_1)* represents the percentage of regulated professionals relative to the total state workforce during 1995.[9] The measure for the volatility of the political market (*VOL_1*)(proportion of the state legislature held by the majority party) was calculated from data provided in the 1996-97 *Book of the States* (NCSL 1997)[10]. The state-level measure to tap the overall impact of interest groups (*AGST_1*) in the states (Gray and Jacob 1996) was coded to reflect the 1994 characterization of a state as "complementary/subordinate (coded as 1); complementary (coded as 2); dominant/ complementary (coded as 3); and dominant (coded as 4).[11] The ranking of the forty most influential interests (IGST_1) was derived from the Hrebenar and Thomas 50-state study in 1990. The occupations in this study correlate to these rankings as: #11) doctors; #12) state and local government employees; #13) insurance; #14) realtors' associations; #17) health care groups (other than doctors); #22) contractors/builders/developers;

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[7]As a state-level variable, the proxy measure (*CULT*) is a finite, categorical variable that serves as a continuum ranging from 0 to 7 for ranking state political culture.[7] Aggregated at the level of occupations for the multivariate analysis, the measure (*CULT_1*) is a finite, continuous average that ranges from 0 - 5.45. This measure was deemed an appropriate proxy from which the direction of any significant coefficient could be interpreted to test the relevant hypothesis and to explain the nature of the relationship with rule output.

[8]Vote turnout data taken from the 1996-97 *Book of the States.* The treatment and interpretation of this measure (TURN_1) for the multivariate analysis is similar to the political culture variable, and represents a range from 50.3 to 69.6.

[9]Due to the minute percentages resulting from this calculation, I multiplied the raw percentage by 10,000 to simplify interpretation of any significant results. When aggregated to the level of the occupations, the measure (*PROF_1*) represents a range of scores from .06 to 38.43.

[10]Aggregated at the occupation level, the (*VOL_1*) measure ranges between 1.02 and 3.5.

[11]The aggregation of (*IGST_1*) results in a measure ranging across a continuum from 1.93 to 4.

#26) mining companies and associations; #27) truckers and private transport interests; #35) hunting and fishing; #36) gaming interests; and, #40) miscellaneous.

As discussed in Chapter One, the principal-agent concept suggests that the separate branches of the political system may act to hold administrative decision-makers accountable. From the assumption that more professional legislatures, more powerful executives, and more influential court systems will be more inclined to exercise this oversight (and ensure compliance with their constituent interests), three measures are employed to tap the influence of principal-agent constraints on state administrative rule writers. The measure for state legislative professionalism (*LEG_1*) is derived from Squire's 1988 index (Mooney 1994) that ranks state legislative resources as a proportion of congressional resources. With the view that Congress is the standard for professional legislatures, states are ranked "as to how well they match that body" (73).[12] To tap governors' inclination and ability to exercise oversight of administration, the model includes the measure of governor power (*EXEC_1*) taken from the Gray and Jacob (1996, 238) "Summary of Personal and Institutional Powers of Governors" for Summer 1994.[13]

As a proxy for judicial professionalism (and the related inclination and/or ability to exercise oversight), this study includes Caldiera's (1983) reputational index (JUD_1) of state supreme courts. Although an extremely dated measure, (derived from 1976 data), I found no other suitable indicator for judicial influence. Use of this index in the study brings with it the caveat that, while it is considered a refined measure of state judicial leadership, any results are open to question due to the difference in time from when the index was constructed to the 1995 time frame of this study.[14]

Two variables are included in the model to tap the comprehensive institutional constraints on administrative rulemaking. The (*APA_1)* variable serves as a measure of the

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[12]The occupation-level aggregation of the (*LEG_1*) variable results in a range of scores from .08 to .28.
[13]State-level scores for the (EXEC) variable ranged from 5 - 8, while the occupation-level aggregation (*EXEC_1*) ranges from 6 - 7.5.

degree of procedural constraint imposed by state administrative procedures acts. Derived from Renfrow and Houston's (1987) typology, this measure has been updated to reflect 1995 APA procedures in the states.[15] The variable (*INTCON_1)* is included as a measure of both the formal rule review powers in the states and the inclination of other political actors to actually exercise those powers (Grady and Simon 1997).[16]

Finally, the variable (*BUR_1*) is included to test assumptions that more professional state bureaucracies will exhibit an internal constraint on rulemaking output. Derived from the Gold and Ritchie (1993) measure of relative public sector/private sector pay, the BUR_1 variable is expected to reflect the influence of the self-imposed constraints of more professional and better trained decision makers.[17]

Table 3.3 provides summary information on each independent variable included in the multivariate analysis. Table 3.4 details zero-order correlation coefficients for these variables. As expected for the full multivariate model, the specification of multiple indicators of the public interest, interest group, principal-agent, and comprehensive constraint concepts has contributed to high correlation coefficients between several independent variable pairs. The analysis in Chapter Four includes various approaches that attempt to ameliorate this multicollinearity problem.

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[14]Occupation-level aggregation of the (*JUD_1*) variable results in a range of scores from -54.9 to 104.2.
[15]From state-level scores ranging from 1-49, the occupation-level aggregation of the (*APA_1*) variable ranges from scores of 3 - 34.
[16]The (*INTCON*) variable ranks states across a range of 2 - 19. Aggregation to the occupation-level (*INTCON_1*) results in a range of scores from 4 - 17.
[17]The (*BUR*) variable ranks states from 1 - 50. Aggregated at the occupation level, (*BUR_1*) ranges from 12.26 - 32.66.

Table 3.3. Descriptive Statistics of Independent Variables

Variable	*N**	Mean	Standard Deviation	Range
CULT_1	40	2.81	1.36	0 -5.45
TURN_1	40	58.84	4.6	51.2 - 69.6
PROF_1	40	3.57	6.51	.06 - 38.43
VOL_1	40	1.6	.44	1.02 - 3.5
AGST_1	40	2.72	.49	1.93 - 4
IGST_1	40	24.77	12.11	8 - 40
LEG_1	40	.21	.05	.08 - .28
EXEC_1	40	6.78	.38	5.86 - 7.5
JUD_1	40	23.66	38.76	-54.9 - 104.2
APA_1	40	21.37	7.1	3 - 34
INTCON_1	40	10.13	2.67	4 - 17
BUR_1	40	21.51	4.87	12.26 - 32.66

* Number of observations

Table 3.4. Correlation Coefficient Matrix of Independent Variables

Variable	*CULT_1*	*TURN_1*	*PROF_1*	*VOL_1*	*AGST_1*	*IGST_1*	*LEG_1*	*EXEC_1*	*JUD_1*	*APA_1*	*INTCON_1*	*BUR_1*	Variable
CULT_1	--												*CULT_1*
TURN_1	-.8724	--											*TURN_1*
PROF_1	-.1372	.1181	--										*PROF_1*
VOL_1	-.41	.4315	-.1177	--									*VOL_1*
AGST_1	.3556	-.1923	-.1616	-.1423	--								*AGST_1*
IGST_1	-.1041	.0488	-.0807	.0826	-.2157	--							*IGST_1*
LEG_1	.4340	-.6907	.0203	-.5916	-.0714	.0679	--						*LEG_1*
EXEC_1	-.1004	.1883	.0746	.2245	-.1416	.1723	-.2015	--					*EXEC_1*
JUD_1	.1662	-.4593	.1296	-.4803	-.4418	.1430	.8669	-.0334	--				*JUD_1*
APA_1	-.4721	.5916	.0718	.1444	-.4504	.1128	-.5007	.0717	-.2078	--			*APA_1*
INTCON_1	.2383	-.3245	.1481	.1049	-.5713	.0366	.1003	.0835	.2659	.1066	--		*INTCON_1*
BUR_1	.4533	-.3472	.0090	-.2815	.4589	-.09	-.0369	-.0643	-.1721	-.0423	.1387	--	*BUR_1*

Conclusion

This chapter has detailed some of the problems and limitations confronting the development and analysis of a comprehensive model of the state rulemaking process. Important factors are a lack of data, inconsistent data, aggregation problems, limitations inherent to the research design, and characteristics of the relationships between explanatory variables that complicate statistical analysis. Resolving the low number of observations at the state level requires aggregation at the level of the 40 occupations included in the analysis. Although this procedure limits tests of state-specific hypotheses, tests of the hypotheses about factors constraining rule-making output discussed in Chapter Two are viable.

Chapter Four presents results and analysis of hypothesis tests stemming from the discussion in Chapter Two and Three. Chapter Five summarizes the empirical findings, and offers recommendations for future analyses and policy considerations.

Chapter 4

Analysis and Findings

In this chapter I describe the relationships among the variables suggested to explain the state rulemaking process. I then test hypotheses developed to test factors that influence rulemaking to regulate the professions. The first section of this analysis addresses basic questions about the state rulemaking process: What is the nature of state rules to regulate the professions? Are there significant differences across the states? Across the professions? And, does ordinal analysis reveal any statistically significant relationships between rule output and the explanatory variables included in this study? The next section of the analysis uses multiple regression and the database described in Chapter Three to test the hypotheses derived from the public interest, interest group, principal agent, and comprehensive theories of regulation discussed in Chapter One. Finally, the profile of the state rulemaking process that emerges from this analysis is summarized.

Characteristics of the State Occupational Rulewriting Process

My analysis does not confirm the assumptions of interest group theories of regulation that suggest regulatee dominance of the process. Use of the rule output index developed in Chapter Two results in the distribution presented in Figure 4.1. Arrayed on a continuum of 0 - 4, visual examination of these results suggests that, of the rules that became effective in 1995 in the 25 states in this sample, a majority reflects pro-consumer interests.[1] Of the 2,864 rules coded for this study, 259 (9.04 percent) were categorized as strongly pro-consumer (coded as 0); 1,361 (47.52 percent) were categorized as moderately pro-consumer (coded as 1); 272 (9.5 percent)

[1]The one-sample chi-square test (X^2 = 1511.1852, significance = .0000) confirms the statistically significant differences between each of the rule output categories.

