

Exclusive Dealing and the Whiskey Trust, 1890–1895

WERNER TROESKEN

This article uses the history of the Whiskey Trust to explore the competitive effects of vertical restraints such as exclusive dealing. The Whiskey Trust distilled alcoholic spirits and bribed distributors not to carry competing brands of spirits. For the Whiskey Trust, exclusive dealing was an ineffective predatory strategy. Despite the trust's market dominance and manifold predatory strategies, it failed to preempt entry. The trust failed, in part, because its rivals could vertically integrate at low cost. Competition disciplined the trust more effectively than did numerous antitrust suits.

Some economists argue that firms use vertical restraints to increase their rivals' costs and deter entry.¹ Consider a frequent exclusive dealing arrangement: contracts requiring distributors to carry only the products of a particular manufacturer. A large manufacturer might use such contracts to undercut the ability of his rivals to compete. If the manufacturer controls distribution, his rivals have to open their own distributorships. This becomes a costly endeavor when distribution outlets are scarce. Other economists, however, argue that vertical restraints promote efficiency. Among other things, vertical restraints might protect relationship-specific investments and prevent competitors from free riding on a firm's advertising expenditures.² Moreover, even if firms use vertical restraints strategically, it is not clear that such restraints promote substantial market power over the long run. The debate over vertical restraints and exclusionary practices is a subset of a larger debate over the ability of firms to use strategic behavior to create and sustain market power.

Although the ratio of theory to evidence is high, there is a growing empirical literature on the competitive effects of vertical restraints.³ This article presents a case study on the Whiskey Trust to explore the sources and consequences of exclusive dealing. Exclusive dealing has received scant empiri-

The Journal of Economic History, Vol. 58, No. 3 (Sept. 1998), © The Economic History Association. All rights reserved. ISSN 0022-0507.

Werner Troesken is Associate Professor of History and Economics, Department of History, University of Pittsburgh, Pittsburgh PA 15260, e-mail: troesken+@pitt.edu

I gratefully acknowledge helpful comments from Patty Beeson, Karen Clay, Dave DeJong, Martin Gaynor, Jim Lesage, John Murray, Timothy Sass, Lester Telser, seminar participants at the University of Toledo, and two anonymous referees from this journal. The usual disclaimer applies.

¹Krattenmaker and Salop, "Competition"; and Salop and Scheffman, "Raising Rivals' Costs."

²On general efficiency arguments, see Bork, *Antitrust Paradox*, pp. 193–207; Posner, *Antitrust Law*, pp. 171–205; Lopatka and Godek, "Another Look"; and Masten and Snyder, "United States." See also, Mathewson and Winter, "Competitive Effects." For advertising and exclusive dealing, see Marvel, "Exclusive Dealing."

³See, Granitz and Klein, "Monopolization"; Lopatka and Godek, "Another Look"; Masten and Snyder, "United States"; and Sass and Saurman, "Mandated Exclusive Territories."

cal attention, case study or otherwise. The Whiskey Trust distilled alcoholic spirits. It sold the spirits to rectifying houses who blended them with flavorings to produce various brand-name whiskies. Rectifying houses then sold the brand-name whiskey to wholesalers who distributed the whiskey to consumers and retailers. During the early 1890s, the Whiskey Trust conducted an unusual experiment in exclusive dealing. The trust did not contract with the rectifying houses who bought its spirits; it contracted with the wholesalers who bought the rectifiers' brand-name whiskies. Starkly put, the trust bribed wholesalers not to distribute rectified whiskey made with spirits from nontrust distilleries. Less starkly, it offered wholesalers substantial rebates if they would deal only with those rectifiers who purchased trust-distilled spirits.

The experience of the Whiskey Trust suggests that exclusive dealing is an ineffective predatory strategy. Despite the trust's market dominance and manifold predatory strategies, its rebate program failed to preempt entry. The rebate program failed, in part, because the trust's rivals could vertically integrate at low cost. Competition disciplined the trust more effectively than did the numerous state and federal antitrust suits brought against the trust and its rebate program. Although the story of the Whiskey Trust bears primarily on the debate over exclusive dealing, it has implications for other debates as well. It contributes to the debate over the effectiveness of antitrust regulation; it contributes to a growing literature on state regulation; and it sheds light on nagging questions about the late-nineteenth-century trust movement.⁴ For example, it explores some of the competitive strategies employed by the trusts. Also of particular interest is the article's analysis of the price of spirits over time. Previous studies of the trusts have been able to present only limited evidence on the trust movement's effect on prices.

Much of the evidence for this study comes from an investigation conducted by the United States Industrial Commission in 1899. Appointed by Congress to investigate large industrial trusts, the Industrial Commission included prominent economists and academics. Perhaps the best-known member of the commission was Jeremiah Jenks, who wrote several books and articles about the trusts and other pressing economic questions.⁵

⁴The literature on the desirability of antitrust regulation is voluminous. I cite only a few examples. Kovaleff (*Antitrust Impulse*) presents a series of essays that generally agree that antitrust regulation is effective and necessary. Stigler ("Economic Effects") argues that the antitrust laws have been, at best, mildly effective. Birtlingmayer ("Stock Market") argues that antitrust regulation is pernicious. See also the brief survey of empirical studies of antitrust in Troesken, "Antitrust Enforcement." A growing number of economists and economic historians have come to appreciate the need for greater study of state regulation during the late nineteenth century. Several of the essays found in Goldin and Libecap's *Regulated Economy* illustrate this. There are a range of interpretations of the trust movement. See, for example, Chandler, *Visible Hand*; Lamoreaux, *Great Merger Movement*; James, "Structural Change"; Libecap, "Rise"; McCraw, *Regulation*; and Telser, *Theory*, pp. 19-40.

⁵See U.S. House, *Industrial Commission Reports*. Hereafter referred to as ICR. For a survey of how economists during this period saw the trusts, see DiLorenzo and High, "Antitrust." Other sources used

THE STRUCTURE OF THE WHISKEY INDUSTRY

There were two types of whiskey, straight whiskey and rectified whiskey. Straight whiskey included Kentucky bourbon and rye whiskey, the latter distilled almost entirely in Pennsylvania and Maryland. Straight whiskey was distilled from corn, rye, and malt. It required at least three years of aging. The best whiskeys aged in oak barrels for up to seven years. About one-third of all whiskey produced in the United States was straight whiskey. Cheaper and poorer tasting than straight whiskey, rectified whiskey required no aging. It was made by blending alcoholic spirits with water, brown sugar, a small amount of straight whiskey, and other flavorings. Industry officials claimed that rectified whiskey did not compete with straight whiskey. The two served separate markets. The markets for both rectified and straight whiskey were large. During the late nineteenth century, per capita whiskey consumption averaged over one gallon a year.⁶

The production and distribution of rectified whiskey can be divided into four stages. In stage one, distillers made alcoholic spirits, which were the primary input in rectified whiskey. Spirits had virtually no other use except as an input for making whiskey. Distillers fermented corn into alcohol, then ran the undiluted alcohol through charcoal to remove various oils and flavors, leaving spirits. Spirits were homogeneous. As one industry official observed, "there was no such thing as a brand of spirits." Besides a small amount of malt used to initiate fermentation, corn was the primary input into spirits.⁷

In stage two, rectifying houses blended the spirits with flavoring according to their respective trademarks and brand names. Brand names and trademarks may have helped assure quality. Rectifying, the Industrial Commission argued, was more profitable than distilling because brand names differentiated various rectified whiskeys. Rectifiers also performed the important task of removing fusel oil from the spirits. Containing small amounts of amyl, butyl, and propyl alcohol, fusel oil was poisonous. In stage three, wholesalers purchased whiskey from rectifying houses and then distributed the whiskey to retail outlets. In stage four, retail outlets sold the whiskey to final consumers.⁸

Licensing requirements increased the costs of integrating across these stages. Testifying before a Congressional inquiry in 1893, J. B. Greenhut,

include newspaper accounts, court reporters, and a Congressional investigation of the trust conducted in 1893. See U.S. House, *Whiskey Trust Investigation*. Hereafter referred to as *Whiskey Trust*.

