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2 The Institutional Antecedents of State Utility Regulation: The Chicago Gas Industry, 1860 to 1913

Werner Troesken

2.1 Introduction

Utilities were not always regulated by state commissions. Throughout the nineteenth century, Massachusetts was the only state that regulated public utilities (excluding railroads), and even in this one instance the state had only limited regulatory powers (see Stotz and Jamison 1938, 446–49). At the same time, state constitutions often put strict limits on the regulatory authority of municipalities. In Connecticut, Kansas, and Kentucky, for example, the courts ruled that local governments could not restrict entry by offering utilities perpetual and exclusive franchises; similarly, in Indiana, Illinois, and Massachusetts, municipalities could not directly regulate the rates charged by utilities.[1] It was not until the second decade of the twentieth century that this situation began to change. In the fifteen years between 1907 and 1922, nearly thirty states created public utility commissions (see Stigler and Friedland 1962; Stotz and Jamison 1938, 450).

It is important to understand the forces behind this institutional shift, as such understanding helps identify the factors that determine the political and economic viability of unregulated markets. Moreover, since many of the interest

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1. See the following cases: *Norwich Gas Light Company v. The Norwich City Gas Company,* 25 Conn. 19 (1856); *City of LaHarpe v. Elm Township Gas, Light, Fuel & Power Company,* 69 Kan. 97 (1904); *Kentucky Heating Company v. Louisville Gas Company,* 23 Ky. Law Rep. 730 (1901); *Citizens Gaslight Company v. Louisville Gas Company,* 81 Ky. 263 (1883); *City of Noblesville v. Noblesville Gas & Improvement Company,* 157 Ind. 162 (1901); *Mills v. City of Chicago et al.,* 127 Fed. 731 (1904); *Worcester Gaslight Company v. City of Worcester,* 110 Mass. 353 (1872).

groups involved in lobbying for state utility regulation were also involved in lobbying for a variety of other regulatory changes, such as the reform of municipal government and municipal ownership of utilities, understanding the battle over state utility regulation helps clarify these other aspects of Progressive Era politics. Finally, the legal and technological changes experienced by utilities at the turn of the century paralleled structural changes in other sectors of the economy. To the extent that these shifts were related, identifying the antecedents of state utility regulation sheds light on these other changes.

One of three different frameworks can be used to examine the origins of state utility regulation. Traditional public interest arguments maintain that state utility commissions were created because unrestrained competition in the presence of natural monopoly led to uneconomic duplication of service and brief periods of ruinous price competition that were surrounded by longer periods of consolidation and monopoly power.[2] A competing private interest view is that state commissions were created at the behest of producers hoping to forestall the relatively hostile regulation of municipalities (Jarrell 1978). One way to explain the relative effectiveness of municipal regulation is to argue that, because consumers monitored local regulators better than state regulators, municipal authorities faced stronger electoral incentives to bring consumers low rates. This argument is developed later in the paper.

A third, and not necessarily competing, hypothesis draws on the long-term contracting literature and is based on the assumption that there was (and is) widespread asset specificity in utility industries (see Goldberg 1976; Joskow 1991; Jacobson 1989; Williamson 1985, 327–64). According to the long-term contracting interpretation, utilities needed to make large investments in fixed plant and distribution systems that were not mobile, easily adapted to alternative purposes, or resold. Before investing heavily in such assets, producers would have desired assurances—credible commitments—from consumers and municipal authorities that these groups would not conspire to set confiscatory rate schedules. Consumers, on the other hand, would have demanded similar commitments from utility companies before investing in fixtures for using electric, gas, water, and so forth. That is, they would have needed to be confident that producers were not going to begin charging monopolistic rates or providing inconsistent service. A state regulatory commission that was responsive to both consumer groups and utilities would have been one way to protect these investments and to provide consumers and utilities with the necessary commitments (see Goldberg 1976; Williamson 1985, 327–64).

2. The reasoning of Stotz and Jamison is illustrative: "[C]ompetition between gas companies is . . . a public nuisance. . . . It means a double burden on the streets, as two companies instead of one will be digging up the streets. If there are three competitors, the situation is that much worse. Moreover, competition between gas companies is not practicable in the long run. It leads inevitably to rate wars" (1938, 421–22).

Although each of these theories likely captures elements of the story, there is little consensus as to which theory best explains the origins and purposes of state regulation. One reason that the political economy of utility regulation remains unclear may be that there have been few detailed studies of utility markets in the years prior to state regulation.[3] As Priest (1993, 322–23) recently argued, how can one assess the impact of state regulation without having at least a limited understanding of the legal and regulatory institutions that preceded it? Moreover, since many utilities operated for nearly a century before they were regulated by state authorities (see Stotz and Jamison 1938, 4–10), focusing solely on the experience of state regulatory commissions overstates that institution's historical significance and, perhaps more importantly, leads one to ignore a potentially valuable body of data and evidence.

Using the Chicago manufactured coal-gas industry as a case study, this paper explores the evolution of utility markets in the years prior to state regulation. This study sheds light on a number of issues. First, it identifies the legal and regulatory regimes that preceded state regulation and offers some preliminary hypotheses and data on how well these regimes functioned and what led to their demise. It also clarifies the role technological change played in generating shifts in regulatory policy. Finally, the history of the Chicago gas industry offers insight into the relationship between asset specificity and the origins of state regulation.[4]

The early history of the Chicago gas industry can be separated into five distinct phases—an early period of stability, a more dynamic competitive period, an unregulated monopoly period, a municipal-regulated monopoly period, and a state-regulated monopoly period. During the industry's formative years, from 1850 through the late 1870s, two dominant firms sold gas to a market limited by competition from alternative fuel sources. In 1878, an exogenous technology shock (described in detail below) altered the structure of the industry, ushering in a more competitive era. Within a decade, this technological change had attracted six new gas companies to the industry and driven down real gas prices by about 50 percent (see Troesken 1993). Producers responded to this increasingly competitive environment by lobbying for legal changes that would slow the rate of entry and enable them to acquire more market power. Partly in response to producers' lobbying efforts, the Illinois legislature passed the Gas Acts in 1897, initiating the third phase of the Chicago gas industry's history—unregulated monopoly. The Gas Acts (described

3. Jacobson 1989 and Brown 1936 are two exceptions, although they both emphasize different issues than does the study here. Moreover, neither of these studies attempts to link their findings to the origins of state regulation.

4. Although both Williamson and Zupan examine the importance of asset specificity in franchise bidding schemes for cable television, there are few efforts to identify the relationship between asset specificity and the origins of state utility regulation. See Williamson 1985, 352–65; Zupan 1989.

in detail below) restricted entry and removed various common law obstacles to merger and consolidation.

Following the passage of the Gas Acts, producers acquired substantially more market power, ultimately merging into a single firm. This increased market power, and the higher prices implied by such power, caused agitation among Chicago politicians and gas consumers. In response to this dissatisfaction, the State of Illinois passed the Enabling Act of 1905, granting the Chicago City Council regulatory power over gas rates in the city. Prior to the passage of the Enabling Act, Chicago gas companies were subject to no direct rate regulation by either state or municipal authorities, though the city did possess some limited powers over taxation and market entry. The industry's final phase—state-regulated monopoly—came in 1913 with the creation of the Illinois Public Utilities Commission. Qualitative and quantitative evidence are consistent with the hypothesis that producers lobbied for state regulation in an effort to forestall the relatively hostile regulation of municipal authorities.