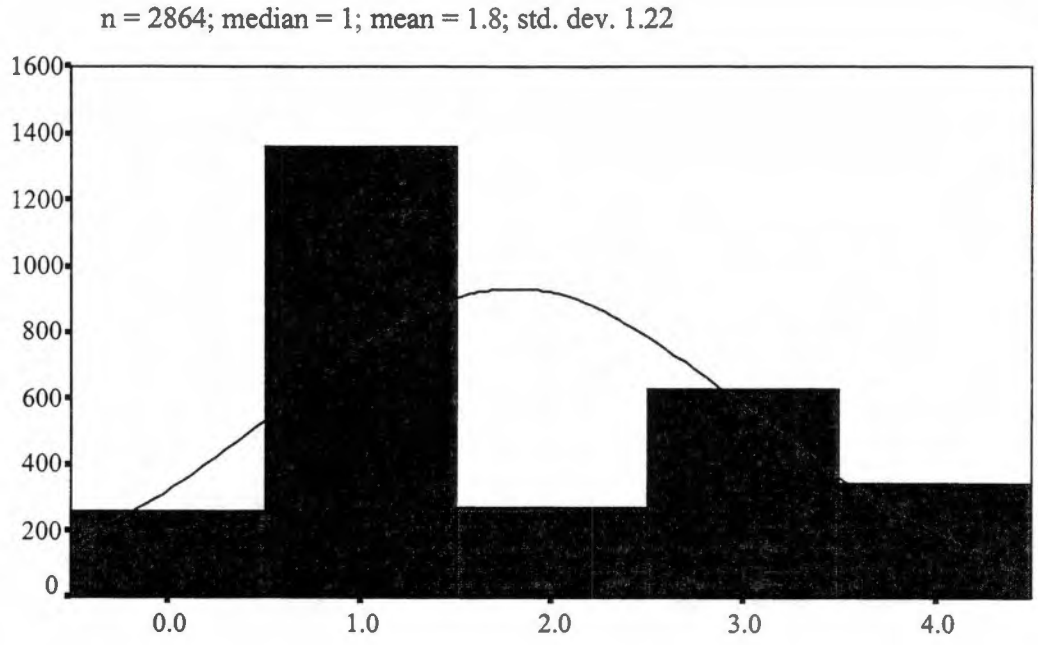

Figure 4.1 Distribution of 1995 Rule Output for 25 States

0 = strong pro-consumer; 1 = moderate pro-consumer; 2 = neutral effect;

3 = moderate pro-regulatee; 4 = strong pro-regulatee

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were categorized as having neutral effect (coded as 2). Only 628 rules (21.93 percent) were categorized as moderately pro-regulatee (coded as 3), while 344 (12.01 percent) were categorized as strongly pro-regulatee (coded as 4). Interestingly, while the Kolmogorov-Smirnov normality test coupled with the high standard deviation and variance (variance = 1.5) confirm that this distribution is not normal, usual measures of the "shape" of the distribution suggest only moderate deviation from normal. The kurtosis measure of the rule output distribution indicates this is a "short-tailed" distribution (or platykurtic)[2], and the resulting .476 skewness measure suggests a curve skewed only slightly to the left of the normal distribution.[3] Visual examination of Figure 4.1 serves as the best means of comparison of the rule output

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[2]Kurtosis measures the extent to which the distribution is "tail-heavy" in comparison to the normal distribution. The -1.039 kurtosis of the rule output measure suggests flatter than normal curve.

distribution against the normal curve. Graphically, the values represent what may best be described as a horizontal "S" curve with the majority of responses at the low (pro-consumer) end of the distribution.

Given these significant differences across the categories of rule output, the logical extension of this ordinal analysis is first, to identify differences in rule output across states. Table 4.1 details the nature of rule output for each of the 25 states included in this study (each cell represents the number of rules coded in a particular category of rule output for the particular state). The test statistics for this relationship and the analysis of variance (ANOVA)[4]suggest there are significant differences in rule output across the states. The chi-square and Cramer's V statistics[5] confirm a statistically significant relationship between the state and rule output variables.

The relatively minute Lambda[6], coupled with the high unexplained error revealed by ANOVA suggests that the independent effect of state is a poor predictor of rule output. Despite this weak predictive power, these results suggest the potential for more significant results given additional states and rule data. As shown in Table 4.2, given a dichotomous distribution of rule outputs where 0 equals pro-consumer rules and 1 equals pro-regulatee rules, the results are a linear distribution of the 25 states' rule output across a continuum ranging from the most pro-consumer to the most pro-regulatee.

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[3]Skewness is a measure of the asymmetry of the distribution. A normally distributed variable will have a skewness value of 0. The resulting skewness measure of .476 for the rule output variable suggests that the more extreme values are greater than the mean (Gujarati 1995).

[4]While it is recognized that ANOVA is prescribed to assess relationships between interval measures, its application with these nominal/ordinal measures serves to identify the explained and unexplained error in this association.

[5]The chi-square (X^2) and Cramer's V statistics are measures of association between two nominal variables. The statistical significance of these results suggest that the null hypothesis of no relationship between the state and rule output variables can be rejected (Manheim and Rich 1986).

[6]Lambda (λ) is a coefficient of association for two nominal variables when one is deemed independent and the other dependent. The statistic measures the percentage improvement in guessing values on the dependent variable given knowledge of values of the independent variable (Manheim and Rich 1986, 271).

Table 4.1 1995 Rule Output, by State

State	Rule Output (Frequency) 0 Strong Pro-Consumer	1 Moderate Pro-Consumer	2 Neutral Effect	3 Moderate Pro-Regulatee	4 Strong Pro-Regulatee	Total (Percent)
Alabama	9	51	8	30	2	100 (3.5)
Arizona	25	59	7	26	14	131 (4.6)
California	7	77	9	31	8	132 (4.6)
Florida	47	192	34	88	44	405 (14.1)
Georgia	3	37	13	15	9	77 (2.7)
Idaho	4	16	3	11	3	37 (1.3)
Illinois	16	44	4	16	14	94 (3.3)
Maryland	2	49	7	11	1	70 (2.4)
Maine	6	26	8	11	17	68 (2.4)
Montana	7	58	3	27	24	119 (4.2)
North Carolina	5	50	10	24	10	99 (3.5)
North Dakota	6	60	1	11	5	83 (2.9)
New Jersey	11	46	2	38	19	116 (4.1)
Nevada	7	68	31	20	16	142 (5.0)
New York	2	7	0	7	8	24 (.8)
Oregon	3	28	8	16	10	65 (2.3)
Pennsylvania	4	13	3	6	4	30 (1.0)
Rhode Island	3	14	2	9	9	37 (1.3)
Tennessee	28	92	5	60	44	229 (8.0)
Utah	2	4	15	5	5	31 (1.1)
Virginia	15	119	11	48	18	211 (7.4)
Vermont	12	93	54	35	24	218 (7.6)

Table 4.1 1995 Rule Output, by State (Continued)

Washington	23	62	17	34	14	150 (5.2)
Wisconsin	10	84	16	43	16	169 (5.9)
Wyoming	2	12	1	6	6	27 (.9)
Total	259	1361	272	628	344	2864
(Percent)	(9.0)	(47.5)	(9.5)	(21.9)	(12.0)	(100.0)

X^2 = 379.46836, df = 96, significance = .0000
Cramer's V = .18200, significance = .0000
Lambda = .00798, significance = .0394

Analysis of Variance (ANOVA)

Source of Variation	Sum of Squared Error	df	Mean Sum of Squares	F	Significance
Explained Error	102.352	24	4.265		
Error due to Residuals	4187.975	2839	1.475		
Total	4290.326	2863	1.499	2.891	.0000

Table 4.2 Dichotomized 1995 Rule Output, by State

State	Rule Output 0 Pro-Consumer (%)	Rule Output 1 Pro-Regulatee (%)	State	Rule Output 0 Pro-Consumer (%)	Rule Output 1 Pro-Regulatee (%)
1. Maryland	51 (80.95)	12 (19.05)	14. North Carolina	55 (61.8)	34 (38.2)
2. North Dakota	66 (80.49)	16 (19.51)	15. Wisconsin	94 (61.44)	59 (38.56)
3. California	84 (68.29)	39 (31.71)	16. Idaho	20 (58.82)	14 (41.18)
4. Arizona	84 (67.74)	40 (32.26)	17. Montana	65 (56.03)	51 (43.97)
5. Nevada	75 (67.57)	36 (32.43)	18. Oregon	31 (54.39)	26 (55.61)
6. Virginia	134 (67)	66 (33)	19. Wyoming	14 (53.85)	12 (46.15)
7. Illinois	60 (66.67)	30 (33.33)	20. Tennessee	120 (53.57)	104 (46.43)
8. Florida	239 (64.42)	132 (35.58)	21. Maine	32 (53.33)	28 (46.67)
9. Alabama	60 (65.22)	32 (34.78)	22. New Jersey	57 (50)	57 (50)
10. Vermont	105 (64.02)	59 (35.98)	23. Rhode Island	17 (48.57)	18 (51.43)
11. Washington	85 (63.91)	48 (36.09)	24. New York	9 (37.5)	15 (62.5)
12 Pennsylvania	17 (62.96)	10 (37.04)	25. Utah	6 (37.5)	10 (62.5)
13. Georgia	40 (62.5)	24 (37.5)			
Total (Excluding rules of neutral effect)				1620	972

$X^2 = 64.17318$, df = 24, significance = .0002
Cramer's V = .15735, significance = .00002
Lambda = .01132, significance = .20388

Again, the chi-square and Cramer's V values reveal a statistically significant relationship between state and this dichotomized rule output variable, but the low, and insignificant Lambda, suggests only a one percent improvement over guessing values of the rule output variable given knowledge of the state variable.[7]

The resulting tests of the influence of profession on rule output are also mixed. As suggested by Table 4.3, the significant chi-square and Cramer's V confirm a statistically significant relationship, but the meager Lambda suggests that knowing the value of the independent variable will only improve chances of guessing the value of rule output by two percent over random chance. This finding leads to further questions regarding public interest and interest group theory assumptions concerning the motivation behind professional regulation.

Moore (1961), Stigler (1984) and others have implied that, while regulation of the medical professions may arguably comply with expectations of public interest theory, regulation of non-medical professions will more likely reflect "capture" by the regulated professions. The database permits a simple test of these expectations with a recategorization of the profession variable into a dichotomous medical/non-medical variable (See Table 4.4). Again, while the chi-square and Cramer's V statistics confirm the statistical significance of this relationship, the insignificant Lambda suggests that knowing whether or not a profession is medical or non-medical adds nothing to our ability to predict the nature of rule output.

Analysis of Explanatory Variables

To test hypothesized models that may explain differences in state rule output, I incorporated in this study several often-overlapping measures of explanatory variables. The theoretical justification for including this variety of measures is addressed in the first two

[7]See footnotes 5 and 6, above.

