

THE BEHAVIOR OF REGULATORY COMMISSIONS:
A CASE STUDY OF THE VIRGINIA STATE
CORPORATION COMMISSION,

by

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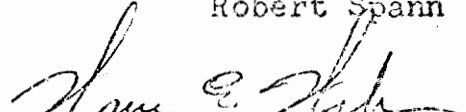
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CHAPTER I

INTRODUCTION

During the past century in the United States there has been a considerable increase in the public control of economic activity. Today, each of the states engages in some form of public utility regulation, and in addition, there are several federal agencies which are charged with the regulation of various segments of the economy.

Regulation has in the past been carried out through the legislative, the judicial, and the executive branches of government, but since the late 1800s the primary institution for the regulation of economic activity has been the independent regulatory commission.

There is widespread discontent with the commission form of regulation. Most students of the subject agree that commissions have failed to live up to the expectations of their creators. The objective of this study is to analyze several of the explanations of commission failure in order to determine which, if any, seem valuable.

There are several theories of commission behavior which fall into two broad categories, traditional approaches and bureaucratic models. We test each of the theories as

variants of a general model incorporating them all. The test is applied to time series data from the Virginia State Corporation Commission. None of the theories is accepted without reservation; however, Stigler's theory of a captured bureaucracy, and the traditional theory seem most consistent with the data.

While all of the theories are useful in explaining certain aspects of regulatory behavior, all suffer from serious shortcomings. We conclude that extensive research remains if we are to be able to adequately explain and predict regulatory behavior, and we offer several suggestions for the scope and direction of that research.

Early Forms of Regulation

Regulation in the United States developed in a rather haphazard manner. According to Fainsod and Gordon, regulation was ". . . initiated by particular groups to deal with specific evils as they arose, rather than inspired by any general philosophy of governmental control."¹

The groups initiating regulatory control first turned to local governments for relief, however, they soon found that local governments were unable to provide the protection they were seeking. They then turned to

¹Merle Fainsod and Lincoln Gordon, Government and the American Economy (rev. ed.; New York: W. W. Norton and Co., 1948), p. 226.

the states and the federal government for regulatory action.

Several states¹ initiated regulation prior to the Civil War, with regulation in Virginia beginning as early as 1816. The first national commission, the Interstate Commerce Commission, was established in 1887.

Early state regulation was legislative in nature. Occasionally a legislative committee would be set up to investigate some area of railroad operation and if it appeared that the public required relief from certain practices, new legislation was proposed by the committee.² Enforcement of the laws passed by the legislature was left up to the judiciary.

The Independent Regulatory Commission

There was great concern that the ordinary law making and law enforcement establishment was poorly equipped to handle regulation of business. Legislative control was felt to be ineffective because of the lack of expertise in dealing with the issues and the absence of continuous sessions. Courts were considered unsatisfactory because in addition to their lack of expert knowledge, their

¹Pennsylvania, Massachusetts, New Jersey and Virginia.

²Marver Bernstein, Regulating Business by Independent Commission (Princeton, N.J.: Princeton University Press, 1955), p. 26.

formal, case by case process was slow and often excluded classes of evidence which were relevant to business decision making.¹

When the traditional enforcement bodies seemed unable to deal with regulatory problems, attention turned to devising a flexible administrative mechanism which would be more competent to deal with complicated economic matters.² The administrative mechanism devised was what is now known as the independent regulatory commission. The typical independent regulatory commission today consists usually of three or five members who act as judges. Commission staffs often consist of: directors of various divisions of the agency, accountants, attorneys, engineers and an occasional economist and rate analyst.³ Independence is sought in order to keep political influence at a minimum. Numerous techniques are used to assure independence. Among the more common are staggered terms, bipartisan representation, and the appointment of commissioners by the executive with legislative approval, though some state commissioners are selected by direct election. The complete separation of the selection process from the political

¹Samuel O. Dunn, "Regulating by Commission," North American Review, CXCI (February 1914), 205.

²Bernstein, op. cit., p. 26.

³Charles F. Phillips, Jr., The Economics of Regulation (rev. ed.; Homewood, Ill.: Richard D. Irwin, Inc., 1969), p. 125.

arena, regardless of the method used, would be difficult. Once the commissioner is selected, complete isolation from the executive and legislative branches is practically impossible. Annual budgets are formulated by the executive branch and the legislature must enact the appropriations bills. This topic will be covered in more detail in Chapter III.

The advantages allegedly enjoyed by the commission form of regulatory administration are:

(1) Flexibility--previous legislative regulation was inflexible and unable to keep pace with changes in the economy.

(2) Expertise--continuity in the commission assures increasing knowledge about the regulated industry and its affairs.

(3) Independence--neither political pressure nor pressure by interested groups would be able to affect the decisions made by impartial commissioners.

(4) Initiative--the commission would not have to wait idly by until cases were referred to it, as the courts must. Commissions could instigate proceedings and investigate evidence on their own volition.

Plan of the Study

In Chapter II we will discuss the historical foundations of regulation in Virginia and the events which led

to the creation of the State Corporation Commission. We will also review the history of the commission from its creation in 1903 to present.

The theories of the behavior of regulatory commissions are presented in Chapter III. We specify a general function incorporating all of the theories and discuss each theory in detail.

We test the alternative hypotheses in Chapter IV and in Chapter V we summarize our findings and discuss the implications of those findings.

CHAPTER II

REGULATION IN VIRGINIA

During most of the nineteenth century, when anyone expressed a concern over the public control of business, his primary interest rested with railroads. In this chapter we will first summarize the history of pre-Civil War railroad regulation in Virginia. After the Civil War, the increased abuses of the railroad's political and economic power resulted in renewed interest in railroad regulation. This culminated first in a relatively powerless railroad commission, and eventually in the creation of the State Corporation Commission by constitutional convention.

In order to familiarize the reader with the functions and activities of the SCC since its formation we will discuss the commissioners, the duties, some major trends in commission activity, and the financing of the commission. Though we take an historical approach, we make no attempt to write a definitive history of the commission's activities for the past seventy years. Rather, we attempt to lay the groundwork for empirical analysis which will be presented in later chapters.

Early Regulation in Virginia

Regulation began in Virginia in 1816 with the creation of the Board of Public Works. The primary reason for its formation was to assure continuity in the supervision of state aid to railroads. The Virginia General Assembly had recognized that rail transportation in that era exhibited certain public goods characteristics and saw the need for public financing of some segments of rail lines. They realized however, that the degree of expertise required to administer such aid was not to be found in the General Assembly. It became, then, the job of the Board of Public Works to advise the General Assembly and the railroads in such matters.¹

The duties and responsibilities of the Board were not those typically associated with the modern regulatory commission. It had no rate making power, but could only advise the railroads and legislature as to proper rates. It was apparent that the Board's rate making advice was not directed toward the approximation of competitive conditions, but rather toward aiding the railroads in establishing rates which would maximize their profits. This was done so that the state might recoup some of its

¹Carter Goodrich, "The Virginia System of Mixed Enterprise: A Study of State Planning of Internal Improvements," Political Science Quarterly, 64 (September 1949), 355-87.

railroad aid in the form of higher dividends from roads in which it had a financial interest.

The next phase of regulation in Virginia began in the 1870s. Twice (in 1872-73 and 1874-75) bills were introduced which would create railroad commissions,¹ but each time they were rejected. In 1877 a relatively strong bill was introduced which would form a commission with the power to set reasonable rates. The bill as enacted, however, left the commission with only the powers of supervision and recommendation, with the additional charge of assuring that the terms of the roads charters were carried out. Once in action the newly formed commission seemed primarily interested in assuring that no traffic was diverted around Virginia, rather than with problems such as reasonable rates and rate discrimination.²

In the years following the creation of the railroad commission until 1892, three bills, designed to restructure the commission after the Georgia commission, were introduced.³ All attempts to redesign the Virginia commission

¹House Journal, 1872-73, p. 378-79; Senate Journal, 1874-75, p. 15.

²Maxwell Ferguson, State Regulation of Railroads in the South (New York: Columbia University Press, 1916), pp. 56-57.

³The Georgia Commission, established in 1879, was more powerful than any commission existing at that time in any other southern state. It had the power to set rates and furthermore had survived court tests of its authority. See ibid., p. 60.

failed, and after 1892 little was done by the proponents of regulation until the 1901-1902 constitutional convention.

The Railroads and Virginia Politics After the Civil War

The passage of the Underwood Constitution, and the election of Gilbert C. Walker as Governor, in July of 1869, coincided with the beginning of an era of rebuilding for Virginia's railroads. The rebuilding was to include numerous consolidations of existing lines, many of which were to require legislative approval. The new constitution provided for universal suffrage, and the railroads often were able to influence the newly enfranchised voters to elect representatives who were sympathetic to their goals. In the campaign of 1869, the power of the railroads began to be felt in Virginia politics. William Mahone, president of three different railroads extending from Norfolk to Bristol, was the primary financial backer of Walker's campaign. Mahone's goal was to legally consolidate the three roads into a single line,¹ and without political help his goal was not attainable. Wells, the nominee of the Radical Republicans, opposed Mahone's consolidation plan and it was felt that the Conservative Party ticket was too weak to defeat Wells. Mahone had little choice

¹Allen W. Moger, Virginia: Bourbonism to Byrd, 1870-1925 (Charlottesville: The University Press of Virginia, 1968), pp. 10-11.

but to press for the nomination and subsequent election of the Conservative Republican Party's nominee Gilbert C. Walker, who was sympathetic to his consolidation scheme.

The Conservatives ruled both houses of the General Assembly, but Negroes had a relatively large representation (22 of 181). Railroads had traditionally influenced the voting of many legislators, especially the Negroes. The stage was set for increasing railroad influence through the manipulation of the legislature. The first controversial issue to come before the General Assembly was Mahone's consolidation plan. He needed legislative approval to purchase railroad stock held by the State of Virginia in order to consolidate the three lines. The issue resulted in a bitter fight with the decision finally hinging on the dispersing of a good deal of Mahone money.¹

Another major piece of legislation which would allow the railroads to purchase the states interests in roads other than Mahone's three, was passed in March, 1870. The stock, purchased between 1816 and the Civil War, was next to worthless by 1870 because of the losses suffered by the roads during the war. Mahone, who had already purchased the States interest in the three roads making up his East-West line, was violently opposed to the measure, since it

¹Rumors of bribery were so widespread that the Senate appointed an investigatory committee, though it took no action.

could result in the consolidation of North-South lines and divert freight northward and to the sea via Baltimore rather than through Norfolk. However, his lobbyists were not so adept as the so-called "bucktails" from the North, and the bill passed both houses of the General Assembly.

As payment for the stock, the state accepted unfunded prewar state bonds, and even second mortgages on the railroad properties themselves, while allowing the railroads to float first mortgages on the same properties in order to raise operating funds, making the second mortgages practically worthless. The total loss to the state from the sale of her stock has been estimated in excess of 26 million dollars.¹

The corruption and influence of the railroads was not confined to the legislature. Governor Walker, whose election was owed in large part to Mahone's efforts, apparently was willing to bargain with other rail interests as well. The railroad bill of 1871, ". . . was concocted in the Governor's Mansion, and the Penn Central gave James Walker (the governor's brother) 2,000 shares of stock for his services in obtaining the road for them."²

¹General J. D. Imboden, in Report on the Internal Commerce of the United States, 1886, House Executive Documents, 49th Cong., 2d Sess. 1886-87, XVII 22-23, 75-76.

²Allen W. Moger, "Railroad Practices and Policies in Virginia After the Civil War," Virginia Magazine of History and Biography, 59 (October 1951), 439.

After the legislative fight of the 1871 session, the railroads had such a firm control over the government in Virginia ". . . that restrictive legislation could not be passed and the roads could get almost any generous concessions they might desire."¹

The Inadequacy of Early
Railroad Regulation

Throughout the remainder of the nineteenth century the railroads reduced competition in Virginia via legislative approved line consolidation and the formation of relatively successful pooling arrangements.²

The railroad commission in existence between 1877 and 1902 had limited powers. It had no absolute rate making power and was thus unable to do anything about rate discrimination. All attempts to give it those powers were successfully thwarted by railroad interests.³

A major cause of monopolistic pricing in the state continued to be road consolidation. Much of the

¹Ibid., p. 427.

²Pooling arrangements have been notorious examples of the failure of collusive oligopolies because of the incentive to chisel, however, the Southern Railway and Steamship Association had been quite successful. Though North-South lines usually had stable rates, this was not the case for East-West routes, which resulted in considerable long-short haul discrimination on these roads. See Henry Hudson, "The Southern Railway and Steamship Association," The Quarterly Journal of Economics (October, 1890), 70-94.

³Ferguson, op. cit., pp. 60-62.

consolidation was accomplished through the manipulation of securities, a practice which the commission was powerless to control. The only control which the commission had was the enforcement of the terms of the railroad's charter. The legislature, which was the agency empowered with the authority to grant charters, did little to control railroad operation through charter restrictions. In fact "the charters were excessively liberal, and only one instance has been discovered of the veto of a railroad charter because it contained too many concessions."¹

The state had become an integral part of the workings of the railroads. Railroads were able to get favorable legislation passed practically at will and they were "regulated" by a commission which was powerless to harm them and could only benefit them.

The 1901-1902 Constitutional Convention

Political corruption and rate discrimination of the late 19th century set the stage for the formation by constitutional convention² of a strong commission

¹Moger, "Railroad Practices . . .," op. cit., p. 448.

²The issue of railroad regulation was not the primary reason for calling the convention. Mississippi and several other southern states had met with success in reforming their reconstruction constitutions in the 1890s. The primary reform was literacy tests as prerequisites for voting. The suffrage issue was of utmost importance to the southside Virginia counties where the major concentration of Negroes lived.

designed, in principle at least, to rid the state of the ills which had plagued it for so many years. Once it convened in Richmond the convention began to consider some form of effective commission which could regulate railroads and remove them from politics. The committee on corporations included eleven men. The two most outstanding were Allen Caperton Braxton of Staunton, who led the fight for the commission and carried the major burden of drafting the corporation article, and Eppa Hunton, Jr. of Fauquier County, who cosponsored the minority report on corporations.

