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Implications of Second-Best Theory for Administrative and Regulatory Law: A Case Study of Public Utility Regulation

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**IMPLICATIONS OF SECOND-BEST THEORY FOR
 ADMINISTRATIVE AND REGULATORY LAW:
 A CASE STUDY OF PUBLIC UTILITY
 REGULATION**

ANDREW P. MORRISS*

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When confronted with a problem, many of us have a simple reaction—do something! We want to help, particularly when we confront facts which set forth compelling stories of personal hardship, lost opportunity, or senseless waste. If we know how to fix a problem, we should roll up our sleeves and fix it. When we confront larger problems, “something” often turns out to be passing a law or writing a regulation to address the problem systematically. In these circumstances, a useful question which might be asked before embarking on a new policy is “How do we know what we are doing will produce the outcome we seek?”

Answering that question requires considering the problem posed by economists R.G. Lipsey and Kelvin Lancaster nearly forty years ago. Examining the realistic case of an economy with multiple imperfections, Lipsey and Lancaster demonstrated that

if one of the Paretian optimum conditions cannot be fulfilled a second-best optimum situation is achieved only by departing from all other optimum conditions. . . . in general, nothing can be said about the direction or the magnitude of the secondary departures from optimum conditions made necessary by the original non-fulfillment of one condition.¹

Lipsey and Lancaster’s analysis reaches far beyond partial equilibrium economic policy analyses because virtually all regulatory problems are essentially constrained optimization problems, whether expressed mathematically or not.

Compared to early twentieth century policy analysts, we have available today extensive tools of “comparative institutional analysis,”² increasingly sophisticated economic models,³ vastly increased and widely distributed computing power, and gigabytes of data. Despite all this, we simply have not come to grips with the implications of second-best theory for regulatory interventions. Moreover, policy must address not only the economic implications of second-best theory but the legal and political implications as well: policymakers must

1. R.G. Lipsey & R.K. Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11, 12 (1956-57).

2. See, e.g., NEIL K. KOMESAR, *IMPERFECT ALTERNATIVES* (1994).

3. See, e.g., JEAN-JACQUES LAFFONT & JEAN TIROLE, *A THEORY OF INCENTIVES IN PROCUREMENT AND REGULATION* (1993).

consider the interaction of potential shortcomings of the legal and political tools available when they design the solutions to be implemented with those tools.

The failure to confront second-best theory's implications is rooted in the foundations of the regulatory state—an inappropriate confidence in our ability to forecast the impacts of regulation and precisely calibrate regulatory interventions. This overconfidence is based on three, interconnected factual assertions: (1) technical expertise can design solutions to social problems; (2) legal constraints can ensure technical expertise is properly applied; and (3) political institutions will produce legal constraints which correctly guide and restrain technical experts. All three are false.

The reasons why the challenge of second-best theory has been ignored are varied. An “engineering” approach to economics based on first-best analysis is seductive in many respects—it relies on elegant mathematical constructs whose solutions are intellectually gratifying and demanding, it allows economists to play important roles in public policy debates, and the analysis leads to (relatively) clear answers. Institutional details can be assumed away and the intellectual history of the discipline safely ignored,⁴ vastly simplifying economists' lives.⁵ Second-best analysis, on the other hand, is messy and requires thorough knowledge of the details of the actual operation of the economy and society. Perhaps public choice analysis explains a great deal about academic life as well as about governments. For whatever reasons, policymakers and analysts have largely ignored second-best theory. In particular, the implications of second-best theory are ignored by those analyzing and designing regulatory policies justified largely by goals related to economic efficiency, as in utility regulation.

Second-best theory suggests an important limitation on regulatory policy: because the ultimate impacts of regulatory actions are dif-

4. In my own economics training, for example, only a few of my graduate courses included a significant number of readings published before 1980, and many included nothing published more than ten years earlier. Two of those exceptional courses were taught by faculty whose own work was well outside the mainstream of the department (and who were also both particularly gifted teachers) and who have since left the school. Not only did MIT not offer a graduate history of economic thought course, but perhaps most amazingly, my formal education included nothing by critically important thinkers like Friedrich Hayek and Joan Robinson, to take two ideological extremes.

5. The most famous example of this tendency is recounted in Ronald Coase's article on the use of the lighthouse as an example of public goods. R.H. Coase, *The Lighthouse in Economics*, in R.H. COASE, *THE FIRM, THE MARKET, AND THE LAW* 187 (1988). Coase demonstrates how British lighthouses were often private ventures until the late nineteenth century. *See id.* He also demonstrates how Paul Samuelson's ahistorical analysis of lighthouses led him to the error of concluding they were a paradigm of public goods. *See id.* at 188-91.

difficult and expensive to discover, we must be cautious in acting to "fix" what we perceive to be "inefficiencies." We should be modest about our ability to understand the world, our ability to design legal institutions which can implement solutions, and our political institutions' capability to produce laws. In particular, we should be suspicious of claims that regulatory actions will enhance economic efficiency. One important role for public policy, aside from preventing fraud and the use of force, is to disrupt rent seeking behavior. This does not mean there is no room for policy; it does mean that there is much less room than appears from much of the legal and economic literature.

In the next section, I describe the public utility regulatory problem which I will use as the basis of the analysis. In the following sections I examine each of the three assumptions described above and show why they are false. In the final section, I suggest an alternative approach.

I. NATURAL MONOPOLY AND PUBLIC UTILITIES

The story of public utility regulation encompasses all three of the assumptions described above. It is, of course, a complex story with a rich institutional context, which I can only sketch here. The outline of this history presented attempts to tell enough of the story to enable evaluation of my claims about regulatory policy.⁶

6. I attempt to outline the history of regulatory efforts, relevant legal doctrines, and intellectual debates over regulation. To do so in a concise fashion requires some sacrifice in comprehensiveness of footnotes, so I have selected sources based on their importance and representativeness rather than burden the reader (and editors) with exhaustive and repetitive citations. A brief justification of my selections will assist the reader in evaluating my choices.

For the pre-World War II period, I rely primarily upon MARTIN G. GLAESER, *OUTLINES OF PUBLIC UTILITY ECONOMICS* (1927). Glaeser's book is part of a series issued under the editorship of Richard Ely. The series generally, and Glaeser's work in particular, reflects the influence of the Wisconsin-institutional school of economics identified with John R. Commons.

For the period between 1945 and 1970, I rely heavily upon the work of James C. Bonbright, particularly his 1961 treatise *PRINCIPLES OF PUBLIC UTILITY RATES* [hereinafter *BONBRIGHT*]. Bonbright was "one of the legendary pioneers in the field of public-utility economics" and "addressed virtually all of the problems that confronted policymakers from the early 1920s to the mid-1960s." Harry M. Trebing, *James C. Bonbright's Contributions to Public-Utility Economics and Regulation*, in *CURRENT ISSUES IN PUBLIC-UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT 3* (Albert L. Danielsen & David R. Kamerschen eds., 1983). Bonbright was both an analyst and an important player in regulatory debates, heavily influencing the Public Utility Holding Company Act of 1935. *See id.* Like Glaeser, Bonbright came out of the Wisconsin-Commons-Institutionalist school, although Bonbright's work focused more on marginal cost pricing than did Glaeser's. *See id.* at 4.

For the 1970s and 1980s, I rely heavily on the work of Professor Michael Crew and a series of conference volumes he edited. These conferences involved many of the major academic figures who focused on utility issues. A 1988 literature survey cited Crew's edited volumes, as well as the Danielsen and Kamerschen edited volumes, as important sources of primary source material. *See* SANFORD V. BERG & JOHN TSCHIRHART, *NATURAL MONOPOLY REGULATION* x

For over a century governments in the United States and elsewhere subjected a shifting set of industries, ranging from grain elevators to energy to transportation, to various forms of social control as public utilities.⁷ For these industries

the primary guarantor of acceptable performance is *conceived* to be (whatever it is in truth) not competition or self-restraint but direct government controls—over entry (and in many instances exit), *and* price, *and* conditions of service—exercised by administrative commissions constituted for this specific purpose.⁸

Although there have been a wide variety of rationales for social control of these industries,⁹ the dominant explanation has been that these industries are “natural monopolies.”¹⁰

(1988). In addition, I used Alfred Kahn’s *ECONOMICS OF REGULATION*, published in 1970, as a source for the 1970s because Kahn’s influential role as regulator and theorist made his book of greater prospective importance than its publication date suggests. Finally, I used STEPHEN BROWN & DAVID SIBLEY, *THE THEORY OF PUBLIC UTILITY PRICING* (1986), a comprehensive survey of utility pricing theory in the 1980s.

More general works have also proven invaluable. George Priest’s survey of the intellectual history of theories of regulation was a welcome guide to the economic literature on regulation generally, a literature which often used utility issues as examples. George L. Priest, *The Origins of Utility Regulation and the “Theories of Regulation” Debate*, 36 *J.L. & ECON.* 289 (1993). Priest’s article allows me to considerably compress my own discussion of the intellectual history of utility regulation.

Finally, the legal analysis draws heavily upon the many insightful works of Richard Pierce. Pierce’s analysis of changes in regulatory law is not only influential and the most complete but also among the most accessible to those uninitiated in the intricacies of such mysteries as FERC orders. Teaching from his text on regulatory law assisted greatly in refining a number of these points. RICHARD J. PIERCE, JR., *ECONOMIC REGULATION: CASES AND MATERIALS* (1994).

7. In the United States these industries have been largely structured as regulated, privately owned corporations; elsewhere they have been mostly structured as publicly owned and controlled firms.

8. 1 ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 10 (Massachusetts Institute of Technology 1988) (1970); *see also* BONBRIGHT, *supra* note 6, at 10 ([“i]t is the general consensus of economists that the primary, even though not the sole, distinguishing feature of a public utility enterprise is to be found in a technology of production and transmission which almost inevitably leads to a complete or partial monopoly of the market for the service.”).

9. There are many other rationales as well: destructive competition, information problems, and the existence of externalities, to name but a few.

10. *See* KEITH M. HOWE & EUGENE F. RASMUSSEN, *PUBLIC UTILITY ECONOMICS AND FINANCE* 1-2, 19 (1982) (“public utilities are frequently natural monopolies, and vice versa,” and natural monopoly status is “a chief economic justification for extensive regulation”); *see also* JOHN H. GRAY & JACK LEVIN, *THE VALUATION AND REGULATION OF PUBLIC UTILITIES* 5 (1933) (regulation of utilities “has its roots in the necessity of protecting the users of their essential services from monopolistic exploitation.”). Of course under the Supreme Court’s rather elastic interpretation of the Constitution in this area, almost any industry can be regulated, subject only to due process. *See* *Nebbia v. New York*, 291 U.S. 502, 536-37 (1934) (“there can be no doubt that upon proper occasion and by appropriate measures the state may regulated a business in any of its aspects, including the prices to be charged for the products or commodities it sells.”). Simply labeling something a “natural monopoly” obviously ought not to end the discussion, even if it sometimes does. As Kahn notes, “the interesting economic questions” are not whether industries are “natural monopolies” but things like

This rationale has posed to regulators the problem of capturing the benefits of a natural monopoly (lowered costs with a single supplier) without incurring the costs a monopolist would impose upon the economy generally and consumers in particular (monopoly profits). The conceptually simple—but difficult to implement—solution proffered by economists is to operate the utility's production side as a monopoly but force the utility to sell its product at an "efficient" price.¹¹

The importance of natural monopolies reaches well beyond the public utility context. George Priest's recent review of the "theories of regulation" debate, for example, notes that industries that are natural monopolies

have traditionally provided the strongest public interest justification for regulation. In addition to any noneconomic goals, regulation seemingly can achieve the powerful economic goal of constraining monopoly pricing toward marginal cost in order to enhance social welfare. Indeed, this social welfare justification is so widely ac-

What makes them so? Is natural monopoly synonymous with long-run decreasing cost tendencies? If so, what about the public utilities such as the supply of water, that seem to be characterized by long-run tendencies to increasing costs? Does a tendency to increasing costs? Does a tendency for costs to decline over time constitute an evidence of natural monopoly? What parts of these industries are natural monopolies, what parts not? Might they be natural monopolies in some static, efficiency sense but "unnatural" ones in terms of the prerequisites for innovation and growth? And how then do we handle, in theory and in practice, the growing competition between "natural monopolists" . . . ? And how do we cope with the historical fact that the prime historic exemplars of the extension of public utility regulation in the United States in the last quarter of the nineteenth century—railroads and grain elevators—were not really natural monopolies?

KAHN, *supra* note 8, at 12.

11. See BONBRIGHT, *supra* note 6, at 37 (arguing "that the basic standards of measurable rates should be primarily standards of functional efficiency"); see also *Northern Natural Gas Co. v. Federal Power Commission*, 399 F.2d 953, 959 (D.C. Cir. 1968) (noting that regulators' goal is to replicate a competitive marketplace). However, social control is rarely limited to a single objective. Even with a benign view of regulators' objectives, it is easy to see how powerful the temptation is to use the levers of power to correct additional market failures. For example, reduction of environmental externalities (shifting away from burning "dirty" coal), redistribution (subsidization of small users), and enhanced national security (energy independence) all can be accomplished, at least in theory, through utility regulation.

The institutions selected to produce this outcome vary almost from country to country, suggesting "the unsettled nature of the debate on how society can best balance the costs and benefits of monopoly regulation." Bridger M. Mitchell & Paul R. Kleindorfer, *Public Enterprise and Regulation in International Perspective*, in *REGULATED INDUSTRIES AND PUBLIC ENTERPRISE 3* (Bridger M. Mitchell & Paul R. Kleindorfer eds., 1980). Regulators continually express confidence in their ability to improve on market outcomes. A former high level Federal Communications Commission ("FCC") regulator, for example, described regulation's role as being "designed to operate more efficiently and effectively than competition. It can pinpoint specific problems or issues and cure them." Asher H. Ende, *Administrative Reform and the Regulatory Process*, in *PUBLIC UTILITY REGULATION: CHANGE AND SCOPE 72-73* (Werner Sichel & Thomas G. Gies eds., 1975). However, even a proponent of utility regulation like Bonbright conceded that utility rate making "is almost unique in the extreme vagueness of its verbal norm and in the highly indirect and unprovable relationship between changes in utility rate-making policies and effects on social welfare, however defined." BONBRIGHT, *supra* note 6, at 27 (footnote omitted).

cepted that the natural monopoly case is viewed as the prototypical context for government regulation. Virtually all public interest justifications for regulation in industries not characterized by natural monopoly consist of claims that the alleged market imperfection in the particular industry will generate an effect resembling natural monopoly.¹²

If the three factual assertions listed above are false for the case of natural monopoly, then, they also are likely to be false for those market failures which are derived from natural monopoly-like claims.

A. *The Problem and Opportunity of "Natural Monopoly"*

The Merchants' Association of New York City memorialized the New York state legislature in 1905 with a litany of complaints about the monopolization of gas and electric service in New York City: Monopolies prevented competition,¹³ charged excessive prices,¹⁴ overcapitalized,¹⁵ used city property without just compensation,¹⁶ underpaid taxes,¹⁷ dominated city government,¹⁸ and delivered poor quality service.¹⁹ As a result, the merchants concluded,

[i]n whatever guise, however masked, the monster monopoly in control of lights and subways in Manhattan has thus far succeeded in frustrating all efforts of the city and of private consumers to escape from its exactions. . . . If the conditions herein portrayed exist—if they are even partially true—the people of the City of New York and the city itself, thus preyed upon and distressed, are, upon the plainest principles, entitled to relief from the Legislature of the State.²⁰

In the years since 1905, the language has changed but the complaints remain the same—monopolies in the utility industry and elsewhere act like, well, monopolies.²¹

12. Priest, *supra* note 6, at 295-96.

13. See The Merchant's Association of New York, FOR AN INVESTIGATION OF THE CONDITIONS SURROUNDING GAS AND ELECTRIC LIGHTING IN THE CITY OF NEW YORK (Jan. 11, 1905), at 3.

14. See *id.* at 4 (reporting that lamp prices in Manhattan more than 160% of prices in cities with competitive supplies).

15. See *id.* at 4-5 (companies "immensely overcapitalized").

16. See *id.* at 14.

17. See *id.*

18. See *id.* at 11-12.

19. See *id.* at 5-6 (claiming that gas provided by Brooklyn Union Gas Company has an effect on consumers' eyes "pernicious in the extreme. The light appears to decrease in an inverse ratio to the size of the combination and the amount of its profits.").