2.2 The Nineteenth Century: An Era of Unregulated Competition

2.2.1 Market Structure and Performance, 1850–1897

From the mid-nineteenth century until 1880, manufactured coal gas was a luxury commodity with a relatively small market. During the early 1870s, it would have cost more than 15 percent of the average laborer's income to light a Chicago home with gas;[5] virtually all manufactured gas sold during this period was used for lighting (see Department of the Interior 1895, 706). Gas companies thus sold primarily to businesses and the wealthy. Mains were rarely laid in working-class neighborhoods (Platt 1991, 14). Furthermore, during this period manufactured coal gas faced competition from other lighting sources. An industry survey published by the U.S. Census Office explained that in 1870 "gas . . . was still much higher in price per unit of light than oil lamps, and for this reason could not compete with kerosene" (Department of the Interior 1902, 713). Because the market for coal gas was so limited during this period, only two companies, the Chicago Gas Light and Coke Company and the Peoples Gas Light and Coke Company, operated in the city until the early 1870s. In 1871, the Hyde Park Gas Company, a small suburban concern, was organized.[6]

5. It required about two thousand cubic feet of gas to light the typical household for a month. During the early 1870s, gas (in Chicago) sold for $3.50 per one thousand cubic feet. The average U.S. laborer earned roughly $480 per year in 1870. These estimates are based on the following sources: *Chicago Tribune,* 8 June 1888, 8; Peoples Gas Light and Coke Company 1900; U.S. Bureau of the Census 1975, 165; Lebergott 1976, 346–47.

6. In the summer of 1862, these two companies entered into a restrictive covenant, a contract dividing the city into two exclusive markets. Under the covenant, Chicago Gas controlled the north and south divisions of the city, while Peoples Gas restricted its operations to Chicago's west side.

The commercial introduction of water-gas technology altered this structure. Prior to the introduction of water gas, ordinary coal gas was the only type of manufactured gas sold, and it had been produced commercially since the early 1800s. Water gas, in contrast, was not used on a wide scale until the late 1870s and early 1880s. As already noted, both were used almost solely as a fuel for lighting. Coal gas was manufactured by filling fireclay boxes, called retorts, with several tons of coal. Gas was then distilled by heating the coal to a temperature of 1,000° to 2,500° Fahrenheit for five to sixty hours. Water gas was manufactured by passing steam and a vaporized oil through the incandescent beds of coal. This process enhanced the lighting power of the gas.[7]

The most important difference between coal and water gas technology was that the latter required a smaller investment in fixed plant and capital.[8] The United Gas Improvement Company explained: "For equivalent capacity, [a] water gas apparatus costs much less to install, and occupies much less ground space than coal gas equipment. Moreover, the space required for storage of fuel for a water gas plant is only about one-third of that required for coal gas" (1911, 15).

By reducing the fixed costs of production, water gas lowered the costs of entry and moved the industry toward a more competitive structure. Between 1881 and 1885, six new gas companies were organized—the Lake Gas Company, the Consumers' Gas Fuel and Light Company, the Suburban Gas Company, the Equitable Gas Light and Fuel Company, the Calumet Gas Company, and the Illinois Light, Heat, and Power Company. This entry spawned fierce competition. Price wars drove Consumers' Gas into receivership by the mid-1880s, while the Chicago Gas Light and Coke Company and Equitable Gas both had difficulty meeting their debt obligations during this period. The market value of the former fell by about a third.[9] The combination of entry and cost-reducing technological change drove down real gas prices in the city by

The agreement was stable for nearly two decades; neither firm attempted to enter the other's territory until the mid-1880s. Although this situation does not sound very competitive, it appears that the threat of entry limited the market power of these two firms. More precisely, entry costs probably were not prohibitive, as the Chicago Gas Light and Coke Company began laying mains in the west side territory of Peoples Gas in the summer of 1886. As already noted, there was competition from other lighting sources. The early history of the Chicago gas industry can be found in the following sources: Illinois Bureau of Labor Statistics 1897, 276–79; Chicago City Council 1914, 19–20; Rice 1925, 1–33; Smith 1926, 10–20.

7. For accessible and detailed descriptions of the production of coal and water gas, see Rice 1925, 34–35, and Chicago City Council 1914, 21–30.

8. Other differences were that the production of water gas appears to have been less labor-intensive. Water gas also had greater illuminating power than coal gas. For example. in 1894, the average candlepower of coal gas was approximately 18.3. The candlepower of water gas averaged 25.3. This estimate is based on a survey of nearly eight hundred firms taken from the 1894 volume of *Browns Dictionary of American Gas Companies.* See also Shelton 1889, 194; American Gas, Fuel, and Light Company 1881.

9. Calculation based on stock-price quotations taken from the *Chicago Tribune.* For a general discussion of the financial difficulties of these firms, see also *Commercial and Financial Chronicle,* 15 December 1888, 746.

about 50 percent (Troesken 1993). Gas markets in Baltimore and New York also experienced rapid market entry and price competition following the commercial introduction of water gas (see Stotz and Jamison 1938, 249; Brown 1936; *American Gas Light Journal* 2 August 1879, 49; 16 October 1879, 169; 3 November 1884, 236).

Producers attempted to suppress this competition through the organization of a holding company known as the Chicago Gas Trust Company. (The holding company may have also enabled producers to exploit scale economies.) Organized in the spring of 1887, the Gas Trust dominated the industry for only a short time. In 1887 and 1888, the Gas Trust's only competitor was a small Hyde Park concern, but throughout the late 1880s and 1890s, additional entry reduced the market power of the Gas Trust. In 1889 and 1890, two firms—the Mutual Fuel Gas Company and the Chicago Economic Fuel Gas Company—entered the industry.[10] In the summer of 1894, the Universal Gas Company was incorporated. An ordinance passed by the Chicago City Council gave the company the right to operate anywhere in the city. The *Chicago Tribune* claimed that the Universal's plant, the largest gas manufacturing plant in the world at the time of its construction, had the capacity to supply Chicago with two-thirds of its total demand for coal gas (see Chicago City Council 1914, 22; *Chicago Tribune* 17 July 1894, 1; 18 July 1894, 1–2; 19 July 1894, 1, 7; 5 October 1895, 4; 6 February 1895, 4; 20 May 1897, 7). The organization of the Ogden Gas Company in 1895 further eroded the trust's market share. The Ogden Gas Company was manufacturing and selling gas on the city's north side by the fall of 1897 (see Illinois Bureau of Labor Statistics 1897, 306; Chicago City Council 1914, 22). Three other companies contemplated entering but never carried out these plans.[11]

Table 2.1 compares the Chicago gas industry's market structure and nominal price performance during this period of unregulated competition to its structure and performance under three other regulatory regimes—unregulated monopoly (referring to the period after passage of the Gas Acts and before passage of the Enabling Act), municipal-regulated monopoly, and state-regulated monopoly. Note that from 1878 through 1897, market entry was relatively frequent; a new company entered the industry once every two years. In contrast, after the passage of the Gas Acts in 1897, entry ceased and the market became increasingly consolidated. Moreover, entry did not increase under either state regulation or municipal regulation. These data on market structure, as well as

10. In the early spring of 1892, though, the owners of the Chicago Gas Company acquired control over the Chicago Economic Fuel Gas Company by purchasing a majority of its outstanding stock. See *Chicago Tribune*, 22 February 1892, 1; 19 February 1892, 12; 20 February 1892, 1–2; 28 February 1892, 2.