⁶ICR, pp. 75-79, 168, 204-05, 258, and 842-43.

⁷ICR, pp. 168 and 835.

⁸ICR, p. 75. Some observers claimed that rectifying houses adulterated their whiskey by watering it down excessively and by flavoring it with unhealthy chemicals. The truthfulness of such claims appears dubious. See ICR, pp. 75-76, 204-05, 230-31 and *Whiskey Trust*, pp. 3-24, 43, 82-98. See also, High and Coppin, "Wiley." High and Coppin provide much information about the nature of the whiskey industry and about claims of "impure" whiskey.

the president of the Whiskey Trust, explained that if a distiller acted as a rectifier "in any shape, form, or manner," the internal revenue would seize all of its property. Greenhut continued: "There are two kinds of licenses which the Government issues, one a rectifying license, which is more expensive, and the other is a wholesale liquor dealer's license. The ordinary wholesale dealer does not rectify."⁹ These licensing requirements forced a firm operating at one stage of the production process to incorporate a separate company to operate at another stage of production. For example, wholesalers often incorporated separate organizations to operate distilleries. Although the wholesaler may have owned and operated the distillery, the distilling and wholesaling operations were legally and organizationally distinct.

In light of the stages of production described previously, the phrase "Whiskey Trust" is a misnomer. The trust did not operate at stage two, rectifying brand-name whiskey, as the phrase Whiskey Trust suggests. The trust's formal name, the Distilling and Cattle Feeding Company, is more accurate. A combination of distillers, the trust made alcoholic spirits.

Most distilleries located around Peoria, Illinois. By locating around Peoria, a region rich with corn, distillers avoided the costs of transporting a key input. Another important consideration was the region's water supply. Peoria had a limitless "supply of cold water running at a temperature of about 54" degrees. Water temperature was a "dominant factor" in distilling and 54 degrees was near perfect.¹⁰

The federal government taxed domestic and imported spirits. The import tariff was so large that the United States did not import any spirits or rectified whiskey. This insulated distilleries from foreign competition and protected all but the most expensive brands of straight whiskey.¹¹ Only the highest grades of foreign straight whiskeys were imported. The tax on domestic spirits was also large. During the late 1890s, the federal tax on spirits was \$1.10 per gallon. At the time, it cost 8 to 15 cents to produce one gallon of spirits. A vibrant trade in illicit spirits grew from the tax. There are, unfortunately, no precise data on the production of stills. The Internal Revenue Service, which collected the tax, only reported the number of illicit stills seized. By the late 1890s internal revenue agents were seizing two thousand stills per year. Tax-paying distillers claimed that the internal revenue discovered only a "small proportion" of all illicit stills.¹²

⁹*Whiskey Trust*, p. 43.

¹⁰Information and quotations, from ICR, pp. 201-02.

¹¹During the nineteenth century, many observers argued that tariffs allowed the trusts to form and raise prices. For example, during the Congressional debate over the Sherman Antitrust Act, many Democrats advocated lowering the tariff as a means of combating monopolistic trusts. If the tariff were lowered, only trusts based on genuine cost efficiencies would have formed. See DiLorenzo, "Origins"; DiLorenzo and High, "Antitrust"; and Grandy, "Original Intent."

¹²ICR, pp. 90-91 and 817-40.

Industry observers argued that barriers to entry were low. According to the Industrial Commission, "the cost of establishing a new distillery" was "slight." "The ease with which new distilleries" were established made it "almost impossible" for the trust to hold "control of the business." Only if distillers "kept prices low," the commission explained, would they not "provoke competition." It is surprising that industry observers described entry as easy, because there were a number of factors that otherwise would have inhibited entry, including evidence of scale economies in distilling; licensing requirements; and brand name loyalty.¹³ There was, however, one type of entry that clearly was easy and low-cost: the creation of small and illicit stills. Competition from illicit stills may have constrained the trust.

THE ORIGINS OF THE WHISKEY TRUST

Distillers began forming pools during the early 1880s. Through pooling arrangements, distillers agreed to limit their production. The pools failed because of market entry and the absence of effective sanctions for members who defected. In 1887, after pooling had failed, distillers organized the Distillers and Cattle Feeders' Trust. Unlike many other combinations that were also called trusts, the Distillers and Cattle Feeders' Trust was a bona fide trust. Distillers who agreed to join the trust gave their stock to a board of trustees. The trustees, in return, gave the distillers certificates representing their shares in the trust. Once a distiller joined the trust, it was supposed to follow the managerial decisions of the trustees. Of the 86 distilleries that eventually joined the trust, the trust kept only 10 or 12 operating and shut down the others. Sometimes the distilleries the trust shut down would reopen and compete with the operating members of the trust. To prevent this, the trust often leased the ground and plant of member distilleries for up to 25 years. It would then remove or destroy the machinery in the plant, leaving the distillery inoperative.¹⁴

During the 1880s state courts raised questions about the legality of trust arrangements. Fearing that state courts would eventually disband its trust agreement, the Distillers and Cattle Feeders' Trust reorganized as an Illinois corporation, the Distilling and Cattle Feeding Company, in 1890. Though the

¹³See ICR, pp. 81 and 87 for quotations regarding barriers to entry. On economies of scale, see James, "Structural Change," p. 445; and ICR, pp. 88-89. For a critical analysis of the concept of entry barriers, see Demsetz, "Barriers."

¹⁴ICR, pp. 76, 168-69, 220, and 828. On the relationship between price wars and pooling, see Lamoreaux, *Great Merger Movement*; and Porter, "Study." On pools as antecedents of large industrial combinations, see Lamoreaux, *Great Merger Movement*. As to why the trust shut down some distilleries, Charles A. Clarke, who operated a trust-affiliated distillery, said that the Whiskey Trust economized on costs by shutting down or scaling back production from inefficient and poorly located plants. Samuel M. Rice, a distributor for the trust, and John McNulta, suggested that the trust wanted to reduce output and drive up prices. For Clarke's testimony, see ICR, pp. 170. For the testimony of McNulta, see ICR, pp. 196-97, 203, and 216. For Rice's testimony, see ICR, p. 832. See also, ICR, pp. 88-89.

new company had abandoned the trust arrangement, people continued to call it the Whiskey Trust. After it reorganized and the Whiskey Trust continued to expand its control over the whiskey industry. During the early 1890s it bought six new distilleries, including two Chicago distilleries that were among the largest five distilleries in the world. With these acquisitions, the trust came to produce 95 percent of all the spirits (legally) produced in the United States.¹⁵

A DESCRIPTION OF THE REBATE PROGRAM

In the summer of 1890 the trust began its exclusionary rebate program. Under the program the trust paid wholesalers a large rebate if they purchased whiskey exclusively from a select group of rectifying houses. Every time a wholesaler purchased whiskey from a trust-selected rectifier, the wholesaler received a voucher. If, after six months, the wholesaler had purchased only from trust-selected rectifiers, the wholesaler could redeem the voucher for a rebate. The size of the total rebate was based on the amount of spirits contained in each brand of whiskey. Suppose a wholesaler purchased ten gallons of whiskey from a trust-selected rectifier. If those ten gallons of whiskey contained nine gallons of spirits, the whiskey would have contained "nine proof gallons." Between 1890 and 1891 the trust set the rebate at five cents per proof gallon. Between 1891 and the summer of 1894, it raised the rebate to seven cents per proof gallon. During the fall and winter of 1894 the trust reduced the rebate to two cents per proof gallon. Compared to the price of spirits, the rebate was substantial. At the time, the before-tax price of spirits ranged from 10 to 30 cents per gallon; the after-tax price of spirits ranged from \$1 to \$1.20.¹⁶