20. *Id.* at 14-15.

21. See, e.g., Clyde Lyndon King, *The Need for Regulation*, in THE REGULATION OF MUNICIPAL UTILITIES 3, 12-22 (Clyde Lyndon King ed., 1912) (describing long list of ills caused by unregulated utilities ranging from high rates to political corruption) [hereinafter King, *The Need for Regulation*]. This view of monopolies in general, and natural monopolies in particular, was not universally held even among economists. Thomas Hazlett concludes his survey of nineteenth-century economic analysis of monopolies with the observation that

At the same time that the victims of monopolies were calling out for legal remedies, many economists and regulators saw natural monopolies not just as villains but also as opportunities. Martin Glaeser's 753-page "outline" of public utility economics published in 1927 typifies the pre-World War II economic literature on public utilities in stating that

[w]hile most discussions of monopoly approach the problem from the point of view of the monopolistic control over price, it is important to note that monopoly is also a way of organizing production, which has its own peculiar advantages. This is our chief interest in it from the point of view of public utility economics. It is, of course, important to understand the theory of monopoly price so that we may know why a monopolist is in a position to increase his gains over and above what would come to him if he were required to sell in competition with other equally efficient producers. This provides the economic reason why the monopolists' power over the prices which he may charge consumers must be limited by regulation. But it is equally important to understand the advantages of monopolistic organization of an industry which operates as a public utility and is thus limited by law in its power over prices. In the latter case, monopoly operates as a beneficent principle of organization which makes possible the conservation of productive capacity, the limitation of profit and the systematizing of rates.²²

The regulation of natural monopolies offered a seemingly irresistible opportunity to gain enormous social benefits. The capture of the production efficiencies of the natural monopoly industries, however defined, would produce a surplus that regulators could then simply distribute or expend on other social needs.²³ Indeed, the problem

there were at least two distinct schools of thought in the early days of large-scale industry. One accepted the newer market forces simply as empirical amendments to the traditional Ricardian view of competition as the omnipresent and beneficent regulator of economic activity. Another strain soon developed that opposed and eclipsed this view. This latter school discarded the universality of the competitive assumption, focusing on instances in which competition was thought to be too weak a regulator to maximize consumer welfare. In the United States, this view would materialize from two premises: that large corporations were, as concentrations of great wealth, immoral in a strongly normative sense; and, in a positive framework, that in particular natural monopoly markets, competition was not an efficient but a wasteful allocator of resources.

Thomas Hazlett, *The Curious Evolution of Natural Monopoly Theory*, in *UNNATURAL MONOPOLIES: THE CASE FOR DEREGULATING PUBLIC UTILITIES* 6-7 (Robert W. Poole, Jr. ed., 1985) (footnote omitted).

22. GLAESER, *supra* note 6, at 634.

23. The desirability of such an outcome seemed so clear to some that as late as 1982 a survey of regulatory reform and public utilities included a chapter by a distinguished economist arguing competition in the U.S. telecommunications market was impossible because of the natural monopoly in the "core, switched telecommunications network." Almarin Phillips, *The Impossibility of Competition in Telecommunications: Public Policy Gone Awry*, in *REGULATORY REFORM AND PUBLIC UTILITIES* 30 (Michael A. Crew ed., 1982).

seemed so simple that in his 1927 text, Glaeser worried that all the intellectual challenge had gone out of regulatory matters.²⁴ Implementing the policies suggested by economic analysis, however, proved more difficult. Actually setting rates required enormous amounts of data and immense effort focused on cost-analysis. “[I]n the roaring twenties, the rate engineers of the electric-utility industry were busy grinding out articles about allocating capacity costs, gauging peak responsibility, and sharing diversity benefits.”²⁵

Between World War II and 1970, aptly termed “an era of stability”²⁶ for both the regulators and regulated in the public utility field, the economic approach to questions of “natural monopoly” continued to center on a “technical engineering framework” built around declining average cost.²⁷ One author summed up state regulators’ task before the 1970s as “essentially one of distributing among rate payers the benefits of the progressively higher efficiencies achieved by utility managers. Not bad work if you can get it.”²⁸ Implementation became increasingly complex as the advent of computers in the 1950s allowed utility managers “to arrange a utility’s costs in infinite patterns of increasing complexity” producing “[t]he two-pound cost-of-service study,” which served “as the empirical, often impressive, and sometimes opaque basis for rate design.”²⁹ Nevertheless,

[r]ate increases during these years were moderate, offset by rate decreases attributed in large part to technological improvements which resulted in economies of scale that produced generally lower unit costs. No customer suffered from inadequate supply of [natural] gas or electrical energy. Capacity reserves were good. A new generating station could be planned, approved by regulatory au-

24. See GLAESER, *supra* note 6, at 752. “Commissions no longer bear aspects of novelty; they have, accordingly, lost much of the original glamour which attended their establishment.” *Id.*

25. Robert G. Uhler, *Electric-Utility Pricing Issues: Old and New*, in CURRENT ISSUES IN PUBLIC-UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT, *supra* note 6, at 77-78.

26. Werner Sichel & Thomas G. Gies, *Introduction to PUBLIC UTILITY REGULATION: CHANGE AND SCOPE*, *supra* note 11, at xiii [hereinafter Sichel & Gies, *Introduction*]. Despite the greater volume of data, however, a 1983 summary concluded that “the basic logic of costing for rate making had not changed much in some thirty-five years.” Uhler, *supra* note 25, at 78. Bonbright, similarly, concluded his 1961 text’s overview of rate-level determinations by noting that all jurisdictions applied essentially the same principles regardless of the labels and differing only in administration. See BONBRIGHT, *supra* note 6, at 282-83.

27. Hazlett, *supra* note 21, at 9.

28. The author is Howard Perry, quoted in Charles F. Phillips, Jr., *The Changing Environment of Public Utility Regulation: An Overview*, in CURRENT ISSUES IN PUBLIC-UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT, *supra* note 6, at 34 [hereinafter Charles F. Phillips, Jr., *The Changing Environment*].

29. Uhler, *supra* note 25, at 78.

thority, financed, and constructed without delay and generally with public approbation.³⁰

Economic analysis of the "natural monopoly problem" also continued to view the "class of firms in similar product markets as homogeneous."³¹ This assumption played an important role in the natural monopoly argument for regulation because, as Thomas Hazlett points out,

the entire rationale for competition's being an efficient regulator of economic activity points to its role as a selection process sorting differentiated firms. It is difficult indeed to construct a viable rationale for competitive behavior, and the duplicative effort (here by definition) it expends, should the assumption that firms are identical be consistently employed. It is not surprising, therefore, that the natural monopoly model has, on these terms, successfully convinced scholars of the waste of market rivalry for nearly a century.³²

The post-war stability in regulatory theory allowed utility-regulation theorists like James C. Bonbright to take a broad view of utility regulation, in which rates served four broad social purposes: "(1) the producer-motivation or capital attraction function; (2) the efficiency-incentive function; (3) the demand-control or consumer-rationing function; and (4) the income-distributive function."³³ Although these functions were in "partial conflict," Bonbright thought "a large measure of harmony" among them was possible if regulators based rates on cost,³⁴ justifying starting with a "rebuttable presumption in favor of so-called 'business principles' of rate making."³⁵ Such rates "

may be designed, at one and the same time, (a) to make the enterprise self-supporting and to attract required new investment, (b) to restrict demand, and (c) to secure a return flow of cash consistent with the income-distributive function of prices Even the efficiency-incentive function of prices can be given some recognition, through flexible features in regulation"³⁶

Any conflicts between these functions could be resolved by "wise compromise."³⁷ Indeed, while Bonbright made an occasional comment on purists who advocated marginal cost pricing even to the point

30. Sichel & Gies, *Introduction*, *supra* note 26, at xiii.

31. Hazlett, *supra* note 21, at 9.

32. *Id.* at 10.

33. BONBRIGHT, *supra* note 6, at 49.

34. *Id.* at 63 (emphasis omitted).

35. *Id.* at 120 (emphasis omitted).

36. *Id.* at 63.

37. *Id.* In rate design, Bonbright saw economic criteria as more important than fairness, although he hastened to caution that keeping fairness issues "in their place" did not mean "that they should be cavalierly dismissed or even belittled." *Id.* at 123. Bonbright remained committed to a vision of utility regulation firmly rooted in cost rather than necessity because of "a conviction that those services now called public utility services belong in that great class of eco-

of subsidizing public utilities,³⁸ his main comparison throughout his text was with nationalized or socialized utilities.³⁹

While the analysis of public utility economics and regulation generally reflected this "stability," there were important intellectual milestones in analysis of regulation during this period. George Stigler and Claire Friedland's 1962 article arguing that utility regulation had no effect on electricity prices,⁴⁰ Harold Demsetz' 1968 article arguing that natural monopoly was insufficient to justify regulation,⁴¹ George Stigler's 1971 economic theory of regulation,⁴² and Richard Posner's 1974 survey of regulatory theory⁴³ all raised fundamental questions about utility regulation separate from second-best issues. These questions ultimately contributed to later deregulation efforts. Much of this work reached back to the earlier tradition of a Schumpeterian view of "competition for the field."⁴⁴ These articles and others from the same period also subjected utility economics to sustained analysis by non-specialists for the first time.

Moreover, in the late 1960s and 1970s, utility regulation became more controversial and policy debates became livelier as a result of a number of factors, including energy price fluctuations and growing non-price regulatory burdens on utilities, such as environmental and nuclear regulations. Regulators awoke from the comparative calm of the 1945-70 period determined to show that, in the words of one state regulator, "regulation in the public interest involves being more than a passive, silent partner to the utilities, acquiescing in company decisions after the fact."⁴⁵ A new breed of intervenors began to appear in rate making proceedings, arguing that construction and pricing decisions should attempt to force companies to internalize environment

conomic products including both commodities and services, than can be best offered for sale instead of being supplied without charge." *Id.* at 119.

38. *See id.* at 65.

39. *See id.* at 67-68 (comparing Canadian, British, and U.S. publicly owned utilities' principles of ratemaking with investor-owned utilities).

40. *See* George J. Stigler & Claire Friedland, *What Can Regulators Regulate? The Case of Electricity*, 5 J.L. & ECON. 1 (1962).

41. *See* Harold Demsetz, *Why Regulate Utilities?*, 11 J.L. & ECON. 55 (1968).

42. George J. Stigler, *The theory of economic regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971).

43. Richard A. Posner, *Theories of economic regulation*, 5 BELL J. ECON. & MGMT. SCI. 335 (1974).

44. The phrase was coined by nineteenth century economist Edwin Chadwick, and is quoted in Hazlett, *supra* note 21, at 7.

45. William G. Rosenberg, *Federal Financing of Electric Utilities in the Wake of Con Ed*, in PUBLIC UTILITY REGULATION: CHANGE AND SCOPE, *supra* note 11, at 62.

costs.⁴⁶ As a result, the 1970s became a decade “of strain, change, and experimentation for the entire public-utility sector.”⁴⁷ Regulators underwent a “painful adaptation” to a more adversarial and technically demanding environment.⁴⁸ Utility stocks’ declining performance relative to other industrial stocks in the late 1970s and early 1980s—a gap in performance Alfred Kahn called “disturbingly large”⁴⁹—delivered a devastating market verdict on regulation. As Kahn noted, “[t]here is no escaping the inference that [deteriorating utility performance] represents a profound failure of the institution of regulation itself.”⁵⁰ Just as he had throughout the 1970s, Kahn advocated forcing utilities “to offer their subscribers the widest feasible choice of price/quality options—which means making rates and rate structures as finely cost differentiated as possible.”⁵¹

Stephen Brown and David Sibley’s text offers a clear summary of conventional utility economics into the mid-1980s.⁵² Kahn’s basic structure remained, modified by additional partial-equilibrium insights into specific pricing methods. Brown and Sibley summarized “the main concepts” of their theme of “efficient pricing by the regulated firm for its services” as

- Efficient prices are those which lead to the highest possible level of welfare, defined as the sum of consumer surplus and producer surplus.
- Moving from some given set of prices to efficient prices makes it possible for the “winners” from the price change to compensate the “losers” and yet still remain better off than before the change. Thus, potential economic welfare rises for all individuals.
- If the regulated firm must break even out of its own sales revenues, potential welfare of society is lower than if the regulated firm were not required to break even.⁵³

46. See Charles F. Phillips, Jr., *The Changing Environment*, *supra* note 28, at 26; see also BARBARA R. BARKOVICH, REGULATORY INTERVENTIONISM IN THE UTILITY INDUSTRY 15-16 (1989) (describing how environmental groups challenged rate increases, construction of new utility facilities, and operation of existing facilities).

47. Charles F. Phillips, Jr., *The Changing Environment*, *supra* note 28, at 28.

48. *Id.* at 34 (again, quoting Howard Perry).

49. Alfred E. Kahn, *Utility Regulation Revisited*, in CURRENT ISSUES IN PUBLIC UTILITY REGULATION: ESSAYS IN HONOR OF JAMES C. BONBRIGHT, *supra* note 6, at 101, 104 [hereinafter Kahn, *Utility Regulation Revisited*]. From 1953-73, utility stocks and industrial stocks performed comparably. See *id.*

50. *Id.* at 104.

51. *Id.* at 115.

52. Similar analyses are present in ROGER SHERMAN, THE REGULATION OF MONOPOLY 124 (1989) and BERG & TSCHIRHART, *supra* note 6.

53. BROWN & SIBLEY, *supra* note 6, at 26.

At the same time that regulators were struggling with the dramatically changed environment, regulatory theory was evolving as well. Not only were the Chicago insights into contestable markets and a deeper understanding of competition beginning to be integrated into the analysis, but economists began to rethink the idea of natural monopoly itself. Thus, for example, Victor Goldberg suggested in 1976 that regulation was necessary to encourage investment and to reap scale economies, rather than because market forces would inevitably lead to a monopoly.⁵⁴ As Thomas Hazlett noted, Goldberg's argument implies "precisely contrary to what earlier advocates of public utility regulation advanced as a defense."⁵⁵ Indeed,

[w]hereas the economic analysis once suggested monopoly franchising and public regulation as an antidote to overinvestment and wasteful duplication, it now recommends it as beneficial in guaranteeing specific capital investments where laissez-faire would lead to too little entry. The model may have entirely reversed its rationale, yet the policy recommendation lives on: political agency is the solution to the natural monopoly problem.⁵⁶

Regulators and analysts began moving toward two related responses. First, regulation itself began to be recast. In recognition of the many distortions introduced by cost of service regulation and the information problems in its implementation, regulators began to adopt "price-cap" regulation.⁵⁷ Under the *RPI-X* form, price-cap regulation allowed utilities a rate of increase in their prices based on a formula (*RPI*) incorporating factors such as fuel and labor cost increases over a base price.⁵⁸ Prices were allowed to rise by less than the full amount (the *X*) to create incentives for the utility to operate efficiently. If the utility discovered efficiencies which reduced its costs further, it was allowed to keep the difference (at least until the next adjustment of the formula); if it operated less efficiently, its shareholders paid the penalty. While solving some of the regulatory information and incentive problems, price-cap regulation did not solve them

54. See Victor P. Goldberg, *Regulation and administered contracts*, 7 BELL J. ECON. & MGMT. SCI. 434 (1976); see also Hazlett, *supra* note 21, at 20 (discussing Goldberg's writings on this topic).

55. Hazlett, *supra* note 21, at 21.

56. *Id.* at 22.

57. After its adoption by telecommunications regulators in Britain in 1984, price level regulation quickly spread to the United States. See Richard J. Pierce, Jr., *Price Level Regulation Plus Inflation is Not an Attractive Alternative to Profit Level Regulation*, 84 Nw. U. L. REV. 665, 665-66 (1990) (reviewing JORDAN JAY HILLMAN & RONALD BRAEUTIGAM, *PRICE LEVEL REGULATION FOR DIVERSIFIED PUBLIC UTILITIES* (1989)) [hereinafter Pierce, *Price Level Regulation*].

