

The Economics of Regulation
Principles and Institutions

Volume I Economic Principles
Volume II Institutional Issues

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The Traditional Issues in the Pricing of Public Utility Services

The essence of regulation is the explicit replacement of competition with governmental orders as the principal institutional device for assuring good performance. The regulatory agency determines specifically who shall be permitted to serve; and when it licenses more than one supplier, it typically imposes rigid limitations on their freedom to compete. So the two prime requirements of competition as the governing market institution—freedom of entry and independence of action—are deliberately replaced. Instead the government determines price, quality and conditions of service, and imposes an obligation to serve.

The licensure of entry in most public utility industries tends to be an infrequent, once-and-for-all or almost-all determination. Franchises legally may have to be renewed, and new firms may seek to be licensed; in radio and television, and trucking this is a frequent occurrence. But even in those cases, and even more so in others, the tendency is to rely on the same chosen instruments, year after year and decade after decade; the structure of the market and identity of the firms selected to serve remain essentially unchanging. And what public utility commissions mainly do (though not in broadcasting) is to fix the prices the chosen instruments may charge—not just a ceiling, as in the case of permissible interest rates paid on time deposits or as prescribed in usury laws, or a floor, such as a minimum wage—but a set of specific prices. It is through the regulation of price that the limitation of profits is purportedly achieved; it is incident to the regulation of price that the levels and permissible kinds of cost are controlled, by allowing or disallowing payments for various inputs, by supervising methods of financing and controlling financial structures. Price regulation is the heart of public utility regulation.

This assertion might strike a constitutional lawyer or anyone who has read Chapter 1 as strangely old-fashioned. It sounds like something the United States Supreme Court would have said 40 to 50 years ago, when it was systematically striking down legislative attempts to regulate prices or wages outside the traditional “industries affected with a public interest” on the ground that the right to set prices free of public control was at the heart of the freedom of contract protected by the Fourteenth Amend-

ment.¹ In 1934, in *Nebbia v. New York*, the Supreme Court finally rejected the notion that there was anything constitutionally sacrosanct about private price-determination, and declared that if any industry could, for good and sufficient reasons, be subjected to public regulation, there was no constitutional bar to its being subjected to price regulation in particular.²

Our assertion may seem irrational also to the economist. And to some extent it is. One purpose of regulation is to protect buyers from monopolistic exploitation—but buyers can be exploited just as effectively by giving them poor or unsafe service as by charging them excessive prices. Another purpose is to prevent destructive competition—but it would seem that sellers can compete just as destructively by offering better or more service for the same price as by offering the same service at lower prices. Price really has no meaning except in terms of an assumed quality of service; price is a ratio, with money in the numerator and some physical unit of given or assumed quantity and quality in the denominator. Price regulation alone is economically meaningless. Moreover, the nature of our dependence on public utility services is typically such that customers may correctly be more interested in the denominator than in the numerator—in the reliability, continuity, and safety of the service than in the price they have to pay.³

This relatively greater concentration on price than on quality of service is one reflection of the severe limitations of regulation as an institution of social control of industry. In this chapter we examine the major traditional components of that effort. In addition to laying the necessary factual foundation for our subsequent analysis, the purpose of this preliminary survey is to suggest (1) the limited resemblance between what regulation, as traditionally practiced, tries to do and the principles of normative microeconomic theory, thus providing the justification for our alternative approach, in Part II, and (2) the severe limitations of this institutional device for achieving optimal economic results, which provides the background for Volume 2.

THE LIMITED ATTENTION TO QUALITY OF SERVICE

The regulatory process devotes considerable attention to the denominator of the money-quantum-of-service ratio.⁴ The governing statutes generally empower commissions to investigate and issue findings on whether the service offered under their jurisdiction is “unjust, unsafe, improper, inadequate or insufficient,” and to promulgate rules for its improvement. The rules adopted

¹ See notes 11–20, Chapter 1. In *Adkins v. Children's Hospital*, the Court struck down a law fixing minimum wages for women in the District of Columbia in these terms:

“The essential characteristics of the statute now under consideration, which differentiate it from the laws fixing hours of labor. . . [are] that the latter . . . deal with incidents of the employment having no necessary effect upon the heart of the contract; that is, the amount of wages. . .

“If now, in the light furnished by the foregoing exceptions to the general rule forbidding legislative interference with freedom of contract, we examine and analyze the statute in question, we

shall see that it differs from them in every material respect. It is not a law dealing with any business charged with a public interest. . . . It has nothing to do with the character, methods, or periods of wage payments. It does not prescribe hours of labor or conditions under which labor is to be done. . . . It is simply and exclusively a price-fixing law. . . .” 261 U.S. 525, 553–554 (1923).

² 291 U.S. 502, 531–532, 536–537 (1934).

³ See Irston R. Barnes, *The Economics of Public Utility Regulation* (New York: Appleton-Century-Crofts, 1942), 742–743.

⁴ For a useful survey, see Charles F. Phillips, Jr., *op. cit.*, 400–438.

cover matters such as safety standards, minimum physical specifications (accuracy of meters, voltage of electricity, heating value of gas), the requirements of prompt meeting of customer demands, extension of service to new customers, controls on abandonment of service, provision of special facilities and arrangements, and certification of new entrants.⁵

But it is far more true of quality of service than of price that the primary responsibility remains with the supplying company instead of with the regulatory agency, and that the agencies, in turn, have devoted much more attention to the latter than to the former. The reasons for this are fairly clear. Service standards are often much more difficult to specify by the promulgation of rules. Where they can be specified, they are often essentially uncontroversial. Where they cannot—and this is particularly the case when it comes to innovations, to the dynamic improvement of service—in a system in which the private companies do the managing and the government the supervision, there is no choice but to leave the initiative with the company itself. The only role the regulatory commission can typically play is a negative one—formulating minimum standards and using periodic inspections to see that they are met; investigating customer complaints and issuing orders when service has been obviously poor, when management or subordinates have been blatantly inefficient or unfair, or when it wishes to insist that the companies take on or retain unremunerative business.⁶

This authority is by no means negligible. The aggressive commission has available to it the ability to penalize offending companies by holding permissible rates at less remunerative levels than it would otherwise be prepared to allow—subject to the constraint, however, that it would be self-defeating to punish them so severely as to impair their financial capacity to institute the desired improvements. And commissions frequently do use this weapon.⁷

Still, their role is essentially a negative one and this raises fundamental questions about the efficacy of the entire process. If, as far as quality of service is concerned, the principal responsibility rests with the private monopolist,

⁵ "Public utility commissions are constantly passing upon questions of service. The determination of a rate without a determination of the quality of the service rendered would be similar to an individual's agreeing to pay a stipulated sum of money for a commodity without specifying the kind or grade of commodity he expects to receive in return for his outlay. A very large portion of the commissions' time is, then, necessarily devoted to the determination of the quality of service rendered by the utilities under their jurisdiction. Most states which have active commissions now have state-wide service standards. . . . Where there are departures from these standards the utility is obviously derelict in the performance of its duties, and unless excused by the commission because of unusual circumstances is subject to its disapproval." Charles Stillman Morgan, *Regulation and the Management of Public Utilities* (Boston: Houghton Mifflin, 1923), 270-271.

⁶ The question of whether and in what circumstances a utility company may be required to

extend service to new customers and areas, or be forbidden to discontinue services may of course be regarded as an aspect of the regulation of service and is usually so treated. But the issue here is usually quite explicitly one of price or of the relation of revenues to costs, present or prospective: to what extent may utilities be required to take on new, or continue to serve old markets that they think are or will be unremunerative; to what extent should profitable business subsidize unprofitable extensions or continuations? These issues are thus embraced (sometimes explicitly, sometimes implicitly) in our later discussions of cost-price relationships. Of course, as we have already suggested, all regulations of service quality are in economic effect also regulations of price.

⁷ For example,

"The testimony given in the gas service case hearing at Neenah was conclusive that the quality of service rendered is totally inadequate. . . . The Commission finds therefore that

no increase in rates for gas should be given consideration until the service rendered in the gas department shall conform in a reasonable manner to the standard laid down by the Commission. . . . That no increase in rates for the electric and street railway departments of this utility should be granted until the service in each of them shall be shown to be reasonably satisfactory, and the burden of proof of so doing shall be put on the company. . . ." Morgan, *op. cit.*, 272.

Or, to turn to more recent examples:

"We are receiving numerous complaints from portions of the territory served by Southern Bell. In some areas . . . installation intervals, or the time required to install service, fall well below a reasonable standard. Operator answering time consistently meets Bell's requirements but does not meet the standards recently adopted by this commission. By far the biggest complaint . . . is the length of time required to obtain service. . . . These are problems that can and must be resolved. We have recently adopted uniform standards for telephone service, and have prescribed administrative rules requiring periodic reports which, together with field inspections, will keep the commission fully advised concerning the quality and sufficiency of telephone service being provided. . . . Any rate adjustments, including the one in this docket, will be on a temporary basis for a reasonable period of time pending any necessary improvements in the quality and sufficiency of service. . . ."

"Southern Bell will be required to furnish a good and sufficient surety bond conditioned on the prompt and full refund of the difference, if any, between the rates collected by it on a temporary basis pursuant to this order, and the rates ultimately prescribed or approved . . . as a result of any further order that may be entered in this docket reducing such temporary rates because of service deficiencies."

Re Southern Bell Telephone and Telegraph Company, Florida Public Service Commission, Order No. 4462, November 26, 1968, 76 *Public Utility Reports* 3rd, 412-413.

"We make the following findings:

1. The present earnings of United Telephone Company of Florida are far below a reasonable level and said utility is entitled to some relief on a temporary and emergency basis.
2. United Telephone's present earnings of 3.15 per cent will not support the additional financing that is necessary to enable it to complete its improvement program.
3. The telephone service presently being rendered . . . by United Telephone has improved substantially during the past several months, but is not sufficiently adequate and efficient to justify the full increases requested. . . .

4. The company has virtually completed 64 per cent of its current 3-year (1967-1969) improvement program and, thus, has been able to bring about substantial improvement in service. On that basis, it is fair and reasonable to allow the utility 64 per cent of the requested increases in local exchange rates. . . .
5. The emergency increases authorized by this order will not result at this time in a fair and reasonable return for United Telephone Company, but will improve its financial position so that it should be able to finance the remainder of its improvement program. . . ."

Re United Telephone Company of Florida, Florida Public Service Commission, Order No. 4451, November 12, 1968, 76 *PUR* 3rd, 471.

For other examples, see *ibid.*, 441-451 and 461.

"After years of deliberation, the Federal Communications Commission has decided to tackle the controversial question of how fast Western Union Telegraph Co. should be required to deliver telegrams. . . ."

"Communications experts say the commission's involvement could lead to the first Government-mandated standards regulating the speed of domestic telegram deliveries. . . ."

"Western Union Telegraph has come under increasing fire in recent years from critics who complain that the cost of telegrams keeps going up while the quality of service declines. . . ."

"The FCC's decision to consider the speed-of-service issue cropped up as a little-noticed part of the FCC's current investigation of telegram rate increases proposed by Western Union Telegraph. In announcing the inquiry, the FCC said it would consider not only the rate boosts, but also the 'speed, quality and adequacy' of the company's telegram service.

"FCC officials say this phrase means the commission probably will deal with a number of service-related telegram issues in its investigation, such as how many telegraph offices Western Union Telegraph should maintain, and whether it should be investing more money in its telegram service. But a key question, these sources maintain, is whether the FCC should force Western Union to meet certain speed requirements in its telegram deliveries. . . ." *Wall Street Journal*, October 18, 1968.

Again, in 1969 the New York State Public Service Commission ordered the Penn Central Company to take more than a dozen specific steps to provide "safe, adequate, just and reasonable service" on its Harlem and Hudson commuter lines, including the purchase or lease of at least 80 new cars and 24 new engines, assuring that each of its 340 weekday trains runs on time at least 80% of the time each month, and providing enough telephone lines and employees

and the government supervisor can intervene only where objective standards can be set or, after the event, when the monopolist's performance has been *obviously bad*,⁸ do we have an adequate assurance—comparable to the assurance provided by competition in other sectors of the economy—that his performance will be *positively good* and continuously as good as possible? If poor service is economically the equivalent of high price, why is there not just as great a danger that monopoly power will involve the one as the other? If monopoly carries the danger of sluggishness with respect both to efficiency and to dynamic cost-reduction, is there not the danger of sluggishness as well in improving the quality and extending the scope of service?

These problems are real. Although, as we shall see later, they can never be wholly solved within the regulatory framework, they deserve more creative and active attention from commissions than they now receive.⁹ But there is another reason why public utility commissions have been willing, and to some extent justified, to leave the quality of service, far more than price, to the companies themselves—the latter will typically have a strong interest in providing good, ample, and expanding service, as long as they can recoup its costs in the prices they charge. In this respect, far more than in the matter of price, the interest of the monopolist on the one hand and the consumer on the other are more nearly coincident than in conflict.¹⁰ Why so?

1. Maintaining and improving the quality and quantity of service typically is costly. Any regulated monopolist who is prevented by regulation from fully exploiting the inelasticity of his demand but assured (albeit with a regulatory lag) of his ability to incorporate these additional costs in his cost-of-service and hence of recouping them in his price, will presumably be less hesitant than a nonregulated monopolist to incur them.¹¹
2. Improvement and extension of service will often involve an expansion of the company's invested capital—that is, its "rate base"—on which it is entitled to a return. The regulated monopolist therefore will have some

so that passengers phoning to check on train schedules "receive a prompt response." *The New York Times*, June 6, 1969, 1. In response, the company petitioned for a rehearing. *Ibid.*, July 4, 1969, 1.

For a more general discussion of the way in which service standards and orders may be enforced and particularly of the authority of commissions to condition rate increases on specified improvements or extensions of service, see "The Duty of a Public Utility to Render Adequate Service: Its Scope and Enforcement," *Columbia Law Rev.* (Feb. 1962), LXII: 312, 327-331.

⁸ See the astonishing intention of Senator Pastore, chairman of the U.S. Senate Subcommittee on Communications, explicitly to confine the powers of the Federal Communications Commission in precisely this manner in deciding whether or not to renew broadcasting station licenses. He would prohibit challenges to renewals unless the FCC first determines that the station has violated the "public interest." Daniel Zwerdling, "FCC Impropriety," *The New Republic*, June 21, 1969, 10-11. See also

note 134, Chapter 2, Volume 2.

⁹ For the case of radio and television, and for a novel case involving the quality of passenger rail service, see Chapter 2 of Volume 2.