Cheating—wholesalers buying from nontrust rectifiers and then redeeming their rebate vouchers anyway—was a potential problem. Monitoring costs, however, were not prohibitive. The Internal Revenue Service required wholesalers to keep detailed records of all of their purchases. If wholesalers failed to keep these records, or kept them inaccurately, they risked having

¹⁵For the court cases raising questions about the legality of the trust, see *State v. Nebraska Distilling Company et al.*, 29 Neb. 700 (1890); *People v. The American Sugar Refining Company*, 7 Ry. & Corp. L.J. 83 (1890); *State v. American Cotton-Seed Oil Trust*, 40 La. Ann. 409 (1888); *People v. Chicago Gas Trust Company*, 130 Ill. 268 (1889); and *People v. North River Sugar Refining Company*, 121 N.Y. 582 (1890). For an analysis of the effectiveness of these suits, see Troesken, "Antitrust Enforcement." Also, testifying before the Industrial Commission, Charles Clarke explained: "The New York courts had declared the sugar trust an illegal combination; and in order to avoid the same thing . . . we organized the corporation known as the Distilling and Cattle Feeding Company." Quoted in ICR, p. 171. For growth of the Whiskey Trust, see ICR, pp. 75–90 and the discussion of the Shufeldt distillery later in the article.

¹⁶ICR, pp. 84, 171–72, and 241–42; and the following court cases: *Olmstead et al. v. Distilling & Cattle Feeding Co.*, 67 F. 24 (1895); *Olmstead v. Distilling & Cattle-Feeding Company*, *Graves v. Same*; *Bayer v. Same*; 73 F. 44 (1895).

their operating licenses revoked. The trust monitored wholesalers with these records.¹⁷

Beyond the wholesale rebate, the trust also offered a rebate to rectifiers. This rebate, however, was not explicitly exclusionary. For every gallon of spirits they purchased, trust-selected rectifying houses simply received two cents off the list price of spirits. They received the rebate whether or not they purchased exclusively from the trust. However, trust-selected rectifiers faced a strong incentive to continue buying most of their spirits from the trust. If they stopped, or bought too much from competing distilleries, they ran the risk that the trust would remove them from the wholesale rebate program. Rectifiers did not want to be removed from the program, because the trust gave participating rectifiers market power by subsidizing distributors' purchases from them.¹⁸

The Whiskey Trust abandoned the rebate plan when it entered receivership in January 1895. The trust reorganized as the American Spirits Manufacturing Company in August 1895. Instead of reviving the rebate plan, American Spirits chose a new form of vertical integration. In January 1896 American Spirits organized another, separate company, the Spirits Distributing Company. The Spirits Distributing Company was a combination of rectifying houses. American Spirits organized the company "as a means for securing the control of the [rectifying] business." According to the Industrial Commission, "all of the common stock" of the Spirits Distributing Company "belonged to the American Spirits Manufacturing Company." American Spirits also under-wrote all of the preferred stock of the Spirits Distributing Company.¹⁹

INTERPRETING THE REBATE PROGRAM

How Historical Observers Saw the Rebate Program

The Industrial Commission asked John McNulta, the court-appointed receiver of the Whiskey Trust, how he thought the rebate program affected the whiskey business. McNulta answered: "I do not think its effect was good. It demoralized the trade and created bad feeling among the customers, so that there was a general disposition to get out of it." McNulta continued, explaining that the trust started the rebate system at a time when it had control over "almost the entire market." "There was," McNulta claimed, "*no alternative for buyers except to start distilleries of their own, and so they submitted to it, but always regarded it as a great burden*" [emphasis added].

¹⁷See ICR, pp. 83–84 and 172.

¹⁸*Ibid.*, pp. 84, 171–72, and 241–42; and the following court cases: *Olmstead et al. v. Distilling & Cattle Feeding Co.*, 67 F. 24 (1895); *Olmstead v. Distilling & Cattle-Feeding Company*; *Graves v. Same*; *Bayer v. Same*; 73 F. 44 (1895).

¹⁹ICR, pp. 78 and 835.

When asked, "Did the company institute the rebate system solely for the purpose of controlling the output?" McNulta answered "Yes." Investigators then asked McNulta if wholesalers would ever again consent to an exclusive rebate system. McNulta testified: "I think it hardly possible ever to start the rebate system again, at least within the memory of the men who had experience with it." Other witnesses before the Industrial Commission agreed with McNulta's assessment of the rebate program.²⁰

McNulta's testimony implies that the trust used the rebate program to increase its market power. However, it is not clear from this testimony how the rebate program would have succeeded in this. The testimony also suggests that wholesalers and rectifiers were dissatisfied with the rebate program and wanted the trust to abandon it. This is puzzling. If wholesalers and rectifiers did not like the rebate program, why did they consent to it? The discussion below clarifies these issues.

The Rebate Program in Light of Current Economic Theory

In the usual anticompetitive story, manufacturers use exclusive dealing to foreclose scarce distributing outlets. This makes it costly for new firms to enter. If new companies decide to enter, they must do so as vertically integrated enterprises, operating both as manufacturers and as distributors, because incumbents have tied up all distributing outlets. The Whiskey Trust's rebate program went the usual story one better. If new distilleries wanted to enter, they not only needed to integrate one step forward, into rectifying, but two steps forward, into rectifying and wholesaling.

Suppose a new distillery opened. Large rectifying houses that participated in the trust's rebate program would have been reluctant to purchase the new distillery's spirits. If they did, they ran the risk of the trust removing them from their list of selected rectifiers. Rectifiers did not want to be removed from the list because the rebate program gave them market power—by subsidizing wholesalers' purchases from specified rectifying houses, the rebate program made the specified rectifiers more attractive to wholesalers. Even if the new distiller managed to find a rectifier to purchase its spirits, that rectifier would have had a hard time finding a wholesale outlet for his whiskey. After all, wholesalers had a strong incentive to purchase only from trust-selected rectifiers. With few wholesale outlets and limited demand for its whiskey, the rectifier would, in turn, have had only a limited demand for the new distillery's spirits.

In this way the rebate program raised the costs of entry and insulated the Whiskey Trust from competition. Protected from competition, the trust

²⁰All of McNulta's statements are taken from ICR, p. 207. For the testimony of others documenting McNulta's statements, see ICR, pp. 172, 181, 241, and 815. See also, *Whiskey Trust*, p. iii.

could have increased the price of spirits. Depending on the size of the price increase, the rebate program could have left rectifying houses and wholesalers worse off. An increase in the price of spirits would have increased the costs of rectifying. Some of the increase would have manifested itself in higher whiskey prices and would have been passed along to wholesalers. Some of it, however, may not have been passed along. In particular, rectifiers would have suffered losses from the price increase if industry demand was not perfectly inelastic or if they had market power.²¹ Although the trust's rebate program increased the market power of its chosen rectifying houses, it is not clear if the benefits of that increase more than offset the losses caused by the increase in the price of spirits.

