

THE PETROLEUM INDUSTRY: A Historical Study in Power

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Before we can understand and evaluate the political economy of the petroleum industry, it is essential that we review the fundamental nature of the market economy and of the interventionist process. The market economy is an institutional arrangement whereby owners of property voluntarily enter into exchange relationships that they consider to be mutually beneficial. In a free market, buyers and sellers agree to an exchange because they both expect to gain some advantage. If the terms of exchange are not determined by buyers and sellers, however, but by the government or a legislature, then the assurance of mutual advantage breaks down. Indeed, if the government sets the terms of exchange (by price fixing, for instance), then some buyers or sellers are likely to gain at the expense of others. In short, a free market tends by its very nature to ensure mutually advantageous trading relationships; a regulated or interventionist market cannot.

Free markets also tend to be efficient, since owners of resources are led by self-interest and competition to adjust their outputs and prices so that consumer demand is fulfilled at the least cost. Entrepreneurial errors are, of course, inevitable in such a system, but since mistakes generate losses to owners, they quickly elicit the behavior necessary to correct them. Profits, on the other hand, tend to encourage suppliers to provide additional outputs and make investments in areas that the market has demonstrated to be worthwhile. Thus, the market economy tends to reward businesses that correctly anticipate future market conditions and to penalize those that do not, thereby ensuring that scarce resources are allocated to those uses that consumers value most highly.

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Interventionism

Government intervention upsets both the efficiency and the mutual advantages associated with free-market arrangements. When the government restricts entry and competition in production, or when it controls the price of some resource or commodity, it substitutes political (i.e., interest-group) choice for the voluntary decisions of the owners of property. Interventionism is a system in which the political authority makes decisions concerning the use of private property that the private owners and consumers would not necessarily have made. Its inevitable result is that the mutual benefits of private exchange disappear, as some buyers or sellers benefit by the intervention at the expense of others. Price fixing, for instance, can temporarily benefit certain consumers at the expense of other consumers and specific producers (though the shortages engendered in the long run are unfavorable to all consumer interests); entry restriction can benefit specific producers at the consumers' expense, as can tariffs or import quotas. Thus, intervention has a closer kinship with coercion and theft, which are gain-and-loss transactions without voluntary consent, than with any market processes.

Interventionism is also inefficient (costly) because it hampers the entrepreneurial process whereby scarce resources tend to be allocated towards their highest-valued use. Since interventionism necessarily interferes with market pricing, it distorts the information that free-market prices are meant to convey concerning actual benefits and costs. Indeed, it is impossible to discover what the highest-valued use for resources is (or what the least costly techniques of production are) when government intervention determines prices or when resources are forcibly "allocated" by the State. In short, the production process in a politically or bureaucratically managed interventionist industry (or economy) is necessarily arbitrary and inefficient.

Business Interventionism and the Market Economy

The attitudes of businessmen historically toward a free-market economy (and towards interventionism) have been ambivalent. On the one hand, the market system has sometimes been supported because it has allowed new entry, economic growth, accumulation, and the attainment (based on merit) of social positions of wealth and power within the industrial order. Conversely, however, large numbers of businessmen have typically come to regret the freedom of the market, since that freedom has tended to generate great insecurities for acquired wealth and position. The very same freedom

and open entry that they employed to gain wealth is used by others to dislodge them from positions of established wealth. And since pragmatism rules the business house, it is not surprising to see particular business interests opposed to the so-called cruelty or inefficiency of unregulated competition and favoring, instead, governmental intervention, especially intervention that lessens competition or restricts entry into an established market. Thus, many business groups have often favored legal interventions such as tariff protection, import quotas and proration, governmental enforcement of "codes of ethics" (a typical cover for anticompetitive state regulations), minimum-price fixing, licensing, and various other restrictions. And, as we will demonstrate below, such restraints of trade are thoroughly typical of the political economy of the American petroleum industry.

The Early Years: 1846-1911

The modern petroleum industry began in 1846 when a Canadian geologist named Dr. Abraham Gesner discovered that oil could be distilled from coal, and that kerosene could be drawn off and used as an illuminant.¹ Several years later a number of firms had entered the business of extracting oil from shale. The kerosene produced would not gum or smoke when burned in properly designed oil lamps; most importantly, the kerosene was relatively cheaper than existing illuminants. Whale or sperm oil, always in uncertain supply, frequently sold for over three dollars a gallon, and gas, though cheaper than sperm oil, was still 30 percent more expensive than kerosene. Thus, when Benjamin Silliman, a Yale professor, confirmed for the Pennsylvania Rock Oil Company the potential value of some oil found floating on marshy creeks in Pennsylvania, the only commercial question left was, Can oil be found in abundant supply? "Colonel" E. L. Drake, a thirty-nine-year-old drifter and ex-railroad conductor, supplied the answer in 1859 when he struck oil in Titusville, Pennsylvania. With Drake's well pumping twenty-

¹For general discussions of the beginnings of the petroleum industry, see J. Stanley Clark, *The Oil Century* (Norman, Okla.: University of Oklahoma Press, 1958); Albert Z. Carr, *John D. Rockefeller's Secret Weapon* (New York: McGraw-Hill, 1962); Jules Abels, *The Rockefeller Billions* (New York: Macmillan Co., 1965); Ralph and Muriel Hidy, *Pioneering in Big Business, 1882-1911, History of the Standard Oil Company (New Jersey)* (New York: Harper & Row, 1955); Harold Williamson and Arnold Daum, *The American Petroleum Industry* (Evanston, Ill.: Northwestern University Press, 1959); Ida Tarbell, *The History of the Standard Oil Company* (New York: Peter Smith, 1950); Allan Nevins, *Study in Power: John D. Rockefeller*, 2 vols. (New York: Charles Scribner's Sons, 1953); and John Chamberlin, *The Enterprising Americans: A Business History of the United States* (New York: Harper & Row, 1963), pp. 146-55.

five barrels a day, and with the price of a barrel of crude oil at twenty dollars, the petroleum industry, and age, had begun.