58. See JORDAN JAY HILLMAN & RONALD BRAEUTIGAM, *PRICE LEVEL REGULATION FOR DIVERSIFIED PUBLIC UTILITIES* (1989) for a description of *RPI-X* style regulation.

all—for example, the initial price still had to be calculated, the RPI formula designed, and a value for X chosen.⁵⁹

The second response was to take Demsetz' advice seriously and push as many regulated industries as possible into competitive forms.⁶⁰ Electricity, for example, could be supplied by a competitive generation sector and delivered over a price-cap regulated, monopoly transmission network. The design of the competitive sector, of course, raised important questions—would a single buyer purchase electricity on a spot market and then allocate it to users at average cost or would “retail wheeling” allow individual users to negotiate different types of supply contracts directly with generators? Because the design of the system has, at the least, profound distributional implications, partial deregulation simply shifts many questions to a different stage in regulatory design. Regardless of how the details are ultimately structured, many “natural monopolies” are on the verge of fundamental restructurings which call into question the entire natural monopoly regulatory structure. The electricity industry, for example, is already beginning a new era under the federal Energy Policy Act of 1992⁶¹ which some analysts believe has undercut much of the post-New Deal regulatory structure.⁶²

Looking back over the history of natural monopoly arguments for regulation, two things stand out. First, the underlying rationale for

59. More completely, successful price level regulation requires

(a) an initial price level somewhere near the economically efficient price; (b) initial price relationships somewhere near efficient price relationships; (c) a price adjustment mechanism that provides a tolerably accurate surrogate for uncontrollable changes in firm costs; (d) a price adjustment mechanism that reflects uncontrollable changes in demand factors; (e) a price adjustment mechanism that includes a tolerably accurate surrogate for the firm's ability to enhance its productive efficiency and that divides expected productivity increases equitably between the firm and consumers; (f) price ceilings sufficiently aggregated to permit economically efficient price discrimination but sufficiently disaggregated to protect consumers with the most inelastic demand; and (g) avoidance of use or threatened use of profit level data for any regulatory purpose.

Pierce, *Price Level Regulation*, *supra* note 57, at 668 (citations omitted).

60. The scope of the presumed “natural monopoly” in public utilities has steadily shrunk over time, in part because technology offers alternatives previously unimaginable. For example, many homes in the United States have at least three wires entering—cable television, telephone, and electric service. All three of these systems are capable of offering combined services, albeit with sometimes expensive investment in converting infrastructure. Combined with wireless telephony, digital satellite systems, and appliances which make use of multiple energy sources, energy, telecommunications, and video services are all now subject to at least potential competition even on the local loop. At the least, however, the transition to a free market in all these areas is likely to take time if only because those interests which benefit from the current system of regulation can be expected to resist deregulation. At a minimum, for a potentially lengthy transition period regulators will continue to intervene in utility operation.

61. Pub. L. No. 102-486, 106 Stat. 2776 (codified in scattered sections of 42 U.S.C.).

62. See, e.g., *When Sparks Fly*, THE ECONOMIST, Feb. 20, 1993, at 68, 69 (citing Glenn Watley of the consulting firm Arthur D. Little).

regulating natural monopolies underwent a 180-degree change in direction with little or no impact on the policies regulators attempted to implement. Second, the technical hubris of regulators in asserting their ability to translate the concept of an ideal regulated “natural monopoly” into actual regulation seems only to have grown, despite the ever-increasing catalog of problems with regulatory implementation.

B. *The Technical Solutions*

As noted earlier, the solution to the “problem” of public utilities is conceptually simple: allow the utility to operate as a monopoly, and use regulatory means to fix the prices the utility can charge (preventing it from charging monopoly prices), set quality standards (preventing it from reducing quality), and require service to all who demand it (preventing reduction in quantity). Judge Richard Cudahy of the Seventh Circuit described rate regulation as

a relatively simple and self-evidently fair business before the economists got their hands on it and for some unknown reason tried to make it efficient. . . . The old type rate regulation was based on wonderfully reassuring fictions, such as the idea that you could allocate rate base to classes of customers.⁶³

However, the economists did get their hands on it and as a 1980s text on regulation warned students, “[a]lthough the [rate of return] formula itself is rather simple, the calculations, estimations, and decisions involved in obtaining its components are complex, and the criteria guiding determination of each component have a long and rich history.”⁶⁴

Regulators have adopted two main methods of simultaneously restraining the bad aspects of monopoly structure and exploiting its benefits. The first method, rate of return regulation, dominated utility ratemaking until recently. The second, price-cap regulation, has become increasingly popular with regulators in recent years and is often combined with restructuring industries to allow partial deregulation. Even as alternatives to rate of return regulation become more common, however, rate of return regulation continues to play an important role and so I will focus on it rather than price cap regulation.⁶⁵

63. AMERICAN BAR ASS'N, PROCEEDINGS OF THE CONFERENCE ON COMPETITION AND REGULATION—COMPATIBLE BEDFELLOWS? 8 (Abigail Porter & Penelope S. Ferreira eds., 1992).

64. HOWE & RASMUSSEN, *supra* note 10, at 65.

65. See, e.g., HOWARD E. THOMPSON, REGULATORY FINANCE: FINANCIAL FOUNDATION OF RATE OF RETURN REGULATION xi (1991) (“rate of return [regulation] is not dead. It will play a key role in whatever the new structure of the regulated sector.”).

In rate of return regulation, utility price regulation begins with a deceptively simple formula:

$$RR = O + T + (V - D)R$$

where RR is the firm's total allowed revenue, O is the firm's operating expenses, T is the annual taxes, R is the rate of return the firm is allowed on its rate base, V is the value of the utility's plant, and D is the depreciation allowable return.⁶⁶ Once RR is calculated, the utility is then allowed to price its product accordingly. In the unrealistic case of a utility with a single product, price would simply be RR/N , where N is the total number of units sold. However, all the right hand side components are problematic.

Inclusion of operating expenses introduces an immediate bias toward overcompensation of factors of production. Labor costs, for example, in price-regulated industries are well established to be inflated because the firms' managers are able to pass all (or at least most) of the inflated cost on to customers. Since traditional utility price regulation more or less guaranteed a fixed return on capital, there was little or no incentive to cut costs. Taxes also distort utility pricing in numerous ways. To take but one example, allowing utilities accelerated depreciation on investment tax credits can lead to charges to consumers for taxes larger than the actual taxes paid by the utility.⁶⁷ Choosing the rate of return itself is fraught with difficulties. Because regulators must rely on accounting rates of return rather than economic rates of return, any connection between the regulatory rate of return and the appropriate rate of return is purely accidental.⁶⁸ Other problems include the Averch-Johnson bias toward overcapitalization,⁶⁹ a reverse Averch-Johnson bias toward undercapitalization caused by regulatory lags,⁷⁰ other costs and biases introduced by regulatory lags,⁷¹ "perverse incentives" for the regulated firm to expand into other industries,⁷² biasing of rate structures to maximize political support for

66. See HOWE & RASMUSSEN, *supra* note 10, at 64.

67. See *id.* at 86-87.

68. See Franklin M. Fisher & John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73 AM. ECON. REV. 82, 83 (1983).

69. See Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962).

70. See Elizabeth E. Bailey & John C. Malone, *Resource allocation and the regulated firm*, 1 BELL J. ECON. & MGMT SCI. 129 (1970).

71. See Ingo Vogelsang, *The Design of Regulatory Rules*, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE, *supra* note 11, at 11-12, 21-23; see also Ende, *supra* note 11, at 80 (noting "the time lag between initiation [of regulating proceedings] and conclusion has become almost unbelievably long" because of "natural bureaucratic encrustations" and statutory complexity).

72. Roger Sherman & Michael L. Visscher, *Rate-of-Return Regulation and Price Structures*, in PROBLEMS IN PUBLIC UTILITY ECONOMICS AND REGULATION 119 (Michael A. Crew ed.,

regulators,⁷³ and lack of knowledge concerning critical values necessary to compute first-best outcomes under the framework outlined above.⁷⁴ In sum, rate of return regulation has numerous well-documented flaws even under a first-best analysis. Many of these have been known since the beginning of the modern regulatory era.⁷⁵ Even more importantly for a second-best analysis, these flaws produce biases in every conceivable direction. Whether there is a net bias toward overcapitalization or undercapitalization, for example, is impossible to determine based on theory alone.

The problem of regulation is much deeper, however. For many years, most attention focused on whether regulation was possible and, once that was settled, on the rate of return allowed. The structure of utility pricing was often ignored.⁷⁶ When utility regulators began to pay more attention to rate design in the 1970s, they confronted an even more daunting informational task.⁷⁷ By the end of the 1970s “as

1979); see also Walter Adams, *Can Regulation Curb Corporate Power?*, in PUBLIC UTILITY REGULATION: CHANGE AND SCOPE, *supra* note 11, at 20 (criticizing holding companies as means to escape regulatory control).

73. See Stigler & Friedland, *supra* note 40, at 8.

74. See, e.g., Robert C. Lind, *Reassessing the Government's Discount Rate Policy in Light of New Theory and Data in a World Economy with a High Degree of Capital Mobility*, 18 J. ENVTL. ECON. & MGMT. 5-8 (1990); Barbara B. Murray, *Irreversibility of Pollution and Depreciation Policies*, in PUBLIC UTILITY REGULATION: CHANGE AND SCOPE, *supra* note 11, at 94 (lack of knowledge about irreversibility of pollution prevents accurate choice of depreciation rates for pollution control equipment).

75. See, e.g., CHARLES STILLMAN MORGAN, REGULATION AND THE MANAGEMENT OF PUBLIC UTILITIES 118-306 (1923) (providing a thorough non-mathematical account of numerous incentive problems in regulated utilities).

76. See Sherman & Visscher, *supra* note 72, at 119.

77. According to a utility engineer, his company's analytic process in evaluating rate structure for different sizes of customers requires several steps. See John Mansees, *The Structure of Utility Rates*, in PUBLIC UTILITY REGULATION: CHANGE AND SCOPE, *supra* note 11, at 54-58. First, each class of customer had the costs of metering, billing, and distribution assessed. See *id.* at 55. Next “demand costs” (those “associated with plant”) were calculated. *Id.* Finally, “energy costs,” the variable costs of providing energy were calculated. *Id.* Even after costs were properly allocated across these three categories, regulators needed to know more “to tell how much to charge the various sized customers.” *Id.* at 56. An extensive testing program was needed “to determine customer characteristics to allow us to relate the demand portion of the costs to the customer characteristics.” *Id.* Regulators needed to know “coincidence factors, diversity factors, local factors, demands, and their consumption.” *Id.*; see also Don Charles Uthus & Diane McIntyre, *Public Utility Rate Regulation and the Iowa Administrative Procedure Act*, 26 DRAKE L. REV. 483, 494-95 (1977) (describing typical state proceeding, which required analysis involving extensive procedures, producing thousand of pages of record and multiple administrative and judicial proceedings). Indeed, the engineer's account tells us quite a bit about regulatory capability—he related the details to defend utility pricing from the charge that it was “promotional,” and produced excess demand. Mansees, *supra* note 77, at 53-54, 57. The engineer argued that rates which appeared “promotional” might actually be efficient two-part pricing rules. Further, he noted that the rate making for the “very large residential customer group” was complicated by the diversity of customers, a diversity partially attributable to a legal requirement that religious customers (churches and affiliated organizations) be included in that class of customer (presumably to provide them with lower rates). *Id.* at 56-57; see also BROWN & SIBLEY,

much as one-half or more of a typical rate case" concerned rate design issues.⁷⁸ The capacity of regulatory bodies to perform this analysis sufficiently well to satisfy a first-best policy is questionable; their capacity to perform it well enough to handle the more complex second-best analysis is even more so.

Suppose that a regulator has solved the problems described above and successfully determined the information needed to accurately determine the needed revenue. The regulator now must formulate pricing for a utility's products and so must confront the problem of defining the product.⁷⁹ Even under our optimistic assumption that the regulator knows and is able to implement a rate design which will achieve the "correct" total revenue, it must allocate that revenue across the different products the utility provides. Economists' steady chorus of "marginal cost pricing," in recent years largely following Alfred Kahn's lead,⁸⁰ has been influential in pulling regulators toward that policy. In a world without other distortions, marginal cost pricing makes sound theoretical economic sense.⁸¹ In a world filled with im-

supra note 6, at 60 (comparing informational demands of Ramsey pricing and fully distributed cost ("FDC") pricing).

78. Charles F. Phillips, Jr., *The Changing Environment*, *supra* note 28, at 33.

79. Electricity is a good illustration of the difficulties a regulator faces in defining a regulated utility's product. Although we are accustomed to think of electricity as a standard product, uniformly available from any outlet, it is capable of being defined as significantly different products. For example, delivery of electricity whose voltage varies $X\%$ can be a different product from delivery of electricity whose voltage varies $(X+10)\%$ if the user has equipment which requires constant voltage. Electricity delivered at noon is different from electricity delivered at midnight, because it produces significantly different demands on generators' equipment. Electricity which must be delivered differs from electricity whose delivery can be interrupted at the will of the generator.

80. See THOMAS K. MCCRAW, *PROPHETS OF REGULATION* 230-59 (1984) for a detailed discussion of Kahn's influence in promoting marginal cost pricing in regulation. In some respects Kahn was advocating ideas advanced earlier by Bonbright and others. See Uhler, *supra* note 25, at 80; see also BONBRIGHT, *supra* note 6, at 46 n.5 (attributing marginal cost pricing to A.C. PIGOU, *THE ECONOMICS OF WELFARE* (1920)). Coase also provides an intellectual history of marginal cost pricing. Ronald Coase, *The theory of public utility pricing and its application*, 1 BELL J. ECON. & MGMT. SCI. 113, 114-123 (1970). I have not discussed Coase's contributions to the marginal cost pricing debate because it is not directly relevant.

See also Jackalyn Pfannenstiel, *Implementing Marginal Cost Pricing in the Electric Utility Industry*, in *APPLICATIONS OF ECONOMIC PRINCIPLES IN PUBLIC UTILITY INDUSTRIES* 53 (Werner Sichel & Thomas G. Gies eds., 1981) (describing difficulties encountered in implementation of marginal cost pricing). Pfannenstiel's survey of numerous technical problems in implementing marginal cost pricing begins with the problem of choosing short run or long run marginal costs and covers a wide range of practical and theoretical problems. Her conclusion is typical, however: marginal cost pricing has "several aspects . . . for which further theoretical and practical research is indicated; none, however, is sufficiently critical to further delay implementation." *Id.* at 71.

81. See, e.g., BROWN & SIBLEY, *supra* note 6, at 29 ("Because producer surplus plus consumer surplus rises as price moves toward marginal cost from either direction total surplus is maximized when price is set equal to marginal cost"). Even in such a world, however, there are questions about its viability as a policy option because its implementation assumes a high degree

perfections, however, marginal cost pricing is not an obvious policy choice, and certainly cannot be defended on efficiency grounds.

While the 1960s and 1970s saw the parallel development of the theoretical literature describing problems with utility regulation and the marginal cost pricing literature, the utility economics literature paid closest attention to two problems in implementing the desired solution. First, marginal cost pricing may not be possible if the utility is required to operate at a point where marginal costs are less than average costs, because it would lead to a deficit.⁸² Based on a 1927 paper by Frank Ramsey, economists devised a solution: vary the price according to the price elasticities of the utility's market.⁸³ By raising price above marginal cost more when demand is more price-inelastic, revenue can be increased while affecting the volume of sales as little as possible.⁸⁴ "Ramsey pricing" thus eliminated the deficit through a premium above marginal cost which varied inversely with the elasticity of demand.⁸⁵ While Ramsey pricing is not always feasible itself,⁸⁶ it "solved" the technical problems with marginal cost pricing.

of knowledge on the part of regulators. Regulatory rules must also be feasible. Feasibility requires that the regulatory scheme be both individually rational and incentive compatible. See LAFFONT & TIROLE, *supra* note 3, at 34-35. Not only must these technical criteria be satisfied but the regulations must be politically feasible as well—ruling out otherwise preferred mechanisms, such as subsidies, in some cases.