Table 4.3 1995 Rule Output, by Profession

Profession	Rule Output (Frequency) 0 Strong Pro-Consumer	1 Moderate Pro-Consumer	2 Neutral Effect	3 Moderate Pro-Regulatee	4 Strong Pro-Regulatee	Total (Percent)
Engineers/architects	5	74	20	61	29	189 (6.6)
Designers	1	12	1	2	3	19 (.7)
Accountants/auditors	11	66	4	18	12	111 (3.9)
Appraisers	4	38	10	16	13	81 (2.8)
Social/welfare Workers	3	6	7	7	1	24 (.8)
Misc. professional, Tech. Professions	4	27	11	16	7	65 (2.3)
Psychologists	16	59	5	19	26	122 (4.3)
Physicians/surgeons	35	123	12	43	25	238 (8.3)
Dentists	22	77	9	24	13	145 (5.1)
Veterinarians	30	44	4	17	12	107 (3.7)
Pharmacists	11	59	3	14	16	103 (3.6)
Registered nurses, CRN's	6	77	36	29	15	163 (5.7)
Therapists	7	77	26	36	18	164 (5.7)
Dieticians	6	18	6	12	7	49 (1.7)
Medical/dental technologists	22	95	13	53	24	207 (7.2)
Medicine/health n.e.c.	22	94	16	50	24	206 (7.2)
Medical service Personnel	3	21	1	6	1	32 (1.1)
Real estate sales/ Brokers	9	53	15	20	8	105 (3.7)
Sales professions	2	11	2	5	1	21 (.7)
Auctioneers	0	32	6	16	3	57 (2.0)
Barbers/ cosmetologists	8	41	16	17	18	100 (3.5)
Funeral directors/ embalmers	9	88	14	37	12	160 (5.6)
Gambling hall attendants	0	1	0	13	2	16 (.6)
Guides	1	6	2	4	4	17 (.6)

Table 4.3 (continued)

Profession	0 Strong Pro-Consumer	1 Moderate Pro-Consumer	2 Neutral Effect	3 Moderate Pro-Regulatee	4 Strong Pro-Regulatee	**Total (Percent)**
Unlicensed birth Attendants, LPN's	2	32	7	21	9	71 (2.5)
Attendants, hospital aides, related occs.	0	1	0	0	1	2 (.1)
Misc. personal service professions	0	2	2	5	1	10 (.3)
Security guards, corrections	0	0	1	0	0	1 (.0)
Fire fighters	0	3	0	10	2	15 (.5)
Detectives, police in private sector	5	35	3	3	10	56 (2.0)
Protective service	0	1	2	2	1	6 (.2)
Forestry occupations	1	1	1	0	0	3 (.1)
Fabrication/repair of optical equip.	5	14	1	10	9	39 (1.4)
Fabrication/repair of surgical, med. equip.	6	27	5	14	2	54 (1.9)
Fabrication/repair of ophthalmic equip.	0	1	0	1	0	2 (.1)
Electricians	0	2	2	5	0	9 (.3)
Construction occupations n.e.c	6	33	6	16	6	67 (2.3)
Plumbers, gas fitters	0	5	2	3	5	15 (.9)
Asbestos/insulation installers	0	0	0	0	1	1 (.0)
Boilermakers	0	0	0	1	0	1 (.0)
Assembly/repair of large appliances	0	3	1	1	0	5 (.2)
Hoisting/conveying occupations	0	2	0	1	3	6 (.2)
Total (Percent)	259 (9.0)	1361 (17.5)	272 (9.5)	628 (21.9)	344 (12.0)	2864 (100.0)

$X^{2*} = 410.10902$, significance = .0000
Cramer's V = .18921, significance = .0000
Lambda = .02063, significance = .0001

Analysis of Variance (ANOVA)

Source of Variation	Sum of Squared Error	df	Mean Sum of Squares	F	Significance
Explained Error	24.098	6	4.016		
Error due to Residuals	4266.228	2857	1.493		
Total	4290.326	2863	1.499	2.690	.0130

Table 4.4 Comparison of 1995 Rule Output for Medical, Non-Medical Professions

Profession	0 Strong Pro-Consumer (Row %)	1 Moderate Pro-Consumer (Row %)	2 Neutral Effect (Row %)	3 Moderate Pro-Regulatee (Row %)	4 Strong Pro-Regulatee (Row %)	**Total (Percent)**
Medical	180 (10.98)	793 (48.38)	143 (8.72)	330 (20.13)	193 (11.78)	1639 (57.2)
Non-Medical	79 (6.45)	568 (46.37)	129 (10.53)	298 (24.33)	151 (12.33)	1225 (42.8)
Total	259	1361	272	628	151	2864

$X^{2*} = 24.73394$, significance = .0000
Cramer's V = .09293, significance = .0000
Lambda = .0000

chapters. A second reason for this broadly specified model lies in the exploratory nature of this research. We can identify and assess the significance of the independent variables associated with rule output when the database is aggregated at the level of the rule output measure. This contributes to our understanding of the rulemaking process in general, and sets the stage for the multivariate analysis to follow.

In line with the hypotheses generated in Chapter Two, I calculated Spearman correlation coefficients[8] to assess the relationship between the explanatory variables and rule output (See Table 4.5). Four of the twelve variables (*TURN, VOL, PROF, and JUD*) were found to be insignificantly related to the rule output index. The measure of administrative procedure act stringency (*APA*) is significant at $p<.10$. The remaining seven variables (*CULT, AGST, IGST, LEG, EXEC, INTCON, and BUR*) are all significant at $p<.05$.[9] The first indication that a

[8]The Spearman correlation coefficient is a nonparametric version of the Pearson correlation coefficient appropriate for ordinal or interval data that do not fulfill the assumption of normality. The coefficient value indicates the strength of the relationship between the test variables, and the sign (-1 to +1) indicates the direction of the relationship (Blalock 1979).

[9]Tests of statistical significance derive a number to measure the likelihood that a generalization is appropriate or inappropriate. The generally accepted significance level of $p<.05$ suggests that, based on this sample analysis, we have a 5 percent chance of incorrect generalization (or conversely, that we will be right 95 percent of the time) (Manheim and Rich 1986, 269-70).

Table 4.5 Spearman Correlation Coefficients Between Public Interest, Interest Group, Principal-Agent, Institutional, and Internal Variables and the Rule Output Index. (Aggregated at the level of Rule Output: n = 2864)

Explanatory Variable	Hypothesized Direction of Association	Spearman Correlation Coefficient
Public Interest Variables		
Voter Turnout (*TURN*)	+	.0209
Political Culture (*CULT*)	-	-.0347**
Interest Group Variables		
Political Volatility (*VOL*)	+	.0142
Aggregate Group Strength (AGST)	+	-.0366**
Interest Group Strength *(IGST)*	+	.0992***
Profession Influence (*PROF*)	+	.0091
Principal-Agent Variables		
Legislative Professionalism (*LEG*)	-	-.0101**
Executive Reform (*EXEC*)	-	.0302**
Judicial Reputation (*JUD*)	-	-.0144
Institutional Variables		
APA Stringency (*APA*)	-	-.0279
Institutional Control (*INTCON*)	-	-.0405**
Internal Variable		
Bureaucratic Professionalism (*BUR*)	-	-.0454***

*** Statistically significant at the .01 level (one-tailed test)
** Statistically significant at the .05 level (one-tailed test)

comprehensive model of the regulation of the professions is viable is revealed by the significance of at least one explanatory variable in each of the four areas of regulatory theory (public interest, interest group, principal-agent, and institutional theories). Of these significant variables, the measures of aggregate group strength (*AGST*) and executive power (*EXEC*) have a coefficient with a direction contrary to the hypothesized relationship. For these results, the coefficients suggest 1.) as aggregate interest group strength increases, pro-regulatee rule outputs will decrease, and 2.) as executive power increases, pro-regulatee rule outputs increase. The aggregate group strength result may indicate that administrative rule writers act to counter stronger interest group influence in their state by issuing more rules favoring the public interest. If so, the economic assumptions of dominant interest groups capturing public agencies and dominating the regulatory process are misguided. Salisbury (1990) suggests another possibility. This finding may reflect the "paradox of more interest groups and lobbyists wielding less influence over policy" (203). Or, this pro-consumer finding may reflect the growing influence of citizen groups in the regulatory process (210). However, it may also suggest that this categorical measure of group influence in the states is tapping some influence(s) that are as yet unexplained. The finding regarding executive power also contradicts the hypothesized direction for the relationship. This suggests that, contrary to views of the governor as the one official representative of the collective state electorate, stronger governors may use their power as a bargaining chip for interest group support.

The coefficient for the (*IGST*) variable (.0992) reflects the strongest association with the rule output index of any of the significant variables. As hypothesized, this result suggests that as an individual interest group's strength increases, pro-regulatee outputs increase. While the results for the remaining significant variables suggest a weak association (based on the coefficient values), interpretation suggests:

1. As state political culture shifts toward a moralistic culture (the higher end of the continuum used in this study), pro-consumer rule outputs increase.
2. As legislative professionalism increases, pro-consumer rule outputs increase.
3. As procedural stringency increases, pro-consumer rule outputs increase.
4. As the use of institutional controls increase, pro-consumer rule outputs increase.
5. As bureaucratic professionalism increases, pro-consumer rule outputs increase.

This analysis of the data aggregated at the level of rule output reveals several factors that help to explain differences in state rule output to regulate the professions. It helps to inform the application of, and expectations for the comprehensive model of occupational regulation proposed in Chapters Two and Three. On the one hand, these results suggest the need for understanding the comprehensive influence of public, interest group, principal-agent, institutional, and internal factors on the decision-making process of rule-writers. On the other hand, the weak associations evident by this analysis suggest that the comprehensive multivariate model will reveal gaps between the variation explained by existing theory and other unexplained influences on rule output.

Multivariate Analysis and Findings

Following the data transformations discussed in Chapter 3, I estimated a linearly specified model using ordinary least squares. I report the results of the fully specified model first as a tentative step toward defining and testing hypotheses generated by a comprehensive model of the state occupational regulation process. I then adjust the sets of explanatory variables to moderate the anticipated effects of multicollinearity and maximize goodness of statistical fit.[10] While attention was paid to retention of more significant, non-collinear variables, my

[10]As an exploratory work, this attempt to formulate a "best" model is consistent with the principle of parsimony suggested by Occam's razor. That is, if we can "substantially" explain the behavior of the dependent variable with fewer explanatory variables, and our theories are vague or silent on other possible explanations, "why introduce more variables?" (Gujarati 1995, 40-1).

specification of subsequent models is made consistent with the bases of a comprehensive theory of regulation.

My analysis also contended with the statistical problem of collinearity among several of the independent variables. (See Table 3.4)[11] When two or more independent variables are correlated (or collinear), the ordinary least squares estimates may have large variances that that contribute to a high R^2 for the model, but few significant partial slope coefficients (or *t* ratios). By obscuring the separate influence of the collinear variables, the *F* test of the simultaneous influence of the independent variables will likely lead to rejection of the null hypothesis of "no difference." However, the resulting individual *t* tests of the partial slope coefficients will suggest that none of the variable influences are significant (Gujarati 1995, 335). Collinearity was diagnosed by visual examination of the residuals, examination of the zero-order pair-wise correlation of the independent variables (See Table 3.4)[12], and by assessment of the variance inflation factor (VIF) (available on SPSS).[13] I found evidence of moderate collinearity (.5 to .79) between *TURN_1 and APA_1* (.5916); *TURN_1 and LEG_1* (.6907); *LEG_1* and *APA_1* (.5007); and *AGST_1* and *INTCON_1* (.5713). *TURN_1* and *CULT_1* (.8724) and *LEG_1* and *JUD_1* (.8669) were highly correlated.[14]

Table 4.6 presents the results of four regression equations used to model the state occupational rulemaking process. As an exploratory work, this study follows Hendry's approach

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[11]As this model employs cross-sectional data, diagnostics were used to detect heteroscedasticity and multi-collinearity. With heteroscedasticity, the error terms (residuals) of independent variable are correlated. Residuals were examined for patterns, and a Durbin-Watson test for heteroscedasticity (available on SPSS) was used as a measure of the degree of any problem. Heteroscedasticity was not evident in this data set.