Industrial Beginnings

When the oil word leaked out, northwestern Pennsylvania was overrun with businessmen, speculators, misfits, horse dealers, drillers, bankers, and just plain hell-raisers. Dirt-poor farmers leased land at fantastic prices, and rigs began to blacken the landscape. Existing towns jammed full overnight, and new towns appeared almost as quickly. "Smellers" and oil "diviners" worked overtime in a frenzied effort to locate the mysterious deposits of black gold.

But getting a rig and sinking a hole on someone's leased land were only the beginning of the problem. The crude-oil flow had to be successfully controlled, and the threat of waste and fire was always great. Furthermore, the heavy, corrosive crude oil had to be stored and shipped—somehow. The barrels of the day were too weak, so new barrels had to be devised. Teamsters had to drive animal teams through hip-deep mud, carrying barreled petroleum from well sites to Oil Creek, the nearest available "transportation." The barrels were then floated on top of flatboats down the creek—when there was water. Periodically, freshets would be created by lumber firms upstream, and riverboat captains (usually after having paid the lumber firms a toll of a few pennies per barrel) would skillfully guide the precious cargo toward the docks at Oil City. As might be expected, much of the oil did not make it, and many lost their very lives attempting to transport crude. However, there were eager buyers at Oil City, and the price for crude oil was good; thus, the first dribbles of oil soon became a swelling stream.

Investments in industries related to the fledgling petroleum industry quickened. Railroad men smelled money in oil transport and quickly put in track to haul oil from northwestern Pennsylvania to Oil City and then to some early refineries. Barrel makers—some right by Oil Creek—tripled production, then tripled it again; but outputs still fell below demand and consumption. Mules and horses were precious, and courageous riverboat captains were at a high premium. Barge companies acting as crude tankers quickly came into existence to move the crude from Oil City to refineries in Cleveland and Pittsburgh. A two-inch wooden pipeline was constructed in 1865, only to be destroyed by suddenly unemployed bands of teamster boys; another built in the same year, destroyed in the same fashion, rebuilt, and then protected by Pinkerton's, proved successful. A metal drum called the tank car, into which petroleum could be pumped, and in which it could be stored and

transported along a railroad track, was also pioneered in the same year. Crude oil could now be found in ample supplies and moved efficiently over land and water to its ultimate destination. The early stream of crude turned into a torrent.

The development of the industry was, predictably, a mixed blessing to the producers, especially to the small, marginal operations. The profit-laden twenty-dollar-a-barrel prices for early crude had soured quickly to twelve dollars; then to two dollars; and then, in early 1862, to ten cents.² Although the prices would recover somewhat in later years, the windfall profits vanished forever. The producers were pushed harshly back to reality by the laws of supply and demand. But the steady production, efficient transportation, and relatively low prices paved the way for another group of oil entrepreneurs, the refiners. It would be the refiners, and particularly the Standard Oil Company, that would turn petroleum into one of America's greatest growth industries.

The Petroleum Refiners

By 1865 the development of a petroleum-refining industry was well underway. The first region to develop refiners was, as expected, the crude-oil region itself, and there were at least 30 independent refiners there.³ But, unexpectedly, the costs of refining petroleum in northwestern Pennsylvania were high, because of heavy charges for shipping machinery and sulfuric acid, and because land was so expensive. Therefore, other areas that were better situated (in regard to cost) grew more quickly than the small, always marginal, oil-region refiners. Pittsburgh, for example, less than sixty miles from Oil City, quickly developed into the refining capital of the industry. It was close to some good market areas (e.g., Philadelphia), and had good rail and water transportation and a cheap supply of coal and labor. By 1856, 80 refineries were manufacturing kerosene and related products, and the Pittsburgh sky was heavy with smoke.⁴ There were other refiners in Baltimore, Philadelphia, and New York, and the industry was growing rapidly. Some sources estimate the total number of independent refiners at this point was about 250.⁵ But the most interesting developments, as it turns out, were taking place in Cleveland, Ohio.

Though Cleveland had about fifty refineries by 1866, its strategic

²Tarbell, *Standard Oil Company*, p. 383.

³Abels, *Rockefeller Billions*, p. 51.

⁴Ibid.

⁵Ibid., p. 65. *The Petroleum Almanac* (New York: National Industrial Conference Board, 1946) lists 170 "establishments" doing business in 1869. See p. 87.

position in the refining industry had always been precarious. Cleveland was over 150 miles from the oil-producing regions and 600 miles from New York and the eastern markets. Though it had an excellent location for reaching any western markets that might develop, its immediate future rested on the level of transportation rates.