¹⁰ Indeed, the greater danger might be that the companies place excessive instead of inadequate emphasis on providing high-quality service, at the expense of economy, for reasons that follow. See also the discussion in Chapter 5, Volume 2, of whether the public utilities reflect a general tendency for limitations on price competition to be associated with an intensification of quality competition.

¹¹ The unregulated monopolist also will have an incentive to improve his product or diversify his product offerings, to the extent that his demand is sufficiently responsive to offset the additional costs of his so doing. But if he is a profit maximizer presumably he will have set his price-quality combination at the profit-maximizing point, beyond which superior service will add more to costs than to revenues. A public utility, in contrast, if prevented from fixing its price at the profit-maximizing level, has a "reserve of incompletely exploited monopoly power; in the

temptation to err in the direction of expanding and improving his services, and thus increasing his rate base beyond the point of economic optimality instead of the reverse.¹²

3. A public utility company is peculiarly exposed to public criticism if its service is inadequate. This exposure is increased by the possibility of customers complaining to regulatory commissions. Possibly associated with this consideration may be a tendency for managers of such companies to assume a quasi-professional responsibility for giving the best possible service, even at the expense of profit maximization.¹³ Although customers may have very definite opinions about whether the prices they pay are too high, the determination of whether in fact they are doing so is a complicated matter, as we shall see. But they need no complex investigative and adjudicatory processes to tell them when they are suffering from a power failure, or a refusal of a railroad to make freight cars available to them, or when they keep getting busy signals or wrong numbers on the telephone.¹⁴ Adequate levels of service can be guaranteed more satisfactorily than price by customer complaints, on the one hand, and the "conscience of the corporation," on the other.¹⁵

It is doubtful that these pressures are as reliable as those exerted by competition; and an unregulated monopolist will surely be subject to similar influences. Still, motivations such as these do to some extent take the place of competition in inducing the franchised monopolist to have a favorable attitude toward providing good and ever-improving service to his captive customers.

The customer may have a fair notion of whether the service he gets is satisfactory. He is likely to find it much more difficult to judge whether its quality and variety are *improving* at a satisfactory rate, because in making such a judgment it would not be pertinent to compare the quality of what he is receiving with what he has been accustomed to expect. But it is precisely these questions about dynamic performance, with respect not only to the quality of service but also to costs and price, that the regulatory commission also is least competent to answer decisively. Although it is in this respect that there may be the greatest danger of inadequate monopoly performance—or *excessive* performance, for the reason suggested under (2), above—this danger is not one to which the commissions have typically been able to devote effective attention.

REGULATING THE RATE LEVEL

Public utility commissions spend the major part of their time, by far, directly or indirectly regulating price. This task has two major aspects and the commissions have tended typically to treat them quite distinctly. The first has to do with the level of rates, taken as a group. The second has to do with the structure of rates—the specific charges on different categories of

same circumstances it will therefore have less disincentive to improve service, since any additional costs involved can serve as the justification for raising price correspondingly.

¹² On this particular distortion, see the section on the "A-J-W Effect," in Chapter 2, Volume 2.

¹³ See, for example, Troxel, *Economics of Public Utilities*, 464-465, 557-560.

¹⁴ See the flurry of complaints in New York City in July of 1969 over the annoying frequency of busy signals in the New York Telephone Company's Plaza 8 exchange. See, for instance, *New York Times*, July 14, 1969, 22.

¹⁵ But see Glaeser, *op cit.*, 115, emphasizing the need for regulation, to overcome consumer ignorance and managerial inertia.

service and the relationship between them. Outside of the transportation field, the former task has claimed much the greater share of commission attention.

"The rate level," like "the general price level," is a statistical abstraction. It could be expressed only as some sort of index number, summarizing the numerous individual rates for the various classifications of service provided by each company: there are some 43 trillion railroad rates on file with the Interstate Commerce Commission!¹⁶ Its real economic meaning is disclosed when these separate prices are translated into total company revenues or into total profits expressed as a percent of owners' investments. Actually the regulatory process works the other way around. The commissions decide what total revenues the companies are entitled to take in, then adjust permitted "rate levels," either selectively or across the board, to yield these totals.

They typically do this by undertaking a thorough examination and appraisal of total company costs in a recent, "test" year.¹⁷ In this way, item by item, they build up an estimate of total permissible "revenue requirements." On the basis of this total, adjusted as much as possible for known or readily predictable changes between the test year and the period for which rates are to be ascertained, the company is ordered or permitted to propose the required adjustments in its rate schedules. Therefore, discussions of rate levels are really discussions of total revenues.

The process of determining permissible revenues falls traditionally into the following three parts or steps, each of them involving an enormous variety of problems and boasting a correspondingly rich history of legal and economic controversy.

Supervision and Control of Operating Costs and Capital Outlays

Just as competition is supposed to hold prices down to the cost of production (ignore for a moment the question of precisely what that means) so regulation takes cost as its standard of the "revenue requirements" of public utility companies, hence the "just and reasonable" rates that the typical controlling statute enjoins them to maintain. It became clear that if the commissions were to be something more than rubber stamps they had to exercise their own judgment about the propriety of the items presented to them as the major components of the cost of service. To do so, first, they had to require the companies to keep uniform systems of accounts, according to procedures and rules stipulated by the commissions, and subject to their audit.¹⁸ Then they needed to make determinations about which costs they were prepared

¹⁶ C. F. Phillips, *op. cit.*, 314.

¹⁷ They may do so regularly or only once in a long while, in a major general rate investigation, or never. If only occasionally, they may employ more limited checks in the intervening years, possibly permitting rate changes on the basis of estimates of cost changes since the "test year." For an illuminating case study of "The General Passenger Fare Investigation," the first undertaken by the Civil Aeronautics Board, about 15 years after passage of its enabling act (a delay for which it was criticized), see the case

study of that title by Emmette S. Redford, in Edwin A. Bock, ed., *Government Regulation of Business: A Casebook* (Englewood Cliffs: Prentice-Hall, 1962), 336-411. On the Federal Communications Commission's "continuous surveillance" over the telephone industry, see Chapter 2, Volume 2, at note 37.

¹⁸ Commissions cannot review costs unless the regulated companies keep their records in some uniform and prescribed fashion. Accounting regulations become necessary also to prescribe those elements of outlay that are to be charged

to authorize for inclusion in the computed company cost-of-service; and, of these, which could be charged directly as operating expenses and thus included in annual revenue requirements dollar for dollar, and which capitalized, thus entering the cost of service in the form of annual allowances for depreciation and return on the undepreciated portion of the investment. Since mere disallowance of certain outlays after the fact could have the effect of reducing excessively the companies' rates of return, and hence of threatening their ability to attract additional capital, commissions came to insist also on the authority to control company expenditure in advance, supervising and passing on their budgets.

Why should it be necessary for commissions to involve themselves in passing on the operating costs of public utility companies? Presumably even an unregulated profit-maximizing monopolist would wish to hold his costs to a minimum, entirely on his own initiative. Could not the commissions then leave such matters to the self-interest of the company managers themselves? Answers can be framed at several levels.

First, there is the simple danger of concealment of profits by exaggeration of costs. Whatever his *actual* level of costs, it obviously pays a regulated monopolist to exaggerate his estimated cost of service. As long as regulation is effective in holding his profits lower than they otherwise could be, he can more completely exploit his monopoly power by fooling the commission into permitting him higher rates than his actual costs justify. Such exaggerations might be expected to show up, after the event, in excessive rates of earnings. But profits can be computed only from accounting records; if there are no understandings about how costs are to be computed and recorded, expenditures to be audited, and the capital value of the stockholders' investment to be measured, there is no way of appraising those records, and supernormal rates of profit can be concealed in padded expense figures and inflated capital accounts.

Second, the charge for depreciation represents not an objective datum but an imputation, an attribution to the production in any given accounting period of responsibility for the using up or obsolescence of capital assets. Similar to the cost of capital itself—that is, the requisite return on invested capital that must likewise be included in the cost of production—there is room for differences of judgment about its proper level. It is obviously in the interest of the regulated company to exaggerate its gross cost of capital—depreciation plus return on investment—and for the commission to hold it to the minimum, as we shall see more fully presently.

Third, it might be in the interest of the company—always assuming that regulation is effective in holding its profits below the levels that the market would otherwise permit—to incur actually greater costs than is in the best interest of the consumer, provided it is then permitted to incorporate those costs in the regulated price. One example would be heavy expenditures for advertising and public relations, since the companies might receive numerous

directly to income and those that are to be capitalized. The appropriate charges for depreciation cannot be determined and reviewed unless the depreciable property accounts are kept in some comprehensible fashion. Accounting rules are also necessary with respect to the

valuation of property, which plays an extremely important role in determining the final cost of service, as we shall see. They are similarly necessary if the utility company itself or the commission is to use cost intelligently in the devising of rate structures.

benefits therefrom while passing the costs on to the consuming public. Public utility companies advertise in the hope of influencing regulatory commissions to treat them generously, and electric companies have financed expensive propaganda campaigns in opposition to competing public power projects.¹⁹ Similar purposes might be served by large charitable contributions; with these, as with advertising outlays, commissions have had to decide how much, if any, is properly charged to the consumer and how much should be borne by the stockholders. A similar need for regulatory supervision could be created by the possible temptation of utility companies—to which we have already alluded, and which we will analyze more fully below—to use capital wastefully in order to inflate their rate bases and hence their total permissible profits.

Fourth, the regulated companies—even more, their promoters and managers—have extracted some of these potential monopoly profits by paying excessive prices to affiliated, unregulated companies for equipment, supplies, financial advice and underwriting, engineering, and managerial services—charges included in the cost of service and recovered from customers.²⁰

Fifth, since the public utilities are typically not subject to intensive price competition, they are probably not under the same pressures as firms in more competitive industries to hold their costs down. It is understandable, therefore, that regulatory commissions, charged with taking the place of competition, should make some efforts in the same direction. The necessity for their doing so is accentuated, finally, by the unusually high degree of

¹⁹ See Ernest Gruening, *The Public Pays: A Study of Power Propaganda*, rev. ed. (New York: Vanguard, 1964), *passim*. Gruening includes (xxix-xliii) the *Memorandum Opinion* of the Federal Power Commission, *In the Matter of Northwestern Electric Company et al.*, Docket No. IT-5647, Opinion No. 59, 1941, reporting on its investigation of the accounting disposition of expenditures for political purposes by five electric companies. Merle Fainsod and Lincoln Gordon report an estimate that the costs of the "educational" campaign by utility companies after World War I "to 'sell' their industry to the public and to convince the American people of the adequacy of existing regulatory techniques and of the dangers of further penetration of government into the utility business" ran \$25-30 millions a year, "all charged off as proper advertising expenses . . . and computed in the rates which the public was required to pay." *Government and The American Economy* (New York: Norton, 1941), 308. And those were Coolidge and Hoover, not Nixon, dollars. The problem, although ancient, has not disappeared: "Five Manhattan State Senators protested yesterday what they called the Consolidated Edison Company's 'gigantic' advertising and promotion campaigns in connection with its request for higher electricity charges." According to the Company's own estimate, its expenditures for institutional advertising would have come to some \$2.1

millions in 1965. *New York Times*, August 23, 1966, 27.

Utility companies engage in commercial as well as political and "institutional" advertising, and the former expenditures may well be economically legitimate (see, for example, note 16, Chapter 4). American Telephone and Telegraph (AT&T) and its affiliated companies ranked fourteenth among the nation's advertisers in 1965 with total expenditures of \$70 million. But this was a relatively modest 0.6% of the system's total revenues, of \$11.3 billion. *Advertising Age*, August 29, 1966, 44, 61.

For a summary of the regulatory treatment of such expenditures, see A. J. G. Priest, *Principles of Public Utility Regulation*, 59-65; also "Trends and Topics, Promotional Programs," *Public Utilities Fortnightly* (June 23, 1966), LXXVII: 65. ²⁰ See, for example, Louis D. Brandeis, *Other People's Money and How the Bankers Use It* (Washington: The McClure Publications, 1913); James C. Bonbright and Gardner C. Means, *The Holding Company: Its Public Significance and its Regulation* (New York: McGraw-Hill, 1932), esp. Chapter 6. The holding company in some ways has contributed to greater efficiency; but it was also used as a device for milking the (controlled) operating companies, and through them the rate-payers. The relation of the various Bell System companies to their parent, AT&T, and to its wholly-owned subsidiary and equipment

separation of ownership and managerial control in these companies.²¹ This fact, taken in conjunction with the lesser pressures of price competition and the possibility of recouping higher costs in higher prices along an inelastic demand curve, creates a particular danger that, in the absence of regulatory scrutiny, managements may vote themselves unusually large salaries, expense accounts and other perquisites, as well as engage in other methods of exploiting their position for their own personal profit or nonpecuniary advantage, as in fact they have from time to time in the past.²²

Manifestly, the operating expenses and capital outlays of public utility companies are by far the most important component of their rate levels, on the one hand, and the efficiency with which they make use of society's resources on the other. Therefore, in terms of their quantitative importance, it would be reasonable to expect regulatory commissions to give these costs the major part of their attention. But in fact they have not done so; they have given their principal attention instead to the limitation of profits.

The reasons for this perverse distribution of effort illustrate once again the inherent limitations of regulation as an institution of effective social control of industry. Effective regulation of operating expenses and capital outlays

supplier, Western Electric Company, has thus been a subject of continuing regulatory concern. In one of the landmark United States Supreme Court decisions in the 1920s the Court refused to permit the Public Service Commission of Missouri to disallow certain payments by the local Bell company to AT&T for rentals and services. *Southwestern Bell Telephone Company v. Public Service Commission of Missouri*, 262 U.S. 276, 288-289 (1923). The Court reversed itself on this matter in *Smith v. Illinois Bell Telephone Co.*, 282 U.S. 133, 152-153 (1930), and the general rule is that these charges must be justified in terms of the costs to AT&T of performing the services. Similarly, numerous state commissions check on the payments by their various Bell companies for Western Electric equipment and supplies, and the *Smith v. Illinois Bell* decision required that this scrutiny take into account Western's profits from these sales. The Michigan Commission has in the past scaled down the payments when it found that the rate of return on Western Electric's capital exceeded the rate of return that it permitted the Michigan Bell Company to earn. C. Emery Troxel, "Telephone Regulation in Michigan," in William G. Shepherd and Thomas G. Gies, ed., *Utility Regulation: New Directions in Theory and Policy* (New York: Random House, 1966), 168-169. But the overwhelming majority of commissions have found Western's charges reasonable and have permitted them to enter the operating companies' cost of service without adjustment. For a fuller discussion, see Chapter 6, Volume 2. ²¹ Distribution of 176 large corporations, according to the proportion of voting stock owned by managements, September 30, 1939, by industrial classes:

Percent of Stock Outstanding	Industrial	Public Utility	Railroad
0-1	66	33	21
1-5	29	3	1
5-10	7	2	1
10-20	6	—	—
20-30	2	—	—
30-40	—	—	—
40-50	1	—	—
50 plus	4	—	—
Total	115	38	23

Source. Robert Aaron Gordon, *Business Leadership in the Large Corporation* (Washington: The Brookings Institution, 1945), 27.