11. In the summer of 1893, the Continental Gas Company of Chicago was incorporated. One year later, producers planned to organize the Plant Gas Company. In the fall of 1894, the Citizens Co-operative Gas Company was incorporated. The company intended that its stock would be "distributed in small amounts among consumers, instead of being owned by a few capitalists." See *American Gas Light Journal*, 5 June 1893, 157; 27 August 1894, 301; 12 March 1895, 336.

Table 2.1 **Legal Environment, Market Structure, and Nominal Prices, 1878–1924**

Year	Type of Rate Regulation[a]	New Entrants	Number of Competing Firms[b]	Price[c]
1878	U	0	3	2.38
1879	U	0	3	2.38
1880	U	0	3	2.38
1881	U	2	4	2.38
1882	U	0	4	2.13
1883	U	0	4	1.50
1884	U	1	4	1.25
1885	U	3	6	1.25
1886	U	0	6	1.25
1887	U	0	2	1.38
1888	U	0	2	1.25
1889	U	1	3	1.25
1890	U	1	4	1.25
1891	U	0	4	1.25
1892	U	0	3	1.25
1893	U	0	3	1.20
1894	U	1	4	1.15
1895	U	1	4 (5)	1.10
1896	U	0	4 (5)	1.05
1897	U	0	5	1.00
1898	U	0	3	1.00
1899	U	0	2 (3)	1.00
1900	U	0	2 (3)	1.00 (0.75)
1901	U	0	1 (2)	1.00 (0.75)
1902	U	0	1 (2)	1.00 (0.75)
1903	U	0	1 (2)	1.00 (0.75)
1904	U	0	1 (2)	1.00 (0.75)
1905	U	0	1 (2)	1.00 (0.75)
1906	M	0	1 (2)	0.85
1907	M	0	1	0.85
1908	M	0	1	0.85
1909	M	0	1	0.85
1910	M	0	1	0.85
1911	M	0	1	0.80 (0.75)
1912	M	0	1	0.80 (0.70)
1913	M	0	1	0.80 (0.70)
1914	S	0	1	0.80 (0.68)
1915	S	0	1	0.80 (0.68)
1916	S	0	1	0.80
1917	S	0	1	0.68
1918	S	0	1	0.68
1919	S	0	1	0.85
1920	S	0	1	0.85
1921	S	0	1	1.00
1922	S	0	1	1.00
1923	S	0	1	1.00
1924	S	0	1	0.95

(continued)

Table 2.1 (continued)

Sources: For market structure and legal environment descriptions, see text. Price data were collected from various issues of *Browns Directory of American Gas Companies.*

[a]*U* = no direct rate regulation, though municipal authorities had limited powers over taxation and entry; *M* = municipal rate regulation; *S* = state rate regulation.

[b]The Ogden Gas Company was organized in 1895 but did not begin operations until 1897. Also, in 1900, Peoples Gas and Ogden Gas entered into a restrictive covenant dividing the city into separate market shares, but they were still under separate managerial control.

[c]Prices expressed in (current) dollars per one thousand cubic feet. Prices in parentheses indicate what prices would have been if the 1900 and 1911 rate ordinances had been enforced.

the behavior of real gas prices, which as noted above fell by 50 percent, are consistent with the hypothesis that market forces were operative during this period.[12]

2.2.2 The Illinois Constitution and Municipal Regulation before 1905

Before 1905, Chicago gas producers operated free of any direct rate regulation. Throughout the nineteenth century, the courts made it clear that, without a special grant from the state legislature, the city council did not have the power to unilaterally dictate gas rates in Chicago. For instance, in 1900, the city passed a coercive ordinance requiring Chicago gas companies to reduce their rates from $1.00 per one thousand cubic feet to $0.75. The Peoples Gas Light and Coke Company refused to comply, filing suit in federal court to secure injunctive relief. On appeal, the U.S. Supreme Court denied the injunction on the grounds that the federal courts lacked jurisdiction in the matter (see *Peoples Gas Light and Coke Company v. City of Chicago,* 48 L. Ed. 851 [1903]). However, a stockholder of the gas company and, importantly, a resident of California, Darius O. Mills, sued in federal court with the identical objective. Since Mills resided in another state, the federal courts could claim jurisdiction.

In *Mills v. City of Chicago,* the court granted Chicago gas companies injunctive relief, ruling that "the regulation of the prices to charge consumers by gas companies is not one of the powers essential to municipal government, and is not included in general powers conferred on cities" (127 Fed. 731 [1904], 731). The court explained that, unless the state constitution, or the legislature, explicitly granted regulatory powers to city governments, such powers could only be exercised by the state: "and such power cannot be exercised by a city unless it has been delegated by the state in express words, or by fair implication from a power expressly granted" (731). The City of Chicago appealed to the U.S.

12. This does not mean that producers earned zero profits. Indeed, since asset specificity made market exit, and therefore entry, costly, incumbent firms probably earned some excess profits. It only suggests that market entry, and the threat of entry, were real and viable constraints on the behavior of Chicago gas producers and kept gas prices in Chicago lower than they otherwise would have been. The presence of competition, in turn, protected consumers against producers' attempts to monopolize the industry.

Supreme Court, claiming that Mills and Peoples Gas colluded in bringing the suit, but the lower court's ruling was upheld (see *City of Chicago v. Darius O. Mills,* 51 L. Ed. 504 [1907]). Without a special act of the Illinois legislature, the city council could not claim the authority to regulate rates.

It should be pointed out, however, that during this period the Chicago City Council did have some limited control over taxation and entry. Through what were known as municipal contract ordinances, the city granted gas companies the rights needed to dig up streets and to lay and repair mains. Municipal contracts also sometimes promised incumbent firms exclusive operating rights, but, at least in the case of Chicago, it does not appear that contractual promises of exclusivity were always kept. For example, in a municipal contract ordinance agreed to in 1891 (described below), the city promised the Chicago Gas Company that it would be protected against competition, yet within four years the city granted two other companies—the Universal Gas Company and the Ogden Gas Company—franchises to operate in the city. Nonetheless, in return for the rights granted through contract ordinances, producers typically agreed to a schedule fixing rates over the next five years. Producers also agreed to pay the city a percentage of their revenues over the same five-year interval.[13] It is important to stress that the city could not unilaterally dictate the terms of the contract ordinance. Gas companies had to offer their full consent before they became binding. (The 1900 coercive rate ordinance discussed above was not a contract ordinance. The city unilaterally ordered gas companies to charge $0.75. It did not bargain with them.)

The *Commercial and Financial Chronicle* described a contract ordinance drafted in early 1891 (20 June 1891, 939):

> The Chicago dispatches state that a settlement has definitely been reached with the city officials on the basis of $1 gas to the city and the city to get 3 and 1/2 percent of the gross receipts. The price of gas to other consumers is to remain at $1.25 until 1893, when a reduction of 5 cents in price will be made each year until $1 is reached. . . . This settlement carries with it the assurance that the company will be protected by the city against competition. . . . The agreement for the reduction in the price of gas is to continue as long as the franchise of the gas company is not attacked by the city of Chicago, and so long as the present rights of the said companies to extend mains within the city are not curtailed.

This quote illustrates the consensual nature of municipal contract ordinances.