Technically the solution is simple: The markup of price over marginal cost is given by

$$\text{Markup} = \frac{P_i - C_i}{P_i} = \frac{\lambda}{\varepsilon_i}$$

where P_i is the price in market i , C_i is the marginal cost, λ is a constant which adjusts prices in all markets to ensure that the firm breaks even, and ε_i is the price elasticity of demand. See BROWN & SIBLEY, *supra* note 6, at 40. In practice, however, calculating such prices is quite demanding. Not only can ["t]he numerical solution of Ramsey prices . . . become quite complicated" but the information needed for calculating Ramsey prices for a utility producing a widely used commodity like electricity would be extensive. Just determining the price elasticity of demand for each market, figures which are unlikely to be constant even in the medium run, would tax the resources of most regulatory commissions. Calculation of Ramsey prices would also require knowing cross-price elasticities for each pair of goods as well. See *id.* at 41-43.

82. See *id.* at 35.

83. See William J. Baumol & David F. Bradford, *Optimal Departures from Marginal Cost Pricing*, 60 AM. ECON. REV. 265 (1970); F.P. Ramsey, *A Contribution to the Theory of Taxation*, 37 ECON. J. 47 (1927). As in Brown and Sibley's book, Ramsey pricing is sometimes confusingly referred to as "second-best" pricing. See, e.g., BROWN & SIBLEY, *supra* note 6, at 39-40. "Second-best" pricing refers not to the problem discussed by Lipsey and Lancaster but to the introduction of the break-even constraint.

84. See BROWN & SIBLEY, *supra* note 6, at 40 (following Ramsey prices alters "market as little as possible from the price-equal-marginal cost.").

85. See LAFFONT & TIROLE, *supra* note 3, at 30-31. A variation on this was Allais' proposal that the premium be fixed across all goods, alleviating some of the informational problems but reducing the theoretical efficiency of the prices. See *id.* at 30.

86. For example, Ramsey pricing may not be sustainable where a natural monopoly produces services which are sold to both consumers and other producers. See John C. Panzar, *Sus-*

The second major problem in utility pricing addressed by the theoretical literature is the allocation of common costs among different classes of users—something which “is not a straightforward task and is the source of many of the most muddled, lengthy and unsatisfactory proceedings in regulatory history.”⁸⁷ The most common approach in the United States is fully distributed cost (“FDC”) allocation in which “common costs are allocated to service based on their relative shares of quantities such as output, peak demand, revenue or attributable cost.”⁸⁸ Under this approach a service (e.g., residential electrical service) must generate sufficient revenue to cover both the attributable costs of the service (e.g., wiring to houses) and a fraction of the common costs (e.g., base generating capacity), a reaction usually calculated “without any thought of economic efficiency.”⁸⁹ Sometimes demand elasticities are used to calculate the fraction as well.⁹⁰ Not surprisingly, given FDC methods’ lack of a theoretical pedigree, economists’ “criticisms of FDC have been scathing.”⁹¹ Not only are FDC allocation methods “essentially arbitrary” but they are unrelated to marginal costs and are “utterly meaningless” for analyzing cross-subsidy issues.⁹² When firms have high ratios of common costs to attributable costs, there is “a large degree of indeterminacy in setting prices.”⁹³ FDC prices have the important practical advantage of being capable of calculation from a regulated monopolist’s books, however.⁹⁴

As with the budget constraint problem “solved” by Ramsey pricing, the solution here is both informationally demanding and subject to second-best problems. Brown and Sibley’s approach is typical—a theory of non-uniform price structures developed out of partial equilibrium results and without considering second-best theory. For example, their derivation of the concept of Pareto dominating, incentive

tainability, Efficiency, and Vertical Integration, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE, supra note 11, at 171, 172.

87. BROWN & SIBLEY, *supra* note 6, at 44.

88. *Id.* at 44-45.

89. *Id.* at 45. It also involves “numerous conventions regarding depreciation rates, valuation of assets at book vs. replacement cost, construction work in progress and hundreds of other items.” *Id.* at 45-46.

90. *See id.* at 46.

91. *Id.* at 49. Kahn pithily describes the futility of the effort to allocate common costs as “not a question of looking for a black cat in a room in which all the lights have been turned out. There is no cat there.” Alfred E. Kahn, *The Uneasy Marriage Between Regulation and Competition*, *TELEMATICS*, Sept. 1984, at 1, 12.

92. BROWN & SIBLEY, *supra* note 6, at 49.

93. *Id.* at 51.

94. *See id.* at 60.

comparable, non-uniform rate structures is dependent on consumers' self-selection of the corporate tariff when offered a choice.⁹⁵ Thus if two types of consumers (high and low usage) are given a choice between a uniform price \bar{P} , based on average cost, and a two-part tariff which is a combination of an entry fee (E) and a variable charge based on usage (P^*) where $E = QH(\bar{P})(\bar{P} - P^*)$,⁹⁶ $P^* < \bar{P}$, and $P^* \geq MC$. Consumers of the high usage type will opt for the multipart tariff, and consumers of the low usage type will opt to continue to pay \bar{P} . Because the two part tariff is incentive compatible, only the high usage type consumers will choose it. Brown and Sibley demonstrate that the firm and high usage type consumers are better off and there is no welfare change for the low usage type consumers; as a result the tariff is Pareto improving.

Aside from assuming that consumers' demand curves are known to the utility,⁹⁷ this discussion neglects the second-best problem. In an imperfect world there is no reason to believe that improving the "efficiency" of the utility's pricing will lead to improved social efficiency. Moreover, there is no reason to believe that the customer types sorted by demand, as the structure analyzed by Brown and Sibley requires to be incentive compatible, will be the same as the customer types sorted by second-best considerations. For example, two firms which purchase electricity from a utility may have similar demand curves but one may be part of a competitive industry while the other may be a monopoly. The key result of incentive compatibility is thus unconnected to the prices which are efficient after considering second-best considerations.

When conventional utility economics considers issues relevant to second-best analysis, it does so using assumptions which both reduce the problem to one solvable with conventional economic tools and make the results unrealistic. For example, Brown and Sibley, in a chapter they label as "written for the technical reader," address some of the issues involved in a second-best analysis by considering the impact of changes in prices to business consumers and downstream users through cross-elasticity efforts in final product markets.⁹⁸ Their analysis rests on what Brown and Sibley characterize as "very strong assumptions about downstream cost and supply structure" which "are met in perfectly competitive markets and, under still further assump-

95. *Id.* at 65-67.

96. This entry fee ensures that the firm continues to break even.

97. See BROWN & SIBLEY, *supra* note 6, at 68.

98. *Id.* at 130-131.

tions, by markets which are contestable.”⁹⁹ Their goal is to “not drastically increase the amount of information” required of policy-makers because

[i]f efficient pricing principles require an accounting of the flow-through effects from the markets of the regulated firm into myriad other markets, then the analyst is little better off than if he ignored them; the required data and computational complexity would be overwhelming. Thus, any modifications to the pricing rules we have discussed in previous chapters should be simple ones.¹⁰⁰

Requiring a second-best solution to produce only “simple” changes in the first-best solution may be required by political feasibility or by the lack of technical capability in a regulatory agency. Such a requirement eliminates achieving a socially efficient outcome as a policy goal and requires justification of the first-best policy prescription on non-efficiency grounds.

Economists dominated much of the public utility regulatory debate. As in so many areas, economics as a discipline successfully captured a public policy debate through the strength of the analytical tools, the power of the economic model of human behavior, and the attractiveness of the chance to divide up enormous efficiency gains from regulation. In practice, however, the technical solutions created by economists proved less satisfying. Not only are there seemingly endless problems identified by the partial equilibrium analysis, there are the inconvenient and consistent suggestions by the Chicago school that if one were really concerned with efficiency, deregulation is much more likely to be the appropriate policy.

The problem with economic analysis here is that it promises so much more than it delivers. Anyone viewing the utility industry today would be hard pressed to find widespread evidence of even technological efficiency; social efficiency seems an even more distant goal. If economic regulation of natural monopolies is not about efficiency, however, there is a strong possibility that the Chicago school has a better explanation of regulators’ motives. At a minimum, the failure to take second-best theory into account suggests that even in the relatively easy case of a natural monopoly, the efficiency justification for economic regulation is at best an unfulfilled aspiration.

99. *Id.* at 132.

100. *Id.* at 132.

C. *The Legal Environment*

Utility (or other) regulators confront two types of legal constraints. First, a state or federal constitution may limit regulators' ability to set rates. The federal takings clauses, for example, prevent uncompensated confiscation of a privately owned utility's property either directly or by requiring it to provide service for free. Depending on how vigorously the courts are willing to enforce the takings clauses, this constraint operates well short of requiring free service and thus could be a significant limit.¹⁰¹ Second, the statutes creating regulatory schemes may require or forbid particular actions.¹⁰² These are essentially political constraints, since the language of a statute is subject to alteration by the legislature if the courts' interpretation is not to the legislature's (or special interests able to control the legislature's) liking.¹⁰³ Moreover, there are significant issues concerning the courts' institutional competence to play a role in monitoring agencies.¹⁰⁴

Legal constraints serve two important functions: they set the terms of the "regulatory bargain"¹⁰⁵ between the State and the regulated entity, and they create the mechanisms through which the technical expertise of the regulatory body is applied to the regulated entity. While both are important, solving both problems simultaneously is difficult. Constraining regulators from engaging in opportunistic behavior on the margin requires limiting precisely the discretion necessary to effectively regulate in the manner first-best analysis suggests.¹⁰⁶ For example, allowing detailed regulatory actions such as

101. The Constitution may also play a role in allocating power among regulators. The Supreme Court's opinion in *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953 (1986), for example, relied on the Supremacy Clause to allow Congress to shift power from state regulators to federal regulators. While which regulator is administering the regulatory scheme is undoubtedly significant in many respects, particularly where federal and state regulators are pursuing radically different regulatory strategies, it is not relevant here. Professor Richard J. Pierce, Jr. has suggested that much of modern federal administrative law is a result of the Supreme Court's distrust of the lower federal courts, preventing the judiciary from playing a more important role in keeping regulatory agencies politically accountable. Richard J. Pierce, Jr., *The Role of the Judiciary in Implementing an Agency Theory of Government*, 64 N.Y.U. L. REV. 1239 (1989).

102. For an example, see the Pennsylvania statute described *infra* note 120 and accompanying text.

103. See BONBRIGHT, *supra* note 6, at 149. Post-*Hope* court decisions "are for the most part interpretive of statute law rather than of constitutional mandate [and] are subject to change by statutory amendment." *Id.* Hence, they are given "only incidental attention" in his analysis. *Id.*

104. For reasons of space I will not discuss these issues in this article.

105. The "bargain" is the implicit agreement of the regulated to invest in and operate the necessary plant in exchange for a "fair" return.

106. Constraining extreme forms of opportunism, such as uncompensated nationalization, is not difficult, of course.

specifying allowable supply contracts or application of a "used and useful" standard may be necessary to implement an efficient solution to the regulator's optimization problem. A regulator could act opportunistically in requiring a utility to use more expensive, locally produced inputs or by later disallowing expenditures the regulator had deemed prudent *ex ante* on the ground the investments did not produce useful results *ex post*.

1. Constitutional constraints

Constitutional constraints offer a means of limiting the ability of political actors to alter the terms of the regulatory bargain. It is particularly important that the "rules of the game" be binding on the entity which holds regulatory power for several reasons. First, without binding rules, regulators have broad scope for opportunistic behavior, introducing regulatory uncertainty.¹⁰⁷ Second, binding regulators reduces the scope for discretionary regulatory activity and thus the size of the rents available. This in turn reduces the incentive to use "bribes, litigation, propaganda, and future career opportunities" to influence regulators.¹⁰⁸ The ability to make a binding commitment not to deviate from rules also allows policies which depend on the regulated entity believing policy will not change.¹⁰⁹ Enforcement of regulatory rules through general enforcement mechanisms also limits the complexity possible—"regulatory rules have to be simple and based on readily interpretable data"¹¹⁰—to allow legislatures and courts to assess regulators' and regulated entities' compliance.

The courts' treatment of the legal issues in the regulation of public utilities has changed substantially over time. Constitutional constraints on substantive regulatory law begin with the 1898 Supreme Court opinion in *Smyth v. Ames*¹¹¹ which held that the Constitution required that

the basis of all calculations as to the reasonableness of rates to be charged by a [regulated firm] must be the fair value of the property used by [the regulated firm] for the convenience of the public. . . . And in order to ascertain that value, the original cost of construc-

107. See Vogelsang, *supra* note 71, at 14.

108. *Id.*

109. See *id.* at 15.

110. See *id.* at 16.

111. 169 U.S. 466 (1898). The Court had previously legitimized legislative authority over private entities' prices in *Munn v. Illinois*, 94 U.S. 126 (1877), a case which did not involve any natural monopoly claims. *Smyth* was the first "complete statement" of the constitutional requirements for rate making. See E.M. BERNSTEIN, PUBLIC UTILITY RATE MAKING AND THE PRICE LEVEL 8 (1937).

tion, 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.¹¹²

Smyth proved an unworkable framework for analysis. The four criteria set out in the opinion were not assigned weights by the opinion, making the ultimate balancing by regulators arbitrary. In addition, criteria like the market value of a regulated company's stock and bonds were dependent on regulatory action themselves.¹¹³ As one analyst concluded after a survey of the law under *Smyth*, "[t]he regulation of privately owned U.S. public utilities has had great difficulty escaping circular reasoning, which in one way or another causes regulatory policy to be determined by regulatory policy."¹¹⁴ Even criteria as seemingly simple as original cost proved extremely difficult to implement in practice because of the primitive accounting tools available and the potential for regulated entities to attempt to inflate costs. Replacement cost raised even more difficult questions in cases where technology changed—current construction would reflect both changes in the technology of the regulated industry and changes in construction technology, making cost comparisons difficult if not impossible. By the 1930s, the *Smyth* framework had produced a complex, contradictory morass, which expressed itself in massive and largely unsuccessful efforts to distill it into principles.¹¹⁵

Whether in recognition of the unworkability of the *Smyth* framework, because of personnel and philosophical changes, or simply to

112. *Id.* at 546-47.

113. Stock in a regulated company which was allowed supra-market returns on its investments, for example, would be worth substantially more than stock in a regulated company which was subject to restrictions on pricing that kept returns below market rates.

114. Roger Sherman, *Is Public-Utility Regulation Beyond Hope?*, in CURRENT ISSUES IN PUBLIC UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT, *supra* note 6, at 66; see also BONBRIGHT, *supra* note 6, at 148-49 (criticizing *Smyth's* fair-value rule).

115. See, e.g., GLAESER, *supra* note 6; ROBERT H. WHITTEN, VALUATION OF PUBLIC SERVICE CORPORATIONS (2d ed. 1928) (two-volume, 2,000-page treatise); see also ELECTRICAL UTILITIES: THE CRISIS IN PUBLIC CONTROL 52 (William E. Mosher ed., 1929) ("About the only positive statement that can be made concerning the court's power to review the work of commissions is that the extent of that power is uncertain."); HENRY FLOY, VALUE FOR RATEMAKING V (1916) (300-plus page treatise by an engineer critical of "various and conflicting views as to the principles involved in determining the basis of value for ratemaking"); TAYLOR E. GRONINGER, PUBLIC UTILITY RATE-MAKING 201 (1928) ("Smith [sic] v. Ames is fraught with grief."); *id.* at 202 (noting Illinois rate case with twenty-four hearings over sixty-two days, 10,000 pages of testimony, 283 exhibits, pending for more than two years in 1914-1916); WILLIAM G. RAYMOND, THE PUBLIC AND ITS UTILITIES 275 (1925) ("There is no rule by which fair return may be computed.").

avoid the endless stream of rate cases which the New Deal's federal regulatory laws would otherwise soon provide, the Supreme Court retreated from the *Smyth v. Ames* framework in *Federal Power Commission v. Hope Natural Gas Co.*¹¹⁶ In *Hope* the Court held that

[u]nder the statutory standard of "just and reasonable" it is the result reached not the method employed which is controlling. . . . It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important. Moreover, the Commission's order does not become suspect by reason of the fact that it is challenged. It is the product of expert judgment which carries a presumption of validity. And he who would upset the rate order under the Act carries the heavy burden of making a convincing showing that it is invalid because it is unjust and unreasonable in its consequences.¹¹⁷

Not only did *Hope* signal a retreat from constitutional review of ratemaking, it changed the focus of judicial review from analysis of the methods used to the looser constraint of an overall reasonable result. The Supreme Court virtually abandoned the field of ratemaking after *Hope*; between 1944 and the late 1980s it decided no cases on the constitutional validity of state ratemaking and deferred broadly to federal regulators in the few federal ratemaking cases it decided.¹¹⁸

The Supreme Court finally returned to the constitutional ratemaking issues in 1989 in *Duquesne Light Co. v. Barasch*.¹¹⁹ *Barasch* dealt with the dominant issue of electric utility regulation of the 1980s—how to treat investments in plants (mostly nuclear) which ex post could be seen to be mistakes.¹²⁰ The Court rejected challenges

116. 320 U.S. 591 (1944).