For wholesalers, the rebate reduced the price of whiskey from trust-selected rectifiers. Initially, the rebate must have been large enough to offset any increase in the price of whiskey that resulted from an increase in the price of spirits. If it were not, wholesalers simply would have purchased whiskey from non-trust-selected rectifiers. However, as the amount of whiskey purchased rose, wholesalers would have found it increasingly costly to abandon trust-selected rectifiers in favor of independents. The rebate vouchers could only be redeemed if wholesalers continued to patronize trust-selected rectifiers. Also, it might have been costly to purchase from nontrust rectifiers because, as noted earlier, they were smaller and might have manufactured the least popular brands of whiskey. Over time, then, the trust might have been able to drive up the price of whiskey to a point where it overwhelmed the rebate.

Brand Names, Licensing Costs, and the Effectiveness of the Rebate Strategy

In the long run the effectiveness of the trust's rebate strategy depended on the costs of vertical integration. If new distilleries could easily open their own rectifying houses and wholesale outlets, the rebate program would not have deterred entry. Alternatively, if new distilleries could not easily open their own rectifying houses, and all existing rectifiers were beholden to the trust, new distilleries would not have been able to find a market for their spirits. This would have deterred entry.

Two factors, mentioned previously, would have affected the costs of vertical integration: brand names and licensing restrictions. To the degree that

²¹Under the first scenario, assume the market for rectified whiskey was perfectly competitive and industry demand was not perfectly inelastic. In this case, an increase in the price of spirits (a key input) would have shifted the supply curve up. Equilibrium price would have been higher and equilibrium output would have been lower. There would have been fewer rectifiers producing less whiskey. Under the second scenario, assume the market for rectified whiskey was not perfectly competitive and that each rectifier had some market power. (Perhaps this market power derived from the rectifier's brand name or from a locational advantage.) An increase in the price of spirits would have shifted cost curves up and reduced each rectifier's profits and profit maximizing output.

loyalty to existing brands of whiskey kept consumers and retailers from switching to new brands of whiskey, it would have been difficult for new distilleries to open their own rectifying houses and create new brands of whiskey. To the degree that the licensing process was expensive or politicized, it would have been difficult for new distilleries to open their own rectifying houses. The cost of licensing is perhaps the most relevant consideration. Regardless of how loyal consumers were to specific brands or how easily new distilleries could find wholesale outlets, existing rectifiers and wholesalers could have opened their own distilleries to compete with the trust. Although I have no direct evidence on licensing costs and brand name loyalty, the historical discussion below shows that wholesalers found ways to open their own distilleries and rectifying houses. Given this, the costs of vertical integration do not appear to have been prohibitive.

THE REBATE PROGRAM AND THE PRICE OF SPIRITS: A TIME SERIES ANALYSIS

Testifying before the Industrial Commission, industry officials suggested a trend: initially, the trust charged moderate to low prices; later, it charged high prices. Martin R. Cook, a rectifier from New York City, testified that originally the trust "maintained a fair price and was willing to accept a fair profit." Only later were prices "advanced." Cook also argued that the advance was not caused by an increase in the price of corn or any other input. Receiver John McNulta testified that "after the concern reached the point where [it] controlled a large proportion of the output of spirits," it "tried to push prices up." Other industry observers, testifying before Congress in 1893, expressed the identical sentiments.²² The data support these observations.

DATA AND ANALYSIS

Data Sources

As noted earlier, most distilleries located in Peoria. In its final report to Congress, the Industrial Commission used data from the Peoria Board of Trade to construct a time series of the price of corn and spirits. The commission's data are monthly and extend from January 1884 through December 1899. Data on corn prices are especially useful because corn was such an important input into the production of alcoholic spirits. McNulta argued that spirits were "corn in liquid form" and that their cost was "based upon the cost of corn."²³

²²All of the quotations are from ICR: Cook's, p. 241; and McNulta's, p. 207. For other testimony corroborating these views, see *Whiskey Trust*, pp. 11-13; and ICR, p. 812.

²³The data are from ICR, pp. 813-16. McNulta's quotation is from ICR, p. 239.

Estimating Procedure

In his study of Standard Oil and its effect on consumer prices, Lester Telser used data very similar to the data here. Using monthly price data, Telser regressed the price of refined oil against the price of crude oil, a time trend, a dummy variable for the Standard Oil Trust, and a dummy-time trend interaction term.²⁴ Following Telser, I estimated the following equation to identify the effects of the Whiskey Trust and its rebate program:

$$SPIRITS_t = \alpha + \beta_1(CORN_t) + \beta_2(TAX_t) + \beta_3(TRUST_t) + \beta_4(REBATE_t) + \dots + \beta_5(TIME) + \beta_6(REBATE_t * TIME) + \epsilon_t$$

The variables are defined as follows. *SPIRITS* is the natural log of the price of spirits (net of tax, and after the rebate). *CORN* is the natural log of the price of corn. *TAX* is the natural log of the internal tax on spirits. *REBATE* is the rebate (in levels) offered by the Whiskey Trust. *TIME* is a time trend; and ϵ_t is an error term. All dollar values have been adjusted for changes in the general price level. The base month is January, 1884. *TRUST*, a dummy variable, identifies how the trust influenced prices during the pre-rebate period. It assumes a value of one for a period of 36 months between 1887 and 1890 and zero otherwise. During these 36 months the trust operated but did not offer any rebates. The interaction term, *REBATE* * *TIME*, is included because theory and congressional testimony suggest that the effectiveness of the rebate would have varied over time. To induce people to participate in the rebate program, the trust would have had to offer very low prices initially. Later, after it had lured people in, it would have tried to raise prices. This logic predicts a positive coefficient on *REBATE* * *TIME*.

The Data and Implications for Estimation

Figure 1 plots the natural log of the real price of spirits (*SPIRITS*) and corn (*CORN*). This figure suggests that the price of spirits and the price of corn were highly correlated, a pattern consistent with the comments of industry observers who argued that corn was the primary input in the production spirits. Figure 2 plots the natural log of the real federal tax on spirits and the trust's rebate in levels. As the figure suggests, the government changed the nominal tax on spirits only once, raising the tax from 90 cents to \$1.10 in 1894. All other movements in the real tax are generated by changes in the general price level. The rebate, in contrast, was changed more frequently. It equaled zero between 1884 and 1890 and between 1895 and 1899. In nominal terms, the rebate varied between two cents and seven cents per proof gallon from 1890 through 1894.

²⁴See Telser, *Theory*, pp. 36-40.

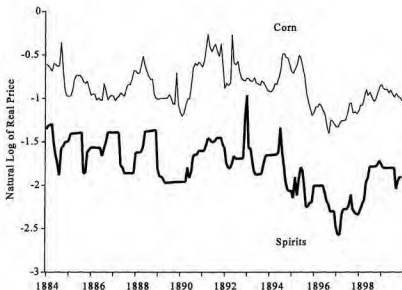


FIGURE 1
NATURAL LOG OF THE REAL PRICES OF CORN AND SPIRITS, EXCLUDING TAXES
AND REBATES

In a preliminary analysis, the data were tested for nonstationarity and autocorrelation, two frequent problems when working with time-series data. Using an augmented Dickey-Fuller test, the hypothesis that the data (*SPIRITS*) are stationary at the 5 percent level of significance cannot be rejected.²⁵ Preliminary tests, however, indicated second order autocorrelation. Autocorrelation might have stemmed from improper functional specification. To control for this possibility, the equation was estimated with and without logarithmic transformations. Functional form did not matter; autocorrelation appeared regardless. Only the results for the logarithmic model are reported. (The other results, which are identical in substance, are available upon request). Omitted variables are another common source of autocorrelation. But it is unlikely that this would have been a concern here. Based on the testimony of witnesses before the industrial commission, corn prices, the internal tax, and the rebate appear to have been the primary determinants of the price of spirits. All of these were included in the regressions.