A later study of the 200 largest nonfinancial corporations found that in 1963 18% of the industrial corporations were controlled by owners of more than 10% of their stock; the corresponding figures for public utility and railroad corporations were 2% and 4% respectively. At the other extreme, management-controlled companies were 78% of the industrial and 98% of the public utility group. In the case of railroads the percentage was 83, but if one adds in the corporations found to be controlled by a legal device such as pyramiding or the use of voting trusts, that figure rises to 97%, while the ratio for industrials rises only to 82%. Robert J. Lerner, "Ownership and Control in the 200 Largest Nonfinancial Corporations, 1929 and 1963," *Amer. Econ. Rev.* (September 1966), LVI: 781.

²² See Barnes, *Economics of Public Utility Regulation*, 618-619 and the cases cited there. Following up a finding by Gary S. Becker that monopolistic

would require a detailed, day-by-day, transaction-by-transaction, and decision-by-decision review of every aspect of the company's operation. Commissions could do so only if they were prepared completely to duplicate the role of management itself. This society has never been willing to have commissions fill the role of management and doubtless with good reason: it is difficult to see how any company could function under two separate, coequal managements, each with an equally pervasive role in its operations. Therefore, when the controlling decisions are made, they are made in the first instance by private management itself. Regulation can do little more than review the major decisions after the fact, permitting here and disallowing there. In these circumstances they have been unable as a general practice to substitute their judgments for those of management; and often when they have tried, the courts have denied them the authority to do so, except in cases of obvious and gross mismanagement.²³ Profits, in contrast, are merely a markup, something added to the sum total of expenses. This does not mean that profit control is noncontroversial—quite the contrary. But their regulation does not involve the same type of detailed and pervasive supervision as would a comparable control of the decisions that determine a company's efficiency.

enterprises discriminate against blacks more frequently than competitive ones, Armen A. Alchian and Reuben A. Kessel developed the more general hypothesis that the managements of companies whose pecuniary profits are limited by regulation (or similar pressures) will be under strong temptation to take out any possibilities of monopoly profit that remain unexploited in the form of "nonpecuniary gains," one category of which is "the indulgence of one's tastes in the kind of people with whom one prefers to associate. Specifically, this may take the form of pretty secretaries, pleasant, well-dressed congenial people who never say anything annoying, of lavish offices, of large expense accounts, of shorter working hours, of costly administrative procedures that reduce the wear and tear on executives . . . having secretaries available on a moment's notice . . . and of many others." "Competition, Monopoly, and the Pursuit of Pecuniary Gain," in Universities-National Bureau Committee for Economic Research, *Aspects of Labor Economics* (Princeton University Press: Princeton, 1962), 163. The likelihood of this managerial behavior may not be significantly greater for regulated public utility companies than in the case of unregulated companies with market power. See Oliver E. Williamson, "Managerial Discretion and Business Behavior," *Amer. Econ. Rev.* (December 1963), LIII: 1032-1057, and William G. Shepherd, "Market Power and Racial Discrimination in White-Collar Employment," *Antitrust Bulletin* (Spring 1969), XIV: 141-161 and, with particular reference to regulated companies, 155-157.

²³ See, for example, William K. Jones, *Cases and Materials on Regulated Industries* (Brooklyn: The Foundation Press, 1967), 175-186.

"Good faith is to be presumed on the part of the managers of a business. . . . In the absence of a showing of inefficiency or improvidence, a court will not substitute its judgment for theirs as to the measure of a prudent outlay." *West Ohio Gas Co. v. Public Utilities Commission* 294 U.S. 63, 72 (1935). See the exhaustive summary of the case law in Priest, *Principles of Public Utility Regulation*, I, Chapter 3.

On the other hand:

"The Alaska commission upheld disallowance of \$50,000 of expenses to compensate for inefficiencies in an electric company's operation. Comparison of the company's expense with that of automated companies . . . showed the cost to be one and one-half to seven times that of the other companies designated as comparable. . . .

"[According to the hearing officer:] It was not out of place for the commission to disallow expenses claimed to be excessive because available advances in technology had been ignored and the capacity and efficiency of the plant had been eroded through years of inadequate maintenance. . . .

"It was not so much a matter of how the company stacked up in relation to the efficiency of other companies, but a measurement of how it operated at present compared to how it would have operated if suggested recommendations had been put into effect. . . .

"The company had adequate notice and opportunity to institute procedures recommended by engineers it had hired as consultants, which it had neglected to do."

"Expense Reduction to Compensate for Inefficiencies Upheld," *Public Utilities Fortnightly*, March 27, 1969, 60-61.

The process has focused primarily on profits, also, because these are politically the most visible—excessive profits the most obvious danger and sign of consumer exploitation, in the absence of effective competition, regulated profits the most obvious and comforting evidence that regulation can be "effective."²⁴

And in those numerous, though comparatively unimportant instances in which commissions do in fact decide whether or not to disallow some item of expenditure, the governing consideration turns out to be what policy would be most "fair" to stockholders on the one hand and consumers on the other—a constantly recurring theme in the regulatory process.²⁵ It is certainly not suggested here that considerations such as these are irrelevant in what is, inescapably, a political determination—that is, a determination of who gets what and how much (and the "who" may include not just stockholders, managers, and customers but, for example, the colleges, churches, or minority groups that might benefit from contributions or other such expenditures that the corporation may be unable to justify on a purely economic basis).²⁶ But it is important to recognize that criteria such as these may or may not coincide with the type of results competition would produce, or with what would be economically optimal.²⁷

²⁴ The analogous situation prevails with respect to weapons acquisition by the Department of Defense:

"a workable definition of efficiency requires considering all of the costs generated in a weapons program, profit . . . being just one special form of cost. Herein lies the second reason for the emphasis on minimum profits as an indicator of weapons acquisition efficiency. It is usually much easier for government negotiators or auditors to say that profits are too high than to claim that the cost of developing some technically complex item of equipment is excessive. Government personnel recognize that if any item in the weapons bill can be attacked and perhaps reduced, it is the profit item. However, this Machiavellian realism ignores the 90% or more of the bill in which a much greater potential for efficiency improvements typically exists." Merton J. Peck and Frederic M. Scherer, *The Weapons Acquisition Process: An Economic Analysis*, Division of Research, Graduate School of Business Administration (Boston: Harvard University, 1962), 509.

²⁵ It frequently recurs outside the regulatory area as well. A striking example is to be found in the field of antitrust policy, where precisely the same issues arise about the compatibility of "fair competition" and economic efficiency. See, for example, Joel B. Dirlam and Alfred E. Kahn, *Fair Competition, The Law and Economics of Antitrust Policy* (Ithaca: Cornell University Press, 1954), which is addressed to this issue.

²⁶ This means that the process, being essentially political, is capable of generating violent emotions or at least rhetoric, on the part both of

the industry, in its efforts to reduce the load of regulation, to justify its managements' compensation and its own performance against the threat of government competition, and of its critics, who see regulation as ineffective and the consumer subjected to merciless gouging. For a fine example of the latter, see Lee Metcalf and Vic Reinemer, *Overcharge* (New York: David McKay Company, 1967), *passim*, and, specifically on cost items such as charitable contributions, managerial compensation, and political advertising, Chapters 6, 8, and 9. It is no condescension to point out that the book's economic analysis and appraisals are neither objective nor thorough; but its argument cannot be ignored.

²⁷ See, for example, the survey of the policies of regulatory commissions with respect to the allowance or disallowance of promotional, public relations, or charitable expenditures in C. F. Phillips, *op. cit.*, 186-188. Or see the very interesting conflicting majority, concurring, and dissenting opinions on the subject of contributions in *Pacific Telephone and Telegraph Co. v. Public Utilities Commission of the State of California et al.*, 401 P. 2d 353, 374-375, 379-382 (1965). It is very difficult to detect any consistent consideration, let alone application, of economic criteria, of the kind to be developed in Part II. Instead there is a mushy mixture of questions such as: Do these outlays benefit the company? Or the community at large? Or the stockholders, mainly? Are they properly part of the utility business? What would be fair? These observations are by no means intended to suggest that application of "strictly economic" criteria would provide any simple answers to these problems either.

Therefore, although efficient operation and continuous improvement therein are, quantitatively, the most important aspects of industrial performance, the principal reliance for securing these results cannot, in the nature of the case, be placed on the regulatory process itself. The major contribution that regulation can make, and it is a modest one, can only be the providing of incentives—or taking care not to remove incentives—for private managements to exert themselves continuously in this direction. Whether such incentives can ever be sufficient, once the spur of competition has been drastically attenuated, is the fundamental question with which we deal in Volume 2.

The allowance for depreciation expenses is of quite a different character. Operating expenses involve actual money outlays, which can be automatically recorded in company accounts and transferred into the computed cost of service. Depreciation, too, goes into cost of service and price; but it is not a money outlay in the year it is charged. It is an imputed cost, introduced to take account of the fact that the economic life of capital assets is limited; to distribute the decline in their value—which is a genuine cost of production—over their economic life, in order to assure its recoupment from customers. So the portion of total revenues it permits the company to earn does not, as is the case with normal operating expenses, go out in payments to outside parties—suppliers of raw materials, workers and so on. It belongs to the owners; it is part of the gross return they are permitted to earn on their investment.

The return to capital, in other words, has two parts: the return of the money capital invested over the estimated economic life of the investment and the return (interest and net profit) on the portion of investment that remains outstanding. The two are arithmetically linked, since according to the usual (but not universal) regulatory practice the size of the net investment, on which a return is permitted, depends at any given time on the aggregate amount of depreciation expense allowed in the previous years—that is, the amount of investment that remains depends on how much of it has been recouped by annual depreciation charges previously. And the two are linked economically, since the rate at which owners are permitted to get their capital out helps determine the true rate of return that they earn on their original investment. To the extent—as happens in some jurisdictions—that accrued depreciation is not fully deducted from the rate base, the regulated companies in effect are being permitted a higher rate of profit; and the same result could be achieved by allowing a higher nominal rate on original investment cost less full depreciation.

Any economic discussion of depreciation should really consider it along with the return on investment. In many contexts it must take into account also the changing provisions of the corporation income tax law concerning allowable rates of depreciation for tax purposes. Consider, for instance, the three-fold effect on the cost of service, hence on allowable rates of return, of provisions for accelerated depreciation in the income tax laws, such as were enacted in 1964, via (1) what it may do to the appropriate level of annual depreciation expense allowed by the regulatory commission, (2) the effect of different rates of annual depreciation on the net remaining investment, on which the net return is permitted, and (3) the amount of income taxes that ought to be included in the cost of service. That requires some explanation.

The effect of accelerated tax depreciation is not to reduce total taxes paid

over the life of any particular piece of capital equipment, but only to change its timing. Only the original cost of the equipment can be charged off, in total, over its life. When a company charges a disproportionately large part of the total in the earlier years for tax purposes—which has the effect of reducing taxable income, hence taxes—this means it will be able to charge off correspondingly less, hence will be forced to pay equivalently higher taxes, in later years. Assuming no change in tax rates in the interim, the taxes saved in the early years have to be paid back in full in the later years. But the postponement is beneficial to the taxpayer; in effect, accelerated depreciation means the Treasury Department is giving him an interest-free loan, during the period of the postponement. It increases the real rate (after tax) of return on investment, if one is permitted to keep more of his profits for a while, before having to hand them over to the government.

So regulatory commissions have had to decide whether the taxes to be incorporated in price should be only those actually paid—in which event the benefits of accelerated depreciation are passed on entirely to customers in the years of tax saving—or “normalized” over the life of the investment (higher than actual taxes in the early years, lower in the later)—in which event the interest-free loan is retained by the company. If the latter is chosen, commissions have had to decide also what treatment should be given to the revenues recouped from consumers in excess of the taxes actually paid in the earlier years. These “phantom taxes” are typically segregated in a special reserve for deferred taxes, in recognition of the fact that taxes will in later years exceed these “normalized” recoupments from customers. But the controversial question is whether the amount of that reserve should be deducted from the company's net investment or rate base, on the ground that, as with depreciation, these monies have been retrieved from customers and that it would be double recoupment to permit the company also to earn a return on that portion of its undepreciated investment; or whether it should be left in the rate base, because Congress intended the tax savings to benefit investors and by so doing to encourage additional investment. The more frequent practice is to permit the company no return on the assets represented by the tax reserve; but many commissions permit a small return (for example, 1.5%, in contrast with 6.5% on the normal rate base), and some allow the full return—that is, they do not reduce the rate base by the accumulations of deferred taxes at all.²⁸

Advocates of including in the cost of service only the taxes actually paid, which involves “flowing through” the benefits of accelerated depreciation to the customers, argue that the benefits are likely to be permanent—that is, that the amount of taxes saved is not really postponed but is, in effect, forgiven. And they are more right than wrong, *provided* the company's total investments grow over time at a sufficiently rapid rate. In that event, the tax postponements on its newer (and ever larger) investments will always exceed the higher taxes continually coming due on the older (and smaller) investments. Indeed, as long as total company assets grow at all, taxes will always be lower under accelerated amortization than they would be otherwise. Opponents of flow-through, assuming instead that the tax is merely postponed, maintain that this method confers a windfall of rate reductions on

²⁸ See Eugene F. Brigham, “Public Utility Depreciation Practices and Policies,” *National Tax J.* (June 1966), XIX: 149.

current customers at the expense of future customers. And, indeed, under almost any assumption about future growth of the company, rates under flow-through *will* have to be increased at some time in the future—although, as long as growth is positive, not to the levels that would have to be charged all the way along by a company that failed to take advantage of this tax privilege.

Rate-payers benefit from normalization also, as long as the accumulated tax reserve is deducted in whole or in part from the rate base, since they no longer have to pay a return on that part of the company's total assets represented by those accumulated tax-savings. Flow-through gives them the greatest immediate benefit. Whether in the long run rates end up lower under flow-through than normalization depends, for the reasons already indicated, on how rapidly the company's total assets grow.²⁹

Not surprisingly, there has been continuous controversy and litigation over which of these methods, if either, utility commissions ought to adopt; and, if they adopt flow-through, whether regulated companies can be required to avail themselves of the tax privileges, although they retain none of the benefits and run the risk of having to ask for rate increases in the future.³⁰ These are really questions of the appropriate return to be permitted on capital investment. When company spokesmen argue against flowing-through or deducting the deferred-tax reserves from their allowable rate base, they are in effect arguing for a larger return on investment. When consumer representatives argue on the other side, their contention, at least implicitly, is that regulation must in any case provide a sufficient rate of return—in which event these additional incentives are unnecessary and ought to be passed on in lower rates.