[12]Following Gujarati's recommendation for diagnosing multicollinearity, examination of the zero-order correlation can help to identify moderate (.50 to .79) and (.8 and above) high collinearity between pairs of variables (Gujarati 1995).

[13]A VIF exceeding 10 suggests severe multicollinearity (Gujarati 1995, 339).

[14]As a byproduct of the use of nonexperimental data, multicollinearity is largely a sample phenomenon with no infallible remedies (Gujarati 1995, 335-9). These remedies may include 1.) reevaluation of a priori information; 2.) combining cross-section and time-series data; 3.) dropping one or more collinear variables; 4.) using the first-difference form of transformation; 5.) increasing the sample size or adding new data; and, 6.) estimating variables as deviations from their mean values (340-2). Options 2.), 4.), 5.) and 6.) were omitted as possible remedies for reasons explained in Chapter 3.

Table 4.6 Regression Results - State Occupational Rulemaking Process

Explanatory Variables	Dependent Variable - Rule Output				Hypothesized Sign
	Regression 1	Regression 2	Regression 3	Regression 4	
Intercept	2.766	.352854	1.5256	1.016293	
	(3.917)	(1.7222)	(1.47991)	(.56057)	
Public Interest Variables					
CULT_1	-.015750	.00750	-.006593	-.03005	-
	(.125107)	(.062934)	(.062635)	(.057825)	
TURN_1	.019951	--	--	--	-
	(.047964)				
Interest Group Variables					
PROF_1	-.03795	--	--	--	+
	(.010291)				
VOL_1	-.072887	--	--	--	+
	(.227543)				
AGST_1	.440445	.657197**	.556901**	.478792***	+
	(.348715)	(.218587)	(.206533)	(.16066)	
IGST_1	.006664	.007254	.007786	.007848	+
	(.005434)	(.00505)	(.005086)	(.005081)	
Principal-Agent Variables					
LEG_1	-7.296630	-5.99105	-7.88741	--	-
	(5.1563)	(4.60304)	(4.4094)		
EXEC_1	.220811	.199301	.156915	--	-
	(.185741)	(.171081)	(.169679)		
JUD_1	.006354	.006794	.007742	--	-
	(.005614)	(.005271)	(.005275)		
Institutional Variables					
APA_1	.012811	.016210	--	.019817	-
	(.015472)	(.012525)		(.011084)	
INTCON_1	-.036034	--	--	--	-
	(.046861)				
Internal Constraint Variable					
BUR_1	-.039117	-.045192**	-.039227**	-.040053**	-
	(.02092)	(.015959)	(.015440)	(.016066)	
F	1.7659	2.7586**	2.85315**	3.19758**	
R2	.43973	.41585	.38428	.31984	
Adj. R2	.19072	.26510	.24960	.21981	

Note: Values in ( ) are standard errors

*** Statistically significant at the .01 level

** Statistically significant at the .05 level

to specimetrics (determination of what an appropriate model "is to begin with" (Gujarati 1995, 480). Traditional econometric methods assume a particular model and test to see if it fits the data at hand. Specimetrics is the "process by which a researcher is led to choose one specification of the model rather than another" (481). D. F. Hendry's approach (also known as the "test, test, and test method") suggests that going from a very general to a more simplified model should satisfy six criteria: 1.) Predictions from the model should be logically sound; 2.) The model must be theoretically consistent; 3.) The regressors must be uncorrelated with the error term; 4.) The values of the parameters should be stable across time; 5.) The residuals from the model must be random; and, 6.) The model should explain the results of all competing models (Gujarati 1995, 485-6). Regression 1 is the fully specified comprehensive model. Regressions 2 , 3, and 4 are respecifications that drop highly collinear independent variables from the equation and modify the models based on reevaluation of a priori information and the nature of the proxy variables used in this analysis. Regression 2 drops the *TURN_1* (a variable highly correlated with political culture), *PROF_1*, and *VOL_1* variables as redundant (in the case of *PROF_1* and *VOL_1*, consistently insignificant) measures of public interest and interest group influence. In addition, Regression 3 includes the three principal-agent measures of constraint (*LEG_1*, *EXEC_1* and *JUD_1*), but drops both institutional constraint measures (*APA_1* and *INTCON_1*) to test the redundancy of these measures in a comprehensive model. Regression 4 reverses the test of the previous model, dropping the principal-agent variables and including the more significant of the institutional constraint variables (*APA_1*). The *INTCON_1* variable is dropped as the least significant measure of institutional constraints.[15]

[15] Variables were selectively excluded from subsequent models on the basis of 1.) correlation with other variables in the model; 2.) their relative significance compared with other variables tapping the same influence; 3.) their contribution to higher standard error/variance of other coefficients in the model; and 4.) their contribution, or lack of contribution to the explanatory power of the model (adjusted R^2).

Results of Hypothesis Tests

The results in Table 4.6 are the basis for testing the hypotheses about the state occupational rulemaking process developed in Chapter Two. The hypotheses are derived from four categories of regulatory theory and one internal decision-making variable: 1.) public interest theories of regulation; 2.) interest group theories of regulation; 3.) principal-agent theories of regulation; 4.) institutional theories of regulation; and 5.) an individual decision-making constraint variable. The statistical significance of the coefficient for each variable is assessed to determine the strength of support for each related hypothesis. The hypotheses developed in Chapter Two are detailed in Table 4.7.

Tests of Public Interest Hypotheses

Both the *TURN_1* and *CULT_1* variables were included in regression 1 to test hypotheses generated by public interest theories of regulation. The *TURN_1* variable is dropped from the subsequent regressions due to its consistent insignificance. Its omission also minimizes the effects of its intercorrelation (VIF = 13.027) with the *CULT_1*, *LEG_1*, and *APA_1* variables. The *TURN_1* variable also confounded the results with its resulting (+) sign, a direction opposite the hypothesized negative relationship. Neither of these public interest variables was significant in the first equation, and the measure of political culture failed to achieve significance in any of the other three regressions. As such, these models suggest that we cannot reject the null hypotheses of no difference. In each of these regressions, the *CULT_1* coefficient was very small, and was an added indication that political culture has little or no effect as a constraint on administrators' rulemaking decisions. The positive *CULT_1* coefficient in regression 2 was the only case in which the direction of influence was reversed from the hypothesized negative relationship. Comparison across regressions suggests that the very small change in value

Table 4.7 Hypotheses Tested With Regression Models 1 - 4.

Constraints	Hypotheses
Public Interest Constraints:	
Hypothesis 1	As voter turnout increases, pro-regulatee rule outputs will decrease.
Hypothesis 2	A more moralistic political culture leads to decreased pro-regulatee rule outputs.
Interest Group Constraints	
Hypothesis 3	As the percentage of regulated professionals relative to the total state workforce increases, pro-regulatee rule outputs will increase.
Hypothesis 4	As political stability increases, pro-regulatee rule outputs will increase.
Hypothesis 5	As the aggregate strength of organized interest groups in the states increases, pro-regulatee rule outputs will increase.
Hypothesis 6	As interest group strength increases, pro-regulatee rule outputs will increase.
Principal Agent Constraints	
Hypothesis 7	As state legislative professionalism increases, pro-regulatee rule outputs will decrease.
Hypothesis 8	As the personal and institutional power of the Governor increases, pro-regulatee rule outputs will decrease.
Hypothesis 9	As judicial professionalism increases, pro-regulatee rule outputs will decrease.
Institutional Constraints	
Hypothesis 10	As the restrictiveness of state APA provisions increases, pro-regulatee rule outputs will decrease.
Hypothesis 11	As rule review and oversight increases, pro-regulatee rule outputs will decrease.
Internal Decision Constraint	
Hypothesis 12	As administrative professionalism increases, pro-regulatee rule outputs will decrease.

required for this shift in sign, coupled with high intercorrelation of this variable with *TURN_1* and the low correlation with *LEG_1* and *INTCON_1*, contribute to this shift.

Tests of Interest Group Hypotheses

The *PROF_1*, *VOL_1*, *AGST_1*, and *INST_1* variables were included in regression 1 to test hypotheses derived from interest group theories of regulation. As in the earlier ordinal analysis, the coefficients for the *PROF_1* and *VOL_1* variables were insignificant, and neither resulted in the expected positive sign. In the case of the *PROF_1* variable, this suggests the measure is an inadequate proxy for group political influence. The *VOL_1* measure of political stability however, showed considerable variation across states and professions. Its lack of significance and lack of collinearity with any of the other interest group measures suggest that this proxy variable also fails to tap group influence on state political systems.

Both the *AGST_1* and *IGST_1* variables were retained in all four models to test related interest group hypotheses. As the proxy measure of aggregate group strength in the states, the *AGST_1* coefficient in regression 1 is insignificant but retains the expected positive sign. It is likely that dropping the *INTCON_1* variable from regressions 2, 3 and 4 contributes to the statistical significance of the AGST_1 variable in each of these equations. In each of these regressions (2, 3, and 4) higher values of aggregate group strength are significantly related to higher values of pro-regulatee rule output. As such, these findings confirm the significance of aggregate group strength as an influence contributing to more pro-regulatee rules.

As a profession-specific measure of group strength in the states, the *IGST_1* variable was statistically insignificant in each of the four regressions. The variable is retained in all four regressions due to the finding that, although relatively uncorrelated with other interest group measures, *IGST_1* taps some aspect of group influence that the *AGST_1* variable fails to capture. The effect of dropping this variable from any of the four equations significantly reduces the overall model performance.

Tests of Principle-Agent Hypotheses

In keeping with the comprehensive theory of the regulatory process, regressions 1, 2, and 3 retain all three of the principle-agent variables hypothesized to influence state rule output. In none of these equations do the coefficients for the proxy measures for executive power and judicial professionalism support the hypothesized relationships or the expected direction of the relationships. The coefficient for the *LEG_1* measure of legislative professionalism exhibits the expected direction of association in all three equations, but is statistically significant only in regression 3 ($p<.10$). This suggests that when the influence of redundant and/or highly collinear measures is dropped from the equation, the resulting coefficient will support the hypothesis that increased legislative professionalism is significantly associated with decreased pro-regulatee rule outputs. However, this finding is tenuous at best: Theoretical consistency requires keeping all or none of the three principal-agent variables in the equations. The moderate collinearity between *LEG_1* and *APA_1*, and high collinearity between *LEG_1* and *JUD_1* make estimation problematic. Although the *LEG_1* variable attains significance when the *APA_1* variable is dropped from the equation (regression 3), its influence is masked by the strong collinear relationship with the measure of judicial professionalism.