Braxton believed that the early railroad consolidation had benefitted society in efficiency gains to as great an extent as the loss of competition had harmed it, ". . . however, the business consolidations of modern times, particularly among railroads, have created an entirely new condition of affairs which requires new governmental agencies to deal with."¹

Opponents of regulation at the convention urged that if Virginia should establish a regulatory commission that it be properly done by the General Assembly. Braxton objected to this on two counts. First, the railroads controlled the General Assembly, and secondly, if created

¹Allen Caperton Braxton, "The Virginia State Corporation Commission," Virginia Law Register, Vol. X, No. 1 (May 1904), p. 5.

by the legislature the commission could have only legislative (i.e., rate making) and administrative powers. Braxton had in mind a fourth branch of government, one with administrative, legislative and judicial powers.¹

Early commissions had often met with failure because they lacked judicial power. Commission regulation could be defeated by the railroads by merely withholding material evidence from the commission proceedings, then introducing it for the first time in an appeal to the courts. If successful, the railroad could force the entire regulation to be sent back to the commission for proceedings 'de novo,' possibly resulting in indefinite delays.²

Even a railroad commission which had ample legislative and administrative powers was unable to cope with such an occurrence. For this reason Braxton would not compromise on the powers to be given the Corporation Commission.³

¹Without judicial power, the enforcement of any administrative or legislative ruling of a commission must be left up to the courts. In addition, should an individual be injured by either the railroads or the commission his only remedy would be the courts. Braxton characterized the court contest between an individual and a railroad as ". . . but the hopeless struggle of a pigmy with a giant." Ibid., p. 2.

²Ibid., p. 11.

³The new Commission was endowed with all the powers of a court of record. Anyone affected by the Commission's

The commission was to consist of three members serving staggered six year terms. Initially the members of the commission were to be selected by the Governor subject to the approval of the General Assembly, but after 1908 the General Assembly could provide for the popular election of commissioners.¹ The article creating the Commission further stipulated that commissioners could not be employed by or hold office in any transportation or transmission company or practice law while a member of the commission. In addition, at least one member of the commission must have the qualifications of a judge of the Supreme Court of Appeals.²

A long-haul, short-haul clause was written directly into the constitution. However, if the elimination of rate discrimination resulted in freight being diverted from Virginia ports, exceptions to the clause would be allowed.

The Commission began its duties on March 1, 1903 but was able to do little its first year. The Commission

decisions had the right of appeal directly to the Supreme Court of Appeals. In addition, should the Supreme Court of Appeals find the Commission in error, rather than sending the regulation back to the Commission for rehearing, it is charged with correcting the error.

¹Popular election was Braxton's only major concession to the opposition at the convention.

²Article XII, Sec. 155, 156, Virginia Constitution, 1902.

reported numerous complaints against railroads, however, most were settled without formal hearing. A complete study of rates in the state was not made during the first year of operation; however, the Commission planned to undertake such a study once its other duties became more settled.¹

The Commissioners

Since its establishment in 1903, there have been twenty-seven commissioners of the State Corporation Commission. The mean commissioner tenure has been 7.85 years. The most common range of service has been from three to ten years, with one commissioner (H. Lester Hooker) serving for forty-eight years, and a few for as little as one year (see Table A-1).

A major complaint often aired by students of regulation has been that salaries earned by commissioners and staff have been too low to attract and retain highly qualified personnel. The salary of SCC commissioners was set at \$4,000 per year in 1904. The current salary of the SCC commissioners is \$30,000 per year. While the increase in salary over the years seems quite large, a better comparison might be made by deflating the salaries in the two years. When deflated using the consumer price index

¹Annual Report, Virginia State Corporation Commission, 1903, p. viii.

(1948-49 = 100), the 1904 salary is \$10,870 and the 1971 salary is \$17,036. This represents a real increase of only about fifty-seven per cent over a nearly seventy year period.

When discussing the levels and changes of commissioners' salaries, it is best to keep in mind that the typical commissioner is an attorney, and often he has the qualifications to serve on the Virginia Supreme Court of Appeals. It is quite likely then, that salary alone has not been a prime motivation for most commissioners to accept appointment to the Commission. If it has been, then the quality of commissioners should not have been expected to be very high.

Duties of the Commission

The Commission was charged with thirteen duties prior to its first year in existence. Several were specified in the Constitution, and others were added by the General Assembly during the first year of the Commission's life. The duties have been expanded over the years to a present total of sixty-four (see Table A-2).

The Work Load of the Commission

It is virtually impossible to find a widely acceptable measure of output of a regulatory commission. There are numerous possible measures of commission workload which may be meaningful, the most obvious being the number

of cases heard in a given year. This measure is imperfect, though, primarily because of the heterogeneity of cases.¹ For any detailed empirical work it would no doubt be necessary to develop a consistent weighting process to standardize the cases handled by the commission. However, for our descriptive analysis of commission output it seems acceptable to break down the cases into various categories, make certain broad assumptions regarding the typical type of cases which appear year in and year out, and discuss trends in caseload.

The primary work of the Commission in the first several years was in the area of transportation regulation (see Table A-3). This is hardly surprising since the SCC was initially created to deal with the abuses of railroads.

After 1923, when modes of transportation other than rail and canals were specifically placed under SCC regulation, transportation proceedings increased from twenty-five to one hundred-forty in 1924. The primary reason for the increased workload was the hearing of seventy-five cases in which trucklines and buslines requested certificates of public convenience and necessity, and

¹Some proceedings may involve the determination of a rate base, possibly complicated with the determination of what part of a national firm's assets are to be included in the base, determination of the fair rate of return, etc., while another may be as simple as finding against a common carrier for failure to correctly report taxes due and ordering him to remit.

twenty-three additional cases dealing with trucks and buses.¹

In 1930 the Commission was charged with collecting gross receipts taxes² on motor vehicle common carriers, resulting in a slight increase in transportation case load. In 1940 the Commission was required to assess and collect motor fuel road taxes. In 1942 the base of the tax was extended to cover actual mileage driven in Virginia, regardless of the amount of fuel actually purchased in the state. Apparently some confusion resulted from the new law, or perhaps there was widespread evasion, because there was a large increase in transportation tax cases, rising to a high of forty-four in 1943. By the 1950s however, the administration of the motor fuels tax became routine, as in only one year did the number of motor fuels tax cases heard in formal session reach four.³

¹By comparison, from 1903 to 1923 there had been only two cases concerning motor vehicle transportation.

²These cases are recorded and included in the category of Corporate matters and Tax cases in Table A-3.

³For a more detailed summary of transportation regulation in Virginia, see Barry L. Thomas, "Regulation of Transportation Within The State of Virginia by the State Corporation Commission" (unpublished M.A. Thesis, Virginia Polytechnic Institute and State University, 1973).

The Commission heard few cases dealing with banks and other financial intermediaries until the depression years. Hearings held prior to this time usually involved the appointment of a receiver for an occasional bank which had failed, or the investigation of irregularities which the banking division found in its periodic audits. In the 1930s there were large numbers of orders for banks to limit withdrawals because of near insolvency conditions. In addition, quite a few savings and loan associations requested permission to join the Federal Home Loan Bank Board for deposit insurance purposes.

The next large increase in formal hearings on banking matters began with the passage in 1962 of new branch banking legislation. In addition, during the 1950s and 1960s the suburban growth around cities resulted in increased requests for permits to establish new banks. In 1956 the added duties of issuing certificates of convenience and advantage to small loan companies resulted in greatly increased caseloads in the banking area. This trend has continued into the 1970s.

Few formal insurance cases were heard by the commission prior to 1928. Even after 1928, the bulk of the workload consisted of administrative orders of the Commission and not formal matters brought before the Commission.¹ There were numerous insurance rate cases

¹A typical administrative insurance order might

reported over the years, though in many instances they were requests for deviations from standardized rates set by rating boards.

Prior to the enactment of a Blue Sky Law in 1918, the securities division's primary duties were to record new stock issues of corporations and banks when they made revisions in their charters and capital accounts. After 1918, however, emphasis turned to the control of the widespread abuses of securities fraud. From 1919 to 1924 the Commission heard an average of one hundred-fifty securities cases annually, up from only three in 1918. In 1934, legislation was passed which required SCC approval of new securities issued by public utility companies and also regulated contracts between regulated utilities and their affiliates. The number of formal securities cases heard ranged from thirty-seven in 1935 to as high as two hundred forty-one in 1948. Since most of the cases were cut and dried, and required only the SCC stamp of approval, the use of formal hearing time was discontinued after 1948. The securities division began in 1949 to handle the bulk of securities cases administratively instead of through

relate to a rate deviation by one company, or perhaps a change in the form of a policy, etc. For a more detailed summary of rate hearings and insurance cases, see Thomas William Hannigan, "An Historical and Economic Analysis of Insurance Regulation in the United States and Virginia" (unpublished M.A. Thesis, Virginia Polytechnic Institute and State University, 1973).

the formal hearing process. From 1949-1970 the securities division acted on an average of three hundred-nine cases per year, while the Commission heard an annual average of only seven securities cases in formal session during the same period. This represented a substantial reduction (from an annual average of one hundred-ten formal securities cases from 1935-1948) in the formal work load of the Commission.

The Commission Budget

The General Assembly appropriated \$8,666.66 for the operation of the SCC during its first year of existence.¹ Commissioner salaries accounted for \$5,000 of the total and salaries of all employees for all but \$1,333.33 of the total. The first full biennial budget appropriation (1905-1906) was in the amount of \$95,970, a far cry from the \$9,136,950 appropriated for operation in the 1972-73 biennium. Even when deflated the comparative budgets are \$260,600 versus \$5,188,500 (see Table A-4).

The general trend in SCC expenditures as a proportion of the total appropriations for the state has been downward throughout the past seventy years. With the exception of seven periods of time,² the SCC share of the

¹The appropriation was for only the remaining five months of the fiscal year.

²1907-1912, 1925-1928, 1933-1936, 1951-1952, 1955-1958, 1964-1965, 1968-1969. For more detail, see Table A-4.

total state budget has decreased since 1903. In most of the years that the SCC share increased, there were also increases in jurisdiction. In some cases as many as four or six new duties were added either in the year preceding the increased share or the year of the increase.

There may be some reason to suspect that recent interest in "consumerism" could partially account for the slight increases in the SCC share during the 1960s. Even in the years during the 1960s when the SCC share fell, the decline was small, perhaps indicating some leveling off of the SCC share of total appropriations.¹

You will recall that the Commission was originally formed to stem the abuses of the railroads. There was widespread public support for the Commission at that time, and its activities were much in the limelight. From 1903 to 1927 the SCC share of the total state budget remained stable at about one per cent of the total budget. While it is unlikely that the abuses of the railroads remained a major concern of the public for that entire twenty-four year period, there may have been other factors working to keep the SCC in the limelight, at least more so than in later years. Since the commissioners were elected by popular vote from 1919 until 1926, the political nature

¹The SCC share ranged from twenty-five hundredths to twenty-eight hundredths of one per cent between 1961 and 1973.

of the Commission may have been sufficient to maintain public interest in its activities. From 1926-1928 the Governor appointed members of the Commission, and after 1928 they were appointed by the General Assembly. A traditional reason for the appointment of members of independent commissions has been to take them out of politics. One result of this may also have been a partial removal of public support for the activities of the Commission, which shows up in the declining budget share.

CHAPTER III

THEORIES OF REGULATORY BEHAVIOR

In this chapter we outline the traditional goals of regulation and the results we might expect from a properly functioning commission. We then discuss the failure of regulatory commissions to achieve those goals in terms of theories which fall into two broad schools of thought, the traditional and the political economic.

We present several explanations of commission behavior as alternatives to the traditional approach. These alternatives fall into six, not necessarily independent classifications. They are: Bernstein's traditional explanation which allows for loss in commission vitality as the result of a natural aging process; Wilson's random behavior model which implies that commissioners have no well defined pattern of behavior but rather haphazardly rule on a given case on the basis of whatever particular goal they are pursuing at the moment; Posner's, and Comanor and Mitchell's models which assert that the goal of regulators is to redistribute income on the basis of their own preferences; and three related theories of bureaucratic behavior. Niskanen's purely

bureaucratic behavior model suggests that the maximization of commission budget is all important. Eckert's bureaucratic model with tenure included asserts that commissioners behave more bureaucratically the more secure is their prospect for reappointment. Finally, Stigler's "captured" bureaucratic model suggests that commissioners behave bureaucratically as regards budget but subject to the constraint that they must regulate in the interests of the firms.

We specify a general model which simultaneously incorporates each of these theories. In a later chapter we empirically test each of the theories against this general model.

At this point we will summarize the general model as: $B = f(t, T, R, A, J)$, where B is the budget of the agency, t represents the aging process over time, T is a measure of commissioner tenure prospects, R is the revenue available to the commission's sponsor (it is assumed that a good bureaucrat will attempt to get his "share" of the sponsor's revenue), A is the activity of the firms being regulated (a properly functioning commission should receive a budget commensurate with the magnitude of the job it has to do), and J is the jurisdiction of the agency. Jurisdiction is treated differently by various schools of thought. Bernstein's aging traditional theory treats it as a variable for new commission vitality. Eckert's

bureaucratic theory, which stresses different behavior due to tenure prospects, sees expanded jurisdiction as a means by which long term bureaucrats will attempt to secure budget increases. Stigler's captured bureau theory argues that increased jurisdiction results in a decline in "capturability," and others view the variable as an alternate measure of regulated activity.

Table 1 summarizes the expected signs for the coefficients on the variables as predicted by each of the theories.

TABLE 1
Signs of the Coefficients Predicted by
the Theories

	t	T	R	A	J
Traditional ^a	0	0	+	+	+
Bernstein	-	-	+	+	+
Niskanen ^b	0	0	+	+	+
Eckert	0	+	+	+	+
Stigler	0	0	+	+	-
Wilson	0	+	+	+	+
Posner and Comanor and Wilson	0	0	+	+	+

^aTraditional theories suggest that while R and A have positive coefficients, the coefficient on R would be smaller than the coefficient on A.

^bBureaucratic theories suggest that while R and A have positive coefficients, the coefficient on R would be larger than the coefficient on A.

The Goals of Regulation

Strictly traditional theories of regulation view its goal as a ". . . substitute for competition (which) should attempt to put the regulated industries under the same restraints competition places on nonregulated industries."¹ A typical textbook example illustrating the effects of regulation shows that monopoly sets price above the competitive level and produces a smaller output. If the state should then impose price regulation on the monopoly, price would fall, output rise, and the previously lost consumer surplus would be recovered. In addition, there is an income transfer, equal to the monopolist's excess profits, from the monopolist to the consumers of the product.

Commission Failure: The Traditional View

Roger Noll places students of regulation into two broad classifications, the traditionalists and the political economists.² There is general agreement among students of both schools that regulatory goals have not been adequately met by independent commissions.