It was important that the city's regulatory control under municipal contracting excluded direct and complete control over rates because of produces' asset-specific investments. Specifically, the unique nature of gas distribution meant that producers had to invest substantial resources in a system of under-

13. It is not clear if these payments were used to compensate Chicago residents for the costs they incurred while gas companies dug up streets or if municipal politicians simply appropriated these payments, not returning them to residents in the form of lower taxes or increased public services.

ground mains in order to distribute gas; according to one investigation performed by the Chicago City Council, the costs of distributing gas constituted roughly 40 percent of the total costs incurred by local producers (Chicago City Council 1906, 2–3). This system of mains, and the legal and political rights needed to lay them, could not be costlessly transferred across municipal jurisdictions. As a result, if the market for manufactured coal gas in Chicago collapsed, producers would have found it difficult to move their assets to another geographic market. Thus the legal provisions that prevented the city council from regulating rates gave Chicago gas companies, who were held hostage by their sizable and immobile investments, a powerful guarantee that their investments were safe from hostile, and perhaps confiscatory, rate regulation by municipal authorities.[14] (The efficacy of municipal rate regulation is discussed in detail below.)

2.3 The Gas Acts and the Origins of Monopoly

2.3.1 A Legislative History of the Gas Acts

The next phase in the Chicago gas industry's evolution toward state regulation—unregulated monopoly—began in 1897 when the state legislature passed the Gas Acts. The Gas Acts consisted of two laws, the Lowenthal Street Frontage Act and the Gas Consolidation Act. The Street Frontage Act erected a prohibitive entry barrier. It provided that before any Illinois gas company could lay mains along a street or alley the company had to secure permission from a majority of the property owners who held land fronting that street or alley. The law further empowered any dissenting property owner to block construction of the main, regardless of the position taken by other individuals along the street. (The Street Frontage Act required electric companies to secure similar approval before stringing wires along a street.) After 1897, all an incumbent firm needed to do to prevent entry was to bribe a property owner to oppose construction of the mains; as explained in greater detail below, no new firms entered the industry after 1897. The Gas Consolidation Act removed the court-erected obstacles to merger and combination; before 1897, the common law explicitly discouraged combination among competing Chicago gas companies (see *Chicago Gas Light Co. v. Peoples Gas Light Co.*, 121 Ill. 520 [1887]; *People v. Chicago Gas Trust Co.*, 130 Ill. 268 [1889]).

The legislative history of the Gas Acts reveals that the lobbying efforts of the Chicago Gas Trust played an important role in securing and shaping their passage. The Street Frontage Act was not put into law the first time it was

14. Note that the courts' adherence to substantive due process during the nineteenth and early twentieth centuries also provided protection against confiscatory rate regulation. In the *Reagan* cases of 1894 and in *Smyth v. Ames* in 1898, the courts held that, "if the rates fixed by a State are unreasonably low, they are obnoxious to the provisions of the Fourteenth Amendment." See Matthews and Thompson 1901, 254, and, more generally, Hovenkamp 1988.

considered. The bill was initially introduced by state senator Miller of Cook County—Chicago is located in Cook County—in early 1895.[15] Although the bill passed both houses, it was vetoed by Governor John P. Altgeld in the summer of 1895. In vetoing the law, Altgeld maintained: "In no instance has the public asked for the passage of this bill. The Chicago gas companies labored for its passage" (*Chicago Tribune,* 25 June 1895, 3).

In the spring of 1897, the Illinois legislature reconsidered the Street Frontage Bill (Senate Bill 400) and another measure, the Gas Consolidation Bill (Senate Bill 387). Again, Chicago gas companies appear to have been active lobbyists. One state senator even claimed that the attorney for the Chicago Gas Trust wrote the text of the Gas Consolidation Bill (see *Chicago Tribune,* 20 May 1897, 2, 7). Also, when the legislature began considering these proposals, the Civic Federation of Chicago published a pamphlet protesting the passage of these laws; in its writings, the Civic Federation claimed to represent the interests of unorganized Chicago voters, consumers, and taxpayers.[16] The federation maintained, "These two gas bills are to be taken as one, as they are closely allied and are being pushed by the same forces and for the same purpose, viz.: to give the Gas Trust everything it wants and to give the public nothing in return" (1897, 3). The Civic Federation also organized a mass public rally at a large Chicago auditorium to protest passage of the Gas Acts (see the *Chicago Tribune,* 28 May 1897, 2; 2 June 1897, 2). It was a vain attempt. On 1 June 1897, the Illinois legislature passed the Gas Consolidation Act and the Street Frontage Act.[17] Governor Tanner signed the measures into law a short time later.

Exactly why Chicago gas companies waited until the late 1890s to secure passage of the Gas Acts is not clear, but the introduction of water gas may help explain the timing of these laws. As noted above, water gas moved the industry toward a more competitive structure, and this in turn may have increased the marginal benefit to producers of securing laws that impaired the market mechanism. Beyond this, the frequent market entry induced by the introduction of water gas may have increased electoral support for laws restricting entry

15. This first bill was slightly weaker than the bill that ultimately passed. Like the later version, this bill prohibited any Illinois city or town from granting a franchise "for the laying of gas pipes . . . without the consent of the owners of more than one-half of the property fronting the street or alley along which it [was] . . . proposed to lay the pipes" (*American Gas Light Journal,* 25 March 1895, 413). Unlike the final version of the Street Frontage Act, however, it did not guarantee dissenting property owners the right to block construction of the mains through a court-issued injunction.

16. Pegram writes that "a coalition of businesspeople, professionals, labor leaders and social workers created the Civic Federation." He adds that, after its founding in 1893, "[b]usinesspeople and professionals quickly came to dominate the federation . . . turning it to the middle-class purposes of cleaning up city hall and promoting efficiency in the conduct of public business" (1992, 91). See also Roberts 1960 for the history of the Civic Federation.

17. The Illinois Senate passed the Street Frontage Act by a vote of 31 to 13, the Gas Consolidation Act by a vote of 29 to 17. The house passed the Street Frontage Act by a vote of 90 to 49, the Gas Consolidation Act by a vote of 89 to 52. See Illinois 1897, 600–601; 700–701; 744–45; 780–81; 788–89; 794–95; 822–23.

among voters who did not use gas; when a new gas company entered the industry, it had to dig up the streets, imposing costs on all Chicagoans, gas consumer or not. Consistent with this view, probably no more than one out of every four Chicagoans purchased gas during the early twentieth century.[18] Finally, the increased popularity of electricity during this period likely had similar effects.

2.3.2 The Effects of the Gas Acts

Several independent pieces of evidence are consistent with the hypothesis that the Gas Acts created and sanctioned monopoly in the Chicago gas industry. First, as table 2.1 shows, no new firms entered the industry after 1897, and at the same time existing firms began consolidating their market power.[19] Second, stock market data indicate that investing in Chicago gas securities became far less risky, in part because the threat of entry had been eliminated.[20] Third, an event study reveals that, when Governor Altgeld vetoed the first version of the Street Frontage Act, the market value of the Chicago Gas Company fell by over 15 percent.[21] Finally, as table 2.1 shows, nominal gas prices in Chicago fell steadily until 1897, but after passage of the Gas Acts, prices stopped falling and remained constant until 1905. (In 1905, the city acquired the authority to regulate rates.)

Certainly factors other than the passage of the Gas Acts may have caused Chicago gas prices to stop falling. To control for at least some of these other factors, gas prices in Chicago are divided by the average price of gas in the following cities: Wilmington, Delaware; Burlington, Iowa; Iowa City, Iowa; Sioux City, Iowa; Danville, Kentucky; Owensboro, Kentucky; Shelbyville, Kentucky; and Minneapolis, Minnesota. (Each city is equally weighted.)