Nonetheless, to control for the remote possibility that something important had been omitted, I estimated a second model that included a lag of the

²⁵The test results are not included here, but are available from the author upon request. The estimating procedure followed Pindyck and Rubinfeld, *Econometric Models*, pp. 459–65. They report the relevant critical values in table 15.1.

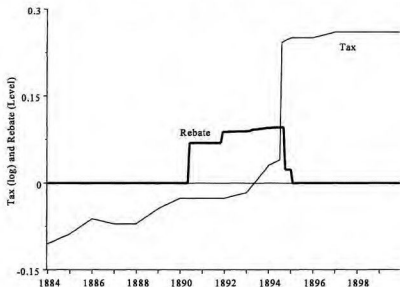


FIGURE 2
NATURAL LOG OF REAL TAX AND LEVEL OF REAL REBATE

dependent variable. I also surveyed the *New York Times Index* for events that might have affected the price of spirits. Based on this survey, two dummy variables were coded, $PRICEWAR_t$ and $SPECULATION_t$. $PRICEWAR_t$ controls for price wars that occurred during the mid-1880s. $SPECULATION_t$ controls for changes in prices induced by speculators who anticipated the large increase in the internal tax on spirits. I then estimated a third equation that included these dummy variables. Including $SPECULATION$ and $PRICEWARS$ improved the fit, but did not eliminate the autocorrelation. Because these remedial steps did not eliminate the serial correlation, I controlled for it using two different estimating procedures. For those models without a lagged dependent variable, Cochrane Orcott was used. For the model with a lagged dependent variable, Dhrymes' estimating procedure was used. (Cochrane Orcott is inappropriate when the model includes a lagged dependent variable).²⁶

Results

Table 1 reports the regression results. Because of the logarithmic transformations, the coefficients on the price of corn and the internal tax are elasticities. At around two, the price elasticity of spirits with respect to the tax

²⁶See Pindyck and Rubinfeld, *Econometric Models*, pp. 141-43.

TABLE I
REGRESSION RESULTS

Independent Variables	Mean (Variance)	Dependent Variable = <i>SPIRITS</i>		
		(1) Coefficient (<i>t</i> -statistics)	(2) Coefficient (<i>t</i> -statistics)	(3) Coefficient (<i>t</i> -statistics)
<i>CORN</i>	-0.86 (0.05)	0.24** (2.89)	0.26** (3.14)	0.20** (2.99)
<i>TAX</i>	0.06 (0.02)	-1.91** (3.89)	-1.98** (4.12)	-1.97** (4.79)
<i>TIME</i>	—	0.001 (1.03)	0.001 (1.46)	0.001 (1.02)
<i>TRUST</i>	0.19	-0.10 (1.28)	-0.11 (1.46)	-0.19** (2.53)
<i>REBATE</i>	0.02 (0.001)	-8.43* (1.95)	-8.50** (2.07)	-11.75** (3.03)
<i>REBATE*TIME</i>	—	0.07* (1.90)	0.07* (1.95)	0.10** (2.87)
<i>SPIRITS</i> (lagged)	-1.78 (0.09)	—	0.09 (1.60)	—
<i>SPECULATION</i>	—	—	—	0.55** (8.10)
<i>PRICEWARS</i>	—	—	—	-0.23** (6.05)
Constant	—	-1.54** (13.55)	-1.42** (11.38)	-1.53** (14.42)
<i>N</i>		192	192	192
Adjusted <i>R</i> ²		0.86	0.86	0.91
Log of Likelihood Fn		155.20	155.78	196.55

** = Significant at 5 percent.

* = Significant at 10 percent.

Note: See the text for variable definitions.

appears large. This reflects the fact that when the tax was raised from 90 cents per gallon to \$1.10 in August 1894, the price of spirits fell from 27 cents per gallon to 14 cents in the following months. That the increase in the tax caused the net price of spirits to decline by roughly the same amount suggests the presence of a nontaxed substitute with a highly elastic supply, namely illicit spirits. The coefficient on the trust dummy is always negative but only statistically significant in the third model. The *t*-statistic on the time trend (*TIME*) is low. This might result from collinearity with *REBATE*TIME*.²⁷

In all of the specifications, the coefficients on the rebate terms are statistically significant. The rebate variable is negative, whereas the rebate interacted with the time trend is positive. Although these results are suggestive,

²⁷In a series of regressions that I do not report here, I also interact the trust and rebate dummies with the price of corn. That is, I add *TRUST*CORN* and *REBATE*CORN* to the first model. Adding these interactions terms does not alter the results.

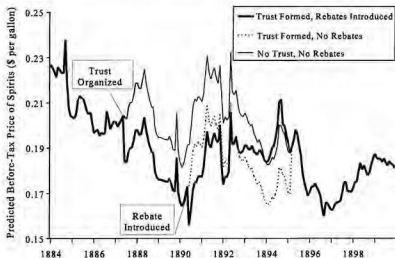


FIGURE 3
PREDICTED BEFORE-TAX PRICE OF SPIRITS UNDER ALTERNATIVE REGIMES

Figure 3 provides a clearer sense of the economic effect of the rebate. (In Figure 3, taxes are held constant). Using the estimates from the first regression, the heavy line plots the predicted price of spirits given actual events. That is, the heavy line plots the fitted price. The pattern is striking. The estimated price falls steadily until the introduction of the rebate program when there is a sharp one time drop in price. Presumably the trust cut prices to lure potential customers into the rebate program. However, shortly after the rebate is introduced, the downward trend stops and estimated prices begin to climb. According to the coefficient estimates from the first regression, the trust had increased prices to the point where they overwhelmed the rebate by December 1893.²⁸ This pattern corroborates the testimony before the Industrial Commission: initially the trust charged low prices but it raised prices after the rebate program began.

In Figure 3, the lighter solid line plots what prices would have been if distillers had not organized the trust and continued setting prices as they had in the years before the trust. Note that the line begins in June 1887, the first full month that the trust operated. Comparing the two lines, one sees that the price of spirits would have been about 10 to 15 percent higher without the trust. This pattern is consistent with the hypothesis that, before the rebate, the trust exploited scale economies and brought consumers lower prices.

²⁸Using the estimates from the first regression, equate the expression $(8.43 * REBATE)$ with the expression $(0.07 * REBATE * TIME)$. With this, $(TIME) = (8.43)/(0.07) = 120$. The 120th observation is December 1893.

Without direct evidence that the trust actually did things to reduce costs, however, it is hard to put much stock in this. A more plausible hypothesis, also consistent with the low prices before the rebate, is that the trust was practicing predatory pricing during this period. The statements of industry observers and the trust's own managers—all of whom claimed that the trust practiced predatory pricing—provide additional corroboration.

The dotted line shows what would have happened if, rather than introducing the rebate, the trust had continued with its prerebate pricing regime. Note that the line begins in June 1890 when the trust introduced the rebate program. Comparing the dotted line and the heavy line shows the predicted effect of the rebate program. It is clear that predicted prices fell by 10 percent when the trust first introduced the rebate program. However, as noted above, predicted prices rose steadily thereafter. Eventually they were 10 to 15 percent higher than they would have been had the trust continued its prerebate pricing regime.

THE TRUST'S OTHER PREDATORY STRATEGIES

Potential distilleries faced low entry barriers. The trust hoped that its rebate program would make it more difficult for competitors to start new distilleries. It also used predatory pricing and threats of violence to discourage entry.