¹Charles F. Phillips, Jr., *The Economics of Regulation*, *op. cit.*, p. 125.

²Roger Noll, *Reforming Regulation: An Evaluation of the Ash Council Proposals* (Washington, D.C.: The Brookings Institution), pp. 39-40.

Traditionalists often accept without question the desirability of regulation, assuming that if carried out properly by well-meaning commissioners, the public interest will be served. Commission failure is explained as government failure in general is often explained--evil government stems from the evil men who govern.¹

Stigler, on the other hand, maintains that ". . . as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit."² In addition to its failure to approximate competition, regulation has in fact led to the creation of monopolies which could not exist in the absence of regulation. One is not hard pressed to find examples which support these charges.³

¹James Q. Wilson, "The Dead Hand of Regulation," The Public Interest, XXV (1971), 39.

²George J. Stigler, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Science (Spring 1971), 3.

³According to Spann and Erickson the primary result of early ICC regulation was the stabilization of the rail cartels to prevent long haul rates from falling to competitive levels, see Robert M. Spann and Edward W. Erickson, "The Economics of Railroading: The Beginning of Cartelization and Regulation," The Bell Journal (Autumn 1970), 237. Whalen found liquor prices higher in states with resale price maintenance laws, see T. J. Whalen, Jr., "State Monopoly of Packaged Liquor Retailing," Journal of Political Economy, 75 (April 1967); and Knutson found that the Unfair Trade Practices Law passed in Minnesota resulted in cooperative market activity in the dairy industry, see Ronald D. Knutson, "The Economic Consequences of the Minnesota Dairy Industry Unfair Trade Practices Act," Journal of Law and Economics, XII (October 1968).

A major theme of the Ash Council report is that commissions have failed to carry out the public interest because they are inflexible. They have been unable to respond to "changes in industry structure, technology, economic trends, and public needs."¹ The inflexibility, according to the report, is due partially to the inability of the commission to attract and keep qualified personnel, the result of low salaries and unstimulating duties. Additional blame is placed on the commission's independence. Though designed to limit control and influence by the executive and legislative branches, commission independence has also resulted in a lack of support from those branches.² Finally, the report blames the somewhat random, and often inappropriate, distribution of responsibilities among agencies. This often leads to conflicting policies because of conflicting agency goals.

Commission Failure: The Political Economic View

Political economists, says Noll, maintain that activity of individual commissioners can be both ". . . explained and predicted on the basis of their effects on

¹A New Regulatory Framework: Report on Selected Independent Regulatory Agencies (Washington: U.S. Government Printing Office, 1971), p. 4.

²Ibid., p. 3.

the distribution of (their own) income and wealth."¹
 We find then, not surprisingly, that underlying the theories offered by students of the political economic school is the basic tenet that the regulator, as anyone else, is a utility maximizer.

The nonmonetary arguments in a regulator's utility function are often of a negative nature. He may be the first to draw the scorn of the public, and especially the legislature, when massive service failures occur. Blackouts, brownouts, gas shortages, and poor service, often are blamed on the regulator, whereas the firm often gets credit for price cuts.²

It is hardly surprising that the regulator, when faced with a mandate to manage a particular industry in

¹Roger Noll, op. cit., p. 39. We should note that though we speak of income and wealth, financial motives, while important arguments, are by no means the sole maximands of the regulator. Among the more common arguments suggested are: salary or wealth, perquisites of office, prestige or public reputation, agency budget and output, power, convenience and ease of managing the agency, and the ability of the regulator to implement his concept of the public interest. See William A. Niskanen, Bureaucracy and Representative Government (Chicago: Aldine Atherton, 1971), especially Chapter Four; and Ross D. Eckert, "On the Incentives of Regulators: The Case of Taxicabs," Public Choice (Spring 1973).

²Professor Stigler cites one example of a helpful regulated firm whose management informed the commission of the company's desire for a price cut in order that the commission might receive credit for ordering the desired reduction. See George J. Stigler, "The Process of Economic Regulation," The Antitrust Bulletin (Spring 1972), 208.

the public interest, often interprets this to mean that uninterrupted service must be assured at all cost. One way of assuring this is to allow rates sufficiently high to attract ample amounts of investment in the industry.

Public safety criteria often accompany a public interest mandate. Rules governing the quality of certain practitioners, e.g., attorneys, physicians, architects, and more recently even auto mechanics, to assure a higher degree of public safety result, as any principles of economics student could tell, in a restricted supply of the service and an artificially inflated price.¹ Taken together then, public interest and public service mandates may result in a regulatory commission which is little more than a legalized cartel, yet such an outcome seems quite consistent with the political economics theory of a utility maximizing regulator.

Regulators are often accused of acting in the interest of the firm and not in the public interest. Such regulators are often said to be "captured" by the firms they are supposed to regulate. Traditionalists often blame capture on evil or corrupt commissioners or on the inability of commissions to attract high quality staff for the pursuit of the public interest. Political

¹Similar results occur when public safety criteria are applied to consumer goods.

economists would argue that capture is consistent with utility maximizing behavior by the regulators.

Regulation is not one of the more glamorous professions. Few of the general public can name commissioners, much less have any sense of appreciation for what they do. The regulated firms, though, have a keen interest (or perhaps self-interest) in what regulators do, and they have ways of showing their appreciation for rulings favorable to the industry.

We may expect similar capturability, for different reasons, from both lifetime bureaucrats and commissioners who choose a short tenure. The regulator is concerned with his budget, and he is often aided in his quest for expanded budgets by regulated firms who testify as to the necessity of the job the commission is doing. However, the regulator who proves to be a thorn in the side of the industry finds his renomination vigorously opposed and has difficulty getting increased appropriations.

The regulator who is not career-minded also finds it to his advantage to be sympathetic to industry problems. The expertise he gains while on the commission often prepares him to fill a post with a regulated firm after he leaves the commission. In addition, since a large number of commissioners are attorneys, the opportunity to represent the regulated firms after retirement from the commission may present itself. Professor Stigler has

studied the profiles of past commissioners of various federal agencies and concluded that "the commissioners are of an age, background, and prospects such that they are not likely to benefit by a major controversy with the regulated industry."¹

The Life Cycle Hypothesis:
The Aging Traditionalist

Marver Bernstein explains, through a life cycle model, how regulatory commissions formed to carry out policies in the public interest wind up captured by the industry they are charged with regulating. He specifies four distinct phases or stages through which regulatory agencies pass over time: gestation, youth, maturity and old age.²

The gestation period begins when organized groups begin to press for legislation. When such legislation is passed the mandate is usually unclear, leaving the specific

¹George Stigler, "The Process of Economic Regulation," *op. cit.*, p. 231. Such a controversy could conceivably be of value to a commissioner with political ambitions but not a career minded bureaucrat or to a commissioner who is going back into private life or to another regulatory agency after his tenure on the commission. Of the one hundred forty-three men whose profiles were studied by Stigler, seventy-five of whom had left office and were still alive, only three were subsequently elected to Congress. Twenty-five were in legal practice, fourteen in business and nine held another appointive office.

²Marver Bernstein, Regulating Business by Independent Commission (Princeton, N.J.: Princeton University Press, 1955), pp. 74-102.

functions of the agency up to the commissioners to establish. They are usually unsure as to how their initial decisions will stand up if tested in court, hence they set up strict judicial procedures which assure due process. There is little pressure for setting out specific regulatory goals and techniques.

The second phase, youth, is characterized by "an aggressive, crusading spirit."¹ The commissioners are still very much in the limelight and in an attempt to command public respect they instigate proceedings on their own and try new and different techniques to promote the public interest.

As the characteristics of youth fade away, phase three, maturity, begins. This process of devitalization is characterized by the commission settling into standard procedures. As the reasons for forming the commission fade from the public eye, it becomes difficult for the commission to maintain appropriations without the help of the regulated industry, and even more difficult to expand its powers and budget. The bureaucrat, facing declining staff and power, becomes less concerned with crusading and more concerned with fighting his own battles with legislative appropriations committees. The day to day management of the affairs of the commission and the industry being regulated become routine.

¹Ibid., p. 30.

In phase four, old age, the commission is maintaining the status quo in the regulated industry. It suffers from a backlog of work and is unable to get additional staff to clean up the backlog because of budget reductions. The period of old age drags on for an unspecified period of time until the cycle begins over again, perhaps with the death of the old and birth of a new agency; or more likely, by the enactment of new legislation expanding the jurisdiction of the existing agency to attack some new found evil. Along with the new legislation comes increased budgets and perhaps a new division to oversee the new jurisdictional duties. Then, according to Bernstein, the agency begins to age once again.

When analyzed within the context of the general model we have presented, Bernstein's hypothesis suggests negative coefficients on both time and tenure. Bernstein argues that commission vitality (measured by the budget of the agency) will, after a brief period of vigorous expansion, begin to decline as the agency matures and eventually reaches old age. This may not necessarily imply actual declines in the budget, but rather declining rates of growth, a phenomenon not unlike diminishing returns to scale in production (see Figure 1, p. 59).

We may also expect the loss of vitality to affect a single commissioner in a similar way, hence longer tenure may result in lowered agency vitality (budget).

Since Bernstein argues that added jurisdiction is the means to new commission vitality, we should expect a positive relationship between jurisdiction and budget.

We have two remaining variables, firm activity and sponsor's revenues. The traditionalist can be expected to argue that regulated firm activity greatly affects the magnitude of the job to be done. If a regulatory agency were pursuing strong regulatory goals and performing well in this respect, we should expect firm activity to have a significant positive impact on budget size.

In a traditional model sponsor's revenue should not have a significant impact on budget size. In fact, a significant positive relationship between sponsor revenue and budget may indicate bureaucratic behavior. Any good bureaucrat will attempt to get his "share" of the sponsor's revenue and will be interested in pursuing only the appropriate means to that end. Even the most staunch traditionalist, though, would not argue that sponsor revenue has no bearing on commission budget. However, we might expect him to argue that the effect of revenue is less than that of activity.

Regulators as Bureaucrats

We will now take a closer look at some theories of bureaucratic behavior and in particular at their possible application to commission behavior.

We begin by discussing a very general theory of the supply of services through bureaus. Here we rely on work by William A. Niskanen. Extensions of the Niskanen model will incorporate Ross Eckert's findings that bureaucratic regulators behave differently toward the acquisition of new duties than do short term appointees. We then discuss Stigler's model of bureaucrats who are captured by the regulated firms.

Niskanen defines a bureaucracy as ". . . a nonprofit organization . . . financed, at least in part, by a periodic appropriation or grant."¹ In his book Niskanen develops a theory of bureau output based on the assumption of a utility maximizing bureau manager. Most of the arguments mentioned above (salary, perquisites, power, patronage, bureau output, ease of bureau management and ease of making changes), are included as arguments in the utility function of Niskanen's bureaucrat. However, Niskanen asserts that all of the variables except the last two are "positive monotonic function(s) of the total budget of the bureau during the bureaucrats tenure in office."² The bureau chief, in attempting to maximize

¹Niskanen, op. cit., p. 15.

²Ibid., p. 38. Power, though a function of budget in a typical bureau is probably more a function of the amount of control vested in a regulatory agency in its enabling legislation, and to a lesser extent its jurisdiction.

his own utility then must maximize the budget of his bureau.

Niskanen specifically says that his theory of bureau output is not directly applicable to regulatory commissions.¹ There are several reasons why this seems correct. First, his model concentrates on bureaus which supply a service. Society has some concept of valuation of output of most bureaus, since in many cases some of the output is sold on a fee basis. A regulatory commission, on the other hand, produces a rather nebulous product, or service.

A second, and perhaps more important reason to argue that the Niskanen model is inapplicable to regulatory commissions is that his model predicts a greater than optimal supply of output. One need only reflect momentarily on the consequences of an oversupply of regulation. Commissions which overregulate industries under their control are certainly not typical. Such behavior would be quite inconsistent with the widely held view that regulatory commissions are basically pro industry or have been captured by the firms they regulate.

¹In a letter to Professor Thomas Hogarty in May 1972, Niskanen states, "I would not expect my model to be very valuable for regulatory agencies, given the implicit collusion of the regulators and regulated parties. Stigler's model of regulatory agencies is probably the most valuable."

We will discuss more direct applications of bureaucratic theory to regulation in the next two sections.

Niskanen's theory of purely bureaucratic behavior is testable using the general model we have previously specified. We expect the bureaucrat to attempt to get his share of the sponsor's revenue, thus the coefficient on R should be positive. The purely bureaucratic model, though, would probably also allow for activity to be positively related to budget. Even if the agency head is uninterested in the amount of regulation which is required by firm activity, his sponsor probably is. Knowing this, the regulator will no doubt try to convince the sponsor that budget increases are necessary if he is to do a proper job of regulation. However, any effect of activity on agency budget should be less than the effect of sponsor's revenue. Jurisdiction, here, is probably viewed as an additional measure of activity and thus, should have a positive impact on budget.

Niskanen argues that career bureau chiefs behave no differently than temporary agency heads, thus his theory predicts that time and tenure have no effect on budget.

Bureaucracy and Tenure

Ross D. Eckert has studied the behavior of taxicab regulators and concluded that civil-service regulators behave differently, and more bureaucratically, than do

members of commissions.¹ He assumes that all regulatory officials are utility maximizers, with utility being a function of "personal prestige, wealth, convenience, and working conditions, and his desire to please other officials and voters, expand his agency's budget, and implement his conception of the public interest."²

Eckert points out, however, that the optimal mix of these arguments differs substantially between regulators who are career bureaucrats and those who are members of a commission with short tenure. The career public servant can obtain a higher salary by finding ways to expand his agency's duties.³

We noted in the previous section that Niskanen's theory seemed inconsistent with regulation. Theories of bureaucratic behavior tell us that we should observe bureaus pressing for larger budgets over time since this is the way that the bureaucrat's personal utility is increased. Yet, suppose we have a regulatory commission

¹Ross D. Eckert, "On the Incentives of Regulators: The Case of Taxicabs," Public Choice, XIV (Spring 1973), 83-99.

²Ibid., p. 83.

