The Economic Role and Effectiveness of Local, Government Electric Utilities in the United States: Past and Present

by

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Abstract: Municipally-owned electric utilities comprise an important segment of the electricity market in the United States. We describe these public power utilities and present evidence on their history. We describe how they are treated, and in many cases misperceived, in the industrial organization literature. In order to assess the legitimacy and effectiveness of public power we argue that it is essential to examine the empirical literature on relative economic performance of publicly-owned versus privately-owned electric utilities. Public power generally comes out very well, but the literature is inconclusive. It is not, however, consistent with the "property rights" school's view of public ownership. We argue that the debate on public versus private ownership should continue but that the focus should be on empirical evidence rather than ideology.

I. Introduction

The electric utility industry in the United States is a rather strange amalgam, constructed contentiously over the past century and a quarter, comprising a mix of privately (investor)-owned and publicly (government)-owned firms. Today there are over 3,200 "traditional" electric utilities that are "responsible for ensuring an adequate and reliable source of electricity to all consumers in their service territories at a reasonable cost" (EIA, 2006, 1). These firms, both private and government owned, generate about two-thirds of the electric power in the United States, but directly serve over 95% of final customers. There also are over 2,100 non-utility power producers, including qualifying facilities (as defined under the Public Utility Regulatory Policies Act of 1978), wholesale generators (exempt from regulation under the Energy Policy Act of 1992), independent power producers (IPPs), and various co-generators that provide the other one-third of raw electric power. Among the traditional utilities, there are 220 investor-owned utilities, 2,011 publicly-owned (municipal and state) utilities, 884 co-operatives (mostly serving rural areas), 152 power marketers, and nine federal power agencies (including the Tennessee Valley Authority). Investor-owned utilities are substantially larger, on average, than most of the other utilities and collect around 63% of electric revenues from sales to final customers, while the publicly-owned utilities collect 16% of revenues, co-operatives and power marketers 10% each, and federal power agencies 1% (APPA, 2006, 20-23). In recent years the outward confrontations in the United States between

government-owned and investor-owned electric utilities appear to have abated. One likely reason for this is the time and effort that must be spent by all participants dealing with changes instigated by recent laws, as well as proposed regulations, that have an impact on the structures and institutions of the industry. The process is ongoing.

The last twenty years have witnessed a dramatic era of liberalization, privatization, and restructuring of electric utilities around the world. At least partly a reaction to both real and perceived weaknesses in state-owned enterprises, organizations as diverse and wide-ranging as the World Bank and the European Union have urged or mandated that both developing and developed countries restructure their electric utility industries. This usually means privatizing previously state-owned utilities, unbundling generation from transmission and distribution functions, and establishing wholesale market mechanisms. While the generating sector frequently has been deregulated, firms engaged in transmission and distribution usually remain subject to government regulation.

There have been similar pressures in the United States, but they have manifested themselves differently. The largest electric utilities already were privately owned, but the prices they charged were regulated by the federal government and by state governments. Consequently, price regulation itself was seen by many as the problem, and the solution was price deregulation rather than reform of existing regulation. There is, however, one notable feature of the reform process in the U.S., and it may surprise some observers. There has been relatively little pressure to privatize the government-owned electric utilities. This suggests that the customers of government-owned electric utilities generally have been satisfied with the economic performance of their respective utilities. Yet public ownership remains controversial.

The focus of this paper is on what is commonly known as “public power” in the United States, the slightly over 2,000 municipal and state-owned electric utilities. Public power dates from the very earliest days of the industry. By 1885, three years after the opening of Thomas Edison’s Pearl Street Station in New York City, there were 167 electric utilities in the United States; sixteen (9.6%) of these were municipally owned. A decade later in 1895, 386 (18.6%) of the 2,076 electric utilities were municipally owned, and by 1902 municipalities owned and operated 815 (22.5%) of the 3,620 in operation.