Another issue associated with the determination of depreciation expense is whether the number of dollars that investors are permitted in this fashion to recoup from customers should be the amounts originally invested, or whether that total should be adjusted over time to reflect the changing purchasing power of those dollars. Here, again, the question is really one of what type of return investors ought to be permitted; in economic essence, it is the same issue in another form as whether the rate base, on which the

²⁹ For a general survey of the issues, see Garfield and Lovejoy, *Public Utility Economics*, 109–114. For a very lucid account and analysis of the pattern of rates over time under the various possible systems and under different growth rate assumptions, see Eugene F. Brigham, "The Effects of Alternative Tax Depreciation Policies on Public Utility Rate Structures," *National Tax J.* (June 1967), XX: 204–218.

³⁰ A survey at the outset of 1970 showed that commissions in 20 states required normalization, in 17 flowing-through, and in 12 had taken no action at all. Both the Federal Power Commission and the Interstate Commerce Commission have ordered flow-through; the Civil Aeronautics Board, normalization; and the Federal Communications Commission has taken no stand, except to declare that the failure of a regulated company to take advantage of accelerated depreciation for tax purposes would be

taken into account in fixing the rate of return. "States Split on Accelerated Depreciation," *Electrical World*, January 20, 1969, 73, and *ibid.*, January 12, 1970, 12. FPC decisions requiring flow-through and computing company costs of service as though the companies had availed themselves of the tax privileges even though they had ceased to do so, have been sustained in the courts. See *Alabama-Tennessee Natural Gas Co. v. Federal Power Commission*, 359 F. 2d 318 (1966), cert. denied, 385 U.S. 847 (1967); *Natural Gas Pipeline Co. of America v. Federal Power Commission*, 385 F. 2d 629 (1967); and *Midwestern Gas Transmission et al. v. Federal Power Commission*, 388 F. 2d 444 (1968), cert. denied 392 U.S. 928 (1968). But the ability of commissions to require flowing-through was severely curtailed by the 1969 income tax law revision. Public Law 91-172, 91st Congress, December 30, 1969, 83 Stat. 487, 625–628.

allowable return is to be computed, should be similarly adjusted—to which we turn shortly.

The treatment of depreciation expense under public utility regulation provides an early illustration of the respects in which pricing here departs from the norms of microeconomic theory. It is an elementary proposition of that model and one aspect of its central rule, as we shall see more fully in Chapter 3, that price ideally should be set at marginal cost—that is, at short-run marginal cost. But that marginal cost is a measure of changes in *variable* costs alone; it does not include (most of) depreciation, or any part of the net return on investment, as such. Nor do monopolists, who are supposed to equate marginal cost to marginal revenue, take depreciation into account either in their pricing decisions—again according to the traditional theory of the firm, which assumes continuous, short-run profit maximization. In both cases this means, roughly, that the businessman must cover his variable costs, if he is to continue to operate at all; and so far as gross return on investment is concerned, he takes as much as he can get, over and above the variable costs—sometimes much, sometimes little—whatever the market will bear. It is only in the long run, over the life of investments, that prices, thus set, are expected to be high enough on the average to cover fixed costs. Therefore, when regulatory commissions include fixed costs such as depreciation and return on investment in their cost of service computations, and hence in the permissible rates, they are in effect requiring not marginal-cost but average-cost or full-cost pricing—a practice widely followed in unregulated industries as well. How serious this departure from optimum pricing is in practice is a major topic of Part II.

Determination of the "Rate Base"

Since the production of public utility services typically is unusually capital-intensive,³¹ the element of cost represented by the return on invested capital necessarily bulks larger in their final selling price than in unregulated

³¹ Garfield and Lovejoy offer as typical the following capital turnover ratios (gross revenues divided by capital investment).

Electric utilities	0.30
Natural gas utilities	0.60
Natural gas pipelines	0.40
Bell Telephone System	0.40
Water utilities	0.20
Total manufacturing	2.00

Source. *Op. cit.*, 23.

A clearer impression of the unusually heavy utilization of capital in the public utility industries is provided by the following skeletal financial data taken from the Annual Reports of a public utility, a steel, and a grocery retailing company. Note the wide range in the ratios of their capital to sales, whether the former is measured by total assets, fixed assets—land, plant, and equipment—or, on the liability side, by total invested capital—that is, long-term debt and owners' equity. Or, to describe the same relationship by its reciprocal, note the differences in the number of times their capital "turns over" each year in the form of sales.

	Pacific Gas and Electric Co.	United States Steel Corp.	The Great Atlantic & Pacific Tea Co. (A&P)
Current assets	236	2,091	558
Land, plant, and equipment, net	3,551	3,446	326
Other assets	28	854	—
Total assets	3,815	6,391	884

industries generally.³² And since it is this element in the cost of service that determines the size of the company's profit, it is not surprising that its determination has been by far the most hotly contested aspect of regulation,³³ consuming by far the greatest amount of time of both commissions and courts.

The number of dollars of investment return are, of course, a product of the aggregate investment, on which some return is to be allowed, and the percentage rate permitted. Arithmetically, the two factors are of equal importance; the result can be changed by increasing or decreasing one just as well as the other. But, largely for constitutional reasons, the traditional emphasis and focus of most of the litigation in the American regulatory experience has been on the former, the "rate base."

It was not always so. In its historic *Munn v. Illinois* decision, the Supreme Court addressed itself to the contention of the appellants that it was up to the courts to determine whether the rates prescribed—in this case by the legislature itself—were reasonable or unreasonable. It specifically declined to do so:

"It is insisted, however, that the owner of property is entitled to a reason-

	Pacific Gas and Electric Co.	United States Steel Corp.	The Great Atlantic & Pacific Tea Co. (A&P)
Long term debt	1,830	—	—
Owners equity	1,625	3,344	627
Total invested capital	3,456	3,344	627
Sales	1,005	4,609	5,459
Ratios to sales:			
Total assets	3.8	1.4	0.16
Fixed assets	3.5	0.7	0.06
Invested capital	3.4	0.7	0.11

Source. The P.G.&E. and U.S. Steel figures are for 1968, the A&P for the fiscal year 1967-68; balance sheet items are for the end of those years. From their *Annual Reports*.

³² Capital costs as a percentage of sales, 1965.

	Net Income After Taxes Plus Interest Paid % ^a	Depreciation Plus Income Taxes % ^b
Transportation	5.9	9.7
Communications	13.4	18.6
Electric, gas, and sanitary services	15.4	19.3
Total manufacturing	5.1	6.3

Source. Computed from U.S. Treasury Department, Internal Revenue Service, *Statistics of Income, 1965, Corporation Income Tax Returns*, Washington, 1969, 17, 20.

^a This column presents net return on investment (equity plus borrowed capital) as a percentage of total business receipts. Interest alone represented the following portions of the total return in the four industry groups: 41, 21, 38 and 14%, respectively.

³³ This generalization, along with the generalization that commissions have devoted their major attention to the general level of rates, does not apply to transportation, where, for more than four decades, profits (at least of railroads) have

typically been below levels that regulatory commissions would have regarded as reasonable, and primary attention has gone instead to rate structures and the conditions of inter-carrier competition. See p. 170, below.

able compensation for its use, even though it be clothed with a public interest, and that what is reasonable is a judicial and not a legislative question.

"... the practice has been otherwise. In countries where the common law prevails, it has been customary from time immemorial for the legislature to declare what shall be a reasonable compensation under such circumstances, or, perhaps more properly speaking, to fix a maximum beyond which any charge made would be unreasonable. . . .

"We know that this is a power which may be abused; but that is no argument against its existence. For protection against abuses by legislatures the people must resort to the polls, not to the courts."³⁴

Thirteen years later, however, the Court took the opposite position:

"The question of the reasonableness of a rate of charge for transportation by a railroad company, involving as it does the element of reasonableness both as regards the company and as regards the public, is eminently a question for judicial investigation, requiring due process of law for its determination."³⁵

Finally, in *Smyth v. Ames*, in 1898, the Court not only strongly reaffirmed its responsibility under the Fourteenth Amendment's due process clause to review the reasonableness of rates set by state commissions, but it proceeded to specify its criteria of reasonableness:

"We hold . . . that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction [the case in question involved a railroad] must be the *fair value* of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, *the present as compared with the original cost of construction*, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience."³⁶

The "specification" was hardly precise; several of the listed "matters for consideration" were distressingly vague, and the Court was also vague about how it wanted all of them, along with the "other matters," combined into a composite "fair value" figure. Nor were regulatory commissions thereafter much clearer about how they were following those instructions, as Ben W. Lewis has caustically observed:

"A word should be said at this point with reference to the hybrid 'fair value' ('trance') method. . . . The 'fair value' method consists of an examination by the commission of evidence relating to reproduction cost and prudent investment, together with evidence of intangible values and observed condition of the property, the application of judgment whose processes defy

³⁴ 94 U.S. 113, 133-134 (1877).

³⁵ *Chicago, Milwaukee & St. Paul Railway Company v. Minnesota*, 134 U.S. 418, 458 (1890). For a compendium of the leading cases concerning the

judicial review of utility regulation, see Barnes, *Cases on Public Utility Regulation*, Chapter 3.

³⁶ Stress supplied. 169 U.S. 466, 546-547 (1898).

analysis or description, and the selection of a final value figure which bears no derivative relation to any figures in evidence and no ascertainable relation to any functional purpose of rate making. The determination is typically accompanied by explicit denials that a formula was employed or that the result is a compromise, together with a statement that the commission is quite incapable of retracing and setting forth the processes by which the value figure was reached."³⁷

It was not only its lack of precision that made *Smyth v. Ames* the bane of public utility regulation for the next 50 years, embroiling commissions and courts in endless controversies about the definition and measurement of fair value. It was also its specific insistence that stockholders were entitled to a return not on the dollars they had actually invested—a quantity easily recorded in the company accounts, hence readily ascertainable—or “prudently invested,” but on the current value of their investment. The first thing wrong with such a standard is its possible circularity. As the Supreme Court pointed out 46 years later, in overturning *Smyth v. Ames*, “fair value” cannot serve as the basis for rate regulation if it is taken to mean market value, since the market value of any enterprise or of its common stock depends on its earnings or anticipated earnings, which in turn depend on the rates that are allowed it: “‘fair value’ is the end product of the process of rate-making not the starting point”³⁸ This objection is sound, however, only if “fair value” is to be measured in terms of the market value of the enterprise. It is incorrect if applied to the customary interpretation that measured fair value (at least in part) with reference to the cost of reproducing the company’s assets, as *Smyth v. Ames* likewise instructed commissions to do. Whatever the problems of applying the reproduction cost standard, and they were great, circularity was not one of them. The current cost of duplicating the existing facilities or others capable of giving the same service does not move up or down so as to validate whatever levels of rates and earnings are permitted.³⁹

³⁷ In Leverett S. Lyon and Victor Abramson, *Government and Economic Life: Development and Current Issues of American Public Policy* (Washington: The Brookings Institution, 1940), 2: 692.
³⁸ “The heart of the matter is that rates cannot be made to depend upon ‘fair value’ when the value of the going enterprise depends on earnings under whatever rates may be anticipated.” *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 601 (1944).

The “market value of its bonds and stock” was one of the considerations that the Supreme Court said had to go into the determination of “fair value” in *Smyth v. Ames*.

³⁹ There is some causal connection between rates and reproduction costs. Higher or lower rates will mean a greater or lesser volume of sales, hence a need for greater or lesser production capacity. To the extent that capacity is supplied under conditions of increasing or decreasing cost, its reproduction cost will vary depending on whether a greater or lesser volume is demanded, hence on the level of rates. In

principle, this relationship does not preclude a single determinate solution, with a level of rates set in order to permit the desired return on the current cost of producing the capacity required to satisfy the demand elicited by that rate level (and structure). In contrast, there are any number of possible rate levels compatible with earning that return on the *market value* of investment, since—if demand is sufficiently inelastic—higher rates will mean a correspondingly higher market value, low rates a lower market value. Indeed, in perfectly functioning capital markets the market value of the company will move up and down, whatever the level of rates set, sufficiently to keep the rate of return earned on that market value at a constant level. (If investors are satisfied with a 10% return on investment, the market value of any company or of its securities will be ten times its permitted earnings, no matter what the rates it is permitted to charge; so its earnings will always be equal to 10% on its “fair value,” thus defined, no matter what their absolute level.)

As we shall see, a strong economic case can be made for basing rate levels on “the present as compared with the original cost of construction,” as *Smyth v. Ames* suggested. But as it developed in practice it had a fatal flaw: it invited endless controversy over the proper valuation of sunk capital, in direct contradiction of the economic principle that sunk investment costs are prominent among the “bygones” that ought to be ignored in price making.⁴⁰

“It is not too much to say that in terms of cost, delay, uncertainty, and the arousing of animosity and contention, the performance of the reproduction cost method falls little short of a public scandal; by far the greater part of the grotesque and costly ponderosity which characterizes modern rate regulation is to be attributed directly and solely to the reproduction cost approach. There is no occasion here to recite details of the maneuvering in a typical rate proceeding. The months and years spent by contending parties, commissions, and courts over such hypothetical factors as pricing, conditions of construction, labor performance, overheads, intangibles; the huge sums paid to engineers and accountants and other professional experts, directed in their claims and counter-claims by high-priced attorneys skilled in the art of rate case strategy; the highly charged, politico-legal-mystic character of the whole performance—this is all accepted practice under the reproduction cost method, yet it seems far removed from the essential business of setting the price of a single service in a single community under conditions of simple monopoly.”⁴¹

It is ironic that when the Supreme Court insisted on the relevance of current or reproduction cost, in *Smyth v. Ames*, it did so in the interest of effective regulation, and specifically in order to preserve “the right of the public to be exempt from unreasonable exactions.”⁴² For obvious reasons, the respective enthusiasms for original and reproduction cost on the part of regulatory commissions and regulated companies has varied depending on the trend of prices and construction costs. *Smyth v. Ames* came at a time when the general price level had fallen to its secular low point as a result of the deflations following the Civil War and the extended Depressions of the 1870s and the 1890s. It was the state of Nebraska that argued for the use of present value, as measured by (the lower) reproduction cost, and the railroads that argued for book or historical cost. In supporting the position of the former, the Court had in mind not only the long-term decline of construction costs, hence of fair value relative to original investment, but also the common complaint that railroad capital structures, on the liability side, and property valuations, on the asset side, were vastly inflated because of excessive payments to contractors and promoters and inadequate accounting for depreciation.⁴³

⁴⁰ This does not mean that the returns permitted on past investments are irrelevant to the optimal pricing of public utility services. It means that endless controversies over the proper valuation and continual revaluation of capital investments made in the past are a deplorably inefficient and indirect way of approaching the task of devising economically efficient rates. (See the discussion on pp. 109–117, Chapter 4).
⁴¹ Lyon and Abramson, *op. cit.*, 2: 691. For a more recent appraisal, see Lewis’ “Emphasis and

Misemphasis in Regulatory Policy,” in Shepherd and Gies, *op. cit.*, 229–236. A place of high honor in these evaluations must be accorded also to Justice Louis D. Brandeis, who made many of the same observations as long ago as 1923; see his famous dissenting opinion in the *Southwestern Bell Telephone* case, 262 U.S. 276, 289–312 (1923).