³A change in jurisdiction should allow for the attainment of several of the bureaucratic goals suggested by Niskanen (e.g., salary, perquisites of office, public reputation, power, patronage, and output of the bureau), if it leads to expanded budgets. Two of the goals suggested by Niskanen, ease of making changes and ease of managing the bureau, might be negatively related to expanded jurisdiction.

which has either been captured by the industry it regulates, or at least is generally agreed to be not guilty of overregulation. If the commission is successful in convincing its sponsor of the need for an increased budget, how does it go about disposing of the increase? Naturally the agency could dispose of those portions of the budget increase which represented price inflation and increases to offset increased activity of the firms it regulates. Some excess funds could no doubt be channeled into more plush surroundings, higher expense accounts and a general decline in efficiency, though this seems to have its limits.

In view of these constraints, how then might the commissioner achieve his goals as a bureaucrat should he wish to? One avenue may be the expansion of agency jurisdiction suggested by Eckert.

Though Eckert says that career bureaucrats (civil servants) behave this way, he contends that commissioners, because of their relatively short tenure, will not seek budget expansion via this route. Niskanen disagrees, and says that short term appointees, ". . . very quickly become representatives of the bureaus they head For most purposes it is thus not necessary to distinguish the behavior of a career bureaucrat from that of a temporarily appointed bureaucrat."¹

¹Niskanen, op. cit., p. 22.

Regardless of who is right, both should agree that when we observe agencies whose commissioners typically have long tenure, being reappointed each year without difficulty, it seems reasonable to assume that those commissioners would behave bureaucratically as regards the expansion of agency duties for purposes of increasing budgets.¹

The agency, with its expanded duties, could now find ways of spending increased budgets without having to engage in either overregulation or excessive waste which might be easily detected by its sponsor. The phenomena of many areas of seemingly minor or needless regulation may exist. Each regulated firm is slightly affected by regulation but none is seriously injured and a few, because of protected cartels, are benefitted. The consumer may be injured by regulation or perhaps benefitted, but in either case the impact is slight for any one individual and certainly not worth the effort to attempt to alter the situation.

¹It should be pointed out that in addition to increased budgets, expanded jurisdiction should lead to greater power both for commissioners and agency staff. The commissioners may be industry oriented and look at expanded jurisdiction primarily as a means to larger budgets. The staff may be interested in pursuing its own view of the public interest, with the same budget maximization goals. It can utilize the expanded jurisdiction and the resulting power to implement each of those goals.

Eckert's theory should be consistent with positive coefficients on the R, A, J, and T variables. The tenure argument leads to a somewhat different interpretation of the jurisdiction variable. Previously we have considered jurisdiction as a means to increased vitality (the life cycle model), or as an alternate measure of activity. We now view J as the mechanism by which budget is increased and additionally as a mechanism which is used only by commissioners whose tenure is secure. The expected sign is of course the same, positive. Eckert does not imply any aging process in terms of the agency itself, thus we expect a zero coefficient on the time variable.

The Captured Bureaucrat

George Stigler argues that regulation, rather than being forced on the firms, is actually acquired, often at high cost by the firms.¹ He tries to quantify commission output and use some expenditure data and career patterns as indicators of commission behavior.²

Stigler studied a cross section of regulatory agencies and concluded that they behaved bureaucratically. He hypothesized that budget is a function of sponsor

¹Stigler, "The Theory of Regulation," op. cit.

²Stigler, "The Process of Economic Regulation," op. cit.

revenues and regulated firm activity.¹ He found significant positive correlation between sponsor revenues and commission budget and an insignificant relationship between activity and commission budget. His basic conclusion is that regulatory bodies will behave as ". . . trustworthy bureaucrac(ies) rather than (exhibit) the dangerous potentialities of competitive politics."² He further states that such behavior is even more likely from bureau chiefs, who he says are ". . . even more committed to public non-elective service."³

In terms of our general model Stigler's hypothesis suggests that revenue is the most important variable in determining the agency budget. If the activity coefficient

¹There have been two recent tests of the Stigler hypothesis using time series data from the Virginia State Corporation Commission, by Hannigan and Thomas. Hannigan failed to find that state revenues had a significant effect on commission budget, but that regulated firm activity did. This suggests that insurance regulators in Virginia may not have behaved as bureaucrats from the late 1940s until the mid-1960s. Thomas found that both revenues and activity of firms were significantly related to budgets. See Thomas W. Hannigan, "An Historical and Economic Analysis of Insurance Regulation in the United States and Virginia" (unpublished M.S. Thesis, Virginia Polytechnic Institute and State University, 1973); and Barry L. Thomas, "Regulation of Transportation Within the State of Virginia by the State Corporation Commission" (unpublished M.A. Thesis, Virginia Polytechnic Institute and State University, 1973).

²Stigler, "The Process of Economic Regulation," op. cit., p. 230.

³Ibid., p. 232.

is positive then surely it has less impact on budget than does revenue. This follows from Stigler's assertion that the commissioners are captured. A significant impact of activity on budget is usually expected when the commission is performing its regulatory duties well. Stigler's hypothesis does not suggest that time and tenure materially affect the budget of the regulatory agencies.

Stigler would regard jurisdiction differently than others have thus far. His capturability argument is directed primarily at single purpose agencies. He feels, however, that general purpose agencies (those with diverse jurisdiction), will not be as susceptible to capture as those which primarily regulate only one industry. He says, "on our theory of industry-regulatory body marriage, these general purpose agencies will be less 'bureaucratic' in their staffing, less cartel-minded in their economic policies--and harder put to maintain their appropriations."¹ This implies that the wider the jurisdiction of an agency, the less will be that agency's budget, other things equal, and the less likely we are to observe bureaucratic behavior. Jurisdiction, then, should have a negative impact on budget within the context of our general model, and if the SCC should qualify as a "general purpose" agency in Stigler's terms, we likely will find that revenue is not a significantly better predictor of budget than activity is.

¹Ibid., p. 235.

Other Theories of Behavior

In this section we will discuss three additional theories of commission behavior; the income redistribution theory, the theory that commissioners regard themselves as planners, and the theory which argues that regulators behave in a random fashion. All three theories are concerned primarily with explaining why, in a particular case, a commission will rule as it does. This is, of course, a bit more specific than our approach, which considers broad behavioral patterns to explain commission failure, however, we will attempt to interpret each of the three theories in our terms.

Income Redistribution

An explanation for the cartel-like behavior of regulatory commissions has been suggested by Richard A. Posner. He maintains that regulatory agencies perform certain redistributive functions which are usually considered to be in the domain of the fiscal agency of the government.¹ There occurs "deliberate and continued provision of many services at lower rates and in larger quantities than would be offered in an unregulated competitive market."² Of course it is necessary to limit

¹Richard A. Posner, "Taxation by Regulation," The Bell Journal of Economics and Management Science, II (Spring 1971), 22-50.

²Ibid., p. 22.

entry in the lucrative market in order to assure sufficient profits to finance the below cost services, hence the regulatory agency must act as a cartel.

Examples of the so-called "cross-subsidization" are many. Clearly it costs less per passenger mile to fly on a high density route such as New York to Washington, D.C. than from Roanoke, Virginia to Warm Springs, Virginia, yet the fares per mile are the same.¹ Indeed, it is not even clear that the rich are subsidizing the poor in most examples. In the one given above, most passengers on the latter flights are patrons of a rather elegant ski resort.

Political economic theories suggest that one argument in an administrator's utility function is to implement his own concept of the public interest. The cross-subsidization may be the way he would implement tax subsidy plans in the public interest if he had the power to do that.

One must not overlook the power of special interest groups in such cross-subsidization cases. Pressure can be

¹A ruling by the FAA in March 1974 may have partially remedied this situation. Other examples given by Posner include rail passenger service, domestic telegraph service, public affairs broadcasting, assigned risk liability insurance and uniform rates for numerous public utilities when cost of service differences would dictate different rates. For more on the airline industry, see Richard E. Caves, "Performance, Structure, and the Goals of Civil Aeronautics Board Regulation," in The Crisis of the Regulatory Commissions, by Paul MacAvoy (New York: W. W. Norton & Co., 1970).

applied directly on regulators or indirectly through the legislature which could affect other more traditional arguments in the regulator's utility function.

Regulators as Planners

While most regulatory agencies are charged with regulating in the public interest, the specific interpretation of this rather broad instruction has been, as mentioned above, left up to the agencies.

The vagueness of the statutes, coupled with the regulator's desire to implement the public interest as he sees it has, according to Comanor and Mitchell, provided "a temptation for regulatory authorities to play the role of economic planners."¹

Since regulators often have neither the funds nor the power to implement the public interest (as they see it), directly, they have been forced to find alternative means. One method often employed is cross-subsidization of monopoly profits to unprofitable areas, discussed above. The planners though do not necessarily engage in the provision of goods which alternatively would be considered public goods and supplied collectively, as do the regulators described by Posner above. Rather they often

¹William S. Comanor and Bridger M. Mitchell, "The Costs of Planning: The FCC and Cable Television," The Journal of Law and Economics, XV (April 1972), 178.

provide goods or services for which there seems no demand, either public or private.

Comanor and Mitchell point out that along with the social gains from such planning there may be major social costs of such activity. In their study of the Federal Communications Commission and cable television they have concluded that the value of the welfare loss, due to the particular plans suggested by the Federal Communications Commission, could easily be between one and two billion dollars, and perhaps more.¹

If a regulator is going to implement his own concept of the public interest, either by the redistribution of income via the provision of public goods, or by implementing the policies of planning suggested by Comanor and Mitchell, he will need as much power as possible. Niskanen includes power as an argument in his bureaucrat's utility function and asserts that power, along with various other arguments is a positive function of agency budget.

We may expect these regulators to behave bureaucratically, in which case we would expect revenue of the sponsor to be positively related to agency budget. Additionally, while we expect firm activity to be positively related to budget, revenue would likely be more important

¹Ibid., p. 205.

than activity. Jurisdiction may be considered as both an additional measure of firm activity, and a means to greater agency power, within the context of these two models. There seems little reason to suspect that the age of the commission or the tenure prospects of the commissioners would have any significant bearing on their ability to obtain larger budgets.

Random Behavior

Until now we have discussed various theories of regulatory behavior, which have differed in their emphasis, yet, were all in one sense similar. Each theory implied that there was some pattern to commissioner behavior, and that behavior could be predicted and explained. There is one school of thought, though, which denies that the regulator's behavior is explicable, but in fact is random, and attempts to explain it are folly.

James Q. Wilson simply does not buy the argument that commissions are captured by the industry, or vice-versa. He finds that there are just too many exceptions to the rule to accept the hypothesis.¹ He cites several instances where seemingly no one, and certainly not the industry, benefits from regulation. Among these are the

¹Wilson, "The Dead Hand of Regulation," op. cit., pp. 46-48.

Federal Power Commission regulation of natural gas prices at the well head, Federal Communications Commission insistence that more prime time be dedicated to local programming, resulting in many local markets in dependence on syndicated reruns that most would agree are inferior to the potential network offerings. Wilson himself has a theory of the "life-cycle" of an agency:

An agency is established, sometimes with industry support and sometimes over industry objections, and then gradually creates a regulatory climate that acquires a life of its own. Certain firms will be helped by some of the specific regulatory decisions making up this climate, others will be hurt. But the industry as a whole will adjust to the climate and decide that the costs of shifting from the known hazards of regulation to the unknown ones of competition are too great; it thus will come to defend the system. The agencies themselves will become preoccupied with the minutiae of cases in whatever form they first inherit then, trying by the slow manipulation of details to achieve various particular effects that happen to commend themselves from time to time to various agency members.¹

Louis Jaffe, says Wilson, contends that rather than being industry or consumer oriented, most agencies are regulation oriented.

They are in the regulation business, and regulate they will, with or without a rationale. If agencies have been "captured" by anybody, it is probably by their staffs who have mastered the arcane details of rate setting and license granting.²

Paul MacAvoy reported that after reading the entire Volume 42 of the Federal Power Commission Reports, that it

¹Ibid., p. 48.

²Ibid.

is difficult to isolate any consistent policy as revealed by the language of each case.¹

It seems that a theory of bureaucratic behavior might best describe a regulatory agency which was regulation oriented. If the agency was simply captured by its staff, much of the agency behavior could be expected to stem from maximization of utility by staff members. We thus expect sponsor revenues to have a positive impact on agency budget. Additionally we might anticipate that the commissioners and staff who have "mastered the arcane details of rate setting and license granting" might argue strongly for larger budgets when greater activity and jurisdiction point to increased workloads. The aging phenomenon is not suggested by the random theory though perhaps as the tenure of agency heads increases they may master the fine art of convincing the sponsor of the necessity of the work they do, resulting in higher budgets. In such a case we might expect a positive effect of tenure on budget.

¹Paul W. MacAvoy, "The Formal Work-Product of the Federal Power Commissioners," The Bell Journal of Economics and Management Science, II (Spring 1971), 379.

CHAPTER IV

TESTS OF THE HYPOTHESES

Before we test the hypotheses it seems appropriate to summarize briefly the main theories presented in the past chapter. We began Chapter III by pointing out the widely held belief that the traditional goals of regulation, higher output at a competitive price, are not being met. Traditionalists explained this in terms of the lack of popular support for the commission. Members of the political economic school, on the other hand, argued that commissioners are concerned with maximizing their own utility, and that this goal is inconsistent with the traditional goals of regulation.

Stigler and Eckert explain commissioner behavior in terms of bureaucratic models similar to that suggested by Niskanen. According to their respective theories, commission budget, a leading argument in the regulator's utility function, would be most closely associated with either the revenues of the sponsoring agency, or the duties of the commission, if indeed the agency heads behave bureaucratically.

Bernstein, on the other hand, views the size of the commission budget as a measure of commission vitality,

and he regards increases in jurisdiction as the means by which new life is injected into a dormant commission. He further says that commission failure is a result of a natural aging process which besets all such agencies. As the sponsor becomes aware of this life cycle in commission vitality the agency becomes progressively more hard pressed to maintain its appropriations.

Wilson claims that regulators behave randomly. We have earlier suggested that the Wilson thesis is most consistent with models of bureaucratic behavior, with the inclusion of commissioner tenure as a measure of the ability to master the art of squeezing budget increases out of the agency's sponsor.

The theories of behavior suggested by Posner and Comanor and Wilson assert that the regulators attempt to implement their own concept of the proper distribution of income, through regulatory policies. It seems that the behavior of such regulators is most consistent with the bureaucratic models suggested by Niskanen.

The General Model

We specified a general model which incorporates all of the leading theories simultaneously as: $B = f(t, T, R, A, J)$. In order to test the aging process suggested by Bernstein, (t in our general model), we specify an exponential growth function: $B = e^{b_0 - b_1/t}$, where t is time, and B is the

agency budget.¹ A plot of this function looks like a typical production function displaying diminishing returns (see Figure 1 below).