Violence

On 11 February 1891, Chicago police arrested George Gibson, the secretary of the Whiskey Trust. Thomas Dewar initiated Gibson's arrest. According to Dewar, several weeks earlier Gibson had offered him \$25,000 to blow up a Chicago whiskey distillery. Dewar, an agent of the Internal Revenue Service, worked with other treasury agents to lay a trap for Gibson. When Gibson arrived at the Grand Pacific Hotel to meet Dewar, police were waiting. State and federal authorities charged Gibson with, among other things, attempted arson and conspiracy to commit murder.²⁹

Dewar could have fabricated the whole story. Before joining the Internal Revenue Service, Dewar worked for the Whiskey Trust, where Gibson had been his boss. Dewar vacated his position with the trust after only a few months. Gibson said he was fired; Dewar said he quit. Perhaps Dewar was a disgruntled employee, bent on destroying his former boss.³⁰

More likely, Dewar told the truth. There were means. When police arrested Gibson they confiscated his grip and found inside an explosive com-

²⁹See Dewar's testimony before Congress in *Whiskey Trust*, pp. 16–30; East, "Distillers and Cattle Feeders' Trust," and the *Chicago Tribune*, 5 June 1891, p. 1.

³⁰It is interesting to compare Dewar's testimony before Congress to that of J. B. Greenhut, the president of the Whiskey Trust. For Dewar's testimony, see *Whiskey Trust*, pp. 17–30; for Greenhut's see *ibid.*, pp. 31–57.

pound. After searching Gibson's other baggage, they found a detonating device—what one investigator called an "infernal machine." There was also motive. For years the Whiskey Trust had been trying to get the Shufeldt whiskey distillery to join the trust but the Shufeldt had always refused. The Shufeldt was the world's second largest whiskey distillery. It was also the distillery Gibson allegedly asked Dewar to destroy. Finally, there was a suggestive pattern. On 10 December 1888, someone threw dynamite on to the roof of the Shufeldt distillery. The explosion caused considerable damage, but it could have been much worse. If the dynamite had fallen through a skylight, which it scarcely missed, it would have destroyed the distillery. Mysterious fires also damaged or destroyed three distilleries in southern Illinois. Each distillery had refused to join the trust. Another time, workers at an independent Chicago distillery discovered "one of the trust's agents" walking around the plant and taking notes. Plant workers reportedly placed a rope around the agent's neck and would have lynched him had others not intervened.³¹

On 4 June 1891, four months after Gibson's arrest, the Shufeldt distillery and the Calumet distillery, another large Chicago distillery, sold out to the trust. Everyone associated with the deal expressed "good feelings and sentiment." The owners of the trust believed that all these warm feelings would "materially effect [*sic*] the Gibson case." Around the same time, the *Tribune* reported that "pressure from influential quarters ha[d] been brought to bear . . . to have the case 'settled.'" Within a year, the state and federal cases against Gibson were resolved and Gibson resigned as secretary of the Whiskey Trust. The trust continued to pay Gibson \$7,500 a year after he resigned.³²

Predatory Pricing

The Industrial Commission wrote:

It was the practice of the Distillers' Trust and the later combinations to send agents into special localities to undersell competitors, their particular customers being approached and offered open or secret cuts in prices. In this way distilleries were

³¹For details on the pattern of mysterious fires and other violence, see East, "Distillers and Cattle Feeders' Trust"; and the *Chicago Tribune*, 20 March 1893, pp. 1–8. For other information, see *Whiskey Trust*, pp. 17–30; and the following issues of the *Chicago Tribune*: 5 June 1891, p. 1; 6 June 1891, p. 3; 2 February 1892, p. 1; and, especially, 25 June 1892, p. 3.

³²All quotations on purchase of the two distilleries are from, *Chicago Tribune*, 5 June 1891, p. 1. On pressure to settle the Gibson case, see *Chicago Tribune*, 6 June 1891, p. 3. The *Chicago Tribune* (20 March 1895, p. 1) reported that "Mr. Gibson, since his retirement, has drawn an annual compensation from its treasury of \$7,500 a year for work which, so far as can be learned, has been mostly in the nature of observing the old adage that 'silence is golden.'" In addition, see *United States v. Gibson*, 47 F. 833 (1891); and *Chicago Tribune*, 25 June 1892, p. 3.

usually forced to sell out to the trust. That, indeed, has been and is the common practice on both sides.³³

The testimony of three witnesses—Charles Clarke, John McNulta, and Henry Luyties—led the commission to this conclusion. Consider the testimony of John McNulta, the court-appointed receiver of the Whiskey Trust. The commission asked McNulta if he had practiced predatory pricing while he controlled the trust: “You sold below the cost of production, then, in order to bring him to time?” “Yes” McNulta answered, “I sold below the cost of production, but there was nothing secret about it. It was open, and I made it perfectly plain to him.” The commission then asked: “Was this method followed by the old trust in order to drive competitors into combining with them?” McNulta responded, “I think it was.” Previous studies raise questions about the effectiveness of predatory pricing.³⁴ The history of the Whiskey Trust raises additional questions. Despite the trust’s many predatory strategies, it failed to deter entry in the long run.

MARKET ENTRY AND THE DEMISE OF THE WHISKEY TRUST

Some industry observers claimed that it was “impossible” for wholesalers to escape the trust because there were so few independent distilleries. These observers overstated their case. When the trust first introduced the rebate program, there were very few independent distilleries. But even then wholesalers and rectifiers found a way to avoid the trust and its rebates. They organized their own distilleries. Testifying before the Industrial Commission, Martin Cook explained that he, “in connection with several [other] large [rectifying] houses,” built his own distillery “in order to secure [his] supply at the lowest possible cost.” Asked why he abandoned the trust and its rebate program, Cook said that he was dissatisfied with the trust’s “high prices” and with the “small profit” he earned being affiliated with the trust. Several other rectifiers and wholesalers adopted Cook’s strategy and built their own distilleries.³⁵

The trust’s rebate program not only encouraged wholesalers and rectifiers to vertically integrate, it also encouraged competing distilleries to vertically integrate. The *Chicago Tribune* reported that several large distillers incorporated the National Distributing Company. Organized by distillers outside the trust, the new company rectified and distributed whiskey for eastern mar-

³³ICR, p. 82.

³⁴The commission’s quotation is from ICR, p. 82. McNulta’s quotation is from ICR, p. 208. For the statements of others corroborating McNulta’s claim of predatory pricing see ICR, pp. 170, 177, and 252–53. Other studies of predatory pricing include, Elzinga, “Predatory Pricing”; and Zerbe, “American Sugar Refining Company.”

³⁵On Cook’s strategy, see ICR, p. 244. For similar actions by other rectifiers and wholesalers, see *New York Times*, 31 October 1890, p. 1 and 21 December 1892, p. 9; and *Chicago Tribune*, 21 January 1892, p. 9.

kets. According to the paper, before the formation of the company, "the distribution of spirits in the East" had been "practically controlled by the trust."³⁶

As more rectifiers and wholesalers broke away from the trust, potential rivals no longer feared that they would be unable to find distribution outlets. In the words of one observer, by 1893, competing distilleries were sprouting up "like mushrooms in the night." Rivals built large distilleries in Nebraska, Wisconsin and in Peoria, Illinois, the home of the trust. These more recent entrants were not vertically integrated. The owner of one Peoria rival explained why he thought people would buy his spirits: "the rebate system has become very odious in the eyes of the dealers who prefer to do their business without feeling the grasp of the trust." As it had in the past, the trust tried to buy out its new competitors. This time, however, "distilleries were built faster than the trust could buy them." Receiver John McNulta testified that "a number of men sold their distilleries to them for stock, and then sold their stock and built more distilleries. In some cases the company bought two or three distilleries from the same parties."³⁷

Trying to purchase all of its competitors, the trust found itself strapped for cash. It began borrowing money to pay ordinary operating expenses. Then banks began refusing to lend and the trust stopped meeting its financial obligations. Some distillers who had joined the trust under the promise that the trust would make a rental payment on their land and plant were denied their payments. When the trust failed to make these rental payments, many distillers withdrew from the trust and began operating independently. One distillery that exited was the Monarch Distillery in Peoria. The Monarch was the largest distillery in the world. According to some, the withdrawal of the Monarch and several other Peoria distilleries, "was a death blow" to the Whiskey Trust.³⁸

Fearing that the trust would be bankrupt before it had paid off rebates, wholesalers, who sometimes held more than \$25,000 in rebate vouchers, grew concerned. They organized a committee to protect their interests. Other wholesalers sued when the trust refused to redeem their rebate vouchers. The trust claimed that the wholesalers were not entitled to rebates because they had purchased from nonmember rectifiers; the wholesalers claimed otherwise. The courts agreed with the wholesalers.³⁹

³⁶*Chicago Tribune*, 20 September 1894, p. 2.