18. Unfortunately, it is difficult to acquire data for earlier periods, but in 1910 the population of Chicago was 2.2 million, while in 1916 the total number of gas consumers in the city (businesses and families) was less than 660,000. See Illinois General Assembly 1917, 7.

19. The Municipal Gas Company operated for three months during 1900, but it was owned and controlled by the Peoples Gas Light and Coke Company. Municipal Gas leased all of its mains and purchased all of its gas from Peoples Gas. In late August 1900, Municipal Gas initiated a price war with the Ogden Gas Company. Gas prices on the north side fell by 60 percent: first Municipal Gas cut the price it charged for gas from $1.00 per one thousand cubic feet to $0.60; then Ogden Gas reduced its price to $0.60. Prices eventually fell to $0.40. Since this all occurred within a two-month span and was concentrated in a small geographic region on the city's north side, it is not considered when calculating the prices presented in table 2.1. See *Commercial and Financial Chronicle,* 8 September 1900, 506. In November, the Ogden Gas Company and the Peoples Gas Light and Coke Company began laying the groundwork for future consolidation. A few days after the two companies worked out their differences, Municipal Gas ceased operating. See, again, *Commercial and Financial Chronicle.*

20. Between 1891 and 1897, the market beta associated with Chicago gas securities was 1.4; between 1897 and 1913, it was 0.7. The market beta measures the level of systematic risk associated with a security. Systematic risk is the only type of risk that concerns a rational investor because it is the only type of risk that cannot be diversified away.

21. Because it is not possible to identify a precise event date for the passage of the Gas Acts (i.e., it is not possible to identify exactly when the market learned the law would be passed), the effects of the passage of these laws could not be identified directly. However, because Governor Altgeld's veto of the first Street Frontage Act was unanticipated by the market, it was much easier to isolate its effects. The event study results are available upon request.

These other cities act as a control group. They were similar to Chicago except that their regulatory environments remained constant between 1878 and 1924. Through time, then, changes in the ratio of Chicago gas prices to the average price for the control group should filter out industry-wide price changes and help isolate the effects of the Gas Acts. (These same cities will be used below to compare the effects of municipal and state regulation.)

The ratio of prices in Chicago to prices in the control group began to rise after 1897. In other words, prices in cities, unlike Chicago, that did not have laws like the Gas Acts continued to fall after 1897.[22] This is consistent with the hypothesis that the Gas Acts caused prices in Chicago to be higher than they otherwise would have been. However, this ratio should be interpreted cautiously, as there are some potential problems. First, if regulation is endogenous or driven by some unidentified variable that affected prices in Chicago but not in the control group, the behavior of this ratio could be misleading.[23] Also, there may have been events in the control-group cities that did not occur in Chicago, and this may affect the reliability of these data.

Shortly after passage of the Gas Acts, producers began consolidating. In August 1897, the Chicago Gas Light and Coke Company, the Lake Gas Company, the Consumers Gas Fuel and Light Company, the Equitable Gas Light and Fuel Company, the Suburban Gas Company, the Illinois Light, Heat, and Power Company, and the Chicago Economic Fuel Gas Company all merged under the title of the Peoples Gas Light and Coke Company. On 10 January 1898 Peoples Gas absorbed the Mutual Gas Company and the Hyde Park Gas Company. One year later, the Calumet Gas Company was acquired. In 1900, Peoples Gas entered into a restrictive covenant with the Ogden Gas Company, granting the latter exclusive control over the city's north side. Peoples Gas controlled the city's west and south sides. By 1907, Peoples Gas began leasing the property of its last two rivals, the Universal and Ogden companies, and had obtained a secure monopoly position over the industry. In 1913, Peoples Gas formally purchased both companies.[24]

The changes in price and market structure that followed the passage of the Gas Acts likely increased the demand for some form of political rate regulation among consumers/voters. To see this, note that, as long as market forces kept gas prices in Chicago near competitive levels, regulation, whether municipal or state, would not have reduced rates substantially. The benefits of such regulation to consumers therefore would have been limited. After the enact-

22. Between 1878 and 1896, the ratio of Chicago gas prices to the control-group price averaged 59 percent. Between 1897 and 1905, the ratio averaged 67 percent. Also, when this ratio is plotted over time, it is constant between 1887 and 1897 and begins to slope upward after 1897. All of these data are available upon request.

23. Other Illinois cities, however, were also subject to the Gas Acts. They revealed the same trends as Chicago. These data are available upon request.

24. The history of the Chicago gas industry between 1897 and 1913 is taken from various issues of the *Commercial and Financial Chronicle;* and Rice 1925, 37–43.

ment of the Street Frontage and Gas Consolidation Acts, though, producers' market power increased, and gas rates probably rose closer to monopoly levels. The incremental benefit of regulation to consumers thus would have risen, increasing the demand among unorganized voters for a regulatory change.

2.4 Municipal Regulation: Origins and Effects

2.4.1 Origins

Consistent with the interpretation that the demand for rate regulation rose as a result of the Gas Acts, after 1897 the Chicago City Council, the state attorney general, and individual consumers attempted to reduce gas rates in the city. First, in 1900, the city council passed the aforementioned coercive rate ordinance that, if enforced, would have reduced Chicago gas prices from $1.00 per one thousand cubic feet to $0.75. This was the first time in the city's history that the council attempted to unilaterally dictate gas prices. Also, after Peoples Gas gained control of gas production in Hyde Park, the company increased gas prices there from $0.72 to $1.00. Several residents of Hyde Park jointly sought an injunction preventing the increase. Their efforts, however, proved futile. An Illinois appellate court denied the injunction (*Peoples Gas Light and Coke Co. v. Frederick C. Hale et al.*, 94 Ill. App. 406 [1900]). In 1903, the Illinois attorney general initiated a *quo warranto* suit against the Peoples Gas Light and Coke Company on behalf of the citizens of Chicago. The attorney general claimed that the Gas Consolidation Act of 1897—Peoples Gas derived its legitimacy from this law—was unconstitutional, first because the law was improperly titled, and second because it granted Peoples Gas privileges not available to other corporations or associations in the state. The courts ruled in favor of the gas company (*The People ex rel. v. Peoples' Gas Light and Coke Co.*, 205 Ill. 482 [1903]).

The regulatory power of the Chicago City Council rose when the Illinois legislature passed the Enabling Act of 1905. This law explicitly empowered the city council to regulate gas (and electric) rates in the city and authorized the city to sell surplus gas and electricity. After the vote, the *Tribune* proclaimed the city "the winner" (7 May 1905, 1, 4). Constructing a detailed legislative history of this measure is difficult, but it is possible to identify at least some of the groups that favored and opposed the law. Among the major proponents of the Enabling Act was Chicago mayor Carter Harrison and perhaps some other Chicago politicians (Weber 1919, 8). The law also had broad-based support among Chicago consumers/voters. After the Enabling Act passed the state legislature, the city was required to ratify it in a local ballot. It passed by a decisive margin; 124,545 Chicagoans voted in favor of the law, 20,504 against it (*Chicago Tribune*, 8 November 1905, 1). On the other hand, anec-

dotal evidence from the popular press and gas industry journals indicates that Chicago gas companies vigorously opposed the Enabling Act.[25]

Although the Enabling Act passed the Illinois house and the senate unanimously, it still appears that gas companies were reasonably effective lobbyists. During the first few months that the Illinois legislature was drafting the Enabling Act, gas companies had an early version of the law replaced by the version that ultimately passed (*Chicago Tribune,* 7 May 1905, 1, 4). The constitutionality of this last version was dubious. Even the legal counsel for the City of Chicago admitted that the constitutionality of the Enabling Act was in the "gravest doubt" (Chicago Corporation Counsel 1914). The *Commercial and Financial Chronicle* (13 May 1905, 1916) also reported, "Friends of the [Peoples Gas Light and Coke] company believe the [Enabling] law is not constitutional and can be successfully fought in the courts." History would prove them right. The constitutional questions surrounding the Enabling Act are documented below. This documentation will help explain the effectiveness of the law, as well as later political battles.