Eckert's theory suggests that career bureaucrats behave differently than commissioners who serve for a limited time. Prior to 1928, commissioners more than likely faced a more uncertain future than those appointed after 1928, for reasons discussed in Chapter II. This should result in different behavior regarding the acquisition of new areas of jurisdiction; if the gains from new jurisdiction cannot be effectively captured by short term commissioners, but can by career bureaucrats. Additionally, Eckert would suggest that the agency heads would generally behave more bureaucratically in the later period. To test this hypothesis we utilized a dummy variable, to determine if budget was affected differently in the years subsequent to 1928, than in the years prior to 1928. Since the usual dummy variable method (alternate values of either zero or unity) merely tells us if there is a difference in behavior, and not whether the difference is the result of increased bureaucratic behavior, as suggested by Eckert, we use two procedures to test this hypothesis.² As mentioned in the

¹See J. Johnston, Econometric Methods (New York: McGraw-Hill Book Co., 1963), p. 50.

²One was the utilization of a dummy variable which took on values of zero in the early years (1905-1928), and unity in the later years (1928-1971). The second

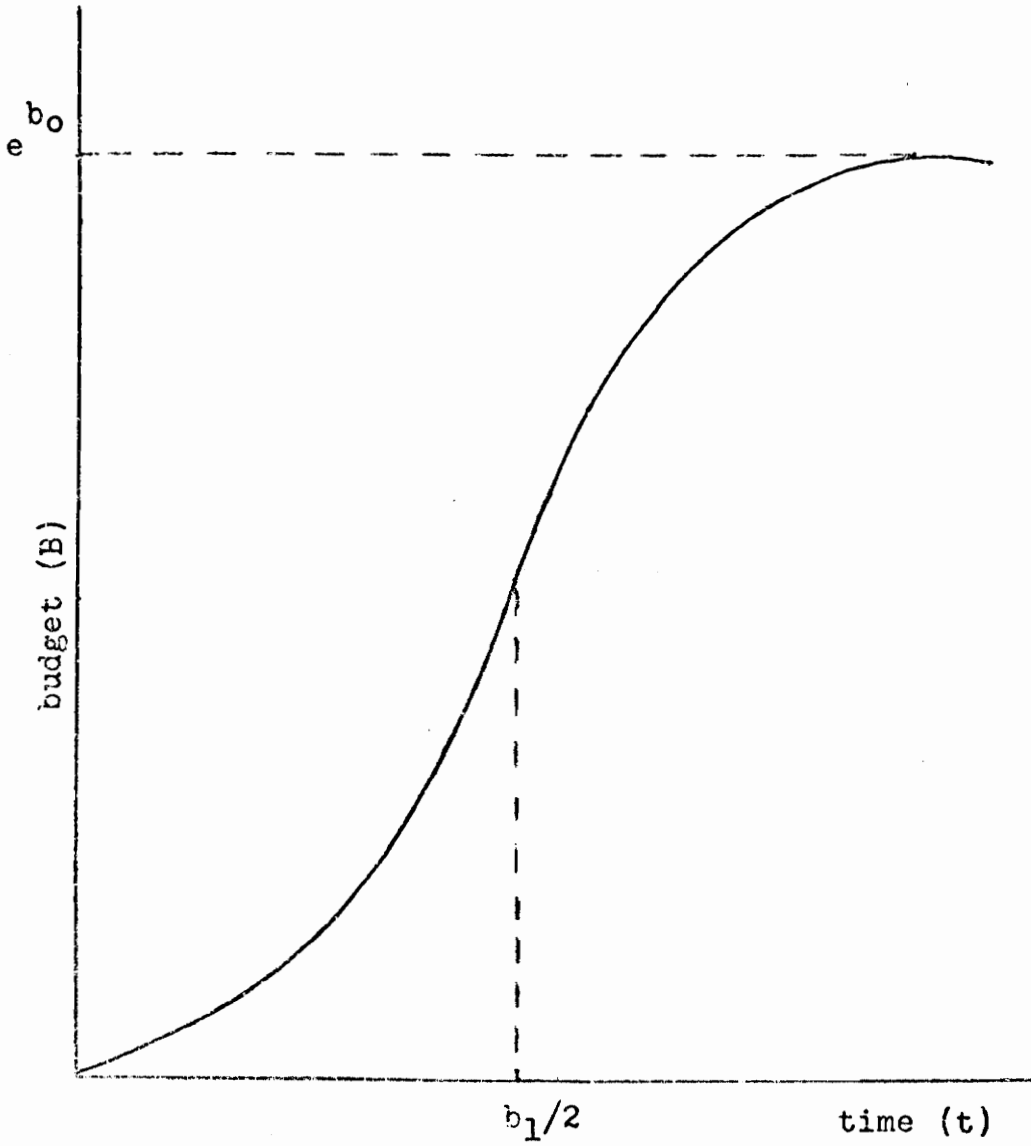


FIGURE 1
THE BERNSTEIN LIFE CYCLE

previous chapter, there is reason to suspect differences in the magnitudes of the revenue and activity coefficients, depending on whether the agency heads behave bureaucratically or in a traditional manner. We may test this by use of a dummy variable to determine if there are slope differences in the two periods. That is, do we observe different revenue coefficients, or activity coefficients, or jurisdiction coefficients during the two subperiods. Comparison of the relative magnitudes of the coefficients in the two subperiods should allow us to determine if behavior was in fact more bureaucratic in the later period, as suggested by the Eckert hypothesis.

Recall that the Ash Report, referred to above, suggested that one explanation of failure was the very independence of commissions. Independence results in a commission, whose activities are insulated from the public. During a brief period (1919-1926) the SCC commissioners were elected by popular vote. This is, perhaps, one period of time during which the commission was less independent and thus less removed from politics. During these years, according to the implications drawn from the Ash Report, the commission should have been able to garner

method was to create six new variables, RL, RH, JL, JH, AL, and AH. RL took on actual values of R for the years 1905-1928, and zeros for the years 1928-1971. RH took on values of zero for the years 1905-1928, and the actual values of R for the years 1928-1971. The other four variables were constructed in a like manner.

more public support (and hence larger budgets), for the performance of its regulatory duties. A test of this hypothesis can be made by inserting a dummy variable for the years 1919-1926, then testing to determine if direct election had a significant impact on budget during those years.

The Data

It is virtually impossible to construct a consistent series of state revenues from 1903 to present, but consistent series of state appropriations and expenditures are available by compiling data from the Governor's Budget, the Report of the Comptroller, and the Acts of the General Assembly. The State of Virginia has been a traditional "pay-as-you-go" state throughout much of the twentieth century, and as such we might expect appropriations to closely approximate anticipated revenues. For this reason total state appropriations are used for the revenue variable and for consistency, SCC appropriations are used for the commission budget variable. In order to avoid fluctuations caused by occasional large capital expenditures, in either agency budget or sponsor revenues, we have chosen operating budgets rather than total budget.

Some portions of the SCC operating budget are for expenditures not consistent with the typical regulatory function of the commission. The funds which appear in

the budget for airport expenditures are construction and maintenance rather than regulatory funds, and the Uninsured Motorists Fund represents merely the "pass-through" of funds collected through auto tag and auto insurance sales and channeled back to motorists who are injured by uninsured motorists. Neither expenditure is representative of the amount of "regulation" being done by the two departments involved. For these reasons we have eliminated these two portions of the SCC budget from our measure of operating budget.

Stigler used per capita personal income as an index of regulated firm activity in his study. He felt that income should be reasonably well correlated with the total revenue of the regulated firms. For two reasons this measure was not used in this study. First, income data are not readily available on a state by state basis prior to 1929. Rough estimates of personal income by states can be made using Kuznet's national income data, but only as far back as 1919. The study of the State Corporation Commission covers the period from 1903-1971 which eliminates the use of personal income as a measure of firm activity. If there were sufficient reason to believe that personal income is a superior measure of firm activity, the period of time studied could be shortened to conform with the data, however, there are some reasons to believe that the measure is inadequate.

Over any time period, especially one as long as that under study, significant changes in consumption habits, living standards, types of economic activity subject to regulation, etc., are likely to occur. For these reasons, in this study we used the assessed value of regulated firms, as determined by the SCC, as the index of firm activity. The series is consistent¹ over the entire period, and since the SCC makes the assessment we may get some added benefits from its use. The assessment should reflect one measure of the SCC's evaluation of the magnitude of their job. In addition, this measure is readily available to anyone who might be interested in the scope of regulated activity. It seems reasonable that an interested legislator who wishes to know the extent of regulated activity in the state would turn to the Annual Report of the SCC. In addition to a summary of such things as charters issued and withdrawn, certificates of public convenience and necessity granted, etc., he will always find the assessed value of firms being regulated in a conspicuous place in each report.²

¹Since 1903 the commission has assessed all land owned by public service corporations at fair market value. All other assets of utilities are assessed at original cost less depreciation. An alternative measure of activity might be gross receipts tax collections, however the rate of taxation has varied from time to time, and the receipts of certain utilities have been included in the base in early years and excluded in later years making this measure inconsistent.

²Changing capital labor ratios over time could

In order to control for price changes over time we have deflated the revenue, activity, and budget variables by the consumer price index.

Jurisdiction has been defined as the thirteen original areas of activity charged to the SCC in the Constitution and in various acts passed prior to its formation, plus any additions listed in the SCC Annual Report from year to year. Since each additional area of the jurisdiction added by the legislature adds one to the value of the jurisdiction variable (i.e., $J = 13, 14, 15,$ etc.), early increases in jurisdiction are weighted more heavily than those in later years. Because of the upward trend in commission budget over the period of time under study, this may result in understating the impact of jurisdiction on on budget expansion in later years. However, since many duties are overlapping, and even complementary in nature (and some seem even trivial), the measure of jurisdiction used may actually be too high for the later years, thus the net direction of bias in the jurisdiction variable is unknown.

bias this measure of firm activity. A changing capital labor ratio might result from both technological change over time and the so-called Averch-Johnson effect. No attempt has been made to adjust for any changes of this sort. Any increase in the capital labor ratio would tend to impart an upward bias on the activity coefficient, and perhaps cause us to understate the importance of other variables on commission budget.

Tests of the Alternate Hypotheses

Each of the theories we have summarized may be tested by means of restrictions placed on the general model. Each theory implies testable hypotheses concerning the signs of the coefficients in the model and the relative importance of the variables. Unfortunately, only in the case of the Bernstein hypothesis may all of the conditions regarding the signs of the coefficients be tested simultaneously. In each of the other cases, we must employ a multipart test. In the case of the Niskanen thesis, for instance, one can test its implications by testing the null hypothesis that time and tenure do not matter. If this hypothesis fails to be rejected, the theory passes one part of a multipart test of its validity. One can also test the null hypothesis that neither revenue, nor activity, nor jurisdiction matters. If this hypothesis is rejected, the theory passes the second part of the test. However, it is impossible to formulate a null hypothesis against which we can test the joint hypothesis; that revenue, activity and jurisdiction all matter, while time and tenure do not. Rather, it is necessary that we test either of these propositions, given that the other, or its complement, holds. The results of these tests may be somewhat weaker than more familiar tests (e.g., is a particular coefficient equal to unity, or zero, etc.); however, they will give us some basis on which to judge

the validity of the theories. A theory will be accepted without reservation only if it passes all parts of the multipart test. If, however, the results are mixed, i.e., the theory passes one part and fails one part of a test, then at best the theory is partially accurate, but fails to completely explain the observed phenomena.

We specify two general models, one which incorporates the standard dummy variable technique, and the other which incorporates the alternate technique discussed above. In most instances, the theories can be tested in terms of either general model; however, in a few cases it is possible to test a theory in terms of only one of the general models.

The general equation is:

$$B = RL^{b_2} RH^{b_3} AL^{b_4} AH^{b_5} JL^{b_6} JH^{b_7} e^{b_0 - b_1/t} \quad (1)$$

which is linear in natural logs and can be written as:

$$\begin{aligned} \ln B = & b_0 - b_1(1/t) + b_2 \ln RL + b_3 \ln RH \quad (2a) \\ & + b_4 \ln AL + b_5 \ln AH + b_6 \ln JL \\ & + b_7 \ln JH + u .^1 \end{aligned}$$

The alternate form of the general equation, using the usual dummy variable technique, may be written in natural logs as:

$$\begin{aligned} \ln B = & c_0 - c_1(1/t) + c_2 \ln R + c_3 \ln A \quad (2b) \\ & + c_4 \ln J + c_5 DT + u , \end{aligned}$$

¹The variables are defined as in fn. 2, page 58. Variable RL represents revenue in the period 1905-28, and

where DT is the dummy variable indicating periods where differences may occur due to different tenure prospects.

The Eckert Hypothesis

We will first test the Eckert hypothesis, which argues that more secure commissioner tenure (in our example this occurs during the 1928-71 period) results in more bureaucratic behavior. The theory suggests that time does not matter, and that tenure, revenue, activity, and jurisdiction do matter. Further, the theory would imply that since the commission behaves more bureaucratically in the 1928-71 period, the revenue and jurisdiction coefficients should be larger during that period than the 1905-28 period, and the activity coefficients should be smaller. Because of the emphasis of Eckert's theory on tenure, and especially because of the implications of this emphasis on the relative magnitudes of the revenue, activity, and jurisdiction coefficients in the two time periods, it seems preferable to test the thesis in terms of the first general model (equation (2a)).

Regression 1 in Table 2 is the estimate of equation (2a), using SCC data. The calculated Durbin-Watson statistic is 1.32, a value in the range where we may neither accept nor reject positive autocorrelation of

RH represents revenue in the period 1928-71. The other variables are defined similarly. The error term, u , is assumed to be independently distributed with mean zero and finite variance.