³⁷For the quotation on competition, see ICR, p. 207. For the quotation about buying up the same plant more than once, see again, ICR, p. 207. For other information, see *New York Times*, 22 December 1892, p. 9; and *Chicago Tribune*, 5 October 1892, p. 1.

³⁸Information in this paragraph is taken from the following issues of the *Chicago Tribune*: 1 February 1893, p. 6, 5 February 1893, p. 7, 18 May 1893, p. 13, and 24 May 1893, p. 4. In addition, see *New York Times*, 22 May 1893, p. 1.

³⁹See ICR, p. 831. On redeeming vouchers, see *New York Times*, 21 December 1892, p. 1; and *Gottschalk Company v. Distilling & Cattle Feeding Company*, 62 F. 901 (1894).

Prompted in part by the actions of the rebate committee, a small group of the trust's stockholders organized their own protective association in the fall of 1894. The association claimed that the trust was mismanaged and that its officers regularly speculated in the trust's stock. Once formed, the small association contacted large holders of stock and asked them for proxies. In a few months the protective association had proxies for 300,000 shares of stock; there were 350,000 shares outstanding. The association tried to meet and negotiate with the officers of the trust but were denied. Afraid that the stockholders' association would push him out, the company's president, J. B. Greenhut, petitioned a Chicago court to appoint him receiver of the Whiskey Trust. Greenhut, however, was eventually removed and John McNulta was appointed as the principal receiver of the Distilling and Cattle Feeding Company. By the fall of 1895 McNulta had sold off nearly all of the trust's assets to the newly organized American Spirits Manufacturing Company.⁴⁰

In addition to competition from legitimate distilleries, the Whiskey Trust also faced competition from illegal stills. As noted earlier, there existed a vibrant trade in illicit and untaxed spirits. If the Whiskey Trust drove up the price of legally distilled spirits, one expects that the number of illicit distilleries would have increased along with the number of legal distilleries. It is impossible to get data on the number of illicit stills in operation. However, the Internal Revenue did collect data on the number of stills seized by government officials. Using these data, it is possible to identify the number of stills seized over time. Consistent with the argument that the trust increased the price of spirits, the number of stills seized rose steadily throughout the early 1890s.⁴¹

ANTITRUST AND THE WHISKEY REBATE

On 11 February 1892 a Boston grand jury indicted J. B. Greenhut and the other officers of the Whiskey Trust. The indictment alleged that the trust's rebate program violated the Sherman Antitrust Act. U.S. attorneys in Cincinnati, Cleveland, and New York also sued the Whiskey Trust. In all of the federal cases brought against the Whiskey Trust, the rulings were the same: the rebate program did not violate the Sherman Act. J. B. Greenhut argued that "the indictments were probably procured by rivals in the trade and through political influence." Reports in the popular press support Greenhut's contention. In May, 1893 the Illinois attorney general filed suit against the Whiskey Trust. Claiming that the combination violated Illinois' antitrust law, the attorney general sought to revoke the charter of the trust. Sustaining

⁴⁰See ICR, p. 832 and *Olmstead et al. v. Distilling & Cattle Feeding Co.*, 67 F. 24 (1895).

⁴¹Specifically, the number of illegal stills seized per year was as follows: 456 in 1887; 518 in 1888; 466 in 1889; 583 in 1890; 795 in 1891; 852 in 1892; 806 in 1893; 1016 in 1894, the same year the tax on legally made spirits was increased; 1874 in 1895; and 1905 in 1896.

a lower court, the Illinois Supreme Court ordered the dissolution of the Whiskey Trust on 13 June 1895. The court's decision, however, came a day late. By the time it decided the case, a court appointed receiver (John McNulta) controlled the trust and had already liquidated many of the trust's assets.⁴²

COMPARISONS AND CONCLUSIONS

The Whiskey Trust tried to use the rebate program to prevent entry and competition. It supplemented the rebate program with other predatory devices. Competitors who refused to sell out to the trust confronted a regime of predatory pricing and violence—hold outs sometimes found their distilleries leveled by mysterious explosions. When the trust introduced the rebate program, it owned nearly every distillery in the United States and produced 95 percent of all spirits sold domestically. Initially, the rebate program caused a large reduction in the price of spirits as the trust lured in customers. Over time, though, there was a pronounced upward trend in prices. As prices rose, competing distilleries began popping up. Many of these new distilleries were organized by wholesalers dissatisfied with the trust's high prices. Wholesalers started their own distilleries because they sometimes found it difficult to find suppliers who were not tied to the trust. Within four years, competition drove the rebate system into the ground and the trust into receivership. Competition was quicker and more effective than the courts. Federal courts consistently ruled that the trust's rebate program did not violate the Sherman Act. And although the Illinois Supreme Court ordered the dissolution of the trust and its rebate program, the court's ruling came six months after the trust had entered receivership.

The story of the Whiskey Trust is not unique. During the late nineteenth and early twentieth century, other trusts used vertical restraints and various predatory strategies to forestall entry. For example, American Tobacco used vertical restraints to limit competitors' access to distribution outlets. American Tobacco also adulterated the products of competing companies and tried to promote strikes and labor unrest at competing plants—strategies similar to the Whiskey Trust's use of violence.⁴³ A more recent parallel comes from the concrete industry. During the late 1950s and early 1960s, several cement companies acquired downstream ready-mix companies. By integrating downstream, the cement companies hoped to foreclose potential markets for their competitors. In the end the acquiring companies failed to foreclose any markets and found themselves at the end of a lawsuit brought by the Federal

⁴²See *New York Times*, 22 December 1892, p. 9; *Chicago Tribune*, 8 January 1892 p. 5 and 1 March 1892, p. 6; *In re Greene*, 52 F. 104 (1892); *In re Corning et al.*, 51 F. 205; *United States v. Greenhut et al.*, 50 F. 469 (1892); *Ohlstead v. Distilling & Cattle Feeding Company*; *Graves v. Same*; and *Bayer v. Same*; 77 F. 265 (1896).

⁴³See Clay and Hamilton, "Creation."

Trade Commission. How did all this happen? Bruce Allen argues that the managers of cement companies simply made a mistake, miscalculating their market power and their ability to use vertical integration to foreclose markets. Seventy years earlier, the managers of the Whiskey Trust made the same mistake, miscalculating their market power and their ability to use vertical restraints to prevent entry.⁴⁴

The story of the Whiskey Trust is an economic parable. As a story about the relative effects of the courts and the market, it helps us appreciate the redundancy of antitrust when markets function well.⁴⁵ As a story about the relative effects of state and federal courts, it helps us appreciate the significance of state regulation. As a story about a firm that controlled nearly its entire market but still failed to stave off the effects of upstart firms, it helps us appreciate the power of market entry. As a story about a firm that rivaled Standard Oil in notoriety, it helps us understand the nineteenth-century trust movement. As a story about the competitive response to strategies designed to promote and sustain market power, the story of the Whiskey Trust helps us understand why such strategies often fail.⁴⁶ More precisely, the standard anticompetitive interpretation suggests that exclusive dealing can promote a manufacturer's market power if distributing outlets are scarce. The Whiskey Trust's experience suggests that even where distributing outlets are scarce, exclusive dealing can fail to give the manufacturer much power. Why? Because if an increase in a manufacturer's market power hurts existing distributors, those distributors have an incentive to vertically integrate and start their own manufacturing enterprises.