117. *Id.* at 602. The magnitude of the retreat from *Smyth* can be seen in Justice Jackson's opinion concurring in the result. Jackson argued that the Court upheld the rate making "as reasonable, but what makes it so or what could possibly make it otherwise, I cannot learn." 320 U.S. at 645-46 (Jackson, J. concurring).

118. See PIERCE, *supra* note 6, at 62.

119. 488 U.S. 299 (1989).

120. The Duquesne Light Company joined a multi-utility project in 1967 to construct seven nuclear power plants. See *id.* at 302. In 1980 the project canceled planned construction on four of the seven plants, after having paid more than \$34 million in preliminary construction costs. See *id.* A Pennsylvania Public Utilities Commission investigation into the project, made in connection with a request by Duquesne to recover these costs from ratepayers, found "that the [consortium] decisions in regard to the [canceled plants] at every stage [leading] to their cancellation, were reasonable and prudent . . ." *Id.* at 303. After Duquesne was granted a rate increase based upon this report, however, the state consumer advocate's office successfully sought its revocation based upon a newly enacted state law forbidding consideration of the cost of construction until the facility in question became "used and useful in service to the public." *Id.* at 303.

In challenging the revocation, the utility argued that the "used and useful" requirement, typically imposed in a fair value approach to ratemaking, was inconsistent with Pennsylvania's

to regulators' disallowance of substantial costs in language reminiscent of second-best theory, holding that

[t]he economic judgments required in rate proceedings are often hopelessly complex and do not admit of a single correct result. The Constitution is not designed to arbitrate these economic niceties. Errors to the detriment of one party may well be canceled out by countervailing errors or allowances in another part of the rate proceeding. The Constitution protects the utility from the net effect of the rate order on its property. Inconsistencies in one aspect of the methodology have no constitutional effect on the utility's property if they are compensated by countervailing factors in some other aspect.¹²¹

Barasch reaffirmed the *Hope* end result test and firmly established that the federal Constitution imposes few significant limitations on state regulators' ratemaking powers beyond barring outright confiscation without compensation.¹²² The experience in the *Smyth* era demonstrates the difficulty in applying constitutional constraints to complex regulatory questions. Constraining regulators is therefore likely to require reliance on statutory methods rather than constitutional ones until the courts are willing to do the hard work of crafting a constitutional interpretation which provides intelligible guidance.¹²³

2. Statutory constraints

Regulation of natural monopolies in this century in the United States has typically been accomplished through regulatory agencies, to which legislative bodies have delegated both the authority to regulate and significant discretion in deciding how to regulate.¹²⁴ Prior to the

historical cost based ratemaking. *See id.* at 313. The utility also argued that the "used and useful" requirement impermissibly constrained the regulators from properly balancing consumer and investor interests. *See id.* at 314.

121. *Id.*

122. Ironically, one area in which courts have recently had significant impacts on regulators is impeding federal energy deregulation efforts. *See, e.g.,* Richard J. Pierce, Jr., *The Unintended Effects of Judicial Review of Agency Rules: How Federal Courts Have Contributed to the Electricity Crisis of the 1990s*, 43 ADMIN. L. REV. 7 (1991) [hereinafter Pierce, *Unintended Effects*].

123. Although both *Barasch* and *Hope* asserted that there was some point at which regulators' actions might become confiscation of property, the Supreme Court's refusal to entertain challenges to disallowances of multi-billion dollar nuclear plant investment throughout the 1980s suggests that point would be difficult to reach.

124. *See* Priest, *supra* note 6, at 296 (regulatory commissions "inaugurated with sudden uniformity in the decade and a half following 1907.") Other legal constraints attempt to create regulatory repeat players to represent interests who would normally be excluded from the process (public advocates, for example), use separation of functions to reduce staff influence, and require action within specified time limits to prevent regulatory lag. *See* Leigh H. Hammond, *Regulation in the Southeast: Comments, in CURRENT ISSUES IN PUBLIC UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT*, *supra* note 6, at 86-88 (describing reform process in North Carolina); *see also* John R. Marks III, *Regulation in the Southeast: Comments, in CURRENT*

establishment of administrative bodies, utility regulation was largely conducted by municipal governments through franchise contracting.¹²⁵

Over time, there appears to have been a systematic transformation in the utility franchise form. Early franchises incorporated provisions of great generality. Later franchises attempted more detailed specifications of contractual requirements. Toward the end of the nineteenth century, however, franchises for many different public services—electricity, gas, water—began to incorporate provisions providing for the subsequent adjustment of terms by independent groups of arbitrators, committees, or boards, charged to provide for amendments fair to both city and utility.¹²⁶

By the 1920s, however, regulation by commission was firmly established as the dominant form in the United States. Among the arguments proponents made for replacing municipal regulation (either by local commission or by franchise contract) were: (1) to take advantage of the greater data collection capabilities of state commissions;¹²⁷ (2) “to protect interurban and intercounty services” from injury by another locality’s regulator;¹²⁸ (3) to adequately protect investors from fraud;¹²⁹ and (4) to have adequate legislative power to regulate.¹³⁰

State commissions proved inadequate as interstate connections between utilities grew.¹³¹ A 1926 Syracuse University research project studying the problem concluded that the “only feasible solution” was “[n]ational control of wholesale interstate shipments.”¹³² While federal regulators eventually began to play a significant role in some aspects of utility regulation, the primary responsibility for ratemaking remained at the state level. A typical state utility statute, for example, authorizes regulators to weigh a list of factors in setting regulatory

ISSUES IN PUBLIC UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT, *supra* note 6, at 93-96 (describing reform process in Florida).

125. See Priest, *supra* note 6, at 320-21.

126. *Id.* at 321.

127. See Clyde Lyndon King, *State Versus Municipal Utility Commissions*, in *THE REGULATION OF MUNICIPAL UTILITIES*, *supra* note 21, at 253, 256-58.

128. *Id.* at 258-59.

129. See *id.* at 259-62.

130. See *id.* at 262-63.

131. By 1926 approximately nine percent of power nationally was transmitted between states, only four states imported no power, six states exported no power, and three individual states imported roughly half the power they consumed. See *ELECTRICAL UTILITIES*, *supra* note 115, at 130-31, 133. By 1934 almost twenty percent of power generated moved across state lines. See G. LLOYD WILSON ET AL., *PUBLIC UTILITY REGULATION* 362 (1938).

132. *ELECTRICAL UTILITIES*, *supra* note 115, at 147.

parameters.¹³³ Although there remain important unanswered questions about the reasons for and effects of the shift to the commission form of regulation,¹³⁴ for our purposes, four features of legislative regulatory constraints are important.

First, economic regulation of natural monopolies (like many forms of regulation) is embedded in a complex set of interconnected, sometimes conflicting regulatory requirements. For example, by the end of the 1970s it was “not uncommon” for a utility contemplating a nuclear plant “to confront as many as twenty state and federal agencies for necessary licenses and permits, to say nothing about the possibility of subsequent court action initiated by environmental groups.”¹³⁵ The Public Utility Regulatory Policies Act of 1978 (“PURPA”),¹³⁶ for example, “forced each state to consider such issues as marginal-cost pricing, time-of-day rates, and below-cost lifeline rates,”¹³⁷ provoking resistance from state regulators to federal invasion of their turf. State regulators also resisted PURPA because of “a fear of upsetting the delicate balance among rates of various customer classes and within classes”¹³⁸ In addition, a regulatory legal structure can be seen as a costly legal structure “profitable only if it is used long enough.”¹³⁹ As the cost of creating regulatory structures is generally inversely related to their complexity, the regulatory community (including regulators, the regulated, interest groups, and, perhaps most importantly, the lawyers and other advocates who practice in the area) has an important incentive to maintain the basic regulatory structure, layering on additional complexities, rather than timely adopting paradigm shifts.

Second, the absence of significant general constitutional constraints requiring coherence in regulatory statutes (e.g., the nondelegation doctrine) means that regulatory legislation often does not give regulators clear mandates, but rather leaves them with the discretion to strike their own balance among competing policy goals. The recent trend toward increased judicial deference to regulators in interpreting

133. See, e.g., OHIO REV. CODE ANN. § § 4909.15, 4909.151, 4909.152, 4909.153, 4909.154, 4909.155, 4909.156, 4909.159 (Anderson 1991 & Supp. 1996) (setting out factors to be considered).

134. See Priest, *supra* note 6, at 321-22.

135. Charles F. Phillips, Jr., *The Changing Environment*, *supra* note 28, at 32.

136. Pub. L. No. 95-617, 92 Stat. 3117 (codified as amended in scattered sections of 15, 16, 30, 42 and 43 U.S.C.)

137. Uhler, *supra* note 25, at 81.

138. *Id.* at 81.

139. Vogelsang, *supra* note 71, at 15.

regulatory statutes (e.g., the *Chevron* doctrine)¹⁴⁰ only enhances this discretion.

Third, regulatory activities cross jurisdictional boundaries in many ways. Federal and multiple states' regulatory policies are all involved in determining how many energy utilities operate today, and as many utilities become multinational firms, foreign regulators are also becoming important. During the New Deal, Congress expanded into the field, enacting federal legislation to regulate utilities' interstate activities.¹⁴¹ The federal intervention "solved" some of the problems of state regulators by bringing interstate activities under regulators' control but created new problems by adding an additional layer of regulatory control. Efficient solution to a multi-state utility's rate "problem" now required coordination between, for example, federal, Ohio, and Pennsylvania regulators. As utilities continue to grow into international companies, this problem increases.

Fourth, even if we assume non-constitutional mechanisms may be sufficiently powerful to resist capture, we are still left with a largely negative power. A regulatory commission

cannot penalize management for its incompetence, for its lack of imagination, or for its lack of creativity because it does not have a clear view of what potentially attainable cost reductions are. It has no way, therefore, of stopping the great vice of monopoly, namely, the monopolist's tendency to lead the quiet life and to squander society's treasure in the form of excessive cost. Limiting the monopolist to a fair return may be the essence of the regulatory process, but it does not achieve society's central objective. Put differently, regulation is often a pass-through mechanism for the inefficiency, cost escalation, and lethargy of pampered management luxuriating in an ambience of governmental permissiveness.¹⁴²

Legislative constraints on regulators thus pose problems whose form mirrors the problem analyzed by Lipsey and Lancaster. Each regulator must consider not only the *first-best* regulatory solution (which itself may be difficult to accomplish for the reasons described in the previous section) but also *second-best* problems. For example, a util-

140. See *Chevron U.S.A. Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984).

141. The Federal Power Act of 1935 regulated interstate wholesale sales and transmission of electric energy, giving the Federal Power Commission the power to set rates, require utilities to keep specific forms of accounting information, set depreciation, require annual reports, and make rates public. See 16 U.S.C. § 791a (1994). The Public Utility Holding Company Act of 1935 regulated the corporate form and activity of multi-utility electric and gas utilities to attempt to prevent what many regulators saw as abuses. See 15 U.S.C. § 79a (1994). The Natural Gas Act of 1938 regulated interstate transportation and sale of natural gas. See 15 U.S.C. § 717 (1994).

142. Adams, *supra* note 72, at 16; see also MORGAN, *supra* note 75, at 88-89 (regulation "puts a damper on individual initiative" and has a "benumbing, stifling" effect).

ity regulator in Ohio conducting a ratemaking proceeding for my electric utility, the Cleveland Electric Illuminating Company (“CEI”), must consider not only the impacts of federal regulatory policy but also:

- CEI’s local competitor, Cleveland Public Power (“CPP”), and the city of Cleveland’s regulatory policy toward both CEI and CPP;¹⁴³
- Pennsylvania regulators’ actions, because CEI is a unit of a holding company with utility properties in that state;
- Canadian regulators, because a potential source of power for CEI is Canadian utilities generally and Ontario Hydro in particular;
- federal policy toward the Tennessee Valley Authority, another potential source of power;
- federal policy toward coal use, because environmental restrictions on coal generally and policies biased toward eastern coal in particular will effect energy production;
- natural gas regulators’ actions at the state and federal level, because natural gas is a significant substitute for electricity; and
- Mexican energy regulators’ policies, because Ohio’s automobile parts industry has significant plant investment in Mexico, and energy availability and price can affect job allocation by multinational firms.
- The regulator will also need to consider the imperfections analyzed by Lipsey and Lancaster—the degree of monopoly power present in supplier and customer sectors.

Even if legislatures could specify legal constraints that would lead regulators to accomplish public policy goals which had democratic legitimacy, these problems seem to me to be overwhelming. By the time a state regulatory agency amassed the data, built the models, and reached even a moderate degree of understanding about the proper method of implementing the policies, circumstances would have likely changed—requiring a fresh round of modeling and data gathering. Moreover, policies would depend on other political entities’ policies in ways which might be difficult to support politically—if Ohio utility rates were raised to “offset” a “mistake” by Pennsylvania regulators, Ohio regulators would face a difficult task to justify their actions.

143. This alone is a complex problem that played a significant role in the city of Cleveland’s default on its bonds in the 1970s.

D. *The Political Environment*

Utility regulation is often complex and dull. It is also intensely political.¹⁴⁴ Both majoritarian¹⁴⁵ and minoritarian¹⁴⁶ bias present important problems for the design of regulatory institutions. Early twentieth century works on utility regulation echo the New York Merchant's Association broadside quoted earlier and cast utility regulation as a struggle between the people and monopolists. A 1912 National Municipal League book on municipal utilities, for example, opened with a justification of regulation because ["s]ociety cannot afford to allow those who have a monopoly upon the most salient needs of urban life to exploit the many simply to bring added shekels into the pockets of the few."¹⁴⁷ Individuals required protection against "discriminatory rates"¹⁴⁸ and utilities stopped from dominating city governments and subverting municipal institutions.¹⁴⁹ To remedy these ills required strong institutions; the National Municipal League called for commissions "with full and complete powers" that would "militantly" thwart ["a]ny attempt to diffuse regulative power and responsibility under the time-worn guise of checks and balances."¹⁵⁰

144. This has been recognized from the earliest analyses of utility regulation. *See, e.g.,* MORGAN *supra* note 75, at 81 ("Regulation by its very nature is an attempt to reconcile two divergent interests through public, that is, political, action."); *see also* WILLIAM T. GORMLEY, JR., *THE POLITICS OF PUBLIC UTILITY REGULATION* (1983); John B. Legler, *Regulation in the Southwest: Introduction*, in *CURRENT ISSUES IN PUBLIC UTILITY ECONOMICS: ESSAYS IN HONOR OF JAMES C. BONBRIGHT*, *supra* note 6, at 85 ("From the perspective of the consumer probably no state agency, not even the state legislature, affects their pocketbook as much as their state public-service commission.").

Another example is the current dispute in Ohio over who will hear consumer complaints about utilities. Ohio regulates public utilities through the Public Utilities Commission of Ohio ("PUCO"). It also has a consumer agency, the Office of Consumers' Counsel ("OCC"), which advocates residential consumer interests in utility proceedings. These two agencies are currently (in spring 1997) engaged in a "nasty spat" over which agency has jurisdiction to handle consumer complaints about telephone service. *See* Zach Schiller, *Utility Agencies Fighting Over Turf*, *THE PLAIN DEALER*, Mar. 16, 1997, at 1H. The PUCO has subpoena power and power over utilities, but sees its complaint role as being a mediator or arbiter between consumers and utilities. PUCO also claims that it needs the information it receives from complaints to assist it in its regulatory duties. The OCC lacks the enforcement tools of the PUCO but has a clearer mission to take the consumer side in disputes. OCC argues that PUCO has a conflict of interest since it must also look after the utilities' interests. *See id.*

145. Majoritarian bias is "the overrepresentation of the many over the few" or "the tyranny of the majority." KOMESAR, *supra* note 2, at 57.