TABLE 2

REGRESSIONS USED TO TEST THE HYPOTHESES

$$1. \ln B = -5.307 - .17664(1/t) + 1.0858 \ln RL + .5942 \ln RH + .11935 \ln AL$$

(3.88) (.2531) (.3301) (.1517) (.2347)

$$+ .47665 \ln AH - 1.024 \ln JL - .45806 \ln JH + u$$

(.1862) (.8108) (.5742)

$$R^2 = .9854 \quad D.W. = 1.32 \quad F(7,26) = 250.221 \quad SSE = .3760$$

$$2. \ln B = -3.182 - .14554(1/t) + .57668 \ln R + .35239 \ln A - .27585 \ln J$$

(3.25) (.1636) (.1300) (.1621) (.4738)

$$+ .05308 DT + u$$

(.0859)

$$R^2 = .9836 \quad D.W. = 1.16 \quad F(5,28) = 335.23 \quad SSE = .4223$$

$$3. \ln B = -6.017 + .98871 \ln RL + .61548 \ln RH + .18195 \ln AL + .50596 \ln AH$$

(3.71) (.2971) (.1472) (.2149) (.1796)

$$- .6371 \ln JL - .54257 \ln JH + u$$

(.5876) (.5561)

$$R^2 = .9851 \quad D.W. = 1.29 \quad F(6,27) = 297.493 \quad SSE = .3830$$

$$4. \ln B = 14.21 - 2.8436(1/t) + u$$

(.149) (.6834)

$$R^2 = .3511 \quad D.W. = .15 \quad F(1,32) = 17.312 \quad SSE = 16.68$$

TABLE 2--Continued

5.	$\ln B = -3.776 - .17701(1/t) + .61528 \ln R + .35365 \ln A - .37127 \ln J + u$
	(3.07) (.1538) (.1128) (.1593) (.4431)
	$R^2 = .9833$ D.W. = 1.13 F(4,29) = 428.074 SSE = .4281
6.	$\ln B = -6.677 + .52955(\ln RL + \ln AL) + .5691(\ln RH + \ln AH) + .006114 \ln JL$
	(3.50) (.1210) (.1386) (.4299)
	$- .45735 \ln JH + u$
	(.5674)
	$R^2 = .9830$ D.W. = 1.17 F(4,29) = 419.177 SSE = .4370
7.	$\ln B = -5.035 - .0949(1/t) + .4995(\ln R + \ln A) - .1676 \ln J + .08136 DT + u$
	(2.946) (.1607) (.1168) (.4716) (.0840)
	$R^2 = .9826$ D.W. = 1.13 F(4,29) = 409.206 SSE = .4475
8.	$\ln B = -3.495 + .57423 \ln R + .3559 \ln A - .1859 \ln J + u$
	(3.07) (.1076) (.1601) (.4150)
	$R^2 = .9826$ D.W. = 1.04 F(3,30) = 564.222 SSE = .4477
9.	$\ln B = 13.11 - .87276(1/t) + 1.3347 DT + u$
	(.199) (.5499) (.2085)
	$R^2 = .7205$ D.W. = .38 F(2,31) = 39.961 SSE = 7.184
10.	$\ln B = -5.882 + .5219 (\ln R + \ln A) - .1622 \ln J + u$
	(2.525) (.1013) (.4197)
	$R^2 = .9816$ D.W. = 1.00 F(2,31) = 825.088 SSE = .4740

the error terms.¹ The coefficient on time has the expected (negative) sign; however, it is not significantly different from zero. The coefficient on revenue in the early years (RL) is not significantly different from unity, while in the later years the coefficient (RH) is significantly less than one. Both coefficients are significantly different from zero.² The coefficients on both jurisdiction variables have negative signs, though in neither case are they significantly different from zero. The coefficients on the two activity variables are both significantly different from zero and are significantly less than unity.³

To test the Eckert hypothesis, the following testable conditions may be posed:

$$\begin{array}{llll}
 H1: b_1 = 0 & H2: b_2 > 0 & b_3 > 0 & H3: b_2 < b_3 \\
 & b_4 > 0 & b_5 > 0 & b_4 > b_5 \\
 & b_6 > 0 & b_7 > 0 & b_7 > b_6
 \end{array}$$

H1 states that time is unimportant, H2 states that revenue, activity, and jurisdiction are important, and

¹Weighted sum correction techniques also yielded a Durbin-Watson statistic which was in the gray area, hence we left the data in original form for the remainder of the analysis.

²Tests indicate that the coefficients do not differ significantly from each other.

³Since the coefficients represent elasticities, the coefficients on the activity and jurisdiction variables tentatively suggest the existence of scale economies in regulation.

H3 states that behavior is different in the two periods, and that it is more bureaucratic in the later years (i.e., that tenure matters). We first test H1 by restricting $b_1 = 0$, without applying other restrictions, to determine if time matters. We may test this by estimating equation (3), and determining if the restricted regression explains significantly less than the general equation.

$$\ln B = b_0 + b_2 \ln RL + b_3 \ln RH + b_4 \ln AL + b_5 \ln AH + b_6 \ln JL + b_7 \ln JH + u \quad (3)$$

If it does, then this would imply that the omission of time is incorrect and that Eckert's theory is wrong.

Regression 3 in Table 2 is the estimate of equation (3), using SCC data. The statistic used to test the restriction $b_1 = 0$ is:

$$F = (Q_1/P)/(Q_0/T - k - 1) ,$$

where $Q_1 + Q_0$ is the sum of errors squared restricted, Q_0 is the sum of errors squared unrestricted, P is the number of restrictions (in this case, 1), T is the number of observations on the dependent variable (34), and k is the number of independent variables in the unrestricted regression (7). The test statistic is distributed as F , with P , and $T - k - 1$ degrees of freedom.¹ The calculated F -statistic is .484. The critical value, $F_{.05}$ is 4.22,

¹For a further explanation of the procedure, see Franklin A. Graybill, An Introduction to Linear Statistical Models, Vol. I (New York: McGraw-Hill, 1961), pp. 133-40.

thus we fail to reject that $b_1 = 0$, since the value of the test statistic does not exceed the critical value.

We next test H2 without applying any restriction to b_1 to determine if revenue, activity, jurisdiction and tenure matter. The null hypothesis for this test is that $b_2 = b_3 = b_4 = b_5 = b_6 = b_7 = 0$. Consequently, the sum of squared residual under the null hypothesis for the test of H2 is obtained by estimating

$$\ln B = b_0 - b_1(1/t) + u, \quad (4)$$

and then calculating the appropriate F-statistic. Regression 4 in Table 2 is the estimate of equation (4). The calculated F is 187.9, and the critical value of $F_{.05}$ is 2.47; thus, we reject the hypothesis that R, A, J and T simultaneously have no effect on budget, and we accept H2 on the basis of the F-test. However, H2 does not say that the coefficients on the b_1^S are non-zero, but rather that they are simultaneously positive. We thus reject H2 on the basis of the incorrect signs on the b_6 and b_7 coefficients.

Condition H3 hypothesizes certain relative magnitudes of various coefficients. The tenure argument suggests that agencies will behave more bureaucratically in periods when tenure is secure than those when tenure may be insecure. This implies that the coefficient on RH should be larger than the coefficient on RL, the coefficient on AH should be smaller than the coefficient on AL, and the

coefficient on JH should be larger than the coefficient on JL, since in the early years the behavior should have been less bureaucratic than in the later years. Casual observation reveals that the expected direction of the difference is not present. By restricting $b_2 = b_3$, $b_4 = b_5$, and $b_6 = b_7$, we can test the significance of the differences in the coefficients. The null hypothesis regression is 5 in Table 2. The calculated F is 1.2009, less than the $F_{.05}$ critical level of 2.98. We therefore reject condition H3 on the basis of both magnitudes of the coefficients and because of the incorrect sign of the estimated coefficient on the jurisdiction variables.

Eckert's theory places primary emphasis on the tenure and jurisdiction variables. Since the conditions which test this part of the theory are rejected, we must reject the Eckert theory.

The Wilson Hypothesis

Wilson's random behavior hypothesis suggests that time has no effect on budget, and that revenue, activity, jurisdiction, and tenure simultaneously have positive impacts on budget. Additionally, behavior should be bureaucratic.

We may summarize the theory on the basis of the following conditions:

$$\begin{array}{llll}
 \text{H1: } b_1 = 0 & \text{H2: } b_2 > 0 & b_3 > 0 & \text{H3: } b_2 < b_3 & \text{H4: } b_2 > b_4 \\
 & b_4 > 0 & b_5 > 0 & b_4 > b_5 & b_3 > b_5 \\
 & b_6 > 0 & b_7 > 0 & b_6 < b_7 &
 \end{array}$$

The first three conditions are identical to those used to test the Eckert hypothesis above. The difference in the theories primarily lies in the emphasis placed on the jurisdiction variable. While Eckert's theory viewed jurisdiction as the means to increased budgets and the tool of the bureaucrat, Wilson considers it an alternate measure of activity. In both cases, of course, the expected sign is positive. Since bureaucratic behavior implies that revenue is more important than activity in determining agency budget, the coefficient on revenue should exceed the coefficient on activity in each sub-period, which is the implication of condition H4. The results of the tests on H1, H2, and H3 are identical to those on the Eckert hypothesis above. The null hypothesis for H4 is that the restrictions $b_2 = b_4$ and $b_3 = b_5$ hold. The sum of squared residuals for this null hypothesis is obtained by estimating equation (5).

$$\begin{aligned}
 \ln B = & b_0 + b_2(\ln RL + \ln AL) + b_3(\ln RH + \ln AH) & (5) \\
 & + b_6 \ln JL + b_7 \ln JH + u
 \end{aligned}$$

Regression 6 in Table 2 is the estimate of equation (5). The calculated F-statistic is 1.406, less than the $F_{.05}$ critical value of 2.98, which means that we fail to reject the hypothesis that $b_2 = b_4$ and $b_3 = b_5$. Hence, we reject

condition H4. In addition to our previous rejection of H2 and H3, because of signs and magnitudes, we also reject that the agency behaved bureaucratically in either sub-period. Hence, we reject the Wilson thesis.

The Bernstein Hypothesis

Bernstein argues that all five variables, time, tenure, revenue, activity, and jurisdiction, are important. He states that the effects of time and tenure are negative, while revenue, activity, and jurisdiction positively affect budget. Additionally, behavior is not bureaucratic, hence the coefficient on activity should be larger than the coefficient on revenue. We may state the condition in terms of the second general equation (2b) as:¹

$$H1: c_1 < 0 \quad c_2 > 0 \quad c_3 > 0 \quad H2: c_2 < c_3 \\ c_4 > 0 \quad c_5 < 0 .^2$$

Regression 2 in Table 2 is the estimate of equation (2b). Again the Durbin-Watson statistic (1.16) is in the gray area and again weighted-sum correction techniques resulted in a Durbin-Watson statistic in the gray area.

¹The superiority of the primary general equation is restricted to its ability to illustrate different magnitudes of the various coefficients in the different sub-periods. This is only useful for testing the Eckert and Wilson theories, and for this reason we will use the simpler second general equation to test this and the remaining theories. In all cases where either general model can be used to test a theory, those tests were conducted using each general model, and in no case were the results different.

²Note that the coefficients which are restricted in terms of the second general model are c_i^S rather than b_i^S .

We find negative, but insignificant, coefficients for both time and jurisdiction, and the coefficients on revenue and activity are both significantly greater than zero and less than unity. The coefficient on tenure is positive, but not significantly different from zero.

We may test condition H1 by simply testing the F-statistic of the entire regression, that is, the null hypothesis that $c_1 = c_2 = c_3 = c_4 = c_5 = 0$, against the alternative that at least one of the c_i^s are merely non-zero, but that c_1 and c_5 are less than zero and c_2 , c_3 and c_4 are all positive. We may reject this because of the positive estimated value of c_5 and the negative estimated value of c_4 .

Condition H2 states that revenue is less important than activity. The null hypothesis for this test is $c_2 = c_3$. The sum of squared residuals under the null hypothesis is obtained by estimating equation (6).

$$\ln B = c_0 - c_1(1/t) + c_2(\ln R + \ln A) + c_4 \ln J \quad (6) \\ + c_5 DT + u$$

The regression which estimates equation (6) is 7 in Table 2. The calculated F is 1.671, less than the critical $F_{.05}$ value of 4.20, so that we fail to reject the null hypothesis that $c_2 = c_3$. Therefore, we reject the Bernstein thesis on the basis of the signs predicted in H1, and the magnitudes of the revenue and activity coefficients.

The Traditional Hypothesis

Strict traditional theories predict that neither time nor tenure matters, and that revenue, activity and jurisdiction all have a positive influence on budget. Activity, however, should be more important than revenue, since the commissioners do not behave bureaucratically. We may summarize the theory in terms of the following conditions:

$$\begin{array}{lll} H1: c_1 = 0 & H2: c_2 > 0 & H3: c_2 < c_3 \\ & c_5 = 0 & c_3 > 0 \\ & & c_4 > 0 \end{array}$$

Condition H1 states that neither time, nor tenure has an effect on budget. We may test this by the null hypothesis $c_1 = c_5 = 0$ without applying other restrictions. The sum of squared residuals under the null hypothesis is obtained by estimating equation (7).

$$\ln B = c_0 + c_2 \ln R + c_3 \ln A + c_4 \ln J + u \quad (7)$$

Regression 8 in Table 2 is the estimate of equation (7). The calculated F-statistic is .8421 with a critical $F_{.05}$ value of 3.34; hence we fail to reject condition H1 and the traditional hypothesis passes the first part of a three-part test.

Condition H2 states that revenue, activity, and jurisdiction simultaneously have positive effects on budget. We test this with the null hypothesis that $c_2 = c_3 = c_4 = 0$, given that c_1 and c_5 are unrestricted, and obtain the sum

of squared residuals under the null hypothesis by estimating equation (8).

$$\ln B = c_0 - c_1(1/t) + c_5 DT + u \quad (8)$$

Note that it is impossible to restrict revenue, activity, and jurisdiction to simultaneously equal zero in the original equation (2a) without also implying that tenure has no effect. It is for this reason that we must use the second general equation for this test. All other tests could have been conducted using either of the two general equations.

Regression 9 in Table 2 is the estimate of equation (8). The calculated F is 149.44 with a critical $F_{.05}$ value of 2.95. Hence, we can reject $c_2 = c_3 = c_4 = 0$ reasoning that we fail to reject condition H2 on the basis of the F-test. However, H2 states that $c_4 > 0$, and the estimated value of c_4 is negative, hence we reject H2 on the basis of the signs of the coefficients.

Condition H3 states that $c_2 < c_3$, implying the absence of bureaucratic behavior. The sum of squared residuals when $c_2 = c_3$, assuming that H1 and H2 hold, is obtained by estimating equation (9).

$$\ln B = c_0 + c_2(\ln R + \ln A) + c_4 \ln J + u \quad (9)$$

The estimate of equation (9) is regression 10 in Table 2. The calculated F-statistic is 1.143, less than the $F_{.05}$ critical value of 2.95, so that we cannot reject the null hypothesis that $c_2 = c_3$. Hence, we reject condition H3.