The number of public power systems in the U.S. peaked at about 3,000 in the early 1920s, dropped by about a third to 2,000 during the merger wave of the later 1920s, and then stabilized (Hausman and Neufeld, 1999, 4). Today, though there are several large public power utilities (including the Los Angeles Department of Water and Power, Seattle City Light, San Antonio City Public Service Board, Jacksonville Electric Authority, New York Power Authority, and the South Carolina Public Service Authority), most of the public power systems in the U.S. are quite small. The median-sized public power utility serves about 1,900 customers, compared to 115,000 for the median investor-owned utility; the public power system at the 90th percentile serves just over 15,000 customers while the comparable investor-owned utility serves 1.1 million customers. (EIA, 2005, Table 10).

As noted above, the electric utility industry in the United States was not constructed without contention. The legitimacy, effectiveness, and economic efficiency of electric utilities owned and operated by local and state governments in the United States have been debated for well over a hundred years. As early as 1899 one observer could note, "No problem in economics has yielded more discordant solutions than has the problem of the comparative value of municipal and private ownership in electrical undertakings" (Perrine, 1899, 286). As might be expected, the present industry restructuring has sparked a new round of controversy over the economic effectiveness of public power systems. In the rest of the world, the liberalization, privatization, and restructuring movement, and the reaction to it, has assured that "the debate over state ownership continues to rage" (Shirley and Walsh, 2001, 1; also see Megginson and Netter, 2001, for a survey of empirical privatization studies). It is fair to say that most economists in most cases have a presumption in favor of private ownership. But that presumption may be misplaced in the case of public power. In the following sections, we examine some of the perceptions economists have of public power, describe the debate over public versus private ownership of electric utilities in the United States, and assess the recent empirical evidence on the issue.

II. Textbook Treatment of Public Power: Facts and Analysis, or Prejudice and Myth?

Industrial organization economists focus on the structure and performance of firms in an industry and usually consider issues such as the degree to which firms in an industry are vertically or horizontally integrated, the extent and nature of competition, regulation of natural monopolies, and issues of antitrust. The question of firm ownership is closely related to these issues. Sympathetic treatments of public power are likely to present it as an alternative to the regulation of privately-owned monopolies. Less sympathetic treatments are likely to present it within the context of government ownership of firms in general, that is, with varieties of socialism.

A theoretical argument prominent in economics holds that private ownership will always lead to more efficient economic behavior than public ownership, even when the firm has no competition (see, for example, Demsetz, 1967; De Alessi, 1980, 1983).[1] In its simplest form, this "property rights" argument holds that those whose decisions affect their own property will always be more careful than those whose decisions affect only other people's property. More recent formulations accept that the managers of large enterprises tend to be distinct from owners, and, in the case of large corporations, that stockholders have very little direct influence on management. Although this attenuates the connection between private ownership and efficient operation, the fact that private ownership can be easily transferred (by sale of stock) subjects inefficient managers to the threat of a "takeover." More efficient operation of a company that has been inefficiently run should lead to higher profits and higher stock market valuation. If a new group of managers can convince stockholders or financiers that they could improve efficiency, this increased valuation can essentially be used to take control of a company and replace

[1] At the most basic level, static economic efficiency means producing a given level of output at the minimum total cost; or conversely, obtaining the maximum value from an existing set of inputs. There are two main types of static efficiency: technical and allocative. Technical efficiency means producing the maximum possible output with a given a set of inputs (where failure to do so is sometimes termed X-inefficiency). Allocative efficiency takes input and output prices into consideration and occurs when costs are minimized and price equals long run marginal cost. Other measures of economic performance include dynamic efficiency (innovation and the loosening of constraints), fairness in distribution, or the fostering of other social values.

existing management (see, for example, Viscusi, et al., 2005, 506-08). Since citizens cannot sell their ownership in a government-owned firm, the argument is that there is less incentive for close monitoring of managerial efficiency either by citizens or by a potential new management team.