146. Minoritarian bias is "[t]he overrepresentation of concentrated interests." *Id.* at 56.

147. King, *The Need for Regulation*, *supra* note 21, at 12.

148. *Id.* at 12-13. An interesting feature of the history of utility regulation is the shift from the early preoccupation with preventing "discrimination" in rates to the modern justification of complex rate structures.

149. *See* King, *The Need for Regulation*, *supra* note 21, at 20-21.

150. King, *In Conclusion*, in *THE REGULATION OF MUNICIPAL UTILITIES*, *supra* note 21, at 379.

After all, [“t]he highly paid, well-fed corporate expert must be met with a highly paid, highly equipped civic expert.”¹⁵¹

After this initial consumerist approach,¹⁵² increases in prices following World War I

coupled with the relatively fixed incomes of the utilities, has placed the emphasis in commissions’ activities, not on the reduction of rates to reduce excessive profits or to eliminate discrimination, but on the increasing of rates or the procuring in other ways of the revenue needed by the utilities, by subsidies from the public tax rolls, if necessary, in order that they might keep from floundering and from thereby depriving the people of good service, or, in fact, of any service at all.¹⁵³

Within a short time of the adoption of commission regulation, state regulatory bodies had been sufficiently captured that utilities “rallied to the support of the commissions”¹⁵⁴ while consumer advocates discovered commissions could raise as well as lower prices. Price stability returned for a short time in the 1920s, only to be disrupted by the Depression.¹⁵⁵

Richard Pierce, one of the preeminent scholars of utility ratemaking, concluded that state utility ratemaking exhibited minoritarian bias during the 1950s and early 1960s and majoritarian bias during the 1970s and 1980s.¹⁵⁶ During the 1950s and early 1960s, conditions in the utility industry were those necessary for minoritarian bias. Rate regulation produced a significant impact on individual utilities but the costs of providing utilities with significant rents were spread across society in general.¹⁵⁷ Moreover, utility rate regulation is generally a complex and tedious subject, not well suited to discussion in the media.¹⁵⁸ Because utility costs were declining, regulators could allow utilities to enjoy rates of return far above their cost of capital while individual consumers could experience declining utility charges.¹⁵⁹ “With electricity rates declining, there was no simple symbol that could be used to organize the majority to do anything to preclude the

151. *Id.* at 379-80.

152. *See generally* William M. Wherry, Jr., *PUBLIC UTILITIES AND THE LAW* 251-256 (1925) (attacking public utility commissions for setting rates too low).

153. MORGAN, *supra* note 75, at 77.

154. *Id.* at 77.

155. *See* BERNSTEIN, *supra* note 111, at 6.

156. *See* Richard J. Pierce, *Public Utility Regulatory Takings: Should the Judiciary Attempt to Police the Political Institutions?*, 77 *GEO. L.J.* 2031, 2047-49 (1989) [hereinafter Pierce, *Public Utility Regulatory Takings*].

157. *See id.* at 2048.

158. *See id.*

159. *See id.*

minority from maximizing their profits through the regulatory process.”¹⁶⁰ One state utility regulator speculated that “many of the citizens probably did not even know that the commission existed” before the 1970s.¹⁶¹ Moreover, during this period the endless debates over appropriate cost formulas were submerged by the combination of falling costs and increasing sales of electricity.¹⁶² While this did not satisfy economists like Bonbright,¹⁶³ it satisfied customers and regulators.

The situation began to change in the late 1960s and early 1970s, however. Utility costs began to increase for reasons beyond their control, leading to rising utility rates. When utility demand forecasts, nuclear plant construction cost estimates, and changes in supply costs made utilities’ enormous investments in nuclear plants appear foolish at best in the late 1970s, majoritarian bias appeared in regulatory decision making. “[T]he simple symbolism of anti-nuclear, anti-utility rhetoric (e.g., ‘staggering rate increases for dangerous white elephants’) facilitates media communications that activates the majority.”¹⁶⁴ After the long slumber of the 1950s and 1960s, the economic crisis of the utility industry brought changes to both state and federal regulatory law in the 1970s. State regulators began more aggressively enforcing existing state laws and state legislatures responded to public outcry with new limits on utilities. At the national level, federal policy shifted in favor of deregulation (e.g., the Natural Gas Policy Act of 1978¹⁶⁵) and increased federal intervention in state regulatory affairs (e.g., the Public Utility Regulatory Policies Act of 1978¹⁶⁶). Utilities sought relief in the courts; as in *Barasch* they were not always successful. The federal statutory framework changed significantly during the general deregulatory climate of the late 1970s and 1980s.

Pierce’s survey of utility regulatory decisions disallowing costs found the astonishing result that the total of all disallowances before 1983 “probably did not exceed a few hundred million dollars”¹⁶⁷ while disallowances between 1984 and 1988 produced more than \$11.6 bil-

160. *Id.*

161. Hammond, *supra* note 124, at 86.

162. See Uhler, *supra* note 25, at 78-79.

163. Bonbright complained that in Britain, unlike in the United States, a government commission would be appointed to address cost allocation issues. BONBRIGHT, *supra* note 6, at 368; see also Uhler, *supra* note 25, at 79.

164. Pierce, *Public Utility Regulatory Takings*, *supra* note 156, at 2049.

165. 15 U.S.C. § 3301-3432 (1994) (codifying gradual decontrol of interstate gas prices).

166. Pub. L. No. 95-617, 92 Stat. 3117 (codified as amended in scattered sections of 15, 16, 30, 42 and 43 U.S.C.) (mandating considerations of particular rate structures by state regulators, including the cost-of-service basis for rates, time-of-day rates, seasonal rates, and other load management rate structures).

167. Pierce, *Public Utility Regulatory Takings*, *supra* note 156, at 2050.

lion in disallowances. As Pierce concludes, if the agencies' findings of imprudent investment are to be believed

that is, if the findings of the [1984-88 period] are something other than a guise for politically opportunistic exercises of raw political power to redistribute wealth from a minority to the majority—then they suggest a startling trend in the industry's management. Apparently, for decades electric utility managers were almost uniformly individuals with outstanding business acumen. At some point in the 1980s, this entire generation of exceptional managers was replaced en masse by a generation of bumbling idiots.¹⁶⁸

Pierce's survey suggests that utility regulation has shifted between majoritarian and minoritarian biases, never free from the political manipulations that steer regulatory decisions away from efficient outcomes even under a first-best analysis.¹⁶⁹

Political constraints play an important role in determining the ability of regulators to respond even if they possess both the understanding and desire to implement particular policies. For example, Richard Pierce analogized the task facing the Federal Energy Regulating Commission ("FERC") in restructuring the electric utility industry to Mikhail Gorbachev's effort to implement perestroika. "Any change will displease powerful constituencies and will bring down on FERC the wrath of those constituencies' representatives in the House and Senate."¹⁷⁰

II. PROBLEMS

Utility regulation presents a paradox. On the one hand, utility regulation in theory (and the "problem" of a natural monopoly in general) is so straightforward as to be uninteresting. Simply set utility prices to marginal cost or some alternative like Ramsey pricing, and allow the market to work. If these solutions ignore second-best problems, they are far from unique in the catalogue of economists' policy prescriptions. On the other hand, utility regulation in practice

168. *Id.* at 2050-51.

169. Political considerations can play a significant role in the structure of regulatory solutions. In the United Kingdom, for example, the government pushed an electricity privatization plan through in 1988 despite solid evidence that the plan's creation of a duopoly would significantly impede the development of competition. The duopoly plan had been designed as a bribe to investors to induce them to purchase British nuclear plants by pairing the nuclear plants with a sixty percent share of non-nuclear generator capacity. When the bribe proved insufficient, the sixty-forty division of non-nuclear capacity was implemented anyway because the approaching general election left inadequate time to change the implementing legislation. The government feared it would lose the next election, preventing privatization at all, and so proceeded to create a duopoly rather than risk continuing state ownership. See MARK ARMSTRONG ET AL., *REGULATORY REFORM: ECONOMIC ANALYSIS AND THE BRITISH EXPERIENCE* 290-95 (1994).

170. Pierce, *Unintended Effects*, *supra* note 122, at 10.

is highly political, and its history demonstrates alternating minoritarian and majoritarian biases. Courts' attempts to involve themselves in regulatory review ultimately led to abandonment of review as the doctrinal tools proved unworkable. The legal tools available to constrain regulators are inadequate in practice. If something so theoretically straightforward is incapable of effective regulation to accomplish even relatively clear first-best policies, then the ability to achieve the technically more demanding policies demanded by second-best analysis appear impossible. The three interconnected factual assertions identified earlier form the foundation of the regulatory state: (1) technical expertise can design solutions to social problems; (2) legal constraints can ensure technical expertise is properly applied; and (3) political constraints will produce legal constraints which correctly guide and restrain technical experts. In this section I will explore the treatment of second-best concerns in utility regulation, and then discuss why these three factual assertions are false.

A. *Second-Best Considerations in Utility Regulation*

The first premise of the regulatory state is that technical expertise can construct solutions to social problems ranging from natural monopoly to externalities. This is promoted by the "engineering"¹⁷¹ view of economics which dominates much of economic analysis—given the appropriate information to plug into the variables in a model, we simply maximize/minimize/optimize our way to a first-best outcome. Second-best theory profoundly challenges this view of the world. If there is no reason to believe that removing a subset of all distortions will lead us closer to a social optimum, of what use are the models, optima, and conditions which remove those distortions and which were so painstakingly calculated and proven?

Economists have had four types of reactions to second-best theory in connection with public utility regulation.¹⁷² The most common

171. As someone who regularly teaches engineers, this characterization may be unfair to the engineering profession. Consider just one example of the differences between much of the utility economics literature and engineering: unlike scholars in utility economics, and law and economics in general, engineers usually have data to test their analyses.

172. Lipsey and Lancaster's paper also led to extensive literature addressing technical points in their analysis and discussing the generality of their results and the policy implications. See P. Bohm, *On the Theory of "Second Best,"* 34 REV. ECON. STUD. 301 (1967); O.A. Davis & Andrew B. Whinston, *Piecemeal Policy in the Theory of Second Best,* 34 REV. ECON. STUD. 323 (1967) [hereinafter Davis & Whinston, *Piecemeal Policy*]; O.A. Davis & Andrew B. Whinston, *Welfare Economics and the Theory of Second Best,* 32 REV. ECON. STUD. 1 (1965) [hereinafter Davis & Whinston, *Welfare Economics*]; M. McManus, *Comments on the General Theory of Second Best,* 26 REV. ECON. STUD. 209 (1959); M. McManus, *Private and Social Costs in the Theory of Second*

response is to ignore the issue. Thus, many economists continue constructing partial-equilibrium models of electricity demand, arguing for and against particular pricing schemes or regulatory actions without discussing whether their proposals make sense in a world in which the deviation of utility product prices from marginal cost is not the only distortion.¹⁷³ For example, one former federal regulator ended his 1983 summary of pricing issues by concluding that

[t]he issue for the 1980s is not to debate the merits of marginal-cost pricing or time-of-day rates—ideas articulated by Bonbright two decades ago and clearly understood by the industry experts of today. The issue for the 1980s is to reaffirm Bonbright's three primary criteria for sound rate making—revenue adequacy, optimal use of service, and fairness—and doggedly pursue marginal-cost pricing as a means to achieve those time-honored ends.¹⁷⁴

Similarly, Brown and Sibley begin their 1986 text on utility pricing by listing the important policy issues that arose after Kahn's 1970 treatise: (1) the rationale for declining block tariffs, cross-subsidization, (2) the size of efficiency gains from Ramsey pricing and other non-uniform price schemes, and (3) the design of optimal tariffs.¹⁷⁵ When they do take up some second-best considerations (although without reference to Lipsey and Lancaster) related to the impact of non-uniform prices on downstream business customers, Brown and Sibley focus on reasons why second-best implications can be ignored.¹⁷⁶ By failing to take second-best issues into account, however, these analyses forfeit the ability to rely on social efficiency as a justification.

The second response is to deny the correctness of Lipsey and Lancaster's analysis. For example, in a 1971 essay economists Eirik G.

Best, 34 REV. ECON. STUD. 317 (1967); T. Negishi, *The Perceived Demand Curve in the Theory of Second Best*, 34 REV. ECON. STUD. 315 (1967).

173. See, e.g., PROBLEMS IN PUBLIC UTILITY ECONOMICS AND REGULATION, *supra* note 72, (volume containing nine essays on such topics as the costs and benefits of time of day electricity rates, utility rate price structure, and peak load pricing, while not even including Lipsey and Lancaster in its bibliography); Charles F. Phillips, Jr., *Utility Pricing: Some Theoretical and Practical Considerations*, in COMPETITION IN REGULATED INDUSTRIES 79 (James F. Niss & Michael T. Pledge eds., 1975) ("If economic efficiency is the goal, the marginal or incremental cost is the proper measure of cost."); BROWN & SIBLEY, *supra* note 6, at 27 (defining "efficient prices" as "those which lead to a maximum of consumer surplus plus producer surplus" without mentioning second-best issues.); *id.* at 65 (claiming non-uniform price schedules "can make all consumers and the firm better off" than uniform pricing based on partial equilibrium analysis.); *id.* at 97 (discussing "Pareto dominating incentive compatible" tariffs based on partial equilibrium results).

174. Uhler, *supra* note 25, at 81-82.

175. See BROWN & SIBLEY, *supra* note 6, at 1-3.

176. See, e.g. *id.* at 158 ("as the distribution of firm types becomes continuous, these multimarket equilibrium effects turn out to be of second-order importance. . . . [O]ne may be able to assume that the effects of tariff changes on the number of firms in each downstream industry are small enough to ignore.").

Furubotn and Thomas R. Saving argued Lipsey and Lancaster were "wrong"¹⁷⁷ and concluded that "there is no general theory of second best unless it is that you can, in general, say nothing."¹⁷⁸ Correctly noting that Lipsey and Lancaster's result did not *preclude* the removal of a subset of distortions from producing welfare enhancements, Furubotn and Saving contended Lipsey and Lancaster's result

implies nothing about the *likelihood* of a particular problem yielding results that require the remaining first-best conditions to be met (or violated). In fact, it would be entirely possible (that is, not in contradiction to the theorem) that in every economics problem in which an additional constraint is imposed that prevents the attainment of one of the first-best conditions, optimization will require the retention of all of the remaining first-best conditions.¹⁷⁹

Moreover, although Furubotn and Saving concede there are some problems in making confident predictions about policies, particularly with respect to distributional questions,¹⁸⁰

[a]ll this makes for some difficulty in applying second-best theory to practical policy problems. Since the significance of any given set of constraints will vary with the structure of the economic model to which the set is applied, we can never gauge the effects of constraints accurately unless fairly detailed information on the structure of the total system is available. Yet, even assuming the basic structural conditions for the second-best problem are met, second-best theory need not be particularly useful. For example, in the case of industrial pricing policy, the general theorem merely tells us that, depending on the nature and pattern of the constraints extant, opti-

177. Eirik G. Furubotn & Thomas R. Saving, *The Theory of the "Second-best" and the Efficiency of Marginal Cost Pricing*, in *ESSAYS ON PUBLIC UTILITY PRICING AND REGULATION* 31 (Harry M. Trebing ed., 1971). Although their entire argument is too lengthy to be repeated here, they summarize their critique of Lipsey and Lancaster as follows:

First, the question of the existence of a second-best solution was treated in a highly misleading way; there can be no general presumption that a second-best solution (even an interior solution) is unlikely to occur. If a first-best solution exists, then the imposition of an additional constraint that does not contradict the original constraint does not, in general, result in no solution. Second, the generality of the conclusion that Paretian optimum conditions are not retained in a second-best solution was overstated. If one of the first-best optimum conditions cannot be met, the normal outcome is not that all other first-best equilibrium conditions are undesirable. In many types of optimization problems considered by economists, the inability to meet one or more specific first-best conditions does not imply that the second-best optimum will require violation of the remaining first-best conditions. Frequently, the second-best will simply demand that the first-best conditions be met wherever feasible.

Id. at 31-32 (footnotes omitted).

178. *Id.* at 36.

179. *Id.* at 34 (footnotes omitted).