Tests of Institutional Constraint Hypotheses

Hypotheses 10 and 11 suggest that the availability and/or use of procedural constraints and oversight procedures will serve to restrain administrative rule writers. The *APA_1* variable is included in regressions 1, 2, and 4 to test the hypothesis that more stringent administrative procedures acts will lead to less pro-regulatee rule outputs. In each of these models, the resulting coefficients are opposite the hypothesized direction of the relationship, suggesting that increasingly stringent APA procedures serve to increase pro-regulatee outputs. This unexpected finding may suggest that, contrary to APA reform theory suggested by Bonfield, increased procedural stringency serves the interests of those groups with the resources, inclination and

motivation to monitor and participate in the rulemaking process. It is only when the three principle-agent variables are dropped from the equation, however, that *APA_1* is statistically significant ($p<.10$). Although this confirms the hypothesis, the small (.019817) coefficient suggests this is weak support for the finding. This regression 4 finding, coupled with the significance of *LEG_1* in regression 3 (when the influence of *APA_1* is removed) suggests that there is some overlapping influence being tapped by the principal-agent and institutional measures. This is further supported by the moderate zero-order correlation between *LEG_1* and *APA_1* (.5007) discussed earlier.

The *INTCON_1* variable in regression 1 fails to confirm hypothesis 11 that use of oversight procedures by other political actors will constrain rulemaking outputs. While the coefficient does retain the expected sign for this relationship, the variable was dropped from later regressions due to consistent insignificance and minimal contribution to the model results.

Test of the Internal Constraint Hypothesis

Hypothesis 12 suggests that increased administrative professionalism (*BUR_1*) will contribute to a decrease in pro-regulatee rule output. The coefficient for this variable retained the expected direction of association across all four regressions. And, while insignificant in regression 1, the *BUR_1* coefficient reveals a statistically significant relationship in each of the other equations ($p<.05$). As with the other significant findings from these hypothesis tests, the relatively small coefficients for *BUR_1* (-.045192 in regression 2; -.039227 in regression 3; and -.040053 in regression 4) weakly support the strength of this association.

The Choice of the "Best" Model

My analysis is particularly concerned with the consequences of multicollinearity and errors in specification of a multivariate model describing the state rulemaking process. As previously mentioned, each of the three restricted models (nested within the fully specified

Model 1) are consistent with Hendry's criteria[16] for model selection. Another key test in the search for the "best" model is examination of the variance of the model coefficients.[17] A key characteristic of models that include irrelevant variables is that the estimated values of the coefficients "will be generally inefficient...their variances will be generally larger than those of the coefficients of the true model" (Gujarati 1995, 458). This can also add to problems with multicollinearity.

Following the above criteria, my findings suggest that Model 4 provides the best empirical representation of the state rulemaking process.[18] The model effectively limits the influence of multicollinearity. With the exception of the *BUR_1* variable (with only a minimal increase in standard error), the standard errors of each of the coefficients reflect improvements over the other three models. Finally, the resulting model provides for logical prediction, theoretical consistency, and is capable of explaining the results of the rival models (i.e., is an improvement over the rival models).

As a representation of the rulemaking process, Model 4 confirms the significance of aggregate interest group strength (*AGST_1*), procedural restrictiveness (*APA_1*), and administrative professionalism (*BUR_1*). Given this sample database, the model also provides reasonable support for the role of institutional variables as proxies that also tap the separate influence of legislative, executive, and judicial actors in the system. With these improvements

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[16]As previously discussed, these include: 1.) Predictions from the model should be logically sound; 2.) The model must be theoretically consistent; 3.) The regressors must be uncorrelated with the error term; 4.) The values of the parameters should be stable across time; 5.) The residuals from the model must be random; and, 6.) The model should explain the results of all competing models (Gujarati 1995, 485-6).

[17] Another test relevant to model selection is the method known as restricted least squares (RLS). Unrestricted and restricted models are compared by application of the F test based on the residual sum of squares. For my purposes however, the limited explanatory power of the tested models contributed to extremely small and insignificant statistics with little variation between models.

[18] This is in keeping with the view that, "the best approach is to include only explanatory variables that, on theoretical grounds, directly influence the dependent variable and that are not accounted for by other included variables" (Michael D. Intrilligator, *Econometric Models, Techniques and Applications*, Prentice-Hall, Englewood Cliffs, NJ, 1978, p. 189, from Gujarati 1995, 459).

over the competing models, the marginal loss in explanatory power of Model 4 (roughly 4.6% less than Model 2 and 3% less than Model 3) appears to be a reasonable sacrifice.

How successful have I been in developing a comprehensive model of the rulemaking process? The results of regression 1 are suggestive of many of the challenges confronting state-level research. Given the use of several untested proxy variables and complex collinear relationships between several of the independent variables, any significant finding would be unexpected and questionable at best. Consistent with the diagnosis of multicollinearity, there were no significant *t*-ratios in the model. And, the insignificant *F* statistic for the model suggests there is no reason to reject the null hypothesis that rule output is not significantly influenced by the combined effect of the independent variables. The R^2 for the model suggests only a modest goodness of fit for this regression, and the adjusted R^2 implies that the model explains roughly 19 percent of the variation in the rule output variable.

Each of the other three regressions is a respecification of the full model that drops consistently insignificant and/or collinear variables from the equation without violating theoretical assumptions of a comprehensive regulatory theory. Variables are retained to assess hypothesized influences from each of the categories derived from existing regulatory theories. Regression 2, a respecification that dropped variables only on the basis of insignificance and collinearity, results in a significant *F* ($p<.05$) that confirms the test hypothesis that rule output is influenced by the combined effect of the independent variables. Again, the R^2 for the model implies only a modest goodness of fit. The adjusted R^2 indicates that Model 2 explains roughly 26 percent of the variation in occupational rule output. In this model, only the measures of aggregate group strength and bureaucratic professionalism result in statistically significant coefficients.

Regression 3 omits the institutional constraint variable *APA_1* as an additional test of the notion that this comprehensive variable is redundant given the measures for legislative,

executive, and judicial influence on the rulemaking process. This is consistent with the view that more professional political actors will be more inclined to avail themselves of existing institutional structures and procedures to ensure the desired rule output. The resulting *F* statistic is significant ($p<.05$), again confirming the test hypothesis. The R^2 for the model indicates only modest goodness of fit, and the adjusted R^2 suggests that dropping the *APA_1* variable reduces the explanatory power of the model by roughly two percent. Three of the explanatory variables in this model - the measures of aggregate group strength, legislative professionalism, and bureaucratic professionalism - result in significant findings that confirm related hypotheses.

Regression 4 serves to test whether or not the *APA_1* variable taps the collective influence of other political actors on the rulemaking process. Dropping the three principal-agent variables results in a model that confirms the test hypothesis ($F = p<.05$), while only marginally reducing the goodness of fit and the explanatory power of the model (adjusted $R^2 = .21981$). In addition, the absence of the *LEG_1* and *JUD_1* variables, in particular, contribute to a significant reduction in the effects of multicollinearity. None of the variables in regression 3 reflect a variance inflation factor (VIF) higher than 1.718. As noted earlier, the measures of aggregate group strength, procedural stringency, and bureaucratic professionalism are statistically significant. This is also the only model of the four tested that results in a significant intercept ($p<.10$).

These model results, particularly those for regressions 3 and 4, present findings relevant to the development of any comprehensive theory of the regulatory process. In light of these results, the interrelationships between the principal-agent and institutional variables suggest they are tapping similar influences on rulemaking output. As such, development of a more refined measure of institutional constraint may serve as a proxy for principle-agent measures that present particular challenges to quantitative analysis of state-level political phenomena.

The consistent result of an unexpected direction of association between procedural stringency and the nature of rule output leads to two additional questions for state-level analysis of the regulatory process. First, is this an adequate and accurate proxy measure for the influence of more stringent administrative procedures (a method already being tentatively addressed by such scholars as Grady and Simon (1997))? And, if so, what do the findings of a positive relationship between procedural stringency and pro-regulatee rule output suggest in light of existing reform theories?

Conclusion

This chapter presents my analysis and findings that address the key research questions about the state rulemaking process: What is the nature of state rules to regulate the professions? Are there significant differences across the states? Are there significant differences across the professions? And, what independent factors explain variation in rule output to regulate the professions? Results of the ordinal and multivariate analyses to address these questions are presented, and the process for selection of a "best" multivariate model representing the rulemaking process is discussed. Chapter Five summarizes these findings, discusses implications of these findings for the rulemaking process, and suggests avenues for future research.

Chapter Five

Conclusion

The basic goal of this work has been to extend our understanding of non-institutional and institutional constraints on state administrative rulemaking. Regulatory and rulemaking theories have identified a number of socioeconomic, political, and system variables that produce cross-state differences in rulemaking output. These variables include the hypothesized effects of the public interest; interest groups; the political power and professionalism of legislative, executive and judicial actors; the stringency of procedural constraints imposed on rule writers; and, administrative training and professionalism.

Over the last half-century, elected state lawmakers have increasingly relied on varying degrees of oversight mechanisms and procedural restrictiveness to ensure compliance of administrative rulemakers. While advocates of these system and procedural constraints have assumed their contribution to rational and politically responsive administrative rulemaking, my review of the regulatory and rulemaking literature finds that tests of these assumptions are scarce. To that end, in this study I propose a valid and reliable measure of rulemaking output, and develop a comprehensive model of the rulemaking process to test hypotheses derived from public interest, interest group, principal-agent, and comprehensive regulatory theories. Analysis of the full model and three abbreviated models of the rulemaking process are analyzed to explain and test the influence of hypothesized constraints on state rulemaking output.

This chapter presents a synopsis of the approach used to develop and address the key research questions tested in this study. With consideration of the strengths and weaknesses of this approach, I summarize key findings and suggest implications for our understanding of the state rulemaking process to regulate the professions. Finally, I suggest some directions for future research.

Evaluating this Approach to Tests of State Rulemaking to Regulate the Professions

My examination of the reasons for and the evolution of state administrative rulemaking is particularly focused on the motivation and practices for imposing system and procedural constraints on administrators. I explore relevant theories of regulation to identify key explanations of regulatory decisions and the key dimensions of rulemaking output -- rules favoring the public interest, rules with neutral effect, and rules favoring the regulated interests. Next, I present the application of these assumptions in prior tests of administrative rulemaking and identify 12 independent influences on rulemaking output.[1] The relative absence of any direct tests of these hypothesized influences on state rulemaking output contributed to my proposal for descriptive analysis and a comprehensive multivariate model to test theoretical assumptions of the rulemaking process to regulate professions.

From the rationales of public interest and interest group theories I derived a rulemaking output index. This measure reflects the objective and subjective impacts of administrative rules as well as the public interest and/or pro-regulatee dimensions of the rules. As a quantitative dependent measure of rule output, I used the index to code 2,864 rules issued to regulate 40 professions in 25 states during 1995. Rules were assigned a numerical value across a continuum ranging from strongly favoring the public interest (0) to strongly favoring the regulated interest (4). Values assigned to rules, then, reflect the subjective and/or quantitative costs/benefits imposed by the rule, and the intent of the rule to benefit either the public or the regulated interest.