Although the political process does provide a means whereby citizens can monitor and influence the behavior of the managers of publicly-owned firms, those who argue for the superiority of privately-owned firms on theoretical grounds seem to have a stronger case given the current state of economic theory than those who argue the case for the superiority of publicly-owned firms on theoretical grounds. However, as a context for evaluating public power, the property rights position has several deficiencies. It does not distinguish electric utilities from other enterprises and thus cannot take the unique history and distinctive economics of the electric power industry into account. Indeed, two theoretical arguments that were commonly made in defense of public power in the 1930s virtually have disappeared: the "yardstick" argument that public power provided a comparison by which the efficiency of private power could be judged and the "birch rod" argument that the threat of municipal takeover provided a major incentive for private power companies to operate efficiently (Olds, 1935; also see Kahn, 1971, 104-6). Finally, the mechanism proposed by property rights theory (in its capital market/takeover version) is weak in the sense that the level of firm efficiency might have to fall very low before it can be detected by outsiders and provide sufficient potential surplus to trigger a costly takeover battle. For these reasons, an objective evaluation of public power must examine the empirical literature.

Much of the professional literature on the economic effectiveness of public power systems focuses on particular aspects of utility operations rather than the utility as a whole. Consequently, generalizations regarding the overall effectiveness of public versus private utilities frequently are made too casually. Many commentators, when they discuss public power at all, use selected references from the literature to make generalizations that are consistent with preconceived notions about public enterprise. For example, one popular industrial organization textbook suggests that the significant difference between public and private electricity rates is due solely to tax differences.[2]

[2] Joskow and Schmalensee (1983, 17) also emphasize differential taxes in their influential book.

Carlton and Perloff (2000) give public enterprise short shrift in their text but still make the generalization that there is little evidence that government-owned firms behave optimally or set prices to maximize welfare. For the electric utility industry, they cite a single 1971 article by Sam Peltzman, "Pricing in Public and Private Enterprises: Electric Utilities in the United States," as evidence. Using Peltzman as an authority, they argue that "although municipal utilities charge lower prices on average, the difference is due to the government firms' tax exemptions" (657). It is worth exploring Peltzman's article in more detail because it is cited frequently in the literature evaluating the relative efficiency of public versus private ownership. Boardman and Vining (1989), Vining and Boardman (1992), and Shirley and Walsh (2001) all cite this paper as showing empirically that private ownership is "more efficient" or "superior" to public ownership.

One problem with citing Peltzman's article for this purpose is that it is not about "efficiency" (producing a given level of output with the fewest inputs or at the lowest cost) at all; it is about pricing behavior and makes the basic argument that public firms will set prices low to gain political support and that they will engage in less price discrimination than private firms. Peltzman admits that public firms have lower prices, but he attributes this to lower operating costs because of tax exemptions. Peltzman's contention, however, that public power systems "are virtually exempt from taxes facing private utilities, and this accounts for virtually all of the difference between government and private utility rates" (135-136), is incorrect. It is true that public systems did not pay the same "nominal" tax payments as private systems, but they did make substantial "in lieu of tax payments" to local governments. For the year Peltzman studied, these payments were about 9 percent of their retail revenues (U. S. Federal Power Commission, 1967, X, XV). Peltzman's specific contention that "private utility taxes are about 3 mills per kwh greater than government utility taxes, and this is the magnitude of the difference between the private and government rates" (136) also is incorrect. Peltzman used different data sources and different numbers of public and private utilities in calculating this difference. The data used to calculate the price difference between public and private utilities are for "cities" served by these utilities (64 by public power and 71 by investor-owned utilities) while the data used to calculate taxes are for "utilities" and are much more comprehensive. If the more comprehensive data are used in the calculation, the

absolute price difference in favor of public power is almost one forth greater than Peltzman suggests (3.7 mills versus 3.0 mills). It is wrong say that this article confirms that private electric utilities are more efficient than public electric utilities. In fact, Peltzman's own conclusion is that "the differences between government monopolies and government firms with private competition might be greater than the differences between government firms and private firms in competition with one another" (147).[3]

Another popular industrial organization textbook, Viscusi et al. (2005), in their chapter on "Public Enterprise" admit that both public and regulated private enterprises face (1) incentive problems due to separation of ownership from control, and (2) imperfect monitoring of managerial behavior (506-7). But they believe private firms have better mechanisms to deal with these problems and are, therefore, likely to outperform public firms.