180. Without a value judgment on distribution, "the case for marginal cost pricing is stripped of its former authority. Yet insofar as the ideal distribution of welfare is unknown (and possibly unknowable), it can be urged that the best policy is to accept some plausible distribution provisionally and optimize with respect to it." *Id.* at 59

mal adjustment may involve marginal cost pricing by some or none of the individual sectors in the economy.¹⁸¹

As a result, they conclude that

in the absence of any clear knowledge of what the ideal distribution is, the best course of action is to follow the conventional marginal rules and optimize relative to some provisionally accepted distribution. Then, we know that marginal cost pricing can benefit everyone relative to any other policy for the chosen distribution.¹⁸²

This response is simply wrong.

The third response is to accept Lipsey and Lancaster's result as a challenge to do better, albeit not a particularly important challenge worthy of much effort.¹⁸³ Alfred Kahn, the intellectual father of most of modern regulatory economics,¹⁸⁴ took this position in his now-classic treatise *The Economics of Regulation*. Kahn addressed second-best issues at the end of the first, "positive" volume, along with several other issues, in a chapter entitled "Qualifications." After summarizing the problem, Kahn set out what he saw as the important implications of the second-best problem for regulators:

This general proposition means that, as a matter of pure economics, adoption of any particular economic policy on the basis of the rules we have expounded could well end up doing more harm than good in practice. But the observation applies equally well to the policy of having *no* policy. Most economists would draw the conclusion, from this dilemma, that a conscious policy is better than an unconscious one; that, therefore, the important contribution of the theory of the second-best is not that it recommends a policy of no policy but that it emphasizes the need for considering, as best as one can, the implications for any particular policy of the presence of suboptimal conditions elsewhere in the economy; and that as a practical matter it is not impossible to make informed judgments about the ways in which *the most directly relevant* imperfections elsewhere might suggest modification of the rules. In short, here as elsewhere, there is no substitute for judgment when one comes to the job of applying our principles—judgment in identifying the imperfections elsewhere that bear most directly on the wisdom of the policy under considera-

181. *Id.* at 58.

182. *Id.* at 57.

183. This reaction is similar to the general responses to Lipsey and Lancaster's paper that concentrated on showing that piecemeal policies could still increase welfare in certain circumstances. For example, Davis and Whinston argued that "where only prices and the variables under the deviant's control enter into his decision rule, then the market takes [the deviations from the behavioral rules necessary for Pareto optimally] into account. In such situations 'piecemeal policy' is all that is required." Davis & Whinston, *Welfare Economics*, *supra* note 172, at 12.

184. See McCRAW, *supra* note 80, at 230-59.

tion and in deciding in what way those imperfections counsel modification of that policy.¹⁸⁵

Kahn's emphasis on contrasting a policy of "no policy" with marginal cost pricing echoes Furubotn and Saving's argument that it is just as likely that removing a distortion will improve welfare as reduce it.

Kahn identifies the "most obvious" relationships worthy of consideration as "between prices and marginal social costs of close substitutes, complementary products, or products using the public utility service as input."¹⁸⁶ Although Kahn concludes that "[t]he decision about what kinds of modifications second-best considerations recommend can be made only by looking at the facts in each individual case,"¹⁸⁷ he suggests the somewhat surprising conclusion that the result of considering second-best issues is likely to "strengthen the general case for adopting first-best pricing of public utility services"¹⁸⁸ and that "[o]n balance second-best considerations probably argue more often for pricing utility services below marginal cost than above."¹⁸⁹ This view is also implicit in Bonbright's 1960 treatise on utility ratemaking, whose theme was that "sound ratemaking policy is a policy of reasonable compromise among partly conflicting objectives."¹⁹⁰ While better than simply ignoring the issues, this reaction rests on the empirically unsupported claim that second-best considerations are largely unimportant. Until there is evidence based on a combination of careful theoretical work and empirical investigations, this claim is little different from Furubotn and Saving's more general rejection of Lipsey and Lancaster.

The fourth reaction is the interpretation of Lipsey and Lancaster's results as an argument for more extensive regulation. For example, one economist concluded an analysis of the problem of sustainability of Ramsey pricing by noting that "the existence of natural monopoly and a zero-profit constraint for any subset of goods in the economy argues in favor of a large number of goods in the regulated set, regardless of demand interrelationships."¹⁹¹

185. KAHN, *supra* note 8, at 196.

186. *Id.* at 196.

187. *Id.* at 198.

188. *Id.* at 197.

189. *Id.* at 198.

190. BONBRIGHT, *supra* note 6, at viii.

191. Almarin Phillips, *Ramsey Pricing and Sustainability with Interdependent Demands, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE*, *supra* note 11, at 201. In addition to explicit calls like Phillips', a number of calls for expanded regulation made implicit second-best arguments; see also Rosenberg, *supra* note 45, at 63-68 (arguing in 1974 for federally insured and guaranteed financing for utility construction because of depressed stock prices, energy prices increases, inflation, and competition for capital).

Common to all four reactions is a lack of attention to second-best considerations. They simply have not played a major role in economic regulation, raising the question of why they have not. One reason is that the second-best literature is dense and difficult to read. A second reason is that the second-best literature itself is unable to clearly define the "problem" of second best, let alone how to resolve the problem.¹⁹² A third reason is the timing of the spread of ideas—just as second-best issues began to be discussed in the utility-regulation literature,¹⁹³ utility regulation was turned upside down by the events of the early 1970s. In the ensuing scramble to create policy responses to the new conditions, relatively theoretical issues—particularly ones which raised what still appear to be unanswerable objections to conventional approaches—could easily be lost.

All four reactions significantly undermine the efficiency rationale for regulation. Commenting on Furubotn and Saving in 1969, Richard Lipsey set out a clear statement of the requirements of his earlier work with Lancaster, a statement which applies equally well to all four types of responses described above:

What the theory of second-best still requires is the specification of economic situations in which we are interested, a translation of these into relevant constraints, and a study of the relation between the [first best optimum conditions] and the [second best optimum conditions] in the particular issues so defined. It also needs additional empirical information about situations in which the behavior of a sector that can be influenced by policy does or does not influence behavior in sectors in which the [first best optimum constraints] cannot be fulfilled. Until we can narrow the range of possible cases empirically we still seem to be left with the original conclusion of [Lipsey and Lancaster]¹⁹⁴

Lipsey's formulation of the requirements of second-best policy go well beyond the application of the regulator's and/or economist's (or, even better, economist-regulator's) judgment that Bonbright and Kahn prescribe. Indeed, Bonbright's and Kahn's positions seem to be in the end a plea for more deference to regulators (or at least regulators who understand economics)—we are to defer to the judgment of regulators not only in choosing rules to be implemented (such as marginal

192. See generally Davis & Whinston, *Piecemeal Policy*, *supra* note 172, at 330 (noting disagreements with others); SHERMAN, *supra* note 52, at 124 (labelling as second-best prices those where "the enterprise must depart from ideal marginal cost prices for some accepted reason, such as to avoid too great a financial loss, and does so in a way that minimizes the consequent loss in economic welfare . . ." and using Ramsey pricing as an example).

193. See, e.g., Furubotn & Saving, *supra* note 177 (published in 1971).

194. Richard G. Lipsey, *Comment*, in *ESSAYS ON PUBLIC UTILITY PRICING AND REGULATION*, *supra* note 177, at 68.

cost pricing) but also in choosing when to deviate from the rules themselves. This is an important distinction; one virtue of a rule such as marginal cost pricing is that it constrains regulators at least a little from action which produce rents (e.g. cross-subsidies) and that virtue is lost when we grant regulators the broad discretion advocated by Bonbright and Kahn. While the effectiveness of the marginal cost constraint is debatable, it is certainly at least greater than discretionary authority to pursue the regulator's own judgment in deciding whether there are other imperfections, whether those imperfections justify departure from the rule, and the form of the deviation the imperfections require.

B. *Technical Expertise*

Regulation requires three types of technical expertise. First, regulators must understand the goals of regulation. Second, regulators must understand how to implement the means of achieving those goals. Third, regulators must have the information available to effectively implement those means.

The goals of natural monopoly regulation under a first-best analysis are relatively straightforward: gain the efficiencies made possible by the natural monopoly characteristics while avoiding the problems of allowing a monopoly to operate. In practice, however, deriving the first-best outcome is more difficult than this simple formulation suggests. Even in the relatively clear-cut case of a natural monopoly, the ultimate goal of regulation is unclear in practice. In particular, who will receive the benefits gained by regulation is open to question.¹⁹⁵ As with price, economists have a straightforward answer: maximize consumer surplus.¹⁹⁶ As with the marginal cost pricing rule, the rule's statement is simpler than its implementation.¹⁹⁷ For example, many utility services have significant quality characteristics which will be affected by regulatory action. Electricity available twenty-four hours per day, for example, is different from electricity that is periodically unavailable. The introduction of non-price rationing of service requires a more sophisticated analysis that introduces additional as-

195. See Vogelsang, *supra* note 71, at 11-12.

196. See *id.* at 12; BROWN & SIBLEY, *supra* note 6, at 27.

197. See Vogelsang, *supra* note 71, at 12. Vogelsang suggests "hypothetical voting procedures" to select regulatory goals and notes that "[m]aximizing consumers' or social surplus as an official goal might tremendously reduce subsequent conflicts if measurement problems could only be overcome." *Id.* at 12 n.5.

sumptions about consumer behavior.¹⁹⁸ Another complication is introduced by allowing joint production of the regulated good and unregulated goods, as in the case of industrial co-generation of electricity. Forbidding such production eliminates potential cost savings and allowing it complicates regulatory action.¹⁹⁹ Implementing marginal cost pricing requires the capacity to vary costs over time to smooth peak loads, thus reducing the need for additional generation capacity, but implementing peak load pricing is expensive and requires sophisticated regulatory structures to realize efficiencies.²⁰⁰ Metering costs also pose a barrier to marginal cost pricing.²⁰¹ Even where technological advances have permitted more accurate measured service (for example of local telephone service), concerns over the distributional effects of switching from flat-rate to metered service have delayed implementation of the technology.²⁰²

The *Hope* framework presented several problems for first-best utility pricing:

the input determining allowed profit and capital is an object of choice for the utility, so that choice may be biased; outputs may be inefficiently chosen because monopolistic motives remain in the utility to influence rate structure; and setting allowed profit by *Hope* methods interferes with the residual role of profit and distorts risk bearing and oversight functions of investors.²⁰³

Solutions to these problems typically involved schemes of increasing complexity. One analyst, for example, proposed a combination of regulatory rules, which he conceded were “not . . . very encouraging when studied singly,” that involved industry-based target costs “adjusted skillfully to make a target reasonably suited to a particular firm’s circumstances,” allowed profit based on “an output mixture

198. See Ray Rees, *Consumer Choice and Nonprice Rationing in Public Utility Pricing*, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE, *supra* note 11, at 227.

199. See Paul L. Joskow, *Industrial Cogeneration and Electricity Production in the United States*, in REGULATORY REFORM AND PUBLIC UTILITIES, *supra* note 23, at 96; Jürgen Müller, *Industrial Self-Generation of Electricity in a Public System*, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE, *supra* note 11, at 244-45.

200. See Jan Paul Acton & Bridger M. Mitchell, *Evaluating Time-of-Day Electricity Rates for Residential Customers*, in REGULATED INDUSTRIES AND PUBLIC ENTERPRISE, *supra* note 11, at 271-72.

201. See Michael A. Crew & Robert D. Dansby, *Cost-Benefit Analysis of Local Measured Service*, in REGULATORY REFORM AND PUBLIC UTILITIES, *supra* note 23, at 35.

202. See *id.* at 35, 59 n.2. Crew and Dansby quote a critic who argued that local measured telephone service “poses the threat of being the most massively regressive piece of social engineering that the nation has ever seen.” *Id.*

203. Sherman, *supra* note 114, at 62.

that is fixed and unaffected by currently chosen prices," and a modified Ramsey-pricing rule.²⁰⁴

Second-best theory suggests important modifications of these goals. In a world with many imperfections, successful regulation requires not simply ensuring efficient operation of the natural monopoly itself but efficient operation of its suppliers and customers. To the extent there are significant imperfections affecting those, the regulator must adjust the regulation of the natural monopoly.

This characterization still understates the problem, however. When a technology is static, simply implementing a pricing rule may be adequate. When a technology has the potential to change in ways which alter the boundaries of the natural monopoly, and which may call into question the entire notion of a natural monopoly, even understanding the goal is difficult. To take but one example, the "local loop" portion of the telephone network in the United States consists largely of twisted pair copper wire. The limitations of this portion of the network significantly restrict the ability to make use of new services which require greater bandwidth (e.g., Internet access at reasonable speeds for downloading video or audio). The obsolete local loop can be replaced by higher capacity cabling or by non-wired services. With additional technology costing less than rewiring the local loop, for example, the networks of many cable companies could also provide local telephone service and also offer additional services more cost-effectively than the local phone companies. How should regulators compensate the former natural monopoly local telephone company for its "stranded" investment in the twisted pair network?

The answer is significant for the investors in the former natural monopoly and its new competitors. It will also have an important impact on the rate of technological change beyond the telecommunications industry since the availability of a high-bandwidth pipeline into businesses and homes will enable new services (most trivially, video on demand). The existence of these services will, in turn, produce restructurings of existing industries (video rental stores, consumer electronics).

Implementation is even more difficult. In a first-best world, regulators theoretically need only implement the currently accepted remedy (e.g. marginal cost pricing, *RPI-X* regulation, etc.). Second-best considerations complicate this analysis even more than they complicate the goals. If pricing must reflect not only the costs of, and tech-

204. *Id.* at 65.

nological change implications for, the regulated natural monopoly but also the impact on other industries based upon non-utility related imperfections in the economy, pricing formulas will inevitably grow more complex.

Even if such formulas could be calculated and could be relied upon to remain stable for a reasonable period of time, implementing a second-best pricing rule would require much more extensive data than the analogous first-best pricing rule. Because utility regulators have proven incapable of adequately amassing the information necessary to implement marginal cost pricing, it is unlikely they could amass the far greater data required for an adequate second-best solution.

It is possible to design legal rules that consider second-best theory's implications in some areas.²⁰⁵ In the case of efficiency-based regulation of natural monopolies, however, it may not be. The information necessary to properly analyze the problem would be both difficult and expensive to gather in a sufficiently timely fashion. Assuming that technology will solve that problem suggests central planners' response to the socialist calculation problem. Suppose, however, that technology provides sufficient computational power that a solution can be calculated. Even then, however, we must consider how to implement any solution, which brings us to the legal constraints we can impose on regulators.

C. *Legal Constraints*

If the fundamental problem of administrative law is to constrain the exercise of discretion by administrative agencies, utility regulation reflects a significant area of failure. First, the legal environment is necessarily incomplete; a regulatory rule covering all possible states of the world would be impossibly expensive to specify.²⁰⁶ As a result, the regulatory regime must inevitably leave significant terms unspecified, heightening the importance of constitutional constraints. Second, the Supreme Court's abdication of constitutional review of rate regulation, combined with its general retreat from review of agency action encompassed in the *Chevron* doctrine, leaves only the more transient restrictions imposed through substantive provisions of regulatory statutes to contain agency discretion. Perhaps more importantly, the regulated community is no longer smaller than the regulators. Energy

205. See, e.g., Richard S. Markovits, *The Causes and Policy Significance of Pareto Resource Misallocation: A Checklist for Micro-Economic Policy Analysis*, 28 STAN. L. REV. 1 (1976).

206. See Vogelsang, *supra* note 71, at 15-16.

utilities are increasingly not only providing multiple types of energy but also providing them across state and even national boundaries.²⁰⁷ Telecommunications utilities are expanding into new services and into international markets.²⁰⁸ As these "natural monopolies" become diversified, international entities, it will become increasingly difficult for state and national regulatory schemes to constrain their behavior.²⁰⁹

There is more to the problem than these significant hurdles to regulation, however. Each of these could be addressed by more sophisticated regulatory schemes, perhaps not wholly successfully but nonetheless partially successfully. There is a second-best problem lurking here as well. Recall that Lipsey and Lancaster's original insight focused on the possibility that individual departures from optimum conditions might "cancel out," making the removal of one distortion lead to a decrease in social welfare. The same may be true of flaws in a regulatory scheme.

For example, suppose that the optimal regulatory scheme involved a wise lawyer-economist (and of course all lawyer-economists are wise) endowed not only with perfect knowledge of all relevant factual information concerning the utility in question, but completely devoid of self-interest and so devoted to his regulatory task that no bribe or other inducement could lead to even the slightest deviation from implementing the ideal regulatory scheme. Suppose further that our omniscient social planner ("Fred") was required to operate under a state administrative procedures act similar to Ohio's in implementing his regulatory scheme.