⁴² 169 U.S. 466, 544 (1898).

⁴³ See *ibid.*, 544–545, and Justice Brandeis, in *Southwestern Bell Telephone*, *op. cit.*, 298.

During and after World Wars I and II, the positions of the contending agencies were reversed: inflation and the introduction of more effective controls over book (historical) property valuations and company capitalizations converted regulated companies into enthusiasts for reproduction cost, and most commissions and advocates of effective regulation the other way—into proponents of a rate or earnings base measured by “prudent investment”—the number of dollars originally, prudently invested in the property used and usable in public service, less accumulated depreciation.⁴⁴

It was not until 1944, in the *Hope Natural Gas* case,⁴⁵ that the Supreme Court at last decided, in the immortal words of Lord Mountararat, to “withhold its legislative hand,” when it explicitly declined to tie the Federal Power Commission to any particular prescribed formula for the fixing of reasonable public utility rates. Rejecting fair value on grounds of circularity, the Court asserted that it would no longer insist on commissions taking reproduction cost into account in fixing permissible rates, either.

“Under the statutory standard of ‘just and reasonable’ it is the result reached not the method employed which is controlling.”⁴⁶ What “end results” were relevant? The tests would henceforth be economic and pragmatic:

“Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called ‘fair value’ rate base.”⁴⁷ As long as regulation treats investors sufficiently well, by the acid test of the competitive capital-market place, to enable the regulated companies to raise whatever funds they need to provide acceptable service, the Court seemed to say, it would pose no additional tests or obstacles.⁴⁸

The Court has been true to its promise. Outside of the novel area of natural gas production, it has entertained no public-utility rate-level case of the traditional kind since *Hope*.⁴⁹ State regulatory commissions have responded,

⁴⁴ See, among others, John Bauer and Nathaniel Gold, *Public Utility Valuation for Purposes of Rate Control* (New York: The Macmillan Co., 1934), Chapter 3; Barnes, *The Economics of Public Utility Regulation*, Chapters 11–17, an especially thorough analysis; Troxel, *Economics of Public Utilities*, Chapter 13; Eli Winston Clemens, *Economics and Public Utilities* (New York: Appleton Century-Crofts, 1950), 157–158; Wilcox, *Public Policies Toward Business*, 311–314; James C. Bonbright, *Principles of Public Utility Rates* (New York: Columbia University Press, 1961), Chapters 11–12; C. F. Phillips, *op. cit.*, 231–240.

⁴⁵ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

⁴⁶ *Ibid.*, 602.

⁴⁷ *Ibid.*, 605.

⁴⁸ Even in applying that primary test, it indicated it would give heavy weight to the “expert judgment” of the regulatory commission:

“Moreover, the Commission’s order. . . is the

product of expert judgment which carries a presumption of validity.” *Ibid.*, 602.

⁴⁹ Information by courtesy of Edward M. Barrett. In the natural gas cases, the Federal Power Commission was attempting to evolve some system for fixing the field prices of a commodity produced at widely varying costs by a large number of producers. The Supreme Court had to decide a number of issues, the most important of which was whether the Commission had to make the traditional type of cost of service determinations, company by company, or might instead shift, as it wished to do, to setting area-wide rates applicable to all companies regardless of their individual costs. In general, following the philosophy of *Hope*, the Court sustained the Commission’s exercise of its own “expertise.” See *Wisconsin v. Federal Power Commission*, 373 U.S. 294 (1962) and *Permian Basin Area Rate Cases*, 390 U.S. 747 (1968). For a similar decision in a case involving the ICC’s use of multi-company costs in determining the proper division

in varying degree, by shifting their attention from a preoccupation with the rate base to the more manageable question of the appropriate rate of return.⁵⁰ In a sense, the change is completely insubstantial: the substantive question of how much return on investment should be incorporated in the total cost of service is the same whether it focuses on one or the other of the two factors by which it is determined. And, as for administrative practicability, since it is the aggregate of dollar profits that concerns the parties to regulatory proceedings, it would seem there would be just as much opportunity for controversy over the percentage rate as there was in the past over the principal sum to which that rate was to be applied. The battle has not abated but merely shifted ground. As regulatory attention has turned from the rate base to the rate of return, and the latter has become less and less an essentially conventional 6% or so, the litigants have become increasingly skilled and assiduous in developing prolonged, complex, and inconclusive testimony about its proper measurement.⁵¹

Nevertheless the transformation of the rate base by most state commissions from a hypothetical or imaginary to an actual book figure,⁵² representing actual money outlays, introduced a strong element of stability and predictability into the regulatory process. While the question of what constitutes a “fair” rate of return, as an ethical or political matter, would seem to be just as potentially productive of controversy as the question of what constitutes “fair value,” the economic question, though in a sense unchanged and no easier to solve than before, is at least subject to the pragmatic test suggested by the Supreme Court itself—are the regulated companies succeeding in attracting the capital they require?⁵³

of revenues for multi-line freight service, see *Chicago & North Western Railway Co. et al. v. Atchison, Topeka & Santa Fe Railway Co. et al.*, 387 U.S. 326 (1966).

⁵⁰ This does not mean that they have been permitted to ignore the rate base. On the contrary, as long as the courts continue to review commission rate orders at all, it is difficult to see how they can avoid insisting on some evaluation of the property on which a reasonable return must be permitted. This has been the continuing practice of such courts as have spoken since *Hope*. See Francis X. Welch, “The Rate Base is Here to Stay!” *Public Utilities Fortnightly* (October 22, 1953), LII: 635–641.

⁵¹ See, for example, the possibly jaundiced view of Ben Lewis:

“as we begin in sheer disgust to move away from the debacle of valuation, we will probably substitute a new form of Roman holiday—long-drawn-out, costly, confusing, expert-contrived presentations, in which the simple directions of the *Hope* and *Bluefield* cases are turned into veritable witches’ brews of statistical elaboration and manipulation. . . . We do not need to do this sort of thing to regulation; we do not need to do it to ourselves. The behavior of investors will tell us, day by day, all we need to know about ‘comparability.’” In Shepherd and Gies, *op. cit.*,

242–243. Copyright, 1966, by Random House, Inc.

⁵² On the imaginary character of the reproduction cost calculation, see Wilcox, *op. cit.*, 317.

⁵³ Controversy over the rate base has by no means disappeared. With price levels increasing secularly since the *Hope* decision, it has paid regulated companies to argue for some incorporation of reproduction cost in their rate bases. The state commissions have to some extent acceded: as of 1967, 31 of them (including the District of Columbia) used original cost (or “prudent investment”) in regulating electric and gas utilities, 12 used fair value—a compromise between original and reproduction cost—one called its method “average net investment,” and one used reproduction cost specifically. Of the remaining six states, four had no state commissions to regulate gas and electric utilities (see note 36, chapter 1) and two commissions had no established procedures. U.S. Senate, Committee on Government Operations, Subcommittee on Inter-governmental Relations, *State Utility Commissions*, *op. cit.*, 37–40. See also Federal Power Commission, *Federal and State Commission Jurisdiction and Regulation: Electric, Gas, and Telephone Utilities*, *op. cit.*, 11–12, which gives a slightly different tabulation; and Joseph R. Rose on “Confusion in Valuation for Public Utility Rate Making,” *Minnesota Law Review* (1962),

Selection of the Permitted Rate of Return

In essence, every part of the regulatory price making exercise involves determining the proper level of earnings to be permitted the regulated companies. This is obviously true of the explicit determination of return, whether concentrating, as it traditionally has, on the valuation of the property on which a more or less conventional rate of return is to be allowed, or, as has become the practice in the majority of jurisdictions, on the rate of return to be permitted on the dollars actually invested in the enterprise. It is also the consequence of a commission's deciding whether or not to include items such as public relations expenditures in the cost of service, or how to measure depreciation, or how to treat income tax costs when accelerated depreciation is available. The process has inevitably reflected a complex mixture of political and economic considerations. Governmental price-fixing is an act of political economy. And, it bears repeating, this means that it necessarily and quite properly involves the striking of a balance between conflicting economic interests, influenced by political considerations in both the crassest and the broadest possible senses, and informed by community standards of fairness. Therefore, from time to time, the courts and commissions have characterized the entire task of setting "just and reasonable rates," and particularly that portion representing return to shareholders, in terms of reaching an acceptable compromise between the interests of investors on the one hand and consumers on the other.⁵⁴ The conception is that there is no single, scientifically correct rate of return, but a "zone of reasonableness," within which judgment must be exercised.

What are the limits of this zone? The bottom limit is an economic one, set by the necessity of continuing to attract capital; but, as we shall see, even that limit is an elastic one, depending on how much capital is required and how well one wishes to treat the company's existing stockholders.⁵⁵ The upper

XLVII: 1, whose analysis demonstrates that the foregoing simple designations conceal considerable differences in application. In a few instances, for example, "original cost" states have applied the permissible rate of return to an *undepreciated* rate base. For a thorough survey of actual valuation practices and rates of return allowed, see *Return Allowed in Public Utility Rate Cases, 1915-54 and 1955-61*, 2 vols., Arthur Andersen & Co. (place and date of publication not indicated); also A. J. G. Priest, "The Public Utility Rate Base," *Iowa Law Review* (Winter 1966), LI: 283-303, yielding a count of 31 original cost, and 19 fair value jurisdictions.

This continued emphasis on the rate base might seem irrational: inflation can be taken into account just as effectively by varying the permissible rate of return as by continuing to fight the old valuation controversies. To some extent this is what has happened. State commissions continuing to employ original cost have tended to compensate by allowing higher rates of return than the states that have either continued to use or have turned to fair value. But the compensation has been only partial. There continues to be a strong element of convention

and tradition in the allowable rates of return; confined to something like a 5.5 to 8% interval, their variation has not been a complete substitute for alterations in the rate base as well. See C. F. Phillips, Jr., *op. cit.*, 268-271, Garfield and Lovejoy, *op. cit.*, 133-134, and the sources cited by both.

⁵⁴ See, for example, the words of Justice Douglas, speaking for the Supreme Court majority in the *Hope* case, 320 U.S. 591, 603 (1944).

⁵⁵ A firm can continue to attract outside capital, within limits, even though its overall rate of return is held well below the rate that new investors will require if they are to make funds available to it. If it does so, it will be at the expense of its present stockholders. See note 64, p. 46. Its managers will therefore be reluctant to do so in those circumstances, to the extent that they are interested in the welfare of their stockholders. The bottom limit can be lower if it is defined as how much the firm must be permitted to earn on its total investment in order for it to be able to pay new investors enough to have them willingly supply the firm with additional funds than if it is defined as the rate that will make a company *willing*, without

limit has been either what it was estimated capital was obtaining in investments of similar risk elsewhere or, even higher, at whatever it was deemed the traffic would bear. As Justice Holmes once commented, rate regulation

"... has to steer between Scylla and Charybdis. On the one side, if the franchise is taken to mean that the most profitable return that could be got, free from competition, is protected by the Fourteenth Amendment, then the power to regulate is null. On the other hand, if the power to regulate withdraws the protection of the Amendment altogether, then the property is nought. *This is not a matter of economic theory, but of fair interpretation of a bargain.* Neither extreme can have been meant. A midway between them must be hit."⁵⁶

Such a view of regulation, as a sort of collective bargaining process, with the commission mediating between investors and consumers, may be justified on two quite distinct bases. The first is that there really *is* such a thing as the correct rate of return, but that it is impossible to *measure* it precisely. The economist, taking as his model the equating of price and marginal cost, would ordinarily begin⁵⁷ by identifying as the "correct" return the one that covers the costs of (incremental) capital.⁵⁸ But as we shall see there is no objective, unequivocal method of ascertaining the cost of capital, even for a particular regulated company at a particular time and place; the process requires the exercise of a good deal of judgment, and judgments will inevitably differ as to the result.

coercion by the regulatory authorities, to seek outside capital. And it can be lower, still, if the company does not need *outside* capital. The point in either case is that, by virtue of their power to control the distribution of dividends and both to prohibit the discontinuance and to require extensions of service, commissions can compel public utility companies to reinvest internally generated funds or to seek outside funds despite the fact that allowed returns are less than sufficient to induce such investment on a voluntary basis. If the supply of capital thus obtained sufficed to provide the desired quantity and quality of service, it would not be necessary to give shareholders a return as high as would be demanded by suppliers of new capital. This is merely a recognition of the fact that capital irretrievably sunk in an enterprise has a lower opportunity cost than incremental capital. See pp. 70-73, 118.

This was one consideration underlying the decision of the Federal Power Commission in 1965 to introduce a two-price system for natural gas, with a lower price for gas discovered in the past and already committed under existing contracts, and a higher price for new, additional supplies of gas committed in new interstate contracts. The differentiation in this case took the form not of allowing different nominal rates of return but of using different cost computations for old and new gas, with the price for the latter being set at the estimated full current cost of new, additional supplies. The justification,

proffered by this writer and accepted by the Commission, was that it was both undesirable and unnecessary to extend that higher price to the old gas—undesirable because to do so would confer windfalls on the owners of reserves discovered and developed at lower costs in the past (a noneconomic argument), and unnecessary because the investments in the old gas had already been made (an economic consideration). *Area Rate Proceeding, Claude E. Aikman, et al.*, 34 FPC 159, 185-192 and *passim* (1965), sustained in *Permian Basin Area Rate Cases*, 390 U.S. 747 (1968).

⁵⁶ Stress supplied. *Cedar Rapids Gas Light Co. v. Cedar Rapids*, 223 U.S. 655, 669 (1912).

⁵⁷ On the reasons why he will not necessarily stop there, see pp. 44 and 69-70.

⁵⁸ This was one of the criteria listed by the Supreme Court in its leading decision in the *Bluefield* case, back in 1923:

"The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties." *Bluefield Water Works & Improv. Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, 693 (1923).