The authors view the dual threats of a firm being acquired and its current management replaced as deterrents to ineffective management of a private enterprise. In contrast, they contend that public enterprises do not face a "comparable disciplining force" (510). This is because public enterprise managers will focus on winning political support rather than maximizing social welfare. They also believe public managers are not threatened by the disciplining forces of capital markets as are their counterparts in the private sector (511).

To the extent these views are intended to apply to public power systems, they betray a basic misunderstanding of what public power systems are, how they work, and the nature of the political and economic pressures that confront them. First, there is an effective proxy for profits in public power systems – the amount by which prices are kept below those of surrounding utilities. This difference is an important indicator of the efficiency of public power operations and is an immediate and constant source of economic and political pressure.

When discussing the "political pressure" on public power managers, Viscusi, et al., while not providing a precise definition of the term or explaining how it is applied, imply that is that it is negative, i.e., the efficient production and pricing of electric service suffers. It is true that public power managers face political pressure, but the primary way

[3] A more extensive critique of Peltzman's article can be found in Wisniewski (2003).

it manifests itself is much different than the authors suggest. Political pressures can reinforce rather than lessen the economic discipline faced by public power managers. These pressures have economic roots and some salutary economic effects – pressures to keep electric rates low and quality of service high. In municipal electric systems the proximity of managers to customers is close and public meetings are frequent, typically twice a month. Consequently, the pressure of economic accountability on public power managers is intense.

Viscusi, et al. make the related point that because there is "nontransferability of ownership," i.e., the local community owners of public power systems cannot sell their shares in the utility, managers of public enterprises have considerably more discretion than their private sector counterparts to pursue their own personal interests (510). But this view overlooks the fact that public power systems can be sold to private utilities and sometimes are. This represents effective transferability of economic ownership and serves as a constant source of economic pressure on public managers to operate their utilities efficiently, or at least as well as the private utilities that surround them.

As for public power systems not being threatened by the disciplining forces of capital markets, this contention ignores the fact that public enterprises are "businesses." As such they must raise money in capital markets and are continually scrutinized by investors and credit rating agencies such as Fitch and Standard & Poor's.[4] They do their financing in the debt sector of capital markets, largely with revenue bonds, and this suggests that they may come under even closer scrutiny than private utilities. Investors in debt capital are more risk-averse than those in equity markets and it is reasonable to expect that they scrutinize the soundness of their potential investments at least as much as equity investors, if not more so.

Given the characterization of public power discussed above, it is useful to examine the empirical literature on the actual performance of public power versus privately-owed electric utilities.

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[4] A research report from Standard & Poor's (2006) recently noted that the agency "has a very favorable view of the U.S. public power sector…even though public power utilities face greater [than water and sewer companies] operational and market challenges."

III. Modern Empirical Evidence on Public versus Private Utility Performance

Any empirical study purporting to compare the performance of publicly-owned and privately-owned electric utilities must address certain issues. Primary among these is determining the basis of comparison. By what standard are the ownership forms to be judged? Some of the very first studies, conducted in the late 19th and early 20th centuries, based their comparison simply on an evaluation of the prices charged by each ownership class (Adams, 1888, for example). This is important but can be quite problematic, since many of the variables actually driving such results are not controlled for. It was recognized quite early that a more sophisticated approach would be needed. The primary basis of empirical comparison then switched to some form of productive efficiency—producing the most output with the least inputs or at the lowest cost. In many early studies this standard often was satisfied by comparing accounting costs of production, frequently adjusted to impute to publicly owned utilities certain costs not reflected in accounting records (for example, see Rosewater, 1893).[5] Modern studies typically have used a multivariate cost or production function approach, and these are the ones of interest to us.