If rates for shipping oil through the Erie Canal could be pushed down, and if rates over the two competitive railroads—the Atlantic and Great Western, and the Lake Shore—could be lowered and kept low; then Cleveland refineries could be competitive in the eastern markets. The key to refining efficiency and competition in the Cleveland area was transportation, and that key would unlock many of the major developments of the industry.

The Rockefeller Organization

John D. Rockefeller was twenty-three years old and already a success in his own profitable commission business when he decided to risk \$4,000 in a speculative oil refinery operation in Cleveland. The firm quickly prospered under the technical direction of Samuel Andrews, and a second refinery was constructed in 1866. Later, Maurice Clark, one of the original partners in the firm, was bought out (for \$72,500), and Rockefeller brought in his brother William for entrepreneurial know-how and his shrewd and wealthy friend, Henry Flagler, for additional capital. By 1868 Rockefeller's complete and undivided attention had turned to petroleum and the profits that could be made by "penny-pinching."

The firm of Rockefeller, Andrews, and Flagler prospered quickly in the intensely competitive industry by the economic excellence of its entire operations. Instead of buying oil from jobbers, they made the jobbers' profit by sending their own purchasing men into the oil region. In addition, they made their own sulfuric acid, their own barrels, their own lumber, their own wagons, and their own glue. They kept minute and accurate records of every item from rivets to barrel bungs. They built elaborate storage facilities near their refineries. Rockefeller bargained as shrewdly for crude oil as anyone before or since. And Sam Andrews coaxed more kerosene from a barrel of crude than the competition could. In addition, the Rockefeller firm put out the cleanest-burning kerosene, and managed to profitably dispose of most of the residues, like lubricating oil, paraffin wax, and vaseline. Thus, it was not surprising that by the late 1860s, the firm was turning out the industry's best line of petroleum products at the lowest costs of production, and that it managed to prosper even while the spread between crude and

refined prices elsewhere in the industry decreased significantly. Rockefeller, the eternal optimist, expanded outputs while others were more conservative, and by 1870 the firm was the biggest refiner in Cleveland, and quite possibly the largest in the country.

The Success of the Rockefeller Organization

In 1870 Rockefeller's share of total refined output was no more than 4 percent, and there might have been as many as 250 independent refiners in existence. By 1874 Rockefeller was refining almost eleven thousand barrels a day, or about 25 percent of estimated industry output, and had purchased 21 of his 26 Cleveland competitors.⁶ By 1880 his total market share had climbed to between 80 and 85 percent, and the number of independent refiners had decreased to between 80 and 100.⁷ During this chaotic period, Rockefeller had unsuccessfully tried collusion with other refiners and railroads (the infamous South Improvement Company episode) and had fought numerous battles with railroads to secure rebates (more on this below) and a final, expanded business war with the Empire Transportation Company and the Pennsylvania Railroad. When it was all over, Standard emerged triumphant, with significant interests in pipelines and tank cars, and an overwhelming bargaining position with the railroads. By 1880 John D. Rockefeller was the undisputed king of petroleum, and his position appeared quite invulnerable.

But *how* was all this success accomplished in so short a time? How did Standard Oil of Ohio's (the name had been adopted on incorporation in Ohio in 1870) share of the industry grow so rapidly? And why did other firms sell out and thus allow the creation of a near "monopoly"? To begin to answer these questions, it must be emphasized that the 1870s were a treacherous period for all speculative businesses and particularly for the overbuilt oil refinery industry. The United States Treasury's intentional deflationary policies (withdrawing greenbacks and other paper from circulation in an attempt to "resume specie payment" in the late 1870s) and the subsequent post-Civil War decline in general demand and prices hurt all speculative businesses, including, of course, oil refining. Prices for refined petroleum (kerosene) fell from over thirty cents a gallon in 1869, to twenty-two cents in 1872, and to ten cents by November 1874.⁸ Many firms that had entered the industry to make a

⁶Abels, *Rockefeller Billions*, p. 83.

⁷Ibid., pp. 106-8. Also, see Williamson and Daum, *American Petroleum Industry*, p. 471.

⁸Tarbell, *Standard Oil Company*, p. 384.

speculative profit during and after the war left the market as prices soured with no relief in sight; others, though less opportunistic, were forced to sell, since they were small, unintegrated refiners that could not lower their input costs as quickly as market prices dropped. For these two reasons, a general reduction in the number of refiners would have been expected in this period with or without the presence of the Standard Oil Company.

With respect to its acquisitions, the price Standard paid for many of the refineries that it purchased during this period was significantly below their original cost. But surely there is nothing suspicious about this. The value of almost all property, and particularly refinery property, had deflated as overproduction and deflation lowered exchange values. The original cost of a refinery in 1865 was irrelevant in 1875, since the market conditions were radically different. Surely Standard cannot be chided for the fact that it paid 1875 market prices for properties that were almost bankrupt and so inefficient that Standard had to close most of them down.