It was also one of the standards set forth by the Supreme Court majority in the *Hope* decision. See p. 40.

The other view would be that the proper return that the regulatory process seeks and should seek to ascertain is not itself an objective phenomenon: what is a "just" or "fair and reasonable" return is a political, not a scientific question. This view is certainly not incorrect, either as a description of the rate making process or as prescription. A model of the price system in the modern, impurely competitive economy constructed in terms of the interplay of various organized groups, each with some degree of market power, with the results determined by the equilibrium of power relations, on the one hand, and influenced by considerations of "just price," on the other, is in some ways more relevant than one in which the transacting parties are conceived of as individuals, each a pecuniary profit-maximizer whose actions are entirely dictated by the objective constraints of the impersonal market. In any event, the economist cannot claim that such a vision of regulation as an essentially political process is "wrong;" all he can do is point out the costs to society of departing from purely economic standards.

Economists could make such an argument with better grace and greater forcefulness if they could themselves declare unequivocally what rate of return those purely economic standards dictate. The problem is that even if we confine ourselves to economic criteria we find that the very *idea* of the "correct" rate is elusive. The cost of capital is only the beginning point, for two reasons, both of which we will be explaining and exploring at a later point. (1) If perfect competition does not prevail in the real world, non-regulated industries generally may earn more (or less) than that minimum return. If so, it would produce misallocation to hold the prices of regulated services down (or up) to that level: this is the problem of the so-called "second best."⁵⁹ (2) The microeconomic model that calls for equating all prices to (marginal) cost and profits to the (marginal) cost of capital, which we describe in Chapter 3, is a static one. It tells us how to make the most satisfactory use of our limited resources with given tastes and a given technology. But it does not necessarily tell us how best to promote economic progress. The provision of incentives and the wherewithal for dynamic improvements in efficiency and innovations in service may require allowing returns to exceed that level: this was the essence of Joseph A. Schumpeter's classic defense of monopoly.⁶⁰ Thus, the rate of return must fulfill what we may term an *institutional* function: it somehow must provide the incentives to private management that competition and profit-maximization are supposed to provide in the nonregulated private economy generally. We have already identified this as a central problem of regulation.⁶¹ There is as yet no scientific way even of defining the rate of return arrangements that would achieve this more complex definition of economic optimality, not to mention measuring them.

In keeping with the purpose of this entire chapter, the following survey of

⁵⁹ See pp. 69-70, Chapter 3 and p. 195, Chapter 7.

⁶⁰ See his *Capitalism, Socialism and Democracy* (New York: Harper & Brothers, 1942), Chapters 7-9.

⁶¹ This is not to suggest that it is only through the rate of return that the necessary incentives are

best provided. Given the divorce between ownership and management, the rewards might better be offered to, and penalties assessed against, the managers themselves, for example, in the form of variable bonuses proportioned to some measure of performance. See the section on "Incentive Plans," Chapter 2, Volume 2.

the major problems and issues in determining the proper rate of return (we assume, for simplicity, that the investment to which it is to be applied is valued at original cost less depreciation) is intended principally to illustrate the foregoing observations. While summarizing the major traditional issues in price regulation, as background for our own, alternative approach in Part II, it should demonstrate also (1) the problems in measuring the minimum cost to which prices would be held by effective competition, which regulation is supposed to emulate; (2) the important influence of noneconomic considerations, and especially of conceptions of what is "fair;" and (3) the elusiveness of the proper economic standards, for the reasons just identified—the problem of "second best" and the institutional function of the rate of return.

Problems in Measuring the Cost of Capital. The public utility company competes with all other companies in the economy for the various inputs of its production process—for labor, materials, and capital. To the extent that these are supplied in open markets (instead of, for example, under negotiated bids), in principle there ought to be readily available objective measures of the prices of these inputs that have to be incorporated in the cost of service. This is clearly true of the capital input: since the regulated company must go to the open capital market and sell its securities in competition with every other would-be issuer, there clearly is a market price (a rate of interest on borrowed funds, an expected return on equity) that it must be permitted and enabled to pay for the capital it requires. Of course, the costs that go into its price (or rate levels) are a function not only of the unit prices of its inputs (for example, the price of a ton of coal, delivered to the generating plant, or the interest rate on its bonds) but also of the efficiency with which they are employed (for example, the number of tons of coal or the number of dollars of capital investment required to generate a kilowatt hour of electricity); and we have already alluded to the problem of assuring maximum efficiency under regulation and to the important role that the allowable rate of return may play in providing an incentive for managers to run their companies as efficiently as possible. But the proper starting point is clearly the competitive price—in this case, the so-called "cost of capital."

1. But whose cost of capital? Should it be the cost to the individual company under consideration? Or of a representative group of companies? If the latter, what constitutes a representative group? The concept of regulation as seeking to keep prices at the lowest possible level consistent with the company's supplying the amount and quality of service demanded at that price—which is surely the competitive ideal, also—would argue for measuring the actual cost of capital to that company alone. But suppose one company is so well run (or promises to become so much more so) that investors, having particularly great confidence in it (or in the stability or growth of its future earnings) are willing to make capital available to it at a price (for example, at current or promised rates of return) less than the average for other regulated companies? If the unusually efficient company's resultant lower cost of capital is automatically translated into lower permitted profits per dollar of invested capital—something that would *not* automatically happen under pure competition—will it not have been deprived of the incentive to be efficient, or to become more so? Its owners, and therefore conceivably its managers, would have been deprived

of the supernormal rewards (quasi-rents) that constitute in nonregulated markets a prime spur to efficiency.⁶²

2. Should it be the cost of capital at a particular moment in time, or an average over some period in the past? If the former, what moment? If the latter, how long a period? Is what is sought the *historical* cost of capital, as of the time when it was raised? Or the current cost? The reader will recognize the relatedness of these questions to the question of whether the rate base and depreciation should likewise be measured at original or at current cost.⁶³ The usual practice is to combine the actual or historical interest cost, as far as debt capital and preferred stock are concerned, with the (estimated) current cost of raising money by sale of common stock. Does this make economic sense? Is it fair? How do these various possible approaches compare with the results that would be produced by competition? And, in such a comparison, *what* "competition" is relevant—"ideal" pure or perfect competition? Or the highly imperfect mixtures of competition and monopoly that actually prevail in unregulated markets?
3. The usual starting point for measuring the cost of equity capital is the ratio of earnings to market prices of the common stocks of the company or companies selected. The logic of this procedure—and it is persuasive—is that the price investors are willing to pay in the open securities markets for shares of stock with known levels of earnings provides an objective measure of the terms on which they are willing to make their money available to the companies in question. If, for example, the common stock sells at 10 times annual earnings, the earnings/price ratio is 10% and that may (subject to the very serious qualifications to be noted) be taken as the cost of capital—the rate of return that the companies must be able to earn on any additional dollars invested in them if they are going to be willing and able to raise those dollars in the capital markets.⁶⁴

However, the principal difficulty is that what investors are capitalizing in the purchase price of the securities they buy is not current but antici-

⁶² Of course, some diminution of the incentive to efficiency is inherent in any system of regulation that holds rates of return to some prescribed level, regardless of how or where that level is set. Still, if the more efficient and progressive company is permitted some sort of higher, industry-average rate of return, instead of its own, low cost of capital, it is on this account rewarded for its own, deserved, above-average attractiveness to investors, and retains an incentive to improve its efficiency in hope of increasing that reward.

⁶³ He is reminded, too, that we consider the economics of these interrelated choices in the following chapters—in particular, Chapter 4.

⁶⁴ As we have already suggested, a company *can* raise capital even if it is allowed a rate of return

below the cost of capital, but only at the expense of its existing stockholders. The common sense of this should be apparent: if a company sells its new stock on terms that give the new stockholders, for instance, a 10% return on their investment—the cost of capital being 10%, they will pay only ten times the prospective earnings for each share—and invests the funds in assets on which it is permitted to earn only 7 1/2%, clearly the other 2 1/2% must be coming out of earnings previously available to its existing stockholders. This is what is known as dilution—dilution of the share in equity (that is, in the claim on net assets of the firm) of existing stockholders.

Suppose, for example, the firm had the following skeleton balance sheet before the new stock issue:

Assets		Liabilities	
Net plant	\$100	Net worth	
		Common stock (10 shares)	\$50
		Surplus	50

And suppose its permitted rate of return (r) and cost of equity capital (k) were, as above, 7 1/2% and

10%, respectively. In this event, its permitted earnings would be \$0.75 per share, and investors

pated earnings;⁶⁵ and there is no objective measure of what their anticipations were or are. Thus, computed contemporaneous earnings/price ratios will either underestimate or overestimate the actual cost of capital, depending on the extent to which investors were expecting earnings to rise or fall from current levels when they paid those prices. From the late 1940s on, for example, security prices in the United States soared relative to earnings; this sharp drop in earnings/price ratios continued all through the 1950s, leveling off during 1960–1965 at the 5 to 6% level, which was well below the average of the preceding half-century.⁶⁶ There can be little doubt that these trends partly reflected the anticipation of increasing earnings and future appreciation of security values; those anticipations were an important consideration in the high and rising prices investors were willing to pay for each dollar of current earnings.⁶⁷ If so, the contemporaneous earnings/price ratios must have understated the true cost of equity capital: investors *thought* they were getting a better return

would pay only \$7.50 for a share. (The market value would thus be below the book value of \$10 per share, precisely because r is less than k ; see note 69.) Now suppose the company sought to raise another \$100 to invest in plant. It would be permitted to earn an additional \$7.50 on this investment, or a total of \$15. How many shares would it have to sell and at what price would they sell? Let x be the required additional number of shares. Then earnings per share will end at $\$15/(10+x)$. These earnings would be capitalized at 10%—that is, investors would pay 10 times those earnings for each new share of stock, assuming they expected per share earnings to remain thenceforth at that level. So the price of each share would be $(10)(\$15)/(10+x)$ and x shares would have to be sold at that price to raise the required \$100:

$$\frac{(10)(\$15)}{10+x} x = \$100$$

$$x = 20$$

Therefore 20 additional shares would have to be sold to raise the added \$100, at a price of \$5. The price per share would thus have dropped from \$7.50 to \$5; the total permitted earnings of \$15 would now be distributed among 30 shares, yielding \$0.50 per share, capitalized at 10%. Assuming they predicted accurately the trend in earnings per share, the new investors would be in a position to demand the 10% k —they would pay only \$5 for a share promising earnings of \$0.50. But sale of the stock in these circumstances would *dilute* the share in ownership of the holders of the 10 original shares of stock: their share in book equity would decline from the original \$10 per share to \$6.67, the new total equity of \$200 being distributed now among 30 shares. The 33 1/3% decline in the market value of their stock would reflect this corresponding dilution of their equity.

A company *can*, thus, raise more capital when r is below k (within limits—try to work out the above example if r is only 5%) but only at the expense of its existing stockholders. This is something its management would ordinarily be unwilling to do.

⁶⁵ It is uncertain to what extent and in what direction investors' appraisal of earnings is altered by variations of the proportions respectively distributed in dividends and reinvested in the business. The weight of informed opinion since the early 1950s seems to be that it is total earnings instead of dividends alone that investors value in purchasing securities; that pay-out ratios have little if any effect—that is, that investors are essentially indifferent to what percentage of earnings is distributed in dividends. See Fred P. Morrissey, "Current Aspects of the Cost of Capital to Utilities," *Public Utilities Fortnightly* (August 14, 1958), LXII: 217–227; Merton H. Miller and Franco Modigliani, "Some Estimates of the Cost of Capital to the Electric Utility Industry," *Amer. Econ. Rev.* (June 1966), LVI: 368–370; Irwin Friend and Marshall Puckett, "Dividends and Stock Prices," *ibid.* (September 1964), LIV: 656–682; cf. E. W. Clemens, "Some Aspects of the Rate-of-Return Problem," *Land Econ.* (February 1954), XXX: 32–43.

⁶⁶ Dividend/price ratios showed a similar trend, and between 1955 and 1965 were lower relative to levels of the preceding half-century than were earnings/price ratios. Board of Governors of the Federal Reserve System, *Historical Chart Book, 1967*, Washington, 37.

⁶⁷ It can be demonstrated that, under not unreasonable assumptions, the market price of a share of stock (P) will be equal to current dividends (D) divided by (the cost of capital, k , minus the anticipated annual percentage growth in dividends, g): $P = D/(k-g)$. Or, in other words, that the cost of capital is equal to the

than would be indicated by that ratio.⁶⁸ Any successful effort by utility commissions to hold earnings on the companies' rate bases thereafter to the low rates suggested by those ratios would surely have resulted in a deflation of security prices, and, by thus increasing earnings/price ratios, have demonstrated that the true cost of capital was higher than they had originally inferred.⁶⁹ But how much higher, it is impossible to say with any precision.⁷⁰

4. Is there need for consistency between the basis on which the cost of equity capital is determined and the rate base to which it is then applied? If the

current dividend/price ratio plus that anticipated percentage growth: $k = D/P + g$. For a fuller explanation, see the Appendix to this chapter, which reproduces a very lucid account by Herman G. Roseman.

To some extent, g results merely from the reinvestment of earnings. If a company earns 9% on book equity, distributes 2/3 and reinvests 1/3 (that is, 6% and 3% of book equity, respectively), the book value of each share of stock will grow 3% a year and dividends may therefore be expected to do the same on this account, *ceteris paribus*. If 9% is also the cost of capital, the market value of the stock will be equal to book (see footnote 69, below) and $(D/P) + g$ (in this case 6% + 3%) will, as far as this source of growth is concerned, be the same as the earnings/price ratio, E/P (9%). The problem arises when g is expected to be greater or less than what would result merely from the reinvestment of earnings. See for example the estimates referred to in note 70.

⁶⁸ That certainly had been their experience during the preceding years. An investment of equal amounts in every stock traded on the New York Stock Exchange in December 1950 would have yielded an investor 15.0% compounded annually, in dividends and capital appreciation, by December 1960; a similar investment in December 1955 would have yielded 11.1% by

Net plant	100
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And suppose the true cost of capital is 10%. If the regulatory commission permits the company to earn 10% on its net plant, valued at original cost, the profits will be \$1 a share, and, *ceteris paribus*, investors will buy those shares for \$10: market value and book value will coincide. But the market value will exceed book value if the commission permits a return in excess of the cost of capital: if, for example, it allows 15%, this will yield \$1.50 a share, for which investors will bid \$15.