If Fred were offered the chance to exchange Ohio administrative law for the 1981 Model State Administrative Procedure Act (a law designed by experts and undoubtedly superior to the Ohio law), social welfare would no doubt be enhanced by the exchange. In a world of multiple imperfections in regulators, however, this may not be true.

207. See, e.g., Emory Thomas, Jr., *South Western Electricity PLC Accepts Southern's \$1.7 Billion Takeover Offer*, WALL ST. J., Aug. 28, 1995, at A5 (describing how American utility purchased British utility).

208. See, e.g., John J. Keller et al., *Phone Tag: BT Secures Its Place Among Telecom Titans with MCI Takeover*, WALL ST. J., Nov. 4, 1996 at A1 (describing purchase of MCI by British Telecom).

209. In response to the FCC's Carterphone decision, for example, the Bell System began a creative strategy of obstruction centered around the requirement of a Bell-supplied buffer between the network and the third-party equipment—leading to complaints about cost, technical limitations, and delays in obtaining the buffers, a series of studies, disputes over the effect on revenue, and inter-jurisdictional disputes between state and federal regulators. See Ende, *supra* note 11, at 75-76.

Avoiding an Ohio-like provision for legislative review of rules²¹⁰ may be a good thing under Fred; under a public utility commission subject to minoritarian bias, review by a majoritarian institution might be welfare increasing. *Chevron*-style deference to agency's interpretation of "their" statutes might affect biases introduced by flaws in the legislative process, or it might not. Just as a thorough second-best analysis of an economic problem requires a level of analysis beyond that usually applied,²¹¹ so too analysis of the administrative law issues in implementing a regulatory scheme must go beyond the partial equilibrium analysis of the law. For example, it is not enough to consider whether administrative law judges should be organized in a manner similar to federal judges (with some form of tenure, independence, etc.) or as agency employees based on general jurisprudential concerns;²¹² one must also consider the details of the regulatory scheme they will be implementing. Just as the degree of monopoly in a customer's market may be relevant to a decision on the antitrust policy toward monopolistic behavior by a supplier,²¹³ so too might considerations about the concentration of political power in a regulated community (and perhaps in its customers and suppliers) be relevant when considering the need to insulate agency adjudicators from political pressure by agency policymakers.

Unfortunately, both the constitutional and statutory constraints fall short of permitting this type of analysis. Constitutional constraints operate at a relatively high level of generality: the takings clauses protect all property, not particular types of property. Indeed, their power comes from this generality: if the takings clauses did not protect all property, evading them would become much easier, because a court would merely need to define the protected category in a manner to exclude the property in question. When the courts have attempted to give these constraints sufficient content to address more specific issues, as in the *Smyth* era, they have been strikingly unsuccessful.

Statutory constraints are also inadequate, although for different reasons. When legislators give regulators specific instructions, they generally do so in response to the biases which an omniscient social planner would want the constraints to solve (e.g., the "used and use-

210. See OHIO REV. CODE ANN. § 119.03 (H), (I) (Anderson 1994).

211. See, e.g., Markovits, *supra* note 205.

212. See, e.g., Richard B. Hoffman & Frank P. Cihlar, *Judicial Independence: Can It Be Without Article III?*, 46 MERCER L. REV. 863 (1995).

213. See, e.g., Richard S. Markovits, *Second-Best Theory and The Standard Analysis of Monopoly Rent Seeking: A Generalizable Critique, a "Sociological" Account, and Some Illustrative Stories*, 78 IOWA L. REV. 327 (1993).

ful" utility statute in *Duquesne*). Conversely, when they do not provide specific instructions, they create opportunities for minoritarian biases (e.g., the utility situation in the 1950s and 1960s). Legislation is a strikingly poor instrument to solve the type of problems illuminated by public choice analysis—an unsurprising result since relying on legislation is essentially asking legislatures to self-regulate. Moreover, to the extent legislatures themselves are not constrained by constitutional doctrines from making contradictory delegations of authority, political pressures may lead to muddled regulatory frameworks.

Solving these problems is complex. To take account of second-best problems requires more than simply identifying an offsetting imperfection²¹⁴—it requires a comprehensive analysis. Offsetting any particular imperfection, of course, may or may not improve social welfare because the additional knowledge that a particular imperfection is offset does not provide sufficient information to assess the overall welfare effects.

Suppose, however, that these problems are solvable—that despite the difficulties in doing so, experts carefully draft statutory or constitutional provisions that will lead regulators to undertake analyses informed by second-best theory and produce the most efficient pricing possible. Further suppose that the expert drafters are capable of designing an administrative process that has just the right incentives so that no participant in the utility regulation debate (including the utilities, consumers, labor organizations, environmental organizations, lobbyists of assorted persuasions and abilities, business customers, rural cooperatives, equipment suppliers, proponents of alternative fuels, and all the rest) is willing or able to make use of the mechanisms of administrative law or judicial review to significantly degrade the performance of the regulatory scheme. Would such a system be enacted by a legislature? This brings us to the third problem area, political institutions.

D. *Political Institutions*

The history of utility regulation suggests that a degree of pessimism about the ability of political institutions to generate appropriate legal constraints in this area is justified. Utility regulation's swing from minoritarian to majoritarian bias reflects a fundamental truth

214. See generally Peter B. McCutchen, *Mistakes, Precedent, and the Rise of the Administrative State: Toward a Constitutional Theory of the Second Best*, 80 CORNELL L. REV. 1 (incorrectly identifying as a second-best solution offsetting one constitutional imperfection with another without a more general analysis).

about the subject: because utility ratemaking is both complex and dull, its ability to capture public attention is thus dependent on the existence of politically charged symbols, like expensive, incomplete nuclear power plants. *The Economist*, for example, concluded a recent article on the slow progress of deregulation in the electric industry by noting “[o]nly one (implausible) event might bring about rapid, and real, competition: a sudden surge of interest by the average American in his electricity bill.”²¹⁵ Because such symbols appear sporadically at best, simply getting the attention of the public in this area is difficult. In the absence of that attention, however, industries regulated as natural monopolies are by definition concentrated interests and hence a minoritarian bias is likely. Another indication of the failure of political institutions to generate appropriate legal constraints is the continued assertion of the natural monopoly argument for utility regulation, even as the underlying rationale underwent a complete reversal.²¹⁶ Public choice theory in general suggests numerous reasons to doubt the political system’s ability to produce legal regimes capable of “optimal” regulation, even under first-best analysis. It is difficult to improve on the conclusion of a 1923 book: politics “stands ever in the background as a counter-determinant, a potent factor working against scientific regulation and one whose presence cannot be forgotten.”²¹⁷

Once again, second-best considerations only make a bad solution worse. There are remedies for at least some of the problems described above—reforms from increasing public participation to decreasing public participation have advocates. A second-best solution to the regulatory problem is unlikely to be prompted by such broad reforms, however. Regulatory measures reformed by second-best theory are likely to be more complex, rely on more difficult to collect and interpret data, and so forth. Ultimately, deriving a second-best solution will require more deference to regulators, something likely to worsen the first-best problems with the political system.

We might proceed from here by making assumptions like those with which I ended the last two sections—our ideal economist-regulators and legislative drafting committee might be joined by a legislature of equally idealistic, technically competent legislators, a population of voters similarly qualified, and so on. In such a society, of course, we would not need any regulation to begin with (except perhaps as an

215. *Chopping Up America's Power*, THE ECONOMIST, May 3, 1997, at 21, 22.

216. See *supra* notes 164-172 and accompanying text.

217. MORGAN, *supra* note 75, at 81.

intellectual exercise). A more rewarding next step is therefore to consider the real world in which disinterested, objective, technically competent analysis comes only from the pens of academics.

III. AN ALTERNATIVE APPROACH TO REGULATION

There is a strong temptation to view second-best theory as an invitation to reject economic analysis altogether. I believe this would be a mistake, and not only because of my own considerable investment in an economics education. Partial equilibrium analysis offers an important tool for identifying pathways for human behavior, incentives for particular types of actions, and such. The mistake lies not in performing the analysis but in considering the solution to the mathematical model as directly translatable into public policy. Identifying the Averch-Johnson effect, for example, is an important contribution to regulatory analysis. However, it is a mistake to draw the policy conclusion from the proof of the Averch-Johnson effect that utilities should be forced to reduce their investment in capital. The potential existence of a bias toward over-investment is a valuable insight but it can be implemented only by examining the totality of a utility's environment.

Moreover, economics offers insights far beyond elegant mathematical constructs—Ronald Coase's *Problem of Social Cost*²¹⁸ is a non-mathematical analysis which has had more influence (or is at least more frequently cited) than any model or econometric effort; Friedrich Hayek's *The Use of Knowledge in Society*²¹⁹ concisely summarizes the comparative advantage of markets over central planning in a manner which still repays extended consideration without a single equation. In approaching a problem such as utility regulation, therefore, one must be aware of the limitations of first-best, partial equilibrium-based analyses.

The dominant approach to the concerns raised by second-best theory is to ignore them and continue to pursue policies at least nominally aimed at traditional, first-best solutions such as marginal cost pricing. Although its social welfare effects are far from clear, this approach has an important virtue: it constrains regulators. If utility regulators are subject to capture, for example, constraining their policies has certain virtues as a safeguard. The technical difficulties in actually implementing such policies, particularly when confronting utilities

218. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

219. F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945).

which operate across regulatory jurisdictions and so have potential to manipulate the "facts" upon which regulators base their actions, like accounting and equipment location, suggest this is a limited benefit.

Utility regulators might attempt to conduct the factual and economic analyses necessary to implement policies which take into account second-best considerations. Electric utility rates, for example, for industrial customers might be varied according to the degree of monopoly power the customer possessed in its product markets and the importance of electricity costs to the customer's operations. Such policies would face not only the technical problems of marginal cost pricing but the costs of making utility ratemaking bodies even more desirable as targets for regulatory capture. In addition, the rates they produced would be difficult to explain to the public at large, again enhancing the prospects for capture.

An alternative view of regulatory history suggests a different approach. George Priest concluded his survey of the theories of regulation debate by noting that both forms of public utility regulation widely used in the United States, municipal franchising and administrative commissions, could be seen as different types of long term, relational-contracting.²²⁰ A contractual approach would reposition regulation into the same continuum of organizational forms which we use to analyze the economic organization of unregulated transactions. For example, regulators would need to consider whether particular problems are best dealt with within a vertically integrated form or by market purchase of goods. Most importantly, thinking of a regulatory transaction as a contract would provide a framework for considering issues such as an exit strategy for when the current organizational form no longer suited conditions, and mechanisms to address issues of opportunism, bounded rationality, and bilateral monopoly. Such a framework would at least make clear the costs of the mechanisms chosen. Thus, for example, a proposed monopoly of access to public property to create a local loop would require more significant concessions from the regulated entity than a proposal to share access with other competitors. Whether such an approach would be feasible requires further analysis (which the reader will undoubtedly be relieved to learn, is not included here). Undoubtedly many of the same problems identified above would hinder the creation of efficient con-

220. See Priest, *supra* note 6, at 323. Another similar argument, that regulatory rules generally "are simply the clauses of such a long-term contract" is made in Vogelsang, *supra* note 71, at 11.

tracts. There would be, however, two significant advantages to such an approach.

First, a contractual form would shift attention away from attempting to implement first-best solutions derived from partial equilibrium analysis. One could not, for example, convince many people that a contract which specified the utility's responsibility as selling its services at marginal cost, Ramsey prices, or anything similar was a well drafted contract. Second, lawyers and individuals generally are quite good at drafting contracts. Building a regulatory structure around something where there is a long record of success would be a positive step, particularly when compared to the unimpressive record of regulation of utilities.

Even if a contractual approach does not ultimately resolve all the problems conventional utility regulation creates, there are some important lessons from second-best theory for regulators. The most important of these is that there ought to be a profound skepticism about society's ability to dictate efficient solutions through regulation. By removing the 'fig leaf' of regulators' presumed ability to optimize natural monopolies' behavior, regulatory policies such as cross-subsidization would require explicit justification on their own merits. Instead of accepting regulators' claims that they can produce efficiency (or indeed any other, comparably large scale social goal) we ought to test their claims against three criteria based on modesty, which correspond to the three factual assertions I rejected earlier: (1) Technical modesty; (2) legal modesty; and (3) political modesty.

(1) *Technical modesty.* There ought to be little room for solving global optimization problems. Let us be honest about our limitations and admit we do not know whether pricing utility services at marginal cost, half marginal cost, twice marginal cost, or any other arbitrary amount increases efficiency. Instead, those proposing regulatory action ought to demonstrate that their proposals accomplish some readily measurable goal.²²¹

(2) *Legal modesty.* Administrative and regulatory law are attempts to solve the problem of constraining the discretion of the ad-

221. In the contractual approach, for example, regulators instead would be expected to accomplish goals similar to those accomplished by private actors in the market. For example, they might be asked to secure a package of basic electric or telephone service which could be purchased for low income families. Not only could such a package be compared to the package obtained by market participants, private charities would be able to negotiate better deals if regulators failed to achieve a satisfactory solution, providing additional benchmarks and a market test if the aid recipients opted for the privately produced package over the publicly provided one.

ministrative state enough to prevent abuses, inefficiency, and mistakes while leaving the “experts” at agencies sufficient discretion to solve the regulatory optimization problem, all the while balancing a complex and often contradictory set of values encompassing public participation, due process, judicial independence, political accountability, and more. In short, it is a messy, not particularly successful, often incoherent and self-contradicting jumble. Public utility regulation embodies all these flaws but it is by no means alone in doing so.²²²

(3) *Political modesty.* The aggregation of individual preferences through elections of any form is such a remarkably crude device that we must be modest about the potential for the resulting political constraints to bear any relationship to those preferences. Encouraging transparency provides one step toward more honesty about the results of shifting decisions to political institutions rather than leaving them to the market. Combined with vigorously enforced general rules to protect against majoritarian bias, such an approach would avoid many regulatory excesses.

Being modest about society’s ability to regulate is not going to be nearly as fun for the regulators or nearly as profitable for the regulated. I suspect it will also lead to less regulation rather than more, but that is a testable empirical prediction.²²³ There may be cases where a regulatory solution can genuinely enhance social welfare. Identifying such cases only begins with partial equilibrium analysis and will require the development of more sophisticated analytical tools and compilation and analysis of a great deal more data. That regulatory problems are hard no more excuses advocates of regulation

222. Contract law, on the other hand, is a comparatively clear, rational and comprehensible body of law. Moving toward contract law can only increase the likelihood that we can accomplish our goals, particularly if those goals are modestly defined.

223. While I believe this would lead to a policy outcome I personally would find congenial (extensive rejection of regulation), those beliefs represent my own evaluation of the public’s true preferences, an evaluation I am more than willing to test in the marketplace of ideas. In a now relatively obscure essay on public utilities, Kenneth Boulding wrote

economic work on market power strikes me as dismal. We have concentrated on developing arbitrary measures of concentration and have neglected the sociology of market power. Who is the bastard? That is the real question of market power; the economics part of it is trivial. If an industry happens to have a bastard, we are all right. He won’t play; he’ll cut prices and he won’t go along with the boys and they won’t let him join the country club. The real question is, Who isn’t in the country club? All this economic numerology of market power is hardly worth the paper it written on. You have to look at these things more subtly. I don’t know what policy produces bastards, at least in the sociological sense, but there is something in this which I am quite sure we can explore.

Kenneth E. Boulding, *Entropy Economics*, in PUBLIC UTILITY REGULATION: CHANGE AND SCOPE, *supra* note 11, at 11. Instead of searching for the solutions to optimization problems we can never solve in the real world, we ought to concentrate on unleashing the “bastards” into regulated industries.

from providing those tools than the difficulty of an exam question would excuse a student from focusing on the proper issues. Until such tools and data are available, however, the debate over regulatory policy should be recognized to have little to do with economic efficiency. We are in the middle of a significant restructuring of most public utility industries in the United States and whether this restructuring produces prices closer to marginal cost or not is among the least relevant and least interesting questions one might ask about it. We ought to turn our attention to the political and distributional questions this restructuring raises rather than waste more time on first-best efficient pricing debates.