Actually, many firms were quite anxious to be bought out by Standard, and at outrageous prices. The story of George Rice does not appear atypical. In 1882 Rice attempted to bribe and blackmail Standard Oil into paying \$250,000 for a refinery he had offered to sell in 1876 for \$24,000; in 1890, he wanted \$500,000!⁹ Other examples cited by John McGee indicate that this was a rather common practice.¹⁰

In addition, the technology and capital requirements of the industry were changing rapidly, and firms too small to invent, innovate, or take advantage of scale economies were destined to be of marginal importance. "Destructive distillation" (the cracking of crude) was introduced in 1875, and the minimum output of an efficient refinery gradually increased to over one thousand barrels a day. Moreover, large efficient refineries and related equipment were relatively more expensive than the simple stills of the 1860s. These greater capital requirements certainly limited the role of the very small operator. In point, much of the crude handled in the late 1880s was a very poor, high-sulfur petroleum that yielded less kerosene, and it was only handled efficiently because of the successful experiments of chemist Herman Frasch and the \$200,000 research gamble of the Standard Oil Company. Thus, technological innova-

⁹Abels, *Rockefeller Billions*, p. 201.

¹⁰John S. McGee, "Predatory Price Cutting: The Standard Oil (N.J.) Case," *Journal of Law and Economics* 1 (October 1958): 144-48.

tion helped determine the structure of the petroleum industry.

Efficient operations in the 1870s meant tank cars, pipelines, adequate crude sources, cheap barrels, huge storage facilities, and export capabilities, all of which the Standard Oil Company had invested in heavily, and most of which the smaller competitors had not. The Standard Company has frequently been criticized for the fact that its competitors could not enjoy the efficiencies of a tank-car fleet, access to cheap pipelines, and large storage facilities. But, surely, the fact that competitors would not or could not be as efficient as Standard in these areas was not Standard's responsibility. Was it unfair to buy or build pipelines and then employ them to obtain lower rates for railroad freight? Was it unfair to own tank cars and use them? Was it unfair to invest millions in storage facilities to take advantage of slight variances in the demand and supply of crude or refined petroleum? And was it unfair for Rockefeller to surround himself with men of such exceptional "brain-power, astuteness, and foresightedness"? While competitors that could not or would not do these things might have regarded them as "unfair," the ultimate justification of these policies was proven again and again in the marketplace: They lowered the costs of production and the price of the product, and raised the profits of the Standard Oil Company.

Between 1870 and 1885 the price of refined kerosene dropped from 26 cents to 8 cents per gallon.¹¹ In the same period, the Standard Oil Company reduced the costs per gallon from almost 3 cents in 1870 to .452 cents in 1885.¹² Clearly, the firm was relatively efficient, and its efficiency was being transmitted to the consumer in the form of lower prices for a much improved product; for the firm, the efficiency meant additional profits.

Standard Oil, Rebates, and the Railroads

The issue of rebates has provoked considerable controversy. According to some critics, it was the receipt by Standard of unfair and discriminatory rebates that allowed it to triumph over competitors and "monopolize" the petroleum industry.

A rebate is a price concession (usually secret) granted by a railroad to some shipper(s). Its immediate consequence is to lower transportation costs to some shipper(s). But to understand why re-

¹¹Tarbell, *Standard Oil Company*, pp. 384-85.

¹²Abels, *Rockefeller Billions*, p. 98. And this might have been as much as 60 percent less than the industry average; see Williamson and Daum, *American Petroleum Industry*, pp. 483-84.

bates are granted and whether they are "fair" or not, it is necessary to understand the economics of railroading.¹³

Railroads are industries that typically have high fixed costs and low variable costs. Most of their expenses are fixed charges, such as interest and depreciation, that must be paid regardless of the volume of traffic. Thus roads are always hungry for traffic, and their rate schedules will reflect this fact. Railroad rates, like all prices in a free market, are determined by competition. And since the variable costs associated with providing railroad services are very low, railroad rates can range from well above average costs where they have little price competition, to significantly below average costs where there is intense competition. Railroads always charge "what the traffic will bear," *like any other business*; and like almost any other business, the "traffic will bear" different rates at different times and places, depending on the pressures of competition. Like any firm, it will pay a railroad (in the short run) to take additional freight business as long as the rate covers out-of-pocket (i.e., variable) costs. Since average variable costs are low (especially if shippers cover some of them), rates on very competitive runs may fall steeply, and almost to nothing. But something, be it ever so little, is better than nothing, and railroads will charge next to nothing if they have to, hoping that the "deficit" can be funded on runs where prices exceed average costs.

In the 1870s much of railroading was very competitive, especially east of the Mississippi.¹⁴ Many roads had overbuilt, and the post-Civil War deflationary period was one of intense and persistent rate competition. Though there were hundreds of voluntary pools, rates were down throughout the period. Railroad pools attempted to fix and maintain prices, but the agreements often lasted no longer than the meetings needed for drawing them up.¹⁵

Railroads went through the motions of drawing up rate schedules, but everyone knew that the schedules were the point at which bargaining began; everyone bargained for "his" price, and the strength of supply and demand (competition) determined the exact rate. Almost always the exact rate was kept secret to prevent a destructive price war. And almost always the real rates were found

¹³An excellent and brief discussion of these issues appears in Alfred D. Chandler, Jr., ed., *The Railroads: The Nation's First Big Business: Sources and Readings* (New York: Harcourt, Brace and World, 1965), pp. 159-72.

¹⁴Louis M. Hacker, *The World of Andrew Carnegie: 1865-1901* (Philadelphia: J. B. Lippincott, 1968), pp. 206-10.

¹⁵Gabriel Kolko, *Railroads and Regulation, 1877-1916* (Princeton: Princeton University Press, 1965), Introduction and chap. 1.

out, as some shippers paying one rate attempted to compete in the same market with other shippers paying different rates.