After passage of the Enabling Act, the Chicago City Council did not immediately attempt to dictate gas rates in the city. Instead, in the spring of 1906, gas companies and the Chicago City Council managed to agree on one last contract ordinance. They contracted to fix rates at $0.85 until the spring of 1911. In describing the ordinance of 1906, Weber (1919, 9) explained: "This ordinance was a contract ordinance, and was not designed to be coercive, nor assertive of any power derived from the law of 1905. The price of eighty-five cents was agreed to by the Company [Peoples Gas] and was for the period of five years." Perhaps the main reason the city council chose not to exercise its newfound regulatory powers was that it feared the ordinance would be challenged in the courts. After passage of the Enabling Act, the *Tribune* speculated that the law would be challenged by producers if the city tried to regulate rates (7 May 1905, 1, 4). Municipal regulators may also have believed that by merely threatening to impose much lower rates on gas companies, they could intimidate producers into agreeing on a contract ordinance voters would find palatable.

The 1906 contract ordinance was the last time gas companies and the city were able to agree on a rate schedule. In the spring of 1911, when the 1906

25. The *Chicago Tribune* reported that shortly after midnight, 6 May 1905—the day that the Enabling Act was passed—Chicago gas companies realized that they did not have enough support to block passage of the law. A *Tribune* reporter wrote: "Early this morning, shortly after midnight, representatives of the gas interests were hustling around Springfield [Illinois's capital] trying to line [up] enough men to defeat Chicago's bill [the Enabling Act]. Representatives were dragged out of bed. Others were found in back rooms of saloons, and others dragged away from poker games. Cabs were jumping all over downtown streets and every inducement that could be brought to bear was used to get a stone wall erected in front of the measure" (7 May 1905, 4). Also, shortly after passage of the Enabling Act, the *American Gas Light Journal* reported that the value of Peoples Gas Light and Coke Company stock fell because of the passage of unspecified legislation (15 May 1905, 774).

ordinance was set to expire, the Chicago City Council asserted the regulatory powers granted to it by the Enabling Act of 1905. The city passed a coercive rate ordinance requiring Peoples Gas to reduce its rate to $0.70 by the end of 1912. The company stonewalled. Rates remained at $0.85 until the summer of 1911, when a U.S. circuit court fixed the price of gas in Chicago at $0.80 pending further litigation.

Only many years later, in *Sutter v. Peoples Gas Light and Coke Co.*, which was decided in 1918, did the Illinois Supreme Court finally settle the dispute between the city and Peoples Gas. In *Sutter*, the court ruled that the Enabling Act of 1905 represented a "clear and palpable violation" of the Illinois constitutional provision that no law embrace more than one subject.[26] Recall, the Enabling Act allowed the city to regulate rates *and* sell surplus gas and electricity. The court's use of the words "clear and palpable" suggests that the legal shortcomings of the Enabling Act were manifest.

2.4.2 The Effects of Municipal Regulation

If enforced by the courts, municipal regulation would have had a large effect on nominal gas prices in Chicago. First, if the city had been able to enforce the coercive rate ordinance of 1900, prices in Chicago would have fallen from $1.00 to $0.75.[27] Such a 25 percent reduction in price would have had but one historical precedent. Except for 1883, there was no time in the history of the Chicago gas industry that nominal prices fell by such a large magnitude in a single year. (See table 2.1). Consider next the 1906 contract ordinance—the ordinance that followed the passage of the Enabling Act. Since this ordinance was a contract ordinance and required the consent of producers, it did not reduce rates as much as the coercive rate ordinance of 1900. Nonetheless, it appears that the increased threat of municipal rate regulation was enough to induce gas companies to agree to lower rates. The 1906 ordinance reduced gas prices by 15 percent between 1905 and 1906. Again, by historical standards, this was a relatively large reduction in nominal prices. Finally, the coercive rate ordinance passed by the city in 1911 also would have had a large effect on nominal prices if enforced, reducing rates from $0.85 to $0.70 within two years.

26. The court wrote, "The act [of 1905] was a clear and palpable violation of the constitutional provision that no act shall embrace more than one subject" (*Sutter v. Peoples Gas Light and Coke Co.*, 284 Ill. 634 (1918), 646). See also *Mills v. Peoples Gas Light and Coke Co.*, 327 Ill. 508 (1927).

27. To put this in perspective, if this ordinance had been enforced, the ratio of gas prices in Chicago to the control-group prices discussed in note 22 and the associated text would have fallen below 0.500. The only other time gas prices in Chicago fell so low relative to prices in the control-group cities was during the mid-1880s, when one producer was driven into bankruptcy by price wars and others experienced financial difficulty. Again, though, because of the problems discussed in the section above on effects of Gas Acts, such comparisons should be interpreted cautiously.

2.5 The Political Economy of State Regulation

2.5.1 A Legislative History of the Illinois Public Utilities Act

The passage of the Enabling Act of 1905 did not resolve the political battle over municipal regulation. Since the dubious constitutionality of the law meant that the city still did not have a clear and unambiguous claim to regulate rates, there likely remained pressure from both Chicago consumers and politicians for the city to secure more regulatory authority. Chicago gas companies, in contrast, wanted to prevent effective municipal regulation and the low rates that would prevail under such a regime. There were two ways to deny the city ultimate regulatory control. Producers could challenge the constitutionality of the Enabling Act in the courts, or they could secure passage of a law granting the state supreme regulatory control. Although the evidence presented below suggests that Chicago gas companies favored the former, preferring as little regulatory interference as possible, it appears that they were willing to tolerate state regulation if that was the only method of preventing effective municipal regulation. Thus, when the Illinois legislature began considering the creation of a state commission, Chicago consumers and politicians seized the opportunity to express their demands for municipal control. Producers countered by lobbying against any measures that expanded the city's authority. In the end, neither group secured their most preferred regulatory structure, though producers managed to forestall the relatively hostile regulation of municipal authorities.

Before it created a state commission to regulate utilities, the Illinois legislature organized the Illinois Legislative Public Utilities Commission. The commission solicited volumes of testimony from Illinois utilities, consumers, municipal leaders, regulators from other states, and academics in order to assess the political demand for state regulation. According to the commission's report and all other secondary and state government sources surveyed in this paper, consumers and politicians in Chicago opposed state regulation of utilities. They favored, instead, vesting the city council with regulatory control.[28]

Among utilities, support for a state commission was mixed. The general counsel to Commonwealth Edison (electric) was "non-committal, but inclined to favor some system of [state] commission regulation." Apparently convinced that the Enabling Act would eventually be declared unconstitutional by the courts, the general counsel for the Peoples Gas Light and Coke Company "opposed . . . state regulation." He favored a system of limited local control "*with final recourse to the courts*" (emphasis added).[29] The president of the Chicago

28. For example, "[t]he general sentiment in Chicago was opposed to state regulation; the opinion expressed . . . being that control should be vested in the local authorities" (Kneier 1927, 158). See also Illinois General Assembly 1913, 857–59; 1917.

29. This quote, and all of the quotations and preferences summarized above, are from Illinois General Assembly 1913, 857.