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[1]The variables suggested to influence administrative rulemaking decisions include: 1.) Public interest influences operationalized as measures of political culture and voter turnout; 2.) Interest group influence operationalized as measures of aggregate group strength in the states, the relative strength of particular interest groups, group strength relative to political stability of the state legislature, and the size of the regulated interest relative to the total state workforce; 3.) Principal-agent influences operationalized as measures of legislative, executive, and judicial professionalism/power; 4.) Institutional influences operationalized as measures of state APA stringency and institutional controls; and 5.) The influence of internal decision-making constraint operationalized as bureaucratic professionalism.

I was confronted with several methodological problems and issues. Unavailable, non-existent, and inconsistent administrative code records limited the number of states in the study to 25, frustrating the use of multivariate methods to compare cross-state differences. To compensate for this low number of state-level observations, I used a multivariate model with data aggregated at the level of the 40 professions. This use of aggregate data required data transformations that limit the predictive capacity and interpretation of the results of the model. In brief, resulting coefficients reflect the direct change in rule output for each unit increase/decrease in the variable of interest, while holding the effects of the other independent variables constant. Results of this cross-section approach also must be tempered with an awareness of the limited number of rules included for analysis and the fact that the data reflect regulatory outputs for only one relatively short time frame. As such, conclusions as to the causes and prediction across time of the relationships being tested are open to question.

Finally, the exploratory nature of this study has required a reliance on theoretical assumptions about cause and effect. Specification of the multivariate model was derived from the assumptions of regulatory theory and rulemaking research. The use of statistical controls to separate out and identify relationships between the independent variables (and unidentified influences) and the dependent variable brings with it several caveats: Despite the tie to applicable theories, this model specification is as yet untested. One goal of this study is to assess the degree of over- or under-specification represented in this model; Second, the adequacy, and possible redundancy, of suggested measures are open to question. Although consistent with prior studies, the reliability and validity of proxy measures for these 12 independent variables are subject to question as true indicators.[2] And, the inclusion of multiple indicators to tap similar

[2] This study incorporated two separate public interest measures (the *TURN* and *CULT* variables), four measures to tap interest group influence (the *PROF*, *VOL*, *AGST*, and *IGST* variables), and two measures suggested to tap the influence of procedural constraints on decision-makers (the *APA* and *INTCON* variables).

concepts is problematic in any multivariate analysis that seeks to control for all relevant independent influences on the dependent variable.

Summary of Ordinal-level Analysis to Describe the State Rulemaking Process

Analysis of the ordinal-level data to describe the characteristics of the state occupational rulemaking process provides several insights. The data reveal significant differences in rule output across the categories of rule output, across states, and across professions. In addition, 56.54 percent of the rules in this study reflected a moderate or strong pro-public interest intent (as opposed to 33.94 percent reflecting moderate or strong pro-regulatee intent). The independent effects of the particular state, profession, or medical/non-medical character of the profession were found to be poor predictors of rule output. These findings run counter to interest group theory assumptions that suggest pro-regulatee dominance of the rulemaking process and of the "capture" of state agencies by regulated non-medical professions.

Analysis of the database aggregated at the level of the rule output measure (n = 2,864) identified seven of the twelve independent variables to be significantly correlated with the rule output index based on Spearman correlation coefficients (with $p < .05$). The factors significantly correlated with increased pro-regulatee output include:

- an increase in particular interest group strength (*IGST*); and
- increased executive power (*EXEC*).

The independent variables significantly correlated with a decrease in pro-regulatee rule outputs (and conversely, an increase in pro-consumer rule outputs) include:

- a more moralistic political culture (*CULT*);
- increased aggregate group strength (*AGST*);
- increased legislative professionalism (*LEG*);

- more active institutional control and oversight (*INTCON*); and,

- increased bureaucratic professionalism (*BUR*).

In this analysis, the measures for aggregate group strength (*AGST*) and executive power (*EXEC*) resulted in coefficients with a direction opposite that of the hypothesized relationship. These findings suggest that increased aggregate group strength leads to more pro-consumer rule output, and that increased governor power leads to more pro-regulatee rule outputs. The finding that in states where groups are more dominant (*AGST*) rule outputs tend to reflect more pro-consumer intent contradicts assumptions of group capture of state agencies. This may suggest economic assumptions of the self-serving motivation of interests groups (i.e. limiting competition, pursuit of economic rents, etc.) are misguided. Another possibility is that in the policy marketplace, groups trade off support between pro-consumer and pro-group interest regulations in hopes of a net "gain." Or, this pro-consumer finding may reflect the growing influence of citizen groups in the regulatory process (Salisbury 1990, 210).

The finding that states with stronger governors produce more rule output favoring regulated interests contradicts principal-agent assumptions that elected political actors will attempt to ensure more politically responsive administrative policymaking.[3] This finding suggests that in state political systems dominated by the governor, administrative policymaking serving the regulated interests may be supported, if not actually directed by a powerful vote-seeking executive.

At least one independent variable in each of the four areas of influence suggested by regulatory theories (public interest, interest group, principal-agent, and institutional influences) was significant. This finding lends credence to the view that understanding the rulemaking

[3] This finding suggests the potential for future assessments that incorporate the effect of executive party affiliation. This study's models are derived from prior tests of regulatory theories that omit reference to this influence. This study's similar omission limits assessment of the effects of changes due to 1994 election results.

process will be better served by efforts to assess comprehensive effects of influences on decision-makers rather than selectively testing the assumptions of a particular theoretical viewpoint.

Summary of Multivariate Analysis

Table 5.1 presents the model *F* statistic, the adjusted R^2, and the percentage of coefficients in each of the four regression equations analyzed in Chapter Four that lend statistically significant support to the hypotheses developed in Chapter Two. These percentages and tests of model significance reflect only modest results. However, the performance of the models does provide incentive for future efforts to develop equations to explain variations in rulemaking outputs.

As suggested in Chapter Four, the insignificance of the fully specified Model 1 is likely attributable to collinear associations between several of the independent variables. The alterations made to the subsequent models are reflected in the improved performance in the number of significant coefficients. However, the adjusted R^2 for each of these models is telling. In no case does it exceed .2651. At best, the theoretical assumptions and related measures of independent influences that are combined to develop these comprehensive models of the rulemaking process explain less than 27 percent of the variation in rule output. In addition to the problems inherent in a cross-section analysis and a limited database, this suggests problems that could be attributable to the imprecise measures of independent influence common to much state-level research and to the need for a better theory of the rulemaking process. Repeated use of categorical, proxy measures for political culture, aggregate group strength, group strength, executive power, and institutional control has contributed to their acceptance as valid and reliable indicators of the concepts they are meant to reflect. While researchers must use the methodological assets that are available, the amount of information that can be gleaned from

Table 5.1 Summary of Regression Results

Regression Model	Test Hypotheses Not Rejected (%)	Model F	Adjusted R^2 (Model Significance)
Model 1	0	1.7650	.1907
Model 2	25%	2.7586**	.2651
Model 3	42.86%	2.85315**	.2496
Model 4	60%	3.19758**	.2198

Note: Percentages indicate percentage of model coefficients with significant signs (at the .10 level or below). The Model F statistic is a measure of the significance of the simultaneous influence of the independent variables. The (**) notation indicates the F statistic is significant at the .05 level or below, and that the null hypothesis of "no difference" may be rejected. The adjusted R^2 is a goodness of fit measure, with the resulting measure indicating the percent of variation in the dependent variable explained by the model.

these ordinal-level measures is limited. The development of related interval-level measures will continue to be a "carrot" for state level researchers seeking to understand the political process.

These modest results, however, should not detract from the positive findings in Models 2, 3, and 4. First, the index of rulemaking output has been demonstrated as a useful dependent measure for multivariate models seeking to explain the rulemaking process. Second, all three models confirm the significance of aggregate group strength and bureaucratic professionalism as influences on rule output. The consistent significance of the bureaucratic professionalism measure may be a cue for future developments of regulatory theory. These models also fail to confirm the influence of public interest variables on rulemaking output. Third, although there was only modest support for the influence of principal-agent variables on rule output, the findings in Model 3 hint at the potential for a comprehensive measure of institutional constraints that may better serve our understanding of the rulemaking process. Future models may confirm the value of APA stringency measures as proxies for the separate influence of political actors in the system.

Implications of the Findings

The findings of this study identify the factors influencing rulemaking outputs to regulate 40 professions in 25 states during 1995. As such, these findings are a snapshot of the state rulemaking process and of factors affecting the nature of rulemaking output. The fact that

inclusion of data in the study was due principally to availability should temper any generalizations to apply only to the included states and professions.

The ongoing efforts to reform state Administrative Procedures Acts is evidence of the importance elected officials place on instituting constraints to ensure rational and responsive rulemaking by unelected administrators. The assumptions underlying choices to impose more oversight or procedural stringency have been drawn from prevailing public interest, interest group, and principal-agent theories of the regulatory process that have been unchallenged by empirical analysis. This study has been guided by the need to directly test the hypothesized independent influences on rulemaking output.

I find that a significant majority of rules reflect pro-public interest intent. This finding contradicts the common assumption of interest group theorists that regulated groups dominate the rulemaking process. A second finding is that the stringency of rulemaking procedures contributes to more pro-regulatee rule outputs. This also contradicts the direction of the hypothesized relationship in this analysis. As suggested in Chapter Four, this unexpected relationship may reflect the effect of the costs imposed on members of the public and group interests who are affected by rulemaking. Rather than enhancing public input, it may be that only those interests directly impacted by a proposed regulation are willing to endure the costs of money, time, and effort required to participate in the notice and comment process. If this is the case, this finding is consistent with Bentley's suggestion that government will resolve conflicts between "visible" groups, and that interests choosing not to participate will fail to appear on decision-makers' agenda (Bentley 1967). This effect could also be expected to contribute to a regulatory process that conforms to Stigler's view of interest group dominance.

The finding that increased bureaucratic professionalism significantly contributes to more pro-consumer rule outputs may suggest that better educated and better paid administrators contribute more toward technically rational and responsive rule output than increased oversight

and procedural stringency. The unexpected finding as to the effect of regulatory stringency and this finding regarding the effect of administrative professionalism suggest that well intended assertions by legal reformers may need reexamination. Future developments in regulatory theory and calls for "model" administrative procedures may do well to consider how procedural constraints limit public input and the importance of administrative training and professionalism as an influence that promotes rational and responsive rulemaking.

The findings from the multivariate analysis also fail to confirm the hypotheses derived from public interest theories of the regulatory process. This suggests that administrative decision-makers are taking their cues from some source other than the influence of political culture or an active electorate. My findings confirm the role of interest groups, state legislatures, and the oversight process in providing cues to administrators charged with writing regulations. Again, any future examination of the rulemaking process will be well advised to include the influence of bureaucratic professionalism as an internal decision-making constraint that helps to explain rule outputs.