For hundreds of years competition had been limited by the extent of the market, and the market had been limited by transportation costs. Goods of considerable weight could not compete in faraway markets because the costs of transportation inflated the selling price. Only with the development of cheap transportation (canals, railroads, etc.), and then with competitive cheap transportation, could the rates on freight be bid down to allow competition between geographic regions of distant cities. It was perfectly possible, therefore, to see railroad rates lower from, say, Cleveland to New York than from Titusville to New York, even though the former distance was one hundred miles longer than the latter; it all depended on the relative supply and demand forces in both regions. In and of itself, distance, like technology, means little in economics; the value of services is determined by the relative strength of supply and demand at any given moment.

Because Cleveland shippers, for example, were in a better bargaining position than oil-region shippers, their rates were lower. If their rates drifted down toward average variable costs, this only attests to the poor economic position of the railroads. If these rates were lower than the rates of oil-region shippers, this was normal, to be expected, and as far as overall competition in New York is concerned, to be applauded. If competition exists in the final product market, almost all such rebates, or "discriminations," get translated eventually into supply increases and price declines.

Nothing has been mentioned as to whether the firms "deserve" their rebate, or, in other words, whether a 10 percent rebate actually represents a 10 percent "savings" to the road from handling some shipper's business.

Two points are relevant here. In the first place, railroads did realize cost savings, and these savings may have been considerable. Standard furnished loading facilities and discharging facilities at great cost; it regularly and reliably provided a heavy volume of traffic (and even one of Standard's severest critics admits that this led to "savings of several hundred thousand dollars a month in handling" for the railroads);¹⁶ it provided terminal facilities and exempted railroads from liability for fire by carrying its own insurance. Thus, Standard might be said to have received a "legitimate" discount for realized economies.

¹⁶Matthew Josephson, *The Robber Barons* (New York: Harcourt, Brace and Company, 1934), p. 113.

Secondly, realized economies need have nothing to do with rebates; *costs do not directly determine prices*. If Standard Oil was, in fact, "paying for" a share of the railroads' variable costs, so much the better; then the price necessary to secure its business could fall even further than before. In fact, since Standard probably performed the railroads' "variable expenses" more efficiently than they did, the mechanism of rebate was profitable for both. Still, from any railroad's point of view, the dominating factor is always volume. To secure additional volume, it may have to accept *any* rate higher than average variable costs.

Standard's ability to threaten water shipment, pipeline shipment, or another railroad shipment was the major pressure that pushed its rates down. Since its shipments were so important to the roads, they could not afford to lose them. As long as the rates covered variable costs, it was good business. Thus, Standard's rate could be and was considerably different from anyone else's, but the differences are not mysterious or regrettable. They are a consequence of railroad transportation economics and the competitive pressures in the market.

In this light, the unfairness of these discriminations is certainly debatable. What is unfair about securing all the advantages that there are in a free and open competitive market? What is unfair about granting concessions to the biggest, most versatile shipper, who can threaten a volume shift, and not to the small producer and shipper whose volume is almost insignificant? One is clearly more valuable than the other. Again, almost all such criticism is based on emotion, and is more concerned with the fate of particular competitors than with the way competition benefits the consumer.

Predatory Pricing

Similar emotions prevail over another of Standard's supposedly unfair business practices: predatory price-cutting. Predatory price-cutting is the practice of deliberately underselling rivals in certain markets to drive them out of business and then raising prices to exploit a market devoid of competition. Ida Tarbell immortalized the charge in the tenth chapter ("Cutting to Kill") of her *History of the Standard Oil Company*. If interested parties had taken the trouble to read that chapter, however, they would have discovered that Tarbell speaks more of railroad discrimination, Standard's efficient kerosene-marketing system, and its morally questionable (to her) use of an elaborate industrial espionage system, than of any specific predatory practices. Nonetheless, such practices were (and remain) part of the Standard legend.

Unfortunately for lovers of legends, this one has been laid theoretically and empirically prostrate. In a now famous article, John S. McGee theorized that Standard Oil did not employ predatory practices, because it would have been economically foolish to do so.¹⁷ In the first place, McGee argued, such practices are very costly for the large firm; it always stands relatively more to lose since it, by definition, does the most business. Secondly, the uncertainty of the length of the forthcoming battle, and thus its indeterminate expense, must surely make firms leery of initiating a price war. Thirdly, competitors can simply close down and wait for the price to return to profitable levels; or new owners might purchase bankrupt facilities and ready them to compete again with the "predator." Fourthly, such wars inevitably spread to surrounding markets, endangering the predator's profits in his "safe" areas. And lastly, predatory practices require a "war chest" of monopoly profits to see the firm through the costly battles; firms apparently cannot initiate predatory practices unless they are already semimonopolistic. Firms, therefore, cannot *gain* initial monopoly positions through predatory practices. To sum up McGee's reasoning, then, there are serious logical weaknesses in the assumption that large firms are motivated to engage in predatory practices.