City Railway Company favored a system where local authorities had limited control, but was willing to consider a state regulatory regime if it was similar to Wisconsin's (see Illinois General Assembly 1913, 857; Wendt and Kogan 1967, 172–73). Finally, other sources indicate that Samuel Insull, chairman of both the Peoples Gas Light and Coke Company (after July 1913) and Commonwealth Edison, had been advocating state regulation for several years (MacDonald 1958).

From this set of conflicting interests, the Illinois Public Utilities Act (IPUA) emerged. The act was initially introduced as House Bill 907 (HB 907). In its original form, HB 907 provided that the governor would appoint a five-person commission to supervise Illinois utilities. The commission would have control over corporate franchises, the capitalization of utility companies, and the rates charged by utilities. After HB 907 passed the house, the senate amended the measure, adding a provision widely supported among Chicago politicians and consumers. This provision granted Chicago what was termed home rule. Home rule would have given the Chicago City Council exclusive regulatory control over utilities operating in the city, preventing any interference from state regulators. The home-rule provision, if enacted, would have meant that, even if the Enabling Act was declared unconstitutional by the courts, the city council could have regulated gas rates. The senate also struck out the provisions giving the commission regulatory powers over the capitalization of public utility companies. In the end, though, the house refused to concur with any of these amendments, and the bill was passed in its original form.[30]

Among the primary opponents of the senate's amendment to grant Chicago home rule (the authority to regulate rates) were Chicago gas companies; among its major supporters were Chicago politicians and consumers. The Springfield *Illinois State Register* (23 June 1913, 4) reported, "[I]t was quite significant during the fight [over the IPUA] that the corporation lobby vigorously opposed the 'home rule' [municipal regulation] feature, and was elated when that principal was finally eliminated." When the IPUA was passed without the senate's home-rule provision, Chicago alderman Charles Merriam proclaimed the law "the crowning triumph of corporation politics in Illinois" (*Chicago Tribune,* 24 June 1913, 2). Many of Merriam's colleagues on the city council echoed his sentiments. According to the *Tribune,* "[t]hree hundred [Chicago] residents gathered . . . and adopted resolutions calling on Gov. Dunne to veto the act and save Chicago's home rule privileges" (27 June 1913, 1). Several other groups and businesses organized to ask that the governor veto the IPUA.[31] These pleas failed to dissuade the governor. The bill was signed into law on 30 June, 1913 and became operative on 1 January 1914.

30. This summary of the IPUA's legislative history is taken from *Chicago Tribune,* 21 June 1913, 1–2.

31. See *Chicago Tribune,* 24 June 1913, 1–2; 26 June 1913, 2; 27 June 1913, 1; 28 June 1913, 1–2; 1 July 1913, 1, 7; 2 July 1913, 1. The *Quincy Daily Herald* reported that the Chicago groups opposed the IPUA because it lacked the home-rule measure included the Association of Com-

2.5.2 The Effects of State Regulation

While it is not possible to construct precise estimates of the effects of state regulation on prices, several independent pieces of qualitative and quantitative evidence suggest that municipal regulation, if enforced, would have led to lower rates than state regulation. First, qualitative evidence on the regulatory preferences of consumers and producers is consistent with this hypothesis. Across states and industries, utilities lobbied for state regulation because they saw it as one way to forestall the relatively hostile regulation of municipal authorities.[32] For example, between 1905 and 1913, at various gas industry association meetings, industry and state government representatives from California and Wisconsin argued that state regulation was needed because municipal regulation was too harsh or political (see *American Gas Light Journal,* 28 September 1908, 537; 25 March 1912, 207; 14 April 1913, 242; 29 May 1911, 1043–44). Other authors document the identical sentiments for water and electric utilities (see Jacobson 1989; Blackford 1970; MacDonald 1957, 117–19; Thelen 1972, 286–87). It appears that consumers shared producers' beliefs that rates were lower under municipal regulation than state regulation. For example, in Minnesota an organization known as the Minnesota Home-Rule League published pamphlets protesting a bill that would have created a state utilities commission. (The bill was not passed.) Presenting evidence on the performance of state regulation in Wisconsin, the group claimed that state regulators were captured by utilities while municipal regulators were responsive to the preferences of consumers (Minnesota Home-Rule League 1914).

At least three systematic empirical studies of state utility regulation are consistent with this qualitative evidence. Moore and Stigler and Friedland, for example, show that state regulation by commission typically had a negligible effect on prices (see Stigler and Friedland 1962; Moore 1970; to a lesser extent, Meyer and Leland 1980). More to the point, Jarrell (1978) argues that state regulatory commissions were not created in response to consumers' demands for lower rates, but rather in response to utilities who hoped that state regulation would insulate them against the relatively hostile policies of municipal regulators. If the purpose of state regulation was to lower rates, one would expect states with relatively high rates to be the first to create state commissions. Jarrell finds the opposite. He divides states into two groups, early-regulated states and later-regulated states. Early-regulated states created utility

merce, the Iroquois Club, the Hamilton Club, the United Societies Club, the City Club, the Citizen's Association, the Municipal Voter's League, and the Legislative Voters' League (25 June 1913, 1).

32. Since utilities were regulated by several local governments when they operated across municipal jurisdictions, they may have also favored state regulation because they would have had to deal with fewer regulators. Sylla (1992) makes the analogous argument for federal regulation, maintaining that regulation by multiple states was one reason big business preferred federal regulation to state regulation.

commissions between 1912 and 1917. Later-regulated states created commissions after 1917. After adjusting for cross-state variations in demand and cost conditions, Jarrell finds that electric utilities in early-regulated states charged lower prices and earned lower profits than electric companies in later-regulated states. In short, Jarrell's results suggest that low profits and rates, not high, drove legislatures to create state commissions.

Finally, gas prices in Chicago under state and municipal regulation are compared with prices in a control group of cities. The same technique was used earlier to identify the effects of the Gas Acts. Also, the same cities that were used as a control group in that analysis are used here to assess the relative effectiveness of state and municipal regulation. Since these control-group cities had regulatory regimes that remained constant for the entire period between 1878 and 1924 and Chicago moved from municipal rate regulation to state regulation in 1914, dividing the Chicago gas price by the average price across the control-group cities yields a ratio that, over time, controls for industry-wide changes in prices. Assuming that the 1900, 1905, and 1911 rate ordinances had been enforced, the average value of the ratio of Chicago prices to the control-group price under these ordinances would have been 58 percent. During the period of state regulation, from 1914 through 1924, the ratio averaged 68 percent.[33] This is consistent with the hypothesis that municipal regulation reduced rates more than did state regulation. However, because of the endogeneity issue, the possibility of idiosyncratic city effects, and other potential problems discussed above, these data need to be interpreted cautiously.

2.5.3 Explaining the Relative Effectiveness of State and Municipal Regulation

One way to explain why state regulators were more sympathetic to producers' interests than were municipal regulators is with a simple principal-agent framework, an approach now frequently used in economic models of politics. A standard assumption in these models is that the legislator acts as an agent for the median voter (see, for example, Kalt and Zupan 1984; Peltzman 1985). The approach here qualifies this assumption only slightly. Besides assuming that state and local lawmakers acted as agents of the median voter, it also assumes that the median voter was a gas consumer.