Therefore, because of our rejection of H3 and the incorrect sign on the jurisdiction variable, we reject the traditional theory.

The traditional theories suggest one additional testable hypothesis concerning commission behavior which we can test using the SCC data. Traditionalists argue that removal of an agency from the public eye may result in a loss of public support for the commission while at the same time increasing its independence. This should result in decreased budget for the agency during periods when it is more independent. As a test of this thesis, we used a dummy variable only in the years during which the commissioners were elected (1919-1926), years during which the commission should have been most in the public eye. When we estimated a regression of this relationship, the coefficient on the dummy variable was not significantly different from zero (and in fact was negative), indicating that popular election had no significant impact on commission budget.¹

The Niskanen Hypothesis

The Niskanen, pure bureau, model suggests that revenue, activity, and jurisdiction have positive effects

¹The regression estimated using the dummy variable equal to unity for the years 1919-1926 is:

$$\begin{aligned} \ln B = & -2.103 - .1983(1/t) + .5704 \ln R + .2903 \ln A \\ & (4.028) \quad (.1588) \quad (.1332) \quad (.1966) \\ & - .1813 \ln J - .0603 D \\ & (.5346) \quad (.0927) \end{aligned}$$

on budget and that time and tenure are unimportant. Additionally, the theory suggests that revenue is more important than activity. This implies the following testable conditions:

$$\begin{array}{lll} \text{H1: } c_1 = 0 & \text{H2: } c_2 > 0 & \text{H3: } c_2 > c_3 \\ c_5 = 0 & c_3 > 0 & \\ & c_4 > 0 & \end{array}$$

Conditions H1 and H2 are identical to the first two conditions of the traditional hypothesis and condition H3 differs only in the direction of the inequality. The identical tests are applied and we reject the theory for the same reasons as we rejected the traditional theory, i.e., the incorrect sign on the jurisdiction coefficient, and the relative magnitudes of the revenue and activity coefficients.

The Posner, and Comanor and Mitchell Hypotheses

The income redistribution theories both suggest that time and tenure have no effect on budget and that revenue, activity and jurisdiction simultaneously have a positive impact. In addition, they suggest bureaucratic behavior, hence the effect of revenue is greater than the effect of activity. All three conditions are identical to the Niskanen model discussed above, and the tests are the same. We reject the theories on the same basis.

The Stigler Hypothesis

Stigler predicts that time and tenure have no effect on budget and that revenue and activity have positive effects on budget. He further argues that if the agency is a general purpose one, it will be less bureaucratic, less cartel minded, and less able to maintain appropriations; hence, the theory predicts a negative coefficient on jurisdiction. Further, if the agency is general purpose, and increased jurisdiction leads to reduced appropriations, then the agency will be less bureaucratic; hence the effect of revenue on budget will not be expected to exceed that of activity.

This suggests the following testable conditions:

$$H1: c_1 = 0 \quad H2: c_2 > 0 \quad c_3 > 0 \quad H3: c_2 \leq c_3 \\ c_5 = 0 \quad c_4 < 0$$

The tests of the three conditions are identical to those conducted on the traditional theory, on the Niskanen theory, and on the two income redistribution theories. We failed to reject any of the conditions, and, furthermore, all of the estimated signs are consistent with the theory; hence, we must accept the Stigler hypothesis.

Summary of Results

We may briefly summarize the results of the tests of hypotheses. All of the theories were valuable in

explaining some of the behavioral phenomena; however, because of the emphasis of some of the theories, we could reject all but the Stigler hypothesis (see Table 3).

Eckert's theory, which emphasized tenure, failed on the basis of the tenure argument and because we found no difference in behavior in the two sub-periods and no evidence of bureaucratic behavior. Additionally, the sign of the jurisdiction variable was wrong.

Wilson's random behavior theory suggests that behavior is generally bureaucratic. We failed to find this in our analysis. Additionally, the sign on the coefficient on jurisdiction was not as predicted by the theory.

Bernstein's life cycle theory failed because we found no evidence that either tenure or aging make any difference in the agency budget. It also fails on the basis of the relative magnitudes of the revenue and activity coefficients and the signs of the jurisdiction and tenure coefficients.

Niskanen's pure bureau theory and the two income redistribution theories failed both on the relative magnitudes of the revenue and activity coefficients and the sign of the jurisdiction coefficient.

Stigler's captured bureau theory seems the most acceptable. This theory suggests that revenue, activity, and jurisdiction all have effects on budget and, further,

TABLE 3

F-TESTS USED TO TEST THE HYPOTHESES

Hypothesis	Condition	F(d.f.)	Decision on Condition	Decision on Hypothesis
Eckert	H1: $b_1 = 0$	.484(1,26)	Accept	
	H2: $b_2 > 0$ $b_3 > 0$ $b_4 > 0$ $b_5 > 0$ $b_6 > 0$ $b_7 > 0$	187.9(6,26)	Reject ^a	
	H3: $b_2 < b_3$ $b_4 > b_5$ $b_6 < b_7$	1.201(3,26)	Reject	Reject
Wilson	H1: $b_1 = 0$	.484(1,26)	Accept	
	H2: $b_2 > 0$ $b_3 > 0$ $b_4 > 0$ $b_5 > 0$ $b_6 > 0$ $b_7 > 0$	187.9(6,26)	Reject ^a	
	H3: $b_2 < b_3$ $b_4 > b_5$ $b_6 < b_7$	1.201(3,26)	Reject	
	H4: $b_2 > b_4$ $b_3 > b_5$	1.406(3,26)	Reject	Reject

TABLE 3--Continued

Hypothesis	Condition	F(d.f.)	Decision on Condition	Decision on Hypothesis
Bernstein	H1: $c_1 < 0$ $c_5 < 0$ $c_2 > 0$ $c_3 > 0$ $c_4 > 0$	335.23(5,28)	Reject ^b	
	H2: $c_2 < c_3$	1.671(1,28)	Reject	Reject
	H1: $c_1 = 0$ $c_5 = 0$	.8421(1,28)	Accept	
Niskanen	H2: $c_2 > 0$ $c_3 > 0$ $c_4 > 0$	149.44(3,28)	Reject ^b	
	H3: $c_2 > c_3$	1.143(3,28)	Reject	Reject
	H1: $c_1 = 0$ $c_5 = 0$	.8421(2,28)	Accept	
Posner, Comanor & Mitchell	H2: $c_2 > 0$ $c_3 > 0$ $c_4 > 0$	149.44(3,28)	Reject ^b	
	H3: $c_2 > c_3$	1.143(3,28)	Reject	Reject

TABLE 3--Continued

Hypothesis	Condition	F(d.f.)	Decision on Condition	Decision on Hypothesis
Traditional	H1: $c_1 = 0$ $c_5 = 0$	.8421(2,28)	Accept	
	H2: $c_2 > 0$ $c_3 > 0$ $c_4 > 0$	149.44(3,28)	Reject ^b	
	H3: $c_2 > c_3$	1.143(3,28)	Reject	Reject
Stigler	H1: $c_1 = 0$ $c_5 = 0$	.8421(2,28)	Accept	
	H2: $c_2 > 0$ $c_3 > 0$ $c_4 < 0$	149.44(3,28)	Accept	
	H3: $c_2 \leq c_3$	1.143(3,28)	Accept	Accept

^aThe F-statistic given is testing the null hypothesis that $b_2=b_3=b_4=b_5= b_6=b_7= 0$ against the alternate hypothesis that at least one of these b_i^s is different from zero. We reject the null hypothesis, thus fail to reject condition H2 on the basis of the F-test. However, since H2 is not that these b_i^s are different from zero, but rather that they are simultaneously positive, we reject condition H2 because of the negative estimated values for b_6 and b_7 .

^bWe accept this condition on the basis of the F-test, but as in the case in note (a) above, we reject the condition because of the negative estimated value of c_4 .

if the agency is a general purpose one, that jurisdiction is negatively related to budget. Additionally, if the agency is a general purpose one and, thus, less subject to capture, we would expect, and in fact found in this study, that revenue is not more important than activity.

CHAPTER V

CONCLUSIONS

There are two primary reasons for studying commission behavior within the context of the alternate theories we have tested. First, it is widely accepted that commissions have failed to achieve the classical goals of regulation. Secondly, each of the models studied predicts behavior which is inconsistent with the achievement of those classical goals. If it can be demonstrated that commissions have indeed behaved in a manner consistent with any of the theories we have studied, then we may be able to explain the failure of regulatory commissions.

Furthermore, we may find it desirable in the future to alter the various regulatory institutions so that the results we desire are consistent with those predicted by models of behavior. In essence, if regulators are individual utility maximizers, then optimization may produce undesirable results. If so, the proper policy prescription must be to alter the institutions in such a way that the utility maximizing regulator is compelled to achieve the desired results.

What have we learned from this study of the various hypotheses? It appears that a few policy implications may

be drawn from the analysis. Here, the task remains to point out the obvious shortcomings of the current state of knowledge about the behavior of regulatory agencies. We may then suggest areas of expansion and improvement of existing theories of behavior.

Theories of bureaucratic behavior may be valuable for explaining the behavior of federal agencies, because they are typically single-purpose agencies and more susceptible to capture by the regulated industry. Such theories, though, seem less useful for explaining the behavior of general purpose state agencies, such as Virginia's State Corporation Commission.

The most useful models for the study of SCC behavior seem to be Stigler's captured bureau theory, but only as it applies to general purpose agencies, and the traditional theory. The analysis is consistent with Stigler's argument that general purpose agencies are less bureaucratic and less cartel-minded than single purpose agencies. This may, however, imply that such agencies behave in a traditional manner. One implication of this is to expand the duties of single purpose agencies so as to reduce their capturability. This should not be construed as a panacea, however, as such a policy would remove only one objectionable characteristic of regulatory behavior. Nor would the finding of traditional behavior necessarily imply that the agency is doing a good job of

protecting the public interest. The very fact that traditionalists offer reform proposals indicates that they too feel that there are deficiencies in commission performance.

Another implication of the analysis is that neither time nor tenure have any effects on the performance of regulatory agencies. This tentatively suggests that if we are dissatisfied with regulation, a policy of shorter terms, or single term appointments would be ineffective in altering performance.

Scale economies are implied by the coefficients on both activity and jurisdiction. This suggests that the duties of the agency, especially those which complement existing duties, may be expanded at small additional cost to the agency's sponsor. There may even be certain jurisdictional changes which enable the commission to perform its existing duties at lower cost; for instance, the regulation of motor vehicles reduces the difficulty of controlling the rates of railroads. We must, of course, weigh against these cost savings, the increased ability of the commission to enforce legalized cartel arrangements in industries which may be basically competitive.

Unfortunately, the clearest conclusion which we may draw from the study seems that the different theories have testable implications which are at best similar, and

at worst so trivially different as to render the models useless in explaining regulatory behavior. This result is not surprising since all of the students of regulation are observing the same set of facts, and attempts to explain those facts will of necessity be similar.

All of the theories we have studied suffer from similar shortcomings. They are all offered as explanations for regulatory failure, and in all cases the theories are somewhat valuable as tools for explaining specific instances of behavior. In general, however, none of the theories does a good job of explaining broad behavior variation which is typical of the regulatory agencies. Furthermore, no theory evidences any ability to predict behavior or the agency's decision concerning a particular issue.

Eckert expects a short term commission to engage primarily in the regulation of monopoly by choice, whereas a commission which is bureaucratic in nature should engage in the cartelization of basically competitive industries. However, there is widespread evidence of the latter behavior in agencies whose commissioners serve typically for only a short tenure.

Stigler explains such behavior as the result of capture by firms who have sought out and acquired regulation in the first place. No doubt, both Stigler and Eckert would suggest deregulation of competitive industries as the proper policy prescription.

Wilson's random behavior hypothesis is unique since it explains everything, yet predicts nothing. Perhaps regulation is characterized by random behavior. Often regulatory decisions do seem contradictory, at times favoring the regulated interests, while at other times clearly injuring the firms. Such instances, however, can often be attributed to crosssubsidization, which is necessary in order to implement income redistribution or enforce the grand plans of the regulator. Such phenomena, while appearing random, may not be based on random decisions by the regulators. The uninformed observer may interpret these decisions over time as random, but the commissioner may have in mind some carefully thought out reasons for his behavior.

The traditional theories make a weak attempt to incorporate the interaction of the commission and groups other than the regulated firms. They point out that the commission is not always independent of its sponsor; however, they also blame independence for the lack of support by the sponsor and other groups. None of the theories explicitly takes into consideration the decision calculus of the sponsor, the public, or special interest groups other than the regulated firms. Fruitful research remains to be done with theories which incorporate the behavior of the agency with the behavior of all parties at interest, especially the agency's sponsor.

The decision variable relied upon most heavily by all of the theories studied is the agency's budget. This supposedly measures either vitality or utility; however, it is not at all clear that a commission with a large and increasing budget is doing a good job, nor is it clear that there are not other important determinants of utility in addition to budget. The primary blame here must rest with the reliance which the bureaucratic theories place on the work by Niskanen. It is not apparent that anyone can specify the arguments in another's utility function. Even assuming that this is possible, Niskanen argues that all but two--ease of managing the agency and ease of making changes--are positive functions of the budget. The income distribution theories suggest that both budget and power are necessary to effect redistribution. Power, though likely a function of the budget, is probably also related to the scope (possibly measured by jurisdiction) of the agency. Additionally, these may be substitutes in the regulator's utility function; hence, trade-offs may occur. There are, of course, other arguments which may enter the decision calculus of the utility maximizing regulator. The usefulness of a theory which ignores these other arguments is obviously subject to question.

The two arguments which Niskanen states are not positive functions of the budget; ease of managing the agency and ease of making changes may be extremely important

variables in the decision calculus of the regulator. None of these theories suggests a rather obvious explanation of regulatory failure, that commissioners simply do not like to work very hard. The events over time, which seem to be the results of the various motives suggested by the theories, may actually be the result of the commissioners choosing the path of least resistance. If the sponsor is uninterested in the general behavior of regulation, then this may represent optimizing behavior on the part of commissioners.

The study of regulatory behavior is in its infancy. With the exception of the Bernstein thesis, none of the theories is more than a few years old. Only two of the theories (Stigler and Eckert) have been subjected to empirical verification. Relatively weak results of the type we have found are not uncommon when dealing with new theories. However, unless these shortcomings lead to further substantive research, little will be known about the behavior of regulatory commissions.