The ordinal level analysis using this dependent rule output measure provided an opportunity to compare state and occupation level differences in rule output, and provided an empirical measure that confirmed the significance of eight of the twelve hypothesized influences on rule output. The weak explanatory power of the multivariate models should not detract from the fact that the measure now provides researchers with an approach for examining hypothesized influences on rule output while controlling for other effects.

Suggestions for Future Research

Both the state and federal rulemaking processes are areas of research that have been characterized by general theoretical argument and case study approaches. The lack of intersubjective, reliable and valid measures of rule output, difficult data collection, the lack of comparable data, and overlapping and imprecise independent measures have no doubt limited

efforts to develop generalizable and predictive models of the rulemaking process. While the index of rule output developed in this study is an effort toward resolving the need for a direct dependent measure, future research of the rulemaking process will be advanced by revisions that will make the index applicable to policy areas in addition to occupational regulation. The establishment of a centralized repository of the annualized updates of all state administrative codes would also facilitate future studies of this nature. However, until a time when all states choose to include comparable administrative history data and similar specificity with revisions, future studies must still contend with the problem of data that is not comparable. Further, more precise theories of the regulatory process may be needed to address the unexplained influences on rulemaking output uncovered by this study. More refined and precise measures of political culture, aggregate and specific measures of group strength, and measures of executive and judicial influence on the regulatory process will also contribute greatly to more refined and precise empirical models.

Our understanding of the rulemaking process will also be enhanced with more expansive studies that consider all rulemaking outputs for a given policy area across all or a representative sample of the states. Extending the scope of future studies across the span of several years will provide opportunities for more valid, reliable, and generalizable results that will overcome many of this limitations of case studies and cross-section research. Finally, the additional resources of time and funding will contribute greatly to larger, cross-time data sets. With the use of available multivariate analysis methods, this will provide an opportunity for more robust, precise, generalizable, and predictive hypothesis testing. The results from this future work will help expand our knowledge of the factors that contribute to more rational and responsive rulemaking in the states, and will help inform elected decision-makers charged with designing and implementing system and procedural constraints to achieve those ends.

Summation

The ongoing debate over the growth of administrative policymaking in the form of rulemaking has at times been couched in assertions that we are witnessing a "crisis of public authority" (Houston 1991, 1). To rulemaking critics, administrative rulewriting conjures up visions of unelected bureaucrats arbitrarily and unconstitutionally writing policy that impacts a public that lacks representation in these policy decisions. My findings suggest that at the level of state administration these images are far from the reality of the rulemaking process. Overall, state rule output to regulate professions reflects a significant concern for the public interest. More specifically, one of the strongest influences contributing to these pro-consumer regulations is the level of professionalism of the administrators charged with implementing policy.

In a broad sense these findings are relevant to concerns for the effects of increased delegation of federal policy functions to the states. Although there are no comparable studies of federal rulemaking, the results of this analysis suggest that views of state administration dominated by special interests and inadequate professionalism are unsupported. Rather, my results suggest that a level of government administration that is closer to the public being regulated *is* capable of issuing policies broadly representative of the public interest.

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APPENDICES

Appendix A

APPENDIX A

Coding Instructions: Rules written to regulate professions.

The administrative regulations being assessed represent each state's attempt to regulate any of a number of different professions.

I. BACKGROUND:

Rule may serve either the interests of the public or of the groups being regulated. This study uses an index of rule output as a measure of the administrative rulemaking process. The index is constructed to reflect the degree to which rules favor either the public interest or the regulated group.

The coding process requires a three-step determination. First, determined if the intent of the rule is to provide direct or indirect benefits or costs to any regulated interest or to the general public. Then, assess the intended effect of the rule. Rules limiting competition by restricting the entry of new practitioners[1], restricting interstate competition[2], allowing practitioners to limit market or service information available to consumers[3], or directly rewarding regulated practitioners with state funds or assistance[4] function in the interest of those being regulated.

In general, rules favoring the public interest take two forms. First, some rules impose direct or indirect costs on practitioners that might not otherwise be levied in a free market

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[1], These rules impose direct or indirect costs on individuals interested in entering the regulated profession. Such costs may include direct expenses for tuition and books related to minimum education requirements for the profession, or for registration/certification/ licensing fees imposed on new entrants to the profession. Indirect costs may include the opportunity costs incurred (e.g., time) to meet qualification requirements in lieu of income potential that may have been earned in some unregulated activity.

[2] In particular, restricting the practice of registered/certified/licensed professionals in neighboring states. Few states totally forbid cross-state practice. Restrictions, when evident, usually take the form of requiring out-of-state practitioners to demonstrate proficiency by passing a state-specific written or oral examination acceptable to the state board.

[3] The most obvious, and most absent, example of this restriction would be prohibition of advertising among professionals. However, rules that restrict consumer access to their own records or to aggregate records of practitioner performance/consumer satisfaction also serve to limit information available to the public.

[4] Most often, indirect benefits to the regulated are in the form of limits on the number of practitioners (e.g., guides in Montana), and grandfather clauses excluding practicing professionals from requirements being imposed on new and future practitioners..

environment. Such directives may include the imposition of continuing education requirements or of standards of practice or procedure.[5] Second, some rules seek to correct market imperfections by enhancing information available to consumers[6], competition in the marketplace (e.g., simplified/less costly entry to the profession and reciprocity) , and opportunities for public and/or board oversight and prosecution.

Finally, each rule is assigned a numerical code based on your assessment of the degree to which the rule was in the public interest, regulatee interest, or had neutral effect. Rules that separately favored both public and regulatee interest (eg. imposed continuing education requirements on practitioners and, in the same rule, grandfathered existing practitioners to exempt them from the standards; or, imposed licensing requirements in one section of a rule and permitted reciprocity priveleges in another), are coded as two distinct rules.

Rule outputs are categorized according to a scale as follows:

0 = Rules strongly favoring the public interest

1 = Rules moderately favoring the public interest

2 = Rules having neutral effect

3 = Rules moderately favoring the regulatee interest

4 = Rules strongly favoring the regulatee interest

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[5] Rules of this form serve the classic public interest intent. Continuing education, practice and procedure standards establish a minimum standard of practice that would be absent in a free market. For example, in an unregulated market, less qualified plumbers may appeal to cost-conscious consumers as an alternative to better trained, more professional (and more expensive) "licensed" plumbers. The threat to the public interest lies in the potential for the less qualified plumber to "botch" the job. Not only does this directly affect the consumer, but the negative externalities extend to the potential to pollute the community water supply. (A similar "negative externality" metaphor is often used to demonstrate the risk of an unqualified physician misdiagosing a patient and threatening the public with communicable disease.)

[6] Evident most often in rules encouraging/regulating the fair use of advertising, and in rules providing access to service performance records of practitioners.

II. INFORMATION TO BE INCLUDED WHEN CODING RULE OUTPUT:

The following information is to be recorded on your coding sheets: (See attached sample coding sheet)

Column 1. Write in the name of the state issuing the administrative code you are coding.

Column 2. Write in the rule number of the specific rule you are coding. Enter the complete rule number. Rule numbers generally serve as a reference to the agency issuing the rule (eg. The State Commission on Fire Fighting Personnel Standards and Education. In Tennessee this commission is identified by the number 0360) Separate topics/policy areas of the rule, (or "codes" or control numbers) usually are incorporated into the second number (often separated by a hyphen [-] or period [.]. For this commission, code 1 includes separate subsections for the table of contents and definitions represented as 0360-1-1, and 0360-1-2. Subsequent codes address the specific topics/policy areas such that rules regarding instructors are included in code 0360-2, rules covering examinations are in code 0360-4, etc.).

Specific rules are usually identified by the last number in the series. This may be an ordered number such as 1, 2, 3, etc., a decimal form such as .01, .02, .03, or an alphabetic form such as (a), (b), (c), etc.

Note that rules separately favoring both public and regulatee interest (eg. imposed continuing education requirements on practitioners and, in the same rule, grandfathered existing practitioners to exempt them from the standards; or, imposed licensing requirements in one section of a rule and permitted reciprocity priveleges in another), are coded as two distinct rules. In this event, add the suffix a, b, c, etc. to the rule number.

Column 3. Write in the month and year the rule became effective. Only rules originated, rewritten, or amended during **1995** are to be considered for this study. This information will usually be reflected at the end of the rule under the section "Administrative History." In some cases, a separate "activity" sheet accompanies the administrative code that collectively lists all rulemaking activity in a given year. If you cannot locate the effective date for the rule change, contact me.

Column 4. Write in the name of the profession being regulated by the rule. This is the occupational group or groups is/are to be governed by the rule. General rules in a code (a section of rules about a general topic/policy area) will usually include a specific rule that specifies this information. Other rules in the same code will, unless specifically stating otherwise,

apply to the same regulated interests. Review each rule to be sure whom the rule applies to, then write out each and/or all of those listed to whom the rule applies.

Column 5. Entering the rule output code:

Step 1: Determine if the rule bestows direct or indirect benefits or costs on the public or a regulated interest that would not be required in a free market of professions.

Step 2: Determination of the pro-consumer, neutral, or pro-regulatee intent of the rule should be made on the following basis:

Pro-Consumer Regulation - Generally reflects an intent to correct information asymmetry or market dysfunction by enhancing consumer access to service or cost information, promoting market competition, enhancing practitioner standards of practice, and strengthening consumer protections against fraud. In general, rules favoring the public interest take two forms. First, some rules impose direct or indirect costs on practitioners that might not otherwise be incurred in a free market environment. Such directives may include the imposition of continuing education requirements or of standards of practice or procedure.

Second, some rules seek to correct market imperfections by enhancing information available to consumers, competition in the marketplace (e.g., simplified/less costly entry to the profession and reciprocity) , and opportunities for public and/or board oversight and prosecution.

Neutral Regulation - These may include statements, directions or instructions that regulate government personnel or procedures. Many rules also include procedural elements that apply to both the governing agents and those being governed without conferring benefits to any party.

Pro-Regulatee Regulation - Generally reflect an intent to restrict entry to the occupation through direct or indirect financial costs levied on potential practitioners; to otherwise limit competition by exclusion of unlicensed/uncertified or out-of-state practitioners; to limit dissemination of pricing, service, and performance information to consumers; or to otherwise confer direct or indirect financial benefits to regulated practitioners.

Step 3. Categorizing Rule Outputs:

Category 1 - Rules strongly favoring the public interest.

This study uses a 1995 cutpoint of $250.00 per year to assess the degree of direct or indirect cost/benefit a rule imposes. This cost/benefit may be a one-time expense or an annual outlay.

Rules deemed in Step 1, above, to be issued in the public interest and imposing estimated direct or indirect financial costs of $250.00 or more on regulated practitioners are categorized as a '1'.[7]

Category 2 - Rules moderately favoring the public interest.