⁴⁴ For the argument that cement companies were trying to foreclose markets, see Allen, "Vertical Integration." McBride ("Spatial Competition") challenges this view. See, however, Johnson and Parkman, ("Spatial Competition") who present further evidence consistent with Allen's story.

⁴⁵ This is a well-known theme, especially in the Chicago School's interpretation of antitrust. See, generally, Bork, *Antitrust Paradox*; and Posner, *Antitrust Law*. For a collection of essays that express a contrary view, see the two volumes edited by Kovaleff, *Antitrust Impulse*. One might also infer from the story of the Whiskey Trust that more vigorous antitrust enforcement is desirable.

⁴⁶ In a similar vein, Telser ("Cutthroat Competition") argues that competition for a predated firm's assets would undermine the efficacy of predatory pricing strategies.

REFERENCES

- Allen, Bruce T. "Vertical Integration and Market Foreclosure: The Case of Cement and Concrete." *Journal of Law and Economics* 21, no. 1 (1971): 251-74.
- Bittlingmayer, George. "The Stock Market and Early Antitrust Enforcement." *Journal of Law and Economics* 34, no. 1, part 1 (1993): 1-32.
- Bork, Robert H. *The Antitrust Paradox: A Policy at War with Itself*. New York: The Free Press, 1993.
- Chandler, Alfred D. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge: Harvard University Press, 1977.
- Chicago Tribune*, various issues, 1887-1898.

- Clay, Karen, and Gillian Hamilton. "The Creation of a Trust: American Tobacco from Formation to Dissolution." Unpublished paper. Department of Economics. University of Toronto, 1997.
- Demsetz, Harold. "Barriers to Entry." *American Economic Review* 72, no. 1 (1982): 47-57.
- DiLorenzo, Thomas J. "The Origins of Antitrust: An Interest-Group Perspective." *International Review of Law and Economics* 5, no. 2 (1985): 73-90.
- DiLorenzo, Thomas J., and Jack C. High. "Antitrust and Competition, Historically Considered." *Economic Inquiry* 26, no. 3 (1988): 423-35.
- East, Ernest E. "The Distillers and Cattle Feeders' Trust, 1887-1895." *Journal of the State Historical Society of the State of Illinois* 47, no. 2 (1958): 101-24.
- Elzinga, Kenneth G. "Predatory Pricing: The Case of the Gunpowder Trust." *Journal of Law and Economics* 13, no. 1 (1970): 223-40.
- Goldin, Claudia, and Gary Libecap, eds. *The Regulated Economy: A Historical Approach to Political Economy*. Chicago: University of Chicago Press, 1994.
- Grandy, Christopher. "Original Intent and the Sherman Antitrust Act: A Re-examination of the Consumer-Welfare Hypothesis." *this JOURNAL* 53, no. 2 (1993): 359-76.
- Granitz, Elizabeth and Benjamin Klein. "Monopolization by 'Raising Rivals' Costs': The Standard Oil Case." *Journal of Law and Economics* 34, no. 1 (1996): 1-48.
- High, Jack C., and Clayton A. Coppin. "Wiley and the Whiskey Industry: Strategic Behavior in the Passage of the Pure Food Act." *Business History Review* 62, no. 2 (1988): 286-309.
- James, John A. "Structural Change in American Manufacturing, 1850-1890." *this JOURNAL* 43, no. 3 (1983): 433-59.
- Johnson, Ronald N., and Allen M. Parkman. "Spatial Competition and Vertical Integration; Cement and Concrete Revisited: Comment." *American Economic Review* 77, no. 3 (1987): 750-53.
- Kovaleff, Theodore P., ed. *The Antitrust Impulse: An Economic, Legal and Historical Analysis*, Volumes 1 and 2. New York and London: Columbia University Press, 1994.
- Krattenmaker, Thomas G. and Steven C. Salop. "Competition and Cooperation in the Market for Exclusionary Rights." *American Economic Review* 76, no. 1 (1986): 109-13.
- Lamoreaux, Naomi R. *The Great Merger Movement in American Business, 1895-1904*. Cambridge: Cambridge University Press, 1985.
- Libecap, Gary D. "The Rise of the Chicago Packers and the Origins of Meat Inspection and Antitrust." *Economic Inquiry* 39, no. 2 (1992): 242-62.
- Lopatka, John E., and Paul E. Godek. "Another Look at *Alcoa*: Raising Rivals' Costs Does Not Improve the View." *Journal of Law and Economics* 35, no. 2 (1992): 311-30.
- Marvel, Howard. "Exclusive Dealing." *Journal of Law and Economics* 25, no. 1 (1982): 1-25.
- Masten, Scott E., and Edward A. Snyder. "*United States v. United Shoe Machinery Corporation*: On the Merits." *Journal of Law and Economics* 34, no. 1, part 1 (1993): 33-70.
- Mathewson, G. Frank, and Ralph A. Winter. "The Competitive Effects of Vertical Agreements: Comment." *American Economic Review* 77, no. 5 (1987): 1057-62.
- McBride, Mark E. "Spatial Competition and Vertical Integration; Cement and Concrete Revisited." *American Economic Review* 43, no. 4 (1983): 1011-22.
- McCraw, Thomas K. *Regulation in Perspective: Historical Essays*. Cambridge, MA: Harvard University Press, 1981.
- New York Times*, various issues, 1887-1898.
- Pindyck, Robert S., and Daniel L. Rubinfeld. *Econometric Models and Economic Forecasts*. New York: McGraw Hill, 3rd Edition, 1991.

- Porter, Robert H. "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886." *Bell Journal of Economics* 14, no. 3 (1983): 301-14.
- Posner, Richard A. *Antitrust Law: An Economic Perspective*. Chicago: University of Chicago Press, 1976.
- Salop, Steven C., and David T. Scheffman. "Raising Rivals' Costs." *American Economic Review* 73, no. 1 (1983): 267-71.
- Sass, Tim R., and David S. Saurman. "Mandated Exclusive Territories and Economic Efficiency: An Empirical Analysis of the Malt Beverage Industry." *Journal of Law and Economics* 34, no. 1, part 1 (1993): 153-78.
- Stigler, George J. "The Economic Effects of the Antitrust Laws." *Journal of Law and Economics* 9, no. 2 (1966): 225-58.
- Telser, Lester. "Cutthroat Competition and the Long Purse." *Journal of Law and Economics* 9, no. 2 (1966): 259-77.
- . *A Theory of Efficient Cooperation and Competition*. Cambridge: Cambridge University Press, 1987.
- Troesken, Werner. "Antitrust Enforcement before the Sherman Act: The Break-Up of the Chicago Gas Trust Company." *Explorations in Economic History* 32, no. 1 (1995): 109-36.
- U.S. House. *Whiskey Trust Investigation*. 52nd Cong., 2d sess., 1893, H. Rept. No. 2601.
- U.S. House. *Industrial Commission Reports, Vol. 1, Trusts*. 56th Cong., 1st sess., 1889-1900, H. Doc. Vol. 93, No. 476, pt. 1.
- Zerbe, Richard. "The American Sugar Refining Company, 1887-1914: The Story of a Monopoly." *Journal of Law and Economics* 12, no. 2 (1969): 355-79.