In the context of this framework, there are three reasons to expect that the median voter would have monitored municipal regulators better than state regulators. First, under municipal regulation the city council regulated gas rates directly, while under state regulation rates were determined by a commission. Since commissions were subject to only limited review by the state legislature, regulation by commission introduced an additional layer of agency costs; voters monitored the legislators, who then monitored the regulators.[34] Second,

33. The control-group cities discussed earlier are used again for the following comparisons. See discussion above for qualifications and problems with such comparisons.

34. To the degree that legislatures anticipated administrative shirking and devised procedural rules to minimize it, this problem would have been limited. See McCubbins, Noll, and Weingast

local legislators represented small, geographically concentrated constituencies in comparison to state regulators. As a result, in the context of municipal regulation, the free-rider problems that typically confound voters' efforts to monitor their political representatives would have been less severe (see Olson 1971).

One final reason to expect municipal regulation to have been more responsive to voters than state regulation is that municipal leaders dealt with a smaller number of issues than state legislators, and utility rates were among the most important of these. Utility regulation was, in other words, a salient issue in local politics; in late-nineteenth- and early-twentieth-century Chicago, gas and electric rates were front-page news. As a consequence, there were strong electoral incentives for local politicians to promise and deliver low utility rates to voters. For example, during the municipal election campaign of 1911, an alderman organized the Seventy Cent Gas League. According to a government report, the group made seventy-cent gas a campaign slogan and solicited candidates' promises to pass a seventy-cent ordinance (Illinois General Assembly 1913, 858). Another contemporary observer argued that Carter Harrison was elected mayor on his promise to bring the city seventy-cent gas (Weber 1919, 9). Shortly after the election, the city passed the aforementioned 1911 coercive rate ordinance, ordering Peoples Gas to reduce its rates to $0.70 in 1912.

Contemporary observers of utility regulation shared the view that municipal regulation, because it was closer to the voters, was more responsive to consumers and less responsive to producers. Alderman Charles Merriam argued, "The real reason why many corporations prefer state to local control is not that one is more 'political' than the other, but that the indirect pressure of the state electorate is preferred to the direct pressure of the local electorate" (Illinois General Assembly 1917, 27). The president of the Pacific Gas Association, and an Oakland gas company, articulated the identical position.[35]

Older historical accounts of local politics often accuse municipal regulators of extorting bribes from utilities by threatening to impose competition or unreasonably low rate ordinances on them (see, for example, Roberts 1960). In Chicago, for example, the popular press reported that the ordinances granting the Universal and Ogden gas companies operating rights in the city were blatant attempts to extort money from the Peoples Gas Light and Coke Company. According to the *Tribune,* after these ordinances were passed, they were to be sold to the highest bidder. This, incidentally, did not happen. Both the Universal and Ogden companies actually operated and were competitors with Peoples Gas for several years before they were purchased.[36]

Such accounts are consistent with the simple principal-agent framework out-

1989. Shepsle (1992) provides some reasons why it might be difficult to forestall all administrative shirking, or what he and others call bureaucratic drift.

35. See his 1908 speech before the Pacific Gas Association, reprinted in *American Gas Light Journal,* 28 September 1908, 537.

36. See *Chicago Tribune,* 18 July 1894, 1–2; 4 March 1895, 1–2. See also Roberts 1960; Wendt and Kogan 1967, 118–20.

lined here. If voters monitored municipal legislators better than state legislators, it would have cost municipal legislators more votes than state legislators to permit high rates. Municipal regulators, in other words, would have been more reluctant than state regulators to permit high rates. Thus, if both state and local regulators were in the business of extorting bribes from utilities, utilities would, on average, have had to bribe state regulators less for higher rates because higher rates cost state legislators fewer votes than they cost municipal regulators. Alternatively, one could say that, because municipal regulators could win more votes by lowering utility rates, they were in a better position to credibly threaten to impose competition or unreasonably low rate ordinances on utilities if utilities did not pay them off. As Wendt and Kogan note in their biography of John Coughlin and Mike Kenna, two of Chicago's most corrupt and colorful aldermen during this era, "It has always been . . . strange . . . that a [state] legislator can be bought cheaper than an alderman" (1967, 172).

Lastly, note the role asset specificity may have played in all of this. If producers had not been held hostage to specific geographic regions by their fixed distribution systems, competition among municipalities for manufactured gas would have constrained the efforts of municipal authorities to set onerous rate schedules. This, in turn, would have limited producers' incentives to lobby for state regulation.

2.6 Summary

The following argument has been advanced to explain the emergence of a state commission to regulate Chicago gas companies. For most of the nineteenth century, the market mechanism and Illinois law limited the demand for political rate regulation among both Chicago gas producers and consumers. During this period, market forces encouraged producers to charge reasonably competitive rates, and thus limited the benefits of rate regulation to consumers. At the same time, the Illinois Constitution protected the investments of Chicago gas companies by preventing the city from regulating rates. This period of unregulated competition was brought to an end in 1897 with the passage of the Gas Acts. These laws granted producers substantial market power and appear to have driven up gas prices. These changes in price and market structure increased the demand among consumers for municipal regulation. Consumers favored municipal regulation over state regulation because they believed it brought them lower prices. Utilities favored state regulation for the same reason. Consumers typically expressed their preferences for municipal regulation in one of two ways: through the vote or by expressing their demands at meetings of existing civic and business organizations like the Civic Federation of Chicago. To the degree that city and state lawmakers had an incentive to respond to the political agitation among unorganized voters and consumers, the State of Illinois began reducing the constitutional constraints on the regulatory powers of municipal authorities, while the Chicago City Council began in-

creasing its efforts to regulate gas rates. In turn, gas companies lobbied to prevent municipal authorities from expanding their regulatory powers. From the ensuing political battle, state regulation emerged. Producers, though favoring an environment with the fewest possible regulatory constraints, saw state regulation as one way to forestall the relatively hostile regulation of municipal authorities.

This interpretation highlights many of the salient aspects of the early history of utility regulation. First, it helps explain why producers favored state regulation over municipal regulation: since free-rider problems were less severe in small groups, consumers were better able to monitor municipal regulators than state regulators. This insight not only buttresses previous empirical work (for example, Jarrell 1978) but also clarifies the role consumer agitation and municipal politics played in giving rise to state utility regulation. Beyond this, the paper has presented limited evidence on how well the Chicago gas industry functioned under alternative regulatory regimes, including those that preceded state regulation. By focusing more closely on these early regulatory arrangements, future research might reveal some additional evidence on the origins of regulation by state commission. Finally, Chicago's experience helps document the role asset specificity played in the battle for utility regulation.

More generally, Chicago's experience contributes to a growing body of empirical and theoretical writings on the nature of institutional change and the growth of government. For example, the Chicago gas industry evolved gradually toward state-regulated monopoly, first adopting laws sanctioning monopoly and then expanding the regulatory powers of local and state authorities. This illustrates North's (1990, 4–7) recent argument that institutional change tends to be an incremental process as opposed to a set of radical and discrete changes. Finally, several recent studies document the interplay between political and technological change, showing, for example, the relationship between the introduction of refrigeration and the origins of federal antitrust and meat-inspection laws.[37] Chicago's history offers another variation on this theme, identifying potential links between the introduction of water gas and the passage of laws inhibiting entry into the gas industry.

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37. Libecap (1992) shows that the introduction of refrigeration, which facilitated the rise of large-scale meatpackers, adversely affected smaller, less efficient local slaughterhouses. This, in turn, drove the local slaughterhouses (and other groups) to lobby for both antitrust and meat-inspection laws. See Alston and Ferrie (1985) for another example. They discuss the relationship between mechanization in agriculture and the decline of paternalism in southern agriculture.

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