Table 1 summarizes the results of ten peer-reviewed journal articles published from 1970-1989 devoted to testing the effect of ownership on efficiency in the electric utility industry. Of the ten articles five concluded that public power systems were more efficient or had lower costs, three found no statistically meaningful difference, and two found public systems to be less efficient. These articles, of course, varied in quality and scope. For example, several of the articles focused only on generation or distribution aspects of electric utilities.

Two of the most comprehensive and statistically sophisticated attempts to date to estimate efficiency differences between public and private utilities are Pollitt (1995) and Kwoka (1996). The results of these important studies are summarized in Table 2. Pollitt's book represents the single most comprehensive, cross-national treatment of the

[5] Hausman and Neufeld (1991) used frontier production functions to analyze the relative efficiency of municipal and private firms in 1898. They found that municipal firms had significantly higher productive efficiency than their privately-owned counterparts.

issue of public versus private ownership of electric utilities published recently. It contains a highly sophisticated empirical treatment of the issue. Pollitt's purpose is to investigate the presumption that privately-owned utilities have lower production costs than publicly-owned utilities, as is generally assumed by proponents of privatization. He uses data from fourteen countries, including the United States. The author first discusses theories of ownership and productive efficiency and reviews previous empirical studies of the issue, many of which are included in Table 1. He then discusses the various methodologies of determining efficiency differences in production, focusing on linear programming techniques and statistical estimation techniques, both of which have been used in previous studies but hardly ever in the same study. He concludes that one of the linear programming techniques, data envelopment analysis, is preferred over the other techniques due to the relative ease of decomposing efficiency (for example into allocative and technical efficiency) and due to the absence of restrictive distributional assumptions.

In the chapters that follow, several data sets are used to test hypotheses regarding relative efficiency of publicly-owned versus privately-owned electric utilities. The first test is based on a sample of 95 firms using thermal power production in nine countries in 1986. Seventy-three of the firms (50 private and 23 public) were located in the United States. In a test of the methodologies used to assess efficiency differences, Pollitt applies two techniques to this data: data envelopment analysis (DEA), the linear programming technique used by Färe et al. (1985), and the stochastic regression technique used by Atkinson and Halvorsen (1986). Using DEA, Pollitt found that private firms were more efficient than municipal firms on five out of six measures of efficiency but that once scale effects were taken into consideration, the differences were quite narrow. When statistical tests were applied to the efficiency scores, it became clear that many of the scores were not statistically different between private and public firms. As Pollitt notes, "…it is difficult to generalize about the significance of differences in efficiency between the two ownership classes" (103). The statistical study based on stochastic estimation (using the same data) could find no statistically significant difference in efficiency between privately-owned and publicly-owned firms. Pollitt's overall conclusion, based on these two analyses, was that "…for two very different methodologies there is no significant

difference in the productive efficiency of public and private firms, after appropriate allowance has been made for differences in technology" (108).

A second analysis tested relative productive efficiency using an international sample of electric power plants. The sample was comprised of 768 (606 of them from the U.S.) thermal electric power plants operating in 14 countries in 1989. Data on output and inputs (capital, labor, and fuel) were collected. The sample was divided into four sub-samples based on theoretical load factors. The results of the plant-level data basically were the same as those for the firm-level data. After applying four different methodologies, Pollitt concluded that "the null hypothesis of no difference in technical productive efficiency between public and private firms holds at the plant level" (113). The results were particularly close for base-level plants with high load factors.