But suppose, to illustrate the point in the text, the commission had been allowing only the true cost of capital, 10% or \$1 a share, but investors had bid share prices up to \$15, yielding currently

the later date. See L. Fisher and J. H. Lorie, "Rates of Return on Investments in Common Stocks," *Jour. of Bus.* (January 1964), XXXVII: 5. During the first period E/P ratios dropped continuously from over 15 to less than 5%, during the second its range was from about 8 to 5%. Board of Governors, *op. cit.*, note 66. Obviously what dropped E/P ratios was investor expectations that they would continue to see this kind of growth in earnings and market value of their investments.

⁶⁹ On the other hand, the sharp appreciation in the prices of public utility stocks, to one and a half and then two times their book value during this period, reflected also a growing recognition that the companies in question were in fact being permitted to earn considerably more than their cost of capital. Perhaps, indeed, the discrepancy was growing over time: as the data in note 76 demonstrate, the return on equity among the public utilities increased markedly relative to manufacturing in the two decades after World War II. See Miller and Modigliani, *op. cit.*, *Amer. Econ. Rev.* (June 1966), LVI: 386; David A. Kosh, "Recent Trends in the Cost of Capital," *Public Utilities Fortnightly* (September 26, 1963), LXXII: 19-26. Suppose, for example, the following skeletal balance sheet of a regulated company:

Equity	
Common stock (10 shares)	50
Surplus	50

only 6 2/3%, because they expected to get the other 3 1/3% from future increases in earnings and appreciation of the securities' prices. If in this event the commission took the 6 2/3% earnings/price ratio to represent the cost of capital, it would permit earnings of only \$0.67 per share, and the market price of the securities would collapse either to the book value of \$10, if investor confidence in future trends continued unshaken, or down to \$6.67, if those favorable anticipations were now destroyed.

⁷⁰ Since the true cost of capital (k) may be taken as equal to $(D/P) + g$ (see note 67), some company witnesses in regulatory proceedings have attempted in various ways to make plausible

cost of equity capital is determined on the basis of the ratio of earnings to the market price of the company's common stock, is there not some inconsistency in applying that rate of return to a rate base as valued in the company's books—that is, at original or historic cost—when, as has been true for well over a decade, the market value of most public utility shares has far exceeded their book value? If, for example, earnings per share were \$5, the market price \$100, and the book value \$50, the E/P ratio would suggest a 5% cost of capital; if that 5% were applied to the book value of (the equity portion of) the rate base, this would produce a return of only \$2.50—thus eliminating the justification for the \$100 market price.

The answer is that there would be an inconsistency in this case, but only because it involves inconsistent assumptions about regulatory policy.

estimates of the g investors had in mind in purchasing the company stock, in order to come up with an estimate of k (since D and P are of course known). See, for instance, the testimony of Irwin Friend, May 26, 1966, in Federal Communications Commission, *In the Matter of American Telephone and Telegraph Company*, Docket 16258, and of Roseman before the Pennsylvania Public Utility Commission, Re: *The Peoples Natural Gas Company*, Docket No. 18527, Exhibit No. 16, 1968. Roseman's basic approach, for example, is to determine statistically which measure of growth (average annual growth in earnings, in dividends, in book equity, in revenue, or in net plant, all over various time periods up to the present) correlates most closely with the current evaluation placed by the market on dividends—that is, with the D/P ratios—of 21 gas distribution companies. The correlation is negative: the higher the anticipated g , the higher the price investors will pay for a dollar of current dividends, so the lower is the D/P ratio. Then, having in this way identified the measure of actual past growth with the highest negative correlation with D/P , he proposes that for his measure of the (anticipated) g component of k . Applying this method for each of the 20 companies (in addition to the one for which he was testifying), he obtained an average estimate for k of 9.8%, compared with an earnings/price ratio of 7.6%. Roseman describes this method also in "Measuring the Cost of Equity Capital for Public Utilities," ABA, *Annual Report, Section of Public Utility Law*, 1969, 54-67.

Two other writers have suggested an alternative solution that would permit the use of E/P ratios alone as the measure of k . Their reasoning is that whenever regulated companies purchase their inputs in competitive markets, regulatory commissions correctly accept the prices thus determined for incorporation in the cost of service. Capital markets are highly competitive; they, too, therefore, should be able to provide

commissions with a very accurate measure of the competitive, minimum necessary cost of capital. The problem at present is that commissions have no way of telling what are the terms of the equity share contract. That is, when investors pay x dollars for a share of stock, they are buying not just current earnings but some unmeasurable amount of growth over and above the growth that occurs because of the mere reinvestment of earnings. (As we have already seen, if dividends are expected to grow only because of reinvestment of earnings, $(D/P) + g$ is the same as E/P , and the latter is a correct measure of k . See note 67, above. It is the expectation of greater—or lesser—growth than this that renders E/P an inaccurate measure of k .) The first key to a solution to this problem is to be found in the fact that when earnings are expected to grow over time merely because of reinvestment of earnings, the market and book values of a share of company stock will grow together; there is no reason for such growth to produce any discrepancy between them. It is the expectation of a capital gain resulting from a discrepancy between market and book values, thus, that makes E/P an inaccurate measure of k , and so makes the latter so difficult to measure. The second key to the solution is that if the allowed rate of return (r) is held at the cost of capital (k), market value will tend to equal book value (see note 69), and the possibility of a discrepancy between them is greatly diminished.

Therefore, the authors suggest, if regulatory commissions were to put investors on notice that henceforth they would allow a return equal only to whatever earnings/price ratio the securities markets set when the market value of the common stock equaled its book value (at which point presumably r equals k), they could greatly diminish, if not eradicate, the expectation of capital gains or losses arising from divergencies of market and book value and thereby cause the current earnings/price ratios to give them a much more accurate reflection of the true cost of

That is, it assumes at one and the same time that the commission allows returns on equity (r) in excess of and equal to the cost of capital (k). The source of the discrepancy between market and book value has been that commissions have been allowing r 's in excess of k ; if instead they had set r equal to k , or proceeded at some point to do so, both the discrepancy between market and book value and the inconsistency would have disappeared, or would never have arisen.⁷¹ The fact that market value has remained above book value indicates that in most jurisdictions r has been high enough, relative to k , so that its application to the lower book value, in determining allowable earnings, has not destroyed the willingness of investors to continue to pay above book value for public utility company shares.⁷²

5. To what extent does the cost of capital, which is a weighted average of the separate costs of obtaining funds by sale of bonds, preferred stock, and common stock, depend on the particular mixture of sources of financing selected? There is general agreement that up to a point the composite cost will be reduced by resorting to borrowing, because the interest costs of borrowed capital may be deducted from taxable income, whereas the return on equity capital—which is no less a genuine economic cost of production—is subject to the corporation income tax.⁷³ But some commentators have maintained that, apart from this tax aspect, the capital structure has no effect on the composite cost of capital; that the more a company resorts to borrowing, typically at lower contractual interest rates than the rates of return it has to promise to common stockholders, the correspondingly higher is its true cost of equity capital, in reflection of the greater risks to stockholders of having a larger and larger share of aggregate earnings subject to the prior, contractual claim of the bond holders.⁷⁴ The more traditional view is that up to some point

capital. Thereafter, when investors purchased the stock they would be buying only current earnings plus such anticipated growth as would result from reinvestment of profits, which would raise book and market value per share simultaneously. They would no longer be paying also for the expectation that the market value per share might rise relative to the number of stockholder dollars actually invested in the enterprise. Regulatory commissions could presumably obtain successive approximations to the true cost of capital by reducing permitted rates of return (r) sufficiently to bring market prices down to book value per share, and then adjusting r to the earnings/price ratios that emerged on announcement of the policy that destroyed anticipations of market price diverging from book.

In brief, what the commissions would be doing in this way would be specifying the terms of the equity share contract. If they succeeded in doing so, the capital market would then provide them with an accurate measure of the true competitive cost of capital. See Robert J. Gelhaus and Gary D. Wilson, "An Earnings-Price Approach to Fair Rate of Return in Regulated Industries," *Stanford Law Rev.* (January 1968),

XX: 287-317.

⁷¹ In the foregoing example, once market value per share was reduced to book value—that is, to \$50—because r was set at k , here assumed to be 5%, there would no longer be any inconsistency, provided, of course, the commission had correctly estimated k at 5%. Return per share would be \$2.50, and this would be 5% of both market and book value.

⁷² See note 69.

⁷³ If the cost of debt capital to a company is 5% and the cost of equity capital is 10%, and it raises \$100 by borrowing, this will add \$5 a year to its costs; if it raises it by issuing new stock, it will add not \$10 but, with the corporation income tax rate at 48%, \$19.23 a year to what it must recover in rates—\$9.23 for the Internal Revenue Service, \$10 for the new stockholders.

⁷⁴ Actually the cost of debt capital would likewise rise, reflecting growing risk to bond holders as well, as a larger and larger share of company income was pledged to them. The Grand Inquisitor's observation in *The Gondoliers*,

"When every one is somebodee,
Then no one's anybody!"

clearly applies to bondholders: when everyone

trading on equity has the effect of reducing the average cost of capital, even apart from the tax advantage. Some commissions, in consequence, have based their allowances for rate of return not on the actual capital structure of the regulated company but on their conception of a preferable one, with a lower inferred composite cost.⁷⁵

Should the Rate Be Adjusted for Changes in Prices? What allowance, if any, should be made for changes in the purchasing power of the investor's dollar, measured in terms of its changing ability either to buy consumer goods and services or to replace capital equipment? In particular, should the owners of the business be offered some sort of protection against inflation, whether by introducing some reflection of (presumably rising) replacement costs in the rate base and/or in allowable depreciation expenses, or in a higher rate of return? On grounds of fairness? Of economic efficiency? *Ought* or *need* the same protections be offered to existing shareholders as to future suppliers of capital? If to stockholders, why not also to creditors? We consider these questions at length in Chapter 4.

The Standard of Comparable Earnings. During the early 1960s, when price/earnings ratios ran around 5 to 6%, manufacturing corporations were earning 10 to 13% on their book equity.⁷⁶ *Ought* or *need* public utility

who supplies capital is at the head of the line in his claim on income, no one is at the head of the line—there is no line. See the considerably more complex argument of Modigliani and Miller, "The Cost of Capital, Corporation Finance and the Theory of Investment," *Amer. Econ. Rev.* (June 1958), XLVIII: 261-297, and "Some Estimates of the Cost of Capital," *Amer. Econ. Rev.* (June 1966), LVI: 338-343, 364-367; the comments on the former article by Joseph R. Rose and David Durand and the Modigliani-Miller reply, *ibid.* (September 1959), XLIX: 638-669; Haim Ben-Shahar, "The Capital Structure and the Cost of Capital: A Suggested Exposition," *Jour. of Finance* (September 1968), XXIII: 639-653.

⁷⁵ See C. F. Phillips, Jr., *op. cit.*, 169-171, 280-283; Troxel, in Shepherd and Gies, *op. cit.*, 166-168.

"On oral argument, Respondents' counsel stated:

"... I think the Commission's function here is to examine a debt policy that we follow... but unless you find that we have abused our discretion or have been imprudent, I don't believe you should disturb it..."

"We agree that this Commission is not the manager of Respondents' business. It is neither our obligation or duty to dictate the business policies and practices to be followed by management. On the other hand, we have the statutory responsibility for the establishment and maintenance of just and reasonable rates... If we are to discharge this responsibility... we must be free to examine fully all matters affecting the

future level of rates... We are not limited to acting in situations in which we have first found abuse, imprudence or indiscretion on the part of management in the past...

"At the 10-percent return on equity sought by respondents herein, each dollar of equity financing requires nearly five times as much gross revenue as a dollar of debt financing. Thus, the rate payer is penalized if more of the financing is by equity than is required..."

"We find, therefore, that a continuation by respondents of their past policies with respect to capital structure will not be conducive to the raising of future required capital in a reasonably economical fashion..."

"Accordingly, in fixing the rate of return to be allowed, we shall take into account this 'additional' and extraordinary amount of risk insurance respondents have given its [sic] stockholders by its low debt ratio policy... respondents are in a position to improve equity earnings by increasing their debt ratio..."

FCC, *In the Matter of American Telephone and Telegraph Company*, Docket No. 16258, Interim Decision and Order, 9 FCC 2d. 30 (1967), sec. 86, 89, 216, 220, 222.

⁷⁶ See note 66, Chapter 2. During these same years (1960-1964, inclusive), the returns on book equity of the "electric power, gas, etc." companies surveyed by the First National City Bank of New York ranged between 10.0 and 11.0%, of telephone and telegraph companies between 9.7 and 10.3% and of transportation companies between 2.3 and 5.5%, as the following table shows. All returns are after tax.

companies be permitted earnings comparable to those received by companies in nonregulated industries, under conditions of comparable risk?⁷⁷ This question involves a number of issues, conceptual and factual.

1. Is the comparable earnings standard merely another measure of the cost of capital, reflecting what public utility companies themselves or purchasers of their stocks could obtain on their dollars elsewhere? Or may it be higher: may not returns in industry generally contain some monopoly component, for example? In point of fact, the owners or purchasers of public utility and industrial common stocks might well not be able to obtain that type of rate of return if they were to go into the market and buy those securities.⁷⁸ The cost of capital, which is what a utility company must match if it is to attract funds, is what investors could obtain by buying the securities of other companies in the open market—not what the companies themselves earn on a dollar of additional investment.⁷⁹
2. If “comparable earnings” exceed the cost of capital, then, would an attempt to hold public utility earnings to the lower, competitive level reduce the prices of their services excessively, relative to the prices of other goods and services?⁸⁰

Net Returns on Net Assets

Year	Total Mfg	Electric Power, Gas, etc.	Telephone and Telegraph	Total Transportation
1947-54	15.4	9.3	7.8	...
1959	11.7	10.1	9.9	3.9
1960	10.6	10.0	9.9	2.9
1961	9.9	10.0	9.9	2.3
1962	10.9	10.4	9.5	3.9
1963	11.6	10.6	9.7	4.6
1964	12.6	11.0	10.3	5.5
1965	13.9	11.3	9.9	6.9
1966	14.2	11.5	10.4	7.4
1967	12.6	11.6	10.2	5.4
1968	13.1	11.2	9.7	4.9
No. of Companies				
1968	2,250	237	19	176

Source: First National City Bank of New York, *Monthly Economic Letter*, April issues, 1947-54 compilation from Shepherd and Gies, *op. cit.*, 103.

⁷⁷ The Supreme Court specified such a comparable earnings standard in both its *Bluefield* and *Hope* decisions. 262 U.S. 679, 692 (1923); 320 U.S. 591, 603 (1944).