Rules deemed in Step 1, above, to be issued in the public interest and imposing estimated direct or indirect financial costs of less than $250.00 on regulated practitioners are categorized as a '2'.[8]

Category 3 - Rules having neutral impacts.

Rules deemed in Step 1, above, to incur no costs or benefits on either consumers or practitioners are categorized as a '3'.[9]

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[7] For both Category 1 and Category 2 rules, the key elements of indirect financial costs are the time, effort, and/or loss of self-determination imposed on practitioners by the rule. Generally, these costs may include the effort required by a regulatee to satisfy continuing education education requirements; to satisfy reporting deadlines; to complete any of a variety of registration, report or record requirements. Other indirect costs include restrictions or more stringent standards of professional activities; limits on reinstatement; threats of disciplinary action; requirements to provide financial or auditing reports; enhanced agency, commission or board authority over a regulated interest; reciprocity agreements with other states; and provision removing restrictions on advertising by the profession.

Categorization of rule outputs imposing direct financial costs is considerably less subjective. Rules assessing fines, penalties, and fees are immediately apparent. In these cases, the decision rule for an assessment of "some" or "significant" costs is a breakpoint at $250/year, either as a one time expense or as a scheduled annual outlay. Costs below $250 are coded as a 2, those above are coded as a 1. This study assumes that up to a point, professional fees, penalties or fines are accepted as "normal" costs of doing business. Less obvious direct costs are included in rules requiring dividend payments; requiring audits, financial reports, records, etc.; or requiring use, maintenance, repair or replacement of physical assets to comply with the rule. Again, the decision rule requires an estimation as to whether or not these costs will exceed $250/year. Costs below $250 are coded as a 2, those above are coded as a 1.

Examples of Category 1 rule outputs include:

TN 0480-1-.10 - Provides that dispensing opticians may not fit contact lenses except under direct supervision of a licensed optometrist or opthalmologist. (This rule is deemed to protect the consumer interest by providing for "expert" supervision of this professional practice, with an substantial estimated indirect market cost to the dispensing optician exceeding $250.)

TN 0480-1-.12 - Defines continuing education requirements for licensed dispensing opticians. (This rule is deemed to protect consumer interest by enhancing the professional skills of the practitioner, while imposing estimated direct and indirect costs in excess of $250.)

TN 0460 -3-.02 - Defines and authorizes reciprocity procedures for dental hygienists licensed in other states. (The rule is deemed to protect consumer interest by simplifying entry to the profession and imposing estimated direct and indirect costs to practitioners in excess of $250.)

TN 0460-4-.04 - Establishes restrictions and requirements on practicing dental assistants performing coronal polishing. (Deemed in the public interest by imposing stringent performance standards on practitioners with estimated direct and indirect costs exceeding $250.)

[8] Examples of Category 2 rule outputs include:

TN 0480-1-.13 - Establishes a code of ethics for dispensing opticians. (Deemed to set a standard of perfomance and ethics in the consumer interest, but imposing direct or indirect costs on practitioners less than $250.)

TN 0460-3-.07 - Sets standards of compliance and fees for license renewal by practicing dental hygienists. (Deemed to provide some degree of oversight over practitioners. Imposes cost of $70.)

[9] Examples of rules having neutral impacts (Category 3), include:

TN 0880-3-.06 details procedures to be followed by the State Board of Medical Examiners.

TN 0880-3-.13 details procedures for the board to enforce the ethics code.

TN 1020-1-.02 provides definitions of terms used in the code.

Category 4 - Rules moderately favoring regulatee interests.

Rules deemed in Step 1, above, to incur estimated direct or indirect financial costs less than $250.00 on potential entrants to the occupation, or to confer other competitive, service, or performance benefits to practitioners estimated to be less than $250.00 are categorized as a '4'.[10]

Category 5 - Rules strongly favoring regulatee interests.

Rules deemed in Step 1, above, to incur estimated direct or indirect financial costs greater than $250.00 on potential entrants to the occupation, or to confer other competitive, service, or performance benefits to practitioners estimated to be greater than $250.00 are categorized as a '5'.[11]

TN 0780-1-67-.01 details the legislative authority under which rules in the code were written.

[10]Examples of Category 4 rule outputs include:

TN 0460-1-.04 - Outlines board of dentistry procedures for application review, approval, denial, and interviews. (Deemed as a benefit to regulatees through restriction of entry to the profession, with estimated related indirect costs of less than $250 to potential practitioners.)

TN 1175-3-.03 - Establishes procedures, requirements for a certified private investigator certificate. (Deemed as a benefit to regulatees through restriction of entry to the profession, with estimated direct and indirect costs of less than $250 to potential practitioners.)

[11] Examples of Category 5 rule outputs include:

TN 0480-1-.03 - Requires licensure of dispensing opticians, and specifies priveleges granted based on licensure. (Deemed as a benefit to regulatees through restriction of entry to the profession and limits to competition, with related benefits to practitioners exceeding $250.)

TN 0460-1-.02 - Sets fees to be assessed for licensure as a dentist, dental hygienist, and dental assistant. (Deemed a benefit to regulatees through restriction of entry to the profession, with related costs of entry exceeding $250.)

TN 0480-1-.21 - Requires each and every licensed dispensing optician establishment to have a duly licensed dispensing optician on duty. (Deemed as a benefit conferred on regulatees with potential direct financial benefits exceeding $250.)

Sample Coding Sheet: 1995 State Rule Output

State	Rule Number	Effective Date	Profession/Occupation	Output Code

Appendix B

Appendix B Guttman Scale of State Administrative Procedures

State	Public Comment	Register	Express Terms	Petition	Statutory Authority	Legis/Exec Review	Legis. Veto	Substantial Evidence	Rulemaking Calendar	Annual Review
California	+	+	+	+	+	(-)	(-)	+	+	+
Illinois	+	+	+	+	+	+	(-)	+	+	(-)
Florida	+	+	+	+	+	+	+	(-)	(-)	+
Massachusetts	+	+	+	+	(-)	+	+	(-)	+	-
Oklahoma	+	+	+	+	(-)	+	+	+	-	-
Kentucky	+	+	+	+	+	+	(-)	+	-	-
Kansas	+	+	+	(-)	+	+	(-)	+	-	-
Idaho	+	+	+	+	+	+	+	-	-	-
Michigan	+	+	+	+	+	+	+	-	-	-
Nevada	+	+	+	+	+	+	+	-	-	-
Pennsylvania	+	+	+	+	+	+	+	-	-	-
Wisconsin	+	+	+	+	+	+	+	-	-	-
Connecticut	+	+	+	+	+	+	+	-	-	-
Nebraska	+	(-)	+	+	+	+	+	-	-	(+)
Alabama	+	+	+	+	(-)	+	+	-	-	-
North Carolina	+	+	+	(-)	+	+	+	-	-	-
Missouri	+	+	+	(-)	+	+	+	-	-	-
Wyoming	+	(-)	(-)	+	+	+	+	-	-	-
Maryland	+	+	+	+	+	+	-	-	(+)	-
New York	+	+	+	+	+	+	-	-	(+)	-
Iowa	+	+	+	+	+	+	-	-	-	-
New Jersey	+	+	+	+	+	+	-	-	-	-
Texas	+	+	+	+	+	+	-	-	-	-
Colorado	+	+	(-)	+	+	+	-	-	-	-
New Hamp.	+	+	(-)	+	+	+	-	-	-	-
Alaska	+	(-)	+	+	+	+	-	-	-	-
Vermont	+	(-)	+	+	(-)	+	-	-	-	-
Minnesota	+	+	+	+	+	-	-	-	(+)	-
Washington	+	+	+	+	+	-	-	-	-	(+)
Maine	+	+	+	+	+	-	-	-	(+)	-
Virginia	+	+	+	+	+	-	-	-	-	-
Utah	+	+	+	+	+	-	-	-	-	-
Montana	+	+	+	+	+	-	-	-	-	-
Oregon	+	+	+	+	+	-	-	-	-	-
Tennessee	+	+	+	+	+	-	-	-	-	-
Arizona	+	+	+	(-)	+	-	-	-	-	-
Indiana	+	+	+	(-)	+	-	-	-	-	-
Delaware	+	+	(-)	+	+	-	-	(+)	-	-
Georgia	+	(-)	+	+	+	-	-	-	-	-
South Dakota	(-)	+	(-)	+	+	-	-	-	-	-
Louisiana	+	+	+	+	-	-	-	(+)	-	-
Rhode Island	+	+	(-)	+	-	-	-	(+)	(+)	-
South Carolina	+	+	+	-	-	(+)	-	(+)	-	-
West Virginia	+	+	-	-	-	(+)	(+)	-	-	-
New Mexico	+	+	-	-	-	-	-	-	-	-
North Dakota	+	-	-	(+)	-	-	-	-	-	-
Mississippi	+	-	(+)	-	-	-	-	-	-	-
Arkansas	+	-	-	-	-	(+)	-	-	-	-
Ohio	-	-	-	-	-	(+)	(+)	-	-	-
Hawaii										

Total Cells 490

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Survey Questionnaire

Provisions in State Administrative Procedures Acts - 1997

STATE:_____

CONTACT NAME:_____

PHONE:_____

DATE:_____

Questions:

1, Do your administrative procedures provide the opportunity for interested parties to petition agencies for issuance, repeal, or amendment of a rule? _____

2. Do your administrative procedures provide for publication of a register to serve as a centralized, accessible source of rulemaking notices? _____

2.b. Is there a requirement that this notice contain the express terms or summary of the proposed rule? _____

3. Do your administrative procedures require the rulemaking notice to specify the statutory authority for the proposed rule? _____

4. Must agencies submit regulations to the legislative or executive branches for review before they are promulgated? Legislature _____ Executive _____

4a. Do the legislature or executive have veto power at this stage? _____

5. Do rulewriting standards require that rules be based on "substantial evidence." (i.e., economic impact analysis)[a more strict judicial review standard than the typical admonition to avoid being "arbitrary and capricious."] _____

6. Do participants in rulemaking have the right to cross examine witnesses? _____

7. Are agencies required to conduct annual reviews of existing regulations to determine if they are still needed? _____

8. Must agencies prepare an agenda or calendar of regulations they expect to propose or adopt in the coming year? _____

VITA

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The author worked at the Department of Human Services in Tulsa, as newspaper business editor and advertising manager, and as publications editor and public relations manager for an international oil well drilling firm. He entered the Master of Public Administration program at the University of Tennessee in August 1989, and received his degree in December 1991. After working as a budget analyst in the Tennessee Department of Finance and Administration, he returned to the University of Tennessee in August 1993 to pursue the Doctorate of Political Science. He received the Doctor of Philosophy degree with a major in Political Science in May 1998.

The author taught a course in business communication at Tulsa Junior College during 1984, and a Tennessee government and politics course at the University of Tennessee while completing the doctoral program. He has authored various works on congressional decision-making, recycling policy, municipal utility financing, and state-level rulemaking. Dr. Schuman is a member of the American Political Science Association, the Southern Political Science Association, and the American Society for Public Administration.