The empirical evidence with respect to Standard Oil reinforces these theoretical predictions. McGee concludes, after sifting through almost eleven thousand pages of the Standard Oil trial record, that

[j]udging from the Record, Standard Oil did not use predatory price discrimination to drive out competing refiners, nor did its pricing practice have that effect. Whereas there may be a very few cases in which retail kerosene peddlers or dealers went out of business after or during price cutting, there is no real proof that Standard's pricing policies were responsible. I am convinced that Standard did not systematically, if ever, use local price cutting in retailing, or anywhere else, to reduce competition. To do so would have been foolish; and, whatever else has been said about them, the old Standard organization was seldom criticized for making less money when it could readily have made more.¹⁸

Thus, to conclude this section, Standard's position in oil refining grew rapidly because of the natural decline of small competitors; the increasing capital and innovation requirements of large-scale oil technology; the economic advantages achieved by intelligent entrepreneurs; tank cars; pipelines; vertical integration into barrels,

¹⁷ McGee, "Predatory Price Cutting," pp. 137-69.

¹⁸ *Ibid.*, p. 168.

cans, and glues; exporting; and the consequent lower transportation costs from the railroads—and not from any general reliance on so-called predatory practices.

The Standard Oil Trust

The 1880–1895 period for the Standard Oil organization was one of rapid expansion (particularly in Europe), continued integration both forward and backward, and experimentation with various institutional arrangements for increasing managerial efficiency. Choosing an effective legal structure was proving particularly bothersome. Almost all states, including Ohio, did not allow chartered companies to hold the stock of other firms. Yet Standard, by 1880, effectively owned fourteen other firms completely and had a considerable stock interest in about twenty-five others, including the giant National Transit Company. How were these companies to be legally and efficiently managed? In addition, Pennsylvania had just unearthed (with the help of Standard's competitors and some producers) an old state law that allowed a tax on the entire capital stock of any corporation doing any business within its borders; other states threatened to follow suit.¹⁹ Thus, a new organizational arrangement was mandatory to allow effective control of all owned properties and to escape confiscatory taxation without breaking the law.

Standard chose to resurrect an old common-law arrangement known as the trust. In a trust, men pool their properties and agree to have someone or some group manage those properties in the interests of the owners. Just as incorporation allows individuals to pool their properties and choose their managers, trusts in the 1880s allowed the same arrangement with corporate holdings. Thus, a trust was a modern "holding company," but frequently without the formalities of a name or legal incorporation, and without the requirement of public disclosure.

The Standard Oil Trust was formed in January 1882, though smaller, informal trustee arrangements had existed before. The forty-two stockholders of all Standard's properties in all the thirty-nine odd companies associated with Standard of Ohio agreed to hand over their ownership claims to nine designated trustees; in return, the ex-stockholders received twenty trustee certificates per share of stock tendered. The original Standard Trust was capitalized at \$70 million, and John D. Rockefeller himself held over 25 percent. The trustees—Rockefeller, his brother William, Henry

¹⁹Abels, *Rockefeller Billions*, p. 154.

Flagler, John D. Archabold, and five others—then managed Standard's entire operation, setting up committees on transportation, export, manufacturing, lubricating, and other affairs to advise the executive committee.

This organizational arrangement functioned until March 1892, when the supreme court of Ohio ruled that the trust arrangement was illegal and ordered Standard Oil of Ohio to withdraw from it. Seven years later, the same men with essentially the same firms came together to incorporate as Standard Oil of New Jersey, a legal holding company, and their goal of multi-firm control over common corporate properties was achieved.

In addition, the substantive changes *within* the organization during this period were significant. Standard closed down many smaller, inefficient refineries and built huge ones in their place. Various units of the refining empire were forced to compete with one another, and substantial economies were realized. Refinery output expanded rapidly, and enormous expenditures had to be made for tanks and pipelines to hold and move this vast supply. Anything that could be manufactured more cheaply by Rockefeller was manufactured, and innovation came to be almost a matter of routine for the corporation. (For example, by 1890 Standard had developed machines that turned out 24,000 five-gallon tin cans a day.) Even Standard's severest critic, Ida Tarbell, recognized all this, and her glowing chapter, "The Legitimate Greatness of the Standard Oil Company," pays tribute to the commercial intelligence of Standard. Though that chapter is filled with many excellent examples, one of the best is the following, because it demonstrates the economics of integration:

Not far away from the canning works, on Newtown Creek, is an oil refinery. This oil runs to the canning works, and, as the new-made cans come down by a chute from the works above, where they have just been finished, they are filled, twelve at a time, with the oil made a few miles away. The filling apparatus is admirable. As the newmade cans come down the chute they are distributed, twelve in a row, along one side of a turn-table. The turn-table is revolved, and the cans come directly under twelve measures, each holding five gallons of oil—a turn of a valve, and the cans are full. The table is turned a quarter, and while twelve more cans are filled and twelve fresh ones are distributed, four men with soldering cappers put the caps on the first set. Another quarter turn, and men stand ready to take the cans from the filler, and while they do this, twelve more are having caps put on, twelve are filling, and twelve are coming to their place from the chute. The cans are placed at once in wooden boxes standing ready, and, after a twenty-four-hour wait for discovering leaks, are nailed up and

carted to a nearby door. This door opens on the river, and there at anchor by the side of the factory is a vessel chartered for South America or China or where not – waiting to receive the cans which a little more than twenty-four hours before were tin sheets lying in flatboxes. It is a marvelous example of economy, not only in materials, but in time and in footsteps.²⁰

By the late 1880s, the economies of integration that were so important to domestic operations were being transferred to foreign production and distribution as well. In 1895, for example, Standard had seventeen manufacturing plants in Europe, hundreds of warehouse and depot facilities under lease, over 150 tank cars, and close to five thousand tank wagons for bulk shipment to retailers. Though it had considerable foreign competition, especially from Russian and British petroleum operations, the Standard Oil Company was a major factor in the development of foreign oil markets throughout the world.