A third analysis was based on a sub-sample of the base-load plants used in the second analysis. Additional data on input prices was collected for 164 of those plants. In this case, once input prices were accounted for, the analysis was more favorable to privately owned plants. "The results … indicate strong evidence for the rejection of the null hypothesis that publicly owned and privately owned electric power plants exhibit no significant difference in overall and allocative productive efficiency. The null hypothesis is rejected in favour of the alternative hypothesis that privately owned plants exhibit significantly higher overall and allocative efficiencies than publicly owned plants" (154). The overall efficiency difference in this case was 4.2%-5.1%. Pollitt concludes that "combined with evidence that the best public utilities in the sample are among the best private utilities, these figures indicate that the expected productivity gain due to ownership transfer, though significant, is small. Well-run publicly owned utilities can still operate at or above the average efficiencies of privately owned utilities" (156).

The final study in the book tests for efficiency differences between private and public utilities engaged in transmission and distribution in 1990. Two data sets are used: one is comprised of 129 U.S. utilities (106 private and 23 public) engaged in transmission; the other is comprised of 145 U.S. and U.K. utilities engaged in distribution. For both data sets, including the one using only U.S. utilities, the null hypothesis of no difference in technical efficiency (as measured by a DEA analysis) could not be rejected at a standard level of significance. Furthermore, the results "indicate

that there is no significant difference in average costs between publicly owned and privately owned firms in both transmission and distribution" (160). Overall, Pollitt did not come close to confirming the usual presumption of greater efficiency in privately-owned electric utilities compared to public power. Pollitt is careful to point out the many potential problems with his analysis and speculates that in the long run privatization may lead to lower production costs for reasons beyond static efficiency, such as better investment planning.

Kwoka (1996) uses data for 396 relatively large public power systems and 147 large private utilities. His analysis used adjusted figures for cost of capital, taxes, types of generation, region of the country, and other factors that were likely to have a significant effect on costs. He concluded that approximately 72 percent of the price difference between public and private electric utilities is due to public ownership itself (30, 78). While no study can be said to be definitive, Kwoka presents a highly credible analysis that shows that public power's significantly lower rates are not primarily due to cost of capital, taxes, or other factors including preferential access to federal hydro power.

All of these quantitative analyses have limitations. For example, none of them explicitly considers the effect on price of the lack of transmission access available to public systems. In the year covered by Kwoka's analysis, 1989, wholesale customers throughout the United States, including public power systems, were restricted from obtaining the least expensive power supply because they did not have reasonable access to transmission facilities. Joskow and Schmalensee (1983) clearly recognize this: "If small utilities cannot bid for ownership rights in generating units of economic size, or cannot transport power over transmission lines at appropriate rates and under appropriate conditions, or cannot participate in power pools on a reasonable basis, they cannot avail themselves of the most efficient sources of generation. This in turn leads to higher costs for the utility and its customers and to associated inefficiencies" (23). Given such conditions, it is even more remarkable that public power has fared so well in most of the empirical studies.

IV. Is Public Power Socialism?

In his sometimes provocative book *The Private Use of Tax-Exempt Bonds*, Dennis Zimmerman (1991), who vigorously disapproves of the use of tax-exempt bonds by private businesses, includes a chapter titled "Tax-Exempt Bonds and Municipal Socialism: The Case of Public Power." While acknowledging that the appropriate division of production between the public and private sectors has always been a subject of debate in the United States, Zimmerman disparages socialism, which he defines in the Marxist sense as "public ownership of the means of production" (271). The use of tax-exempt bonds by public power systems encourages their expansion and is, therefore, undesirable. But Zimmerman's casual use of the term "socialism" and its application to public power is at odds with the views of other well-regarded historians and economists.