A more complete framework for the study of commission behavior must encompass the decision calculus of all parties at interest, and the interactions of those parties. Expansion of the single variable utility function is certainly necessary and surely must include those arguments which are not positively related to the budget of

the agency. Only by this method may we be able to explain, more than piecemeal, the behavior of regulatory commissions, or in any way predict that behavior with respect to specific issues.

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APPENDIX

TABLE 4
 SCC COMMISSIONERS 1903-73

Name	Term
B. T. Crump	March 1, 1903 to June 1, 1907
H. C. Stuart	March 1, 1903 to February 28, 1908
Henry Fairfax	March 1, 1903 to October 1, 1905
J. E. Willard	October 1, 1905 to February 18, 1910
R. R. Prentis	June 1, 1907 to November 17, 1916
W. R. Rhea	February 28, 1908 to November 15, 1925
J. R. Wingfield	February 18, 1910 to January 31, 1918
C. B. Garnett	November 17, 1916 to October 28, 1918
Alex Forward	February 1, 1918 to December 5, 1923
R. E. Williams	November 12, 1918 to July 1, 1919
S. L. Lupton	October 28, 1918 to June 1, 1919
B. D. Adams	June 12, 1919 to January 31, 1928
O. L. Shewmake	December 16, 1923 to November 24, 1924
H. L. Hocker	November 25, 1924 to April 3, 1927
L. S. Epes	November 16, 1925 to November 16, 1929
W. M. Fletcher	February 1, 1928 to December 19, 1943
G. C. Perry	November 29, 1929 to April 17, 1933
T. W. Ozlin	April 17, 1933 to July 14, 1944
H. B. Apperson	January 31, 1944 to October 5, 1947
R. O. Norris	August 30, 1944 to November 20, 1944
L. M. Downs	December 16, 1944 to April 18, 1949
W. M. King	October 7, 1947 to June 24, 1957

TABLE 4--Continued

Name	Term
R. T. Catterall	April 28, 1949 to February 1, 1973
J. W. Dillon	July 16, 1957 to January 28, 1972
P. C. Shannon	March 15, 1972 to present
Junie Bradshaw	April 4, 1972 to present
Thomas P. Harwood	February 1, 1973 to present

Source: Annual Report of the Virginia State Corporation Commission.

TABLE 5
DUTIES OF THE COMMISSION

Year	Duties
1903 ^a	To oversee the creation and supervision of corporations, including the issuance of charters and amendments to, or extensions of, charters.
1903	To assess annually the properties of railway companies for local taxation.
1903	To assess annually the properties of canal companies for local taxation.
1903	To fix rates and regulate the service of railroads.
1903	To fix rates and regulate the service of telephone and telegraph companies.
1903	To levy the state franchise tax against railroads.
1903	To levy the state franchise tax against canal companies.
1903	To prescribe rules regulating the demurrage and car service charges in the state.
1903	To assess the value of the properties of steam-boat companies for local taxation.
1903	To assess the value of the properties of electric railway companies for local taxation.
1903	To assess the value of the property of telephone and telegraph companies for local taxation.
1903	To assess the value of properties of express companies for local taxation.
1903	To assess the value of all mineral lands and improvements, fixtures and machinery thereon.

^aDuties dated 1903 are duties which were assigned to the commission either in the Constitution, or by the General Assembly, prior to the time the commission began operation.

TABLE 5--Continued

Year	Duties
1906	Regulation of insurance.
1906	Investigate cases of suspected arson.
1910	Valuation of the property of public utilities for local taxation, and assessment of state taxes on them.
1910	Regulation of banking.
1914	Fixing the rates of public utilities, and regulating their services.
1915	Taxation of the rolling stock of car line companies.
1918	Administration of the Blue Sky Law.
1923	Regulation of transportation by motor vehicle.
1924	Fixing rates of pilotage.
1928	Regulation of aeronautics.
1928	Licensing of dams.
1930	Transferring to the Commission from the office of the Secretary of the Commonwealth the recording of corporate charters.
1932	Collection of the gross receipts tax on common carriers by motor vehicle.
1934	Regulation of the issuance of securities by public utilities.
1934	Regulation of contracts between public utilities and affiliates.
1938	Transferring from the Department of Highways to the Commission functions relating to the construction and maintenance of airports.
1940	Assessment and collection of the motor fuel road tax.

TABLE 5--Continued

Year	Duties
1940	Supervision of Blue Cross and Blue Shield contracts.
1946	Fixing the maximum charges of small loan companies.
1948	Registration of trademarks.
1948	Adoption and enforcement of regulations for the prevention of fire hazards in public buildings. Appointment of Chief Fire Marshall for the state.
1948	Regulation of household goods carriers.
1950	Adoption of safety regulations for liquefied petroleum gas.
1950	Issuance of certificates of public convenience and necessity to public utilities.
1952	Regulation of petroleum tank truck carriers.
1954	Transferring from the Division of Motor Vehicles the issuance of identification tags for commercial vehicles.
1956	Issuance of certificates of convenience and advantage to small loan companies.
1956	Transferring from the Secretary of the Commonwealth to the Clerk of the Commission all functions relating to service of process on corporations.
1956	Collection of surtax on motor fuel used in the state by heavy vehicles.
1956	Regulation of transportation of explosives.
1956	Regulation of sight-seeing carriers.
1956	Licensing of automobile clubs.
1958	Administration of Uninsured Motorists funds.

TABLE 5--Continued

Year	Duties
1958	Registration of service marks.
1958	Registration of laundry marks.
1960	Regulations for installation of boilers.
1964	Regulation of insurance premium finance companies.
1964	Regulation of leasing of motor vehicles.
1964	Central filing office, Uniform Commercial Code.
1964	Publish motor vehicle reciprocity agreements and decide whether a motor vehicle carrier is entitled to reciprocity.
1964	Register Interstate Commerce Commission authority of motor carriers.
1964	Assessment for local taxation of petroleum pipe line companies.
1966	Regulation of parachute jumping.
1968	Administration of Take-Over Bid Disclosure Act.
1968	Administration of Consumer Credit Code.
1968	Regulation of sight-seeing and charter party boats.
1968	Regulation of Basic Property Insurance Inspection and Placement Plan.
1970	Regulation of Radio Common Carriers.
1970	Regulation of Virginia Insurance Guaranty Association.
1970	Administration of Virginia Industrialized Building Unit and Mobile Home Safety Law.
1971	Mediate controversies between public service companies and their employees and patrons.

TABLE 6

STATE CORPORATION COMMISSION CASELOAD, 1903-1970

Category	Year													
	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Utilities	0	0	0	1	2	1	1	0	0	2	5	5	12	13
Transportation	11	10	12	13	27	33	30	18	26	20	22	23	25	22
Banking	0	0	1	0	1	1	1	0	5	1	2	2	3	1
Insurance	0	0	0	0	1	0	0	0	1	0	3	0	1	2
Corp. & Tax	1	5	4	1	2	1	1	12	28	15	9	29	17	10
Securities	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 6--Continued

Category	Year													
	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Utilities	21	32	28	39	27	22	15	10	15	32	33	13	15	13
Transportation	38	52	28	39	39	22	25	140	26	41	34	41	81	86
Banking	2	2	3	1	0	0	0	0	0	0	0	0	0	0
Insurance	1	0	0	0	0	1	0	0	2	0	0	23	30	10
Corp. & Tax	13	40	13	30	51	19	20	20	6	4	14	26	35	27
Securities	13	3	59	169	101	154	198	216	4	2	4	5	16	22

TABLE 6--Continued

Category	Year													
	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Utilities	12	8	4	5	10	14	17	2	4	3	14	7	3	4
Transportation	162	151	72	67	76	114	115	100	103	74	93	69	50	76
Banking	2	23	59	16	2	1	4	1	2	1	3	3	0	1
Insurance	50	43	39	48	55	46	62	107	108	110	115	86	75	56
Corp. & Tax	41	23	24	33	27	28	47	30	33	30	41	32	49	19
Securities	22	21	13	19	37	51	63	95	90	119	122	136	99	90

TABLE 6--Continued

Category	Year												
	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
Utilities	8	10	12	28	22	22	21	32	24	30	17	19	20
Transportation	71	83	83	84	131	86	82	102	99	124	82	86	52
Banking	3	1	1	6	2	1	4	5	1	2	11	49	36
Insurance	92	127	90	109	21	19	42	65	52	59	77	76	22
Corp. & Tax	12	28	42	53	61	12	9	7	8	10	2	5	11
Securities	116	175	109	241	521	450	409	454	371	377	416	404	337

TABLE 6--Continued

Category	Year												
	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Utilities	17	21	18	5	11	10	2	12	8	8	10	35	46
Transportation	76	35	34	61	56	47	64	46	57	62	45	32	58
Banking	21	37	34	24	43	34	51	36	33	31	26	27	42
Insurance	23	8	7	10	9	5	4	8	4	10	18	17	26
Corp. & Tax	5	3	6	15	3	8	5	3	4	4	1	26	24
Securities	NA	268	243	224	242	243	275	227	253	236	240	214	93

Source: State Corporation Commission, Annual Report, 1903-1970, passim.

TABLE 7

SCC AND STATE OF VIRGINIA BUDGET, 1903-1973^a

Year	SCC-Operating	Va-Operating	SCC Budget/Va. Budget
1905-06	.09597	8.86144	.0108
1907-08	.118992	10.1304	.0117
1909-10	.145106	11.5835	.0125
1911-12	.169018	13.061	.0129
1913-14	.162009	14.2382	.0114
1915-16	.169000	15.9886	.0106
1917-18	.185717	18.1881	.0102
1919-20	.245236	25.6336	.0096
1921-22	.271067	29.880	.0091
1923-24	.337235	37.3029	.0090
1925-26	.439575	44.2500	.0099
1927-28	.504337	47.2283	.0107
1929-30	.482387	56.9834	.0085
1931-32	.406315	64.012	.0063
1933-34	.511414	65.1987	.0078
1935-36	.712207	74.6429	.0095
1937-38	.737598	103.441	.0071
1939-40	.826492	135.860	.0061
1941-42	.898401	150.463	.0060
1943-44	.931808	206.741	.0045
1945-46	.931182	213.813	.0044
1947-48	1.15555	300.567	.0038

TABLE 7--Continued

Year	SCC-Operating	Va-Operating	SCC Budget/Va. Budget
1949-50	1.69263	474.744	.0036
1951-52	2.08758	578.388	.0036
1953-54	2.36533	663.726	.0036
1955-56	2.61381	729.422	.0036
1957-58	2.97832	812.672	.0037
1959-60	3.02546	896.1075	.0034
1961-62	3.08776	1,247.890	.0025
1964-65 ^b	4.07834	1,440.410	.0028
1966-67	4.2631	1,609.180	.0026
1968-69	5.56987	2,070.210	.0027
1970-71	7.17917	2,880.650	.0025
1972-73	9.13695	3,699.840	.0025

^aBudget figures in millions of dollars.

^bState biennium altered; begins in even numbered years after 1964.

Source: SCC Operating Expenses, 1970-1973, Acts of Assembly
 SCC Operating Expenses, 1919-1973, Governor's Budget
 Va. Operating Expenses, 1903-1917, Acts of Assembly
 Va. Operating Expenses, 1919-1973, Governor's Budget

TABLE 8
 CONSUMER PRICE INDEX, 1905-1971

Year	CPI ^a	Year	CPI ^a
1905	.368	1939	.594
1907	.402	1941	.629
1909	.385	1943	.740
1911	.406	1945	.769
1913	.423	1947	.966
1915	.434	1949	1.018
1917	.548	1951	1.110
1919	.740	1953	1.144
1921	.764	1955	1.145
1923	.739	1957	1.202
1925	.750	1959	1.255
1927	.742	1961	1.284
1929	.733	1963	1.315
1931	.650	1965	1.355
1933	.553	1967	1.442
1935	.587	1969	1.593
1937	.614	1971	1.761

^a1949 = 1.00

Source: 1905-1913, Historical Statistics of the United States;
 1915-1971, Monthly Labor Review.

VITA

James Alton Zellner, the son of Ben G. and Mary Zellner, was born on the first day of January, 1946, in Clay County, Florida. He is married to the former Celia Dianne Aenchbacher.

He attended public secondary school in Jacksonville, Florida. After completion of high school, he entered Florida State University as a freshman in the Fall of 1963, and was awarded the A.B. degree in April, 1967.

After completion of the A.B. degree at Florida State University, he entered the Graduate School of the Louisiana State University in New Orleans in September, 1967. He was awarded the M.A. degree in Economics in June of 1969.

In the Fall of 1968 he was appointed to the position of Instructor in Economics at The Virginia Military Institute, where he is currently employed as Assistant Professor of Economics. In the Fall of 1969, he enrolled in the Graduate School at Virginia Polytechnic Institute and State University. The requirements for the Ph.D. degree in Economics were completed in May, 1974.


James A. Zellner

THE BEHAVIOR OF REGULATORY COMMISSIONS:
A CASE STUDY OF THE VIRGINIA STATE
CORPORATION COMMISSION

by

James A. Zellner

(ABSTRACT)

Public utility regulation in the United States is carried out primarily by independent regulatory commissions. Though created to deal with problems which the courts and legislature had previously been at a loss to solve, the commission form of regulation has not been very successful. Students of regulation are in general agreement that commissions have failed to implement policies which serve the public interest, though the explanations for that failure are quite varied.

By using time series data collected from the Virginia State Corporation Commission, it was possible to test the usefulness of several leading theories of regulatory behavior. The theories can be categorized primarily as either traditional or political economic--bureaucratic. The traditional theory and Stigler's captured bureaucracy theory were most consistent with the data. However, few

implications could be drawn from the analysis which could be used to prescribe policy changes for improved commission performance.

While all of the theories proved useful in explaining certain observed phenomena, they all suffered from serious shortcomings. None was useful as a general tool to describe behavior, and none was valuable for predicting agency behavior regarding a particular issue.

The primary decision variable suggested by all of the theories is the budget of the agency. It was concluded that this measure is too narrow, whether we are dealing with a traditional theory, where budget is a measure of agency vitality, or a bureaucratic theory, where budget serves as the primary argument in the regulator's utility function. Rather, it is necessary to include other measures of both vitality and utility if one is to have a workable theory.

The primary weakness of all of the theories is the failure to include the decision calculus of the agency's sponsor, and other interested groups, into the explanation of agency behavior.

We conclude that if we are to construct a theory which is able to explain more than piecemeal the behavior of regulatory agencies, or in any way predict that behavior with respect to specific issues, such a theory must include interactions between the agency and all interested parties.