Finally, throughout the 1880–1895 period, refined oil products increased in quality, and the price to the consumer declined. Though Standard's share of the refining market declined slightly (approximately 82 percent in 1895 compared to over 88 percent in 1879), the price of refined oil per gallon in barrels *declined* from 9 1/3 cents in 1880 to 8 1/8 cents in 1885, to 7 3/8 cents in 1890, and to 5.91 cents in 1897.²¹ In addition, Standard's refining costs per gallon fell to 0.29 cents in 1896.²² Thus, at the very pinnacle of Standard's alleged industry control, the costs and the prices for refined oil reached their lowest levels in the history of the petroleum industry.

It is important to note here, given subsequent legal events, that the long-run trend in outputs of various petroleum products was strongly *upward* throughout this period. If monopoly control means anything it means the ability to restrict the market supply and, consequently, increase the market price. Yet Standard's price and output behavior is entirely consistent with what would have been expected under competitive conditions. For instance, between 1890 and 1897, Standard *increased* its kerosene production 74 percent, lubricating oil production 82 percent, and wax production 84 percent.²³ Clearly there was no "restriction" of supply, and "monopoly" prices were never realized, even during periods of relatively high market share. Standard was a (large) competitive firm in an (open) competitive market.

²⁰Tarbell, *Standard Oil Company*, pp. 240–41.

²¹*Ibid.*, p. 385.

²²Hidy and Hidy, *Pioneering in Big Business*, p. 422.

²³*Ibid.*, p. 289.

Changing Market Conditions: 1896-1911

Between 1896 and 1911, the petroleum industry began to change radically, and Standard Oil of New Jersey's position in the changing market became less and less secure. The most revolutionary change that occurred, and the one that fueled the others, was the demand shift away from kerosene to other petroleum products. Kerosene sales leveled off as the competitiveness of gas and electricity cut deeply into a once-solid growth area; correspondingly, lighter fuel oils, lubricating oils, and gasoline became significantly more important. Between 1899 and 1914, kerosene sales as a percentage of all refined petroleum products declined from 58 percent to 25 percent, while fuel oil rose from 15 percent to 48 percent.²⁴ The kerosene age was over.

As new crude supplies in Kansas, Oklahoma, Texas, and California reached the market, new large, vertically integrated refinery companies came into existence to direct the crude flow towards the new demand. For example, the Pure Oil Company was formed in 1895, and by 1904 it owned fourteen refineries, mostly in the oil region, 1,500 miles of crude-oil pipeline, plus another 400 miles of pipeline for refined products; it handled 8,000 barrels of crude a day, owned steamers and barges, and was capitalized at over ten million dollars.²⁵ Other firms were formed, such as Associated Oil and Gas (in 1901), Texaco (a year later), and the giant Gulf Company (in 1907).²⁶ By 1908 there were at least 125 independent refineries in the United States, among them Sun Oil, Union Oil, and the Tidewater company; and by 1911 there were at least 147.²⁷ The petroleum industry was exploding faster and in more directions than any one man or firm could predict or control. The competitive market was taking apart Standard Oil of New Jersey's position. As the Hidy's so neatly put it:

Thus even before the breakup of the combination, the process of whittling Standard Oil down to reasonable size within the industry was already far advanced.²⁸

Even though Standard was continuously increasing its output of petroleum products and its consumption of crude oil, its *percentage*

²⁴Clark, *The Oil Century*, p. 127.

²⁵Ibid., p. 123.

²⁶Gabriel Kolko, *The Triumph of Conservatism* (New York: The Free Press of Glencoe, 1963), pp. 40-42.

²⁷Ibid., p. 40. Also, see McGee, "Predatory Price Cutting," p. 156; and *The Petroleum Almanac*, p. 87.

²⁸Hidy and Hidy, *Pioneering in Big Business*, p. 477.

of output and crude oil consumed *decreased* steadily throughout the period. Standard's share of the petroleum products market fell from approximately 88 percent in 1890, to 68 percent in 1907, and to 64 percent in 1911. And even though Standard consumed and refined increasing volumes of crude oil (39 million barrels in 1892, 52 million barrels in 1902, 65 million barrels in 1906, and 99 million barrels in 1911), its own production as a percentage of total market supply *decreased* significantly from 34 percent in 1898 to 20 percent in 1902, to but 11 percent in 1906.²⁹ Thus to seriously maintain that Standard was "increasingly monopolizing" the petroleum industry at the turn of the century, or that the antitrust suit against Standard in 1906 was a legitimate response to almost complete monopolistic control, is patently absurd. The raw data of the period indicate no such increasing monopoly by Standard. Reasonable inferences, even from a neoclassical perspective, would be all the other way.