Government interventions in the U. S. economy were undertaken largely with little attention to centralized planning (Goodrich, 1960, xxxiii). While the preference for private enterprise in the country is strong, the willingness to use public enterprise also exists. "The choices between public and private enterprises, and in the combination of the two, reveal a pragmatic approach toward appropriate solutions for particular needs, including search for solutions which compromise contending interests"(Redford, 1965, 613). Addressing the issue of "socialism in the United States," economic historian James Anderson (1966, 206) contends: "Public enterprises have been established …for practical and pragmatic reasons and not, it must be emphasized, because of adherence to socialist doctrine. In various situations public enterprises have appeared to be the best, or at least the most satisfactory, way to solve particular problems and meet particular needs."

Prominent economists in the late 19th century did not view the provision of electric service by a municipal utility as an unwelcome introduction of socialism. Rather, the notion of public enterprise was viewed as a legitimate economic response to market imperfections. Although the municipal ownership movement was controversial from its beginning, so was the behavior of privately-owned electric companies. The development of the electric power industry occurred during a period when rapid industrialization, the rise of "Big Business," and growing urbanization created problems that caused many to doubt that solutions could be provided by unfettered private enterprise and *laissez-faire*

public policy. These views were expressed most forcefully by leaders of the Progressive movement in their crusade for municipal reform, an integral part of which was the demand for municipal ownership of public utilities. The advocates of municipal ownership based their arguments on political, moral, and economic grounds. Among the Progressives' most vigorous allies were a group of economists who in 1885 founded the American Economic Association. Economists such as Richard T. Ely, Henry C. Adams, Edward W. Bemis, Edmund J. James, and Edwin R.A. Seligman emphatically rejected the *laissez-faire* attitudes of the classical school of economics. They advocated various types of social control of market processes, including government ownership of a class of business they designated "natural monopoly" and which included electric utilities, gas companies, water works, and street railways (Coats, 1960). The first volume published by the Association contained two lengthy articles justifying this position (James, 1886; Adams, 1887).

These references discuss only the motivations for the establishment of public enterprises in the United States and provide a useful context. However, economic justifications for public power can be found elsewhere. George Stigler, surely no friend of socialism or other government intrusions into the economy, acknowledges that there is a wide range of legitimate activities that local governments might undertake, ranging from libraries to skating rinks. He says: "The preservation of a large role in economic activity for local governments is widely accepted as an important social goal." A good political system "adapts itself to the different circumstances and mores of different localities." The system "should allow legitimate variations of types and scales of governmental activity to correspond with variations in the preferences of different groups of citizens." And the different choices made by different localities are "surely an area of legitimate freedom," and "there is no correct distribution of expenditures among functions" (Stigler, 1962, 137). Stigler argued that the primary criterion for evaluating the appropriateness of government involvement is whether the local community can perform the particular task at hand efficiently.

Nearly half a century ago James Bonbright (1961) said: "Public ownership in the utility field cannot be widely condemned, even by economic conservatives, as 'an entering wedge of socialism.' The case for and against this type of ownership should

depend on the test of relative efficiency as judged by actual experience, not on a doctrinaire dispute as to whether the utilities belong in the sphere of business or the sphere of government" (59). He earlier (Bonbright, 1940) had noted that the literature on the utility industry contained many examples of attempts to block proposals for the establishment of public enterprises by appealing to ideology and characterizing government ownership of utilities as "creeping socialism." But he points out that if "socialism" is used to characterize municipal electric service, then it is important to note that these activities are "enterprises," not socialized services. They are businesses "even when directly owned and operated by the government" (22-23). Socialism has little to do with public enterprise services, such as electricity. These services are designed to be sold at cost, including interest, to investors. They are not subsidized by some to be socialized for all. Contrast this to public schools or other municipal services where there is no serious attempt to apportion taxes with the benefits citizens receive. As under private ownership, customers of municipal utilities are "free to take whatever types and amounts of service they are ready to pay for" at rates that reflect the cost of producing the service (Bonbright, 1940, 24).