⁷⁸ See for example, Calvin B. Hoover, “On the Inequality of the Rate of Profit and the Rate of Interest,” *The South. Econ. Jour.* (July 1961), XXVIII: 1-12; James Tobin, “Economic Growth as an Objective of Government Policy,” *Amer. Econ. Rev., Papers and Proceedings* (May 1964), LIV: 13-14. This discrepancy is suggested by the far lower earnings to market price ratios of both industrial and public utility common stocks than those companies earn on book equity. However, as we have seen, investors have been earning more than the contemporaneous earnings/price ratios. (See note 68.) Whether what they have in fact earned in this way was the same as the cost of capital—that is, the rates

that they would have been willing to take to make their funds available—is highly uncertain. ⁷⁹ If the cost of capital is lower, any attempt of a regulatory commission, persuaded by the comparable earnings argument, to permit investors the higher return would only be self-defeating. Investors would respond to the higher earnings per share by bidding up the prices of the securities to the point at which new purchasers would earn only the old cost of capital on their investments. The only beneficiaries would be those who happened to own the stock at the time the policy change was announced or anticipated. There is no way of giving new purchasers of stock more than the cost of capital, except by changing the rules after they have made their purchases. See the same argument in another context, p. 116, Chapter 4.

⁸⁰ This is the “problem of the second best,”

3. In applying this standard, how does one select nonregulated industries of comparable risk? How do risks in public utilities compare with those of other industries, and to the extent they do differ how would this difference be allowed for in translating comparable earnings elsewhere into permissible rates of return here?⁸¹

The Problem of Rewards and Incentives. How, if at all, can rates of return be varied in order to reward, and hence to provide an incentive for efficiency and innovation? What standards of performance are available that will separate results attributable to good or bad management from those attributable to other factors? How can such rewards be related to performance, and how much in the way of rewards is required? In particular, is there any way of punishing poorly managed companies with a reduced rate of return without jeopardizing their ability to attract the very capital they may need to do a better job?

It has been urged by defenders of the comparable earnings standard and by others that public utilities be allowed returns markedly above the bare cost of capital, in order to provide them with both the financial means and the incentive to engage in risky innovation, both technological and commercial. That regulatory commissions have in fact allowed earnings well in excess of k is suggested not just by the behavior of the market prices of public utility securities but also by the apparent ease with which such companies have been able, since World War II, to raise the huge amounts of capital required to meet growing demands. It is suggested also by their aggressiveness in seeking such capital and expanding capacity, something that they would obviously have been reluctant to do if allowable returns were less than k .⁸²

But this does not necessarily prove that these companies have been offered the optimum amount of incentive for undertaking risky investments.⁸³ The defining characteristic of such investments is that they offer a wide range of possible outcomes; those that are nevertheless economically worthwhile are so because the possibilities of very large pay-offs balance the possibilities of failure. Any restriction on aggregate earnings, by threatening to cut off the opportunities for the great successes, will therefore have some immeasurable effect of discouraging risky investments that otherwise would be made. How important this effect may be in public utility regulation is very difficult to determine, but it is probably slight. For one thing, there are mitigating or countervailing considerations, among them the slowness of regulation in

to which we have already referred. As Shepherd has observed, the problem of the second best is the core of economic validity in the comparable earnings standard. “Regulatory Constraints and Public Utility Investment,” *Land Econ.* (August 1966), XLII: 353. See pp. 195-198, Chapter 7. ⁸¹ See, for example, Shepherd, “Utility Growth and Profits Under Regulation,” in Shepherd and Gies, *op. cit.*, 35-45. “if utility stocks are compared with those of non-utility corporations of comparable size, utilities which are protected from many forms of competition will be compared with the winners in other areas with no such . . . protection. . . . Somehow, in strict logic, the shadow losses of long defunct automobile companies would have to be subtracted from the profits of General Motors, after these

in turn had been adjusted downward for the hypothetical competition—and then, following this trip through the looking-glass, the result would be comparable earnings. . . .”

James R. Nelson, “Reassessment of Economic Standards for the Rate of Return Under Regulation,” in Harry M. Trebing and R. Hayden Howard, *Rate of Return Under Regulation: New Directions and Perspectives* (Institute of Public Utilities, Michigan State University: East Lansing, 1969), 16.

⁸² See Troxel and Lewis, in Shepherd and Gies, *op. cit.*, 170-175 and 237-239 and note 64, above.

⁸³ See Thomas G. Gies, “The Need for New Concepts in Public Utility Regulation,” *ibid.*, 105-107.

reducing earnings that prove *ex post* to be "excessive"—this is the familiar "regulatory lag"—and the ability of regulated companies to seek any rate increases that may be required to keep their overall rates of return at satisfactory levels, and hence to compensate for some of their failures. More important is the fact that the regulatory restriction is on total earnings, not the returns from individual investments. It would only be if the latter were so overwhelmingly large as to threaten to push the total above permissible levels that regulation might discourage it. To the extent all these offsets and qualifications are insufficient, there is no easy solution to the incentive problem. Merely permitting all regulated companies as a matter of course to earn rates in excess of the cost of capital does not supply the answer; there has to be some means of seeing to it that those supernormal returns are *earned*, some means, for example, of identifying the companies that have been unusually enterprising or efficient and offering the higher profits to them while denying them to others. We return to these institutional problems in Chapter 2 of Volume 2.

REGULATING RATE STRUCTURES

With respect to the second major aspect of public utility price regulation—the regulation of rate patterns or structures—the typical statutory or judicial injunction is that rates be not "unduly discriminatory," that differences in the rates charged various customers or classes of service be likewise "just and reasonable." At this point we need make only two general observations about the way in which most regulatory commissions have carried out this mandate. First, outside of the transportation field, they have given far less attention to this subject than to determining general rate levels and especially the rate base and rate of return.⁸⁴ The height of particular rates and the differences between them have been from the very outset a very important consideration in the regulation of railroads: the feeling of different customers and localities that they were being subjected to unfair discrimination played a vital role

⁸⁴ The managements of public utility companies have been at least equally delinquent. See the following acid comments by the Public Utilities Commission of California on the apparent lack of interest of the Pacific Telephone Company in the various individual components of its aggregate cost of service and unwillingness to supply information about them:

"Pacific adheres to a concept of setting basic telephone rates in relation to the availability of main stations and on a statewide pattern. . . . By this scheme Pacific, as in all prior rate proposals, ignores the costs of providing service and from the present record it is apparent that it isn't even interested in knowing what its costs are for any given existing service. It is content to rely on broad and loosely-made estimates first put together at the time an initial or innovative service offering is proposed, no matter how long ago such estimates may have been made. . . . That the executives of Pacific have developed no means by which the actual costs of any of

Pacific's existing basic tariff offerings may be determined or measured seems incomprehensible but this record clearly establishes that such is the fact. Equally incomprehensible is the fact that Pacific does not even know, nor can it readily determine, what revenues its individual tariff offerings produce. . . . [F]or example, Pacific cannot even tell the Commission what revenues it actually receives from its charges for colored telephones without making a special 'study' of the situation."

"[I]t has been repeatedly pointed out that Pacific has not supplied actual revenue, cost or plant data in support of its tariffs. When specifically requested to do so . . . its Counsel argued in opposition to the request. . . .

"The arguments of Pacific's counsel and the comments of its witnesses make it abundantly clear that the whole subject is distasteful to Pacific. It desires, apparently, to forever rely on estimates made prior to the setting of rates on

in the passage and enforcement of the Interstate Commerce Act, from the very beginning.⁸⁵ In the other utilities, the major issue has usually revolved around the adequacy of total or net revenues; and the solution has usually been a more or less across-the-board increase or decrease of the entire structure.⁸⁶ Second, to the extent regulatory laws and commissions have considered the pattern of prices set, they have been guided by the same sort of mixture of essentially economic and political-social considerations as have influenced their determinations of the proper returns on investment.

The relative neglect of individual prices most clearly epitomizes the difference between the traditional approach to public utility price regulation and the one the economist would recommend. In this area, the commissions typically proceed only in response to specific complaints: businessmen in locality A complain that the freight rates charged them are higher than those charged their competitors; railroads point out that they are losing particular classes of business to trucks or barges and ask permission to reduce the relevant rates to meet competition; the affected trucking and navigation companies intervene to prevent the proposed reductions. Commercial customers assert that they are paying a higher price than residential users for electricity; local utility commissions complain that high rates for local service are subsidizing unduly low rates on long-distance calls; oil jobbers argue that gas distribution companies are offering uneconomically low promotional rates on home heating; the latter maintain that too large a proportion of the capacity costs of the interstate pipelines that supply them are incorporated in the demand charges that they pay and too little is imposed on the lines' direct industrial customers; and representatives of the bituminous coal industry join in these protestations, because the low-priced gas sold for use as boiler fuel for electricity generation takes business away from them. And all too often, from the economist's standpoint, the commissions resolve such controversies on bases other than economic efficiency, seeking to protect offended competitors from excessive losses of business, to preserve a "fair share" of the

new services as justification for continuing rate forms and relative rate levels whether or not the services are in reality today properly priced. One of its witnesses is 'hopeful' that the original estimates will so price new services that they will not be a burden on basic service. While this Commission may share or even applaud such 'hopes,' it has the duty to see to it that rates are fair and reasonable. . . ." *In the Matter of . . . the Pacific Telephone and Telegraph Company et al.*, Decision No. 74917, November 6, 1968, mimeo., 30-31, 60-61.

⁸⁵ In describing what was to become the Act to Regulate Commerce, in 1887, the Cullom Committee said: "the provisions of the bill are based upon the theory that the paramount evil chargeable against the operation of the transportation system of the United States as now conducted is unjust discrimination between persons, places, commodities, or particular descriptions of traffic." U.S. Senate, Select Committee on Interstate Commerce, 49th Cong., 1st Sess., Sen. Report 46, Part I, Washington, 1886, 215. Correspondingly, "it would be possible to write an extensive history of railroad regulation without mentioning cost of capital or rate of return." James R. Nelson, "Pricing and Resource Allocation: The Public Utility Sector," in Shepherd and Gies, *op. cit.*, 83. Since 1922, the Interstate Commerce Commission "has not found it necessary to specify a fair rate of return for the roads." Phillips, *op. cit.*, 271.

⁸⁶ See, for example, Troxel, in Shepherd and Gies, *op. cit.*, 150-151, 175-176. Regulatory commissions and courts alike have tended to leave the designing of rate structures to the discretion of managements. Even in transportation, both company managements and the Interstate Commerce Commission for much too long neglected the much-needed reconsideration of common-carrier rate structures in the light of the intensified competition of newer transport media and of private and contract carriers. See the section on "Transportation," Chapter 1, Volume 2.

market for each, to strike some equitable or politically acceptable distribution of common costs among the various classes of patrons. We will see numerous illustrations of this kind of behavior in Chapters 1 and 2 of Volume 2.

Microeconomics, in contrast, is interested first and foremost in the determination of individual prices. Its normative models also include certain notions about the appropriate relation between an industry's average prices or total revenues on the one hand and its average or total costs on the other; but that optimum is conceived to be the result or *end product* of a competitive process that operates directly and in the first instance in individual markets, in the fixing of individual prices.⁸⁷

With respect to those individual markets, the rules of microeconomics are in principle simple and grounded in objective facts: subject to important qualifications that we shall elaborate at a later point, prices should be equated to marginal costs. In this scheme, there is no room for separate considerations of "fairness." Or, to put it another way, fairness is defined in strictly economic terms: those prices are fair that are equal to marginal costs, those unfair that are not equal.

"As in so many other policy areas, the lawyers and engineers (and increasingly the accountants)—not the economists—have largely dominated regulatory policy."⁸⁸ This does not mean that economists have not written at length and incisively about public utility regulation. But until recently, their analyses have been directed mainly toward the traditional issues, and organized within the framework formulated by administrative commissions and courts and by *Smyth v. Ames* in particular. Our next chapters, following

⁸⁷ These comments may seem arbitrarily to suggest that short-run equilibrium is somehow more important than long-run, and in so doing to reflect the essentially static character of traditional economic theory, or its tendency simply to assume mobility of resources sufficient to ensure the achievement of long-run equilibrium. In a dynamic world and in the presence of resource immobilities, competition sufficiently pure to hold prices constantly at short-run marginal cost may prove destructive and violently unstable; and much of the pricing in impurely competitive or oligopolistic markets can often be understood as seeking to achieve the long-run competitive result—which in a perfectly competitive market could safely be left to instantaneous inflows and outflows of labor and capital—at the possible expense of the constant equation of price with short-run marginal cost. The student of industrial organization may be as much concerned with the process that holds an industry's total profits, averaged over some period of time, at the competitive level as that its individual prices be instantaneously equated with short-term marginal cost.

The fact remains that the welfare ideal is constructed on the basis of the equation of price to marginal cost in individual markets and in the short-run. That is where the process starts. Departures from that standard must be individually justified. The mere control of overall

rates of return does not in itself ensure that the pattern of individual prices is economically efficient:

"A great many *different* patterns, efficient and inefficient, within the firm may be perfectly consistent with a *given* over-all rate of return. So, whatever the rates of return may actually have been, they cannot by themselves demonstrate whether resource allocation (to and within the utilities) has been efficient." Shepherd, in Shepherd and Gies, *op. cit.*, 20. See also Nelson, *ibid.*, 66.

Moreover—and this is a point critically important with respect to the public utility industries—even long-run equilibrium price is not the same thing as a price that covers current operating expenses plus some acceptable average rate of return on investment, which is what has principally concerned regulatory commissions. On the contrary, it involves the equation of price with long-run marginal cost. Correspondingly, the investment policy that produces long-run equilibrium in the competitive ideal is one that equates with the cost of capital the rate of return on incremental investment, not the *average* rate of return on historical investment, however the latter is valued. We shall explore these similarities and differences in the ensuing chapters.

⁸⁸ Shepherd, "Conclusion," in Shepherd and Gies, *op. cit.*, 266.

the lead of some of the recent economic literature⁸⁹ and accepting the implied invitation of the *Hope Natural Gas* decision, returns to the economic principles and attempts to apply them to the problems of public utility regulation. In so doing we will try not to neglect the traditional regulatory issues set forth in this chapter, but will instead analyze them in economic terms, while continuing, as throughout this study, to assess the limitations as well as the possible contributions of economics to their resolution.⁹⁰

⁸⁹ See, for example, the works cited *ibid.*, 267 and throughout this chapter and those that follow.
⁹⁰ There is no intention here to exaggerate the novelty of this approach, as compared with current regulatory thinking and practice. On the contrary, the traditional approaches that we have been describing in this chapter have certainly been modified in recent years.

Regulated companies and commissions alike have been paying increasing attention to the design of economically efficient rate structures; and, in this task and in others, as we have already observed, they have made dramatically increasing use of the tools and perspectives of the economist. This book is in a sense a survey, summary, and critique of this emergent practice.