V. Conclusion

The characterizations and assessments discussed here suggest that ideological bias can be a problem when economists discuss public power. Preconceived views are frequently propagated and perpetuated without paying much attention to existing literature or alternative viewpoints. Selective research is uncritically accepted and then perpetuated until it becomes the conventional wisdom of the profession and of public policy discussions. Economists need to be more attentive.

We believe that both productive and allocative efficiency should be the primary economic test of whether particular, local government undertakings are appropriate. A careful examination of the modern literature on the relative efficiency of publicly-owned versus privately-owned electric utilities in the U.S. leads to the following conclusion: neither publicly-owned nor privately-owned electric utilities in the U.S can be shown with definitive, conclusive empirical evidence to be more economically efficient than the other. This conclusion may not be fully satisfying to public power advocates but it could

be disturbing to "property rights" advocates who have universal faith in the ability of the private, unfettered market to generate efficient outcomes in all cases and at all times.

Finally, any characterization of public power as socialistic should respond to the issues Bonbright and Stigler raised about local public enterprises -- that they are businesses and within the legitimate scope of local government economic activities. We believe that public policy discussions about the economic legitimacy and effectiveness of public power systems should address the analytical and empirical issues discussed here. As the noted statistician Karl Pearson said in a dispute with Alfred Marshall and John Maynard Keynes ninety-five years ago, "'Statistics on the table, please,' can be my only reply." If this were not done then Pearson argued that the issue would not be one of economic science but "plausible verbalism which renders so much of economics barren" (quoted in Stigler, 1999, 31, 33).

Table 1. Modern Comparisons of the Efficiency of Public and Private Electric Utilities, 1970-1988

Author	Model	Sample Size	Conclusions
Moore (1970)	linear operating cost function; no input prices; full results not presented	49 private 27 public	Public plants had approximately 5% higher costs
Yunker (1975)	linear operating cost function; no input prices	49 private 24 public	Public plants had lower costs
Meyer (1975)	cubic operating cost function; no input prices	30(90) private 30(90) public	Public firms had significantly lower costs
Neuberg (1977)	Cobb-Douglas distribution cost function	90-185 private 75-189 municipal	Public firms had significantly lower costs of 6-20%
Pescatrice and Trapani (1980)	translog cost function	33 private 23 public	Public firms had significantly lower costs of 24-33%
DiLorenzo and Robinson (1982)	linear generation cost function; no input prices	23 private 18 public	No significant cost differences
Färe, Grosskopf and Logan (1985)	non-parametric production frontier	123 private 30 public	No significant difference in overall efficiency
Atkinson and Halvorsen (1986)	Translog cost function; shadow prices for regulatory effects	same data as Färe, *et al*	No significant difference in efficiency
Hollas and Stansell (1988)	translog profit function	113-114 private 17-23 cooperative 13-20 municipal	Private firms significantly more price efficient than municipal firms with coops in between
Cote (1989)	stochastic frontier cost function; panel data	37 private; 16 coops; 27 public	coops and municipally owned firms more efficient than privately owned firms

Table 2. Comparisons by Pollitt and Kwoka of the Efficiency of Public and Private Electric Utilities, 1995-96

Author	Model	Sample Size	Conclusions
Pollitt (1995)	data envelopment analysis and stochastic frontier regression; utility firms	60 private; 35 public firms (73 U.S.)	no significant difference in productive efficiency
Pollitt (1995)	data envelopment analysis; utility plants	33 coops; 522 private; 213 public (606 U.S.)	no significant difference in technical productive efficiency
Pollitt (1995)	data envelopment analysis; base load plants	11 coops; 148 private; 54 public	overall efficiency approximately 5% higher in privately owned plants
Pollitt (1995)	data envelopment analysis; U.S. transmission utilities	106 private; 23 public	no difference in technical efficiency
Pollitt (1995)	data envelopment analysis; U.S. and U.K. distribution utilities	124 private; 26 public	no difference in technical efficiency
Kwoka (1996)	quadratic cost functions	147 private; 396 public	publicly owned have approximately 5% lower costs overall

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