Nonetheless, the intellectual criticism of big business, and especially of Rockefeller and the Standard Oil Company, intensified. Though Standard had remained relatively clean of political scandal and was not the beneficiary of tariff protection, subsidy, or public land grants—like the sugar and steel trusts—most of the muckrakers saved their best shots for the "petroleum combination." Henry Demarest Lloyd set the tone of the era with his great populist polemic, *Wealth Against Commonwealth*, published in 1894. The Hearst papers, along with *Life*, *Collier's*, and *Harper's*, quickly discovered that antiwealth and particularly antimonopoly journalism paid off handsomely. And when Ida Tarbell's articles titled "The History of the Standard Oil Company," published during 1902 and 1903 in *McClure's*, became modern classics, popular antibusiness resentment was at its zenith. The fact that most of the attacks were personal, emotional, and even illogical was irrelevant; the fact that some of the attacks were ambiguously motivated (e.g., Ida Tarbell was the sister of William Tarbell, treasurer of the Pure Oil Company) was ignored. Rockefeller and Standard Oil's silence on all criticism just fired the public indignation more. Between 1904 and 1906 at least twenty-one state antitrust suits were brought against Standard Oil subsidiaries in ten states.³⁰ And on November 15, 1906, the federal government filed its Sherman Act case and petitioned for the dissolution of Standard Oil of New Jersey.

²⁹Ibid., p. 407.

³⁰Ibid., p. 683.

Standard Oil and the Courts

The Lower Court Decision

Standard was convicted in the federal suit on November 20, 1909, and ordered dissolved back into its "independent" component parts.³¹ The four circuit court judges (Sanborn, VanDevouter, Hook, and Adams) all agreed that Standard violated the Sherman Act by forming a holding company in 1899, and that the holding company had not allowed any competition *between the merged firms*. Judge Sanborn stated that:

By the trust of 1899, more than 30 corporations were combined with the principal company, and that corporation was given the power to fix the rates of transportation and the purchase and selling prices which all *these* companies should pay and receive for petroleum and its products throughout the republic and in the traffic with foreign nations. The principal company and many of the subsidiary corporations were many of them *capable of competing with each other* in that trade, and would have been actively competitive if they had been owned by different individuals or different groups of individuals. . . . The majority of the stock of the New York Company and of 18 other corporations engaged in different branches of the production, manufacture, and sale of petroleum and its products was conveyed to the New Jersey Company in exchange for its stock, and the latter has ever since controlled and operated all these corporations and those which they controlled, *and has prevented them from competing* with it or with each other.³²

Since "any contract or combination of two or more parties, whereby the control of such rates or prices is taken from separate competitors in that trade and rested in a person or an association of persons, *necessarily restricts competition* and restrains that commerce," and since Standard had clearly formed such an "association," Standard had necessarily violated the Sherman Act:

[Since] the power to restrict competition in interstate commerce granted to the Standard Oil Company of New Jersey by the transfer to it of the stock of the 19 companies and of the authority to manage and operate them and the other corporations which they controlled was the absolute power to prevent competition *between any of these corporations* . . . and the *necessary* effect of the transfer of the stock of the 19 companies to the holding company was, under the decision in the case of the Northern Securities Company, a direct and substantial restriction of that commerce, that transfer and the operation of the companies under it constituted a combi-

³¹ *United States v. Standard Oil Company*, 173 Fed. Reporter 179.

³² *Ibid.*, p. 185. (Emphasis added.)

nation or conspiracy in restraint of interstate and international commerce in violation of the Anti-trust Act of July 2, 1890.³³

Nowhere in the decision was there a discussion of the reasonableness or unreasonableness of Standard's competitive practices. Nowhere was there any economic analysis of Standard's performance in the market. The determining issue was, strangely, that the formation of the holding company in 1899 necessarily restrained trade between the parties to the holding company. As Judge Hook so neatly put it:

A holding company, owning the stocks of other concerns whose commercial activities, if free and independent of common control, would naturally bring them into competition with each other, is a form of trust or combination prohibited by Section I of the Sherman Act. The Standard Oil Company of New Jersey is such a holding company.³⁴

Hence in 1909 the Sherman Act was being enforced literally, as it had been previously. Trusts or holding companies "necessarily" restrained trade, and Standard was a holding company. In 1909 there was no explicit concern with "intent" or with facts about economic conduct-performance.

The Supreme Court Decision

On May 15, 1911, the lower court decision against Standard was reaffirmed by the Supreme Court.³⁵ The general impression of this decision is that the Supreme Court set an important precedent when Justice White argued that not all restraints of trade or contracts or conspiracies were illegal and in violation of the Sherman Act, but only "unreasonable" ones.

Thus not specifying, but indubitably contemplating and requiring a standard, it follows that it was intended that the standard of reason which had been applied at the common law . . . was intended to be the measure used for the purpose of determining whether, in a given case, a particular act had or had not brought about the wrong against which the statute provided.³⁶

According to the logic of Justice White's position, no firm (including Standard Oil, presumably) was to be judged guilty of Sherman Act violations simply because of, let us assume, its dominant position in the marketplace or because it was a holding company. What (sup-

³³Ibid., pp. 189-90. (Emphasis added.)

³⁴Ibid., p. 193.

³⁵*Standard Oil Company of New Jersey v. United States*, 221 U.S. 1.

³⁶Ibid., p. 60.

posedly) was to be the crucial factor determining innocence or guilt was the *reasonableness* or *unreasonableness* of a firm's actions, or whether they were

of such a character as to give rise to the inference or presumption that they had been entered into or done with the *intent to do wrong to the general public and to limit the rights of individuals*, thus restraining the free flow of commerce and tending to bring about the ends, such as *enhancement of prices*, which were considered to be against public policy.³⁷

Justice White appears to be concerned with business acts that reveal an unmistakable *intention* to "wrong the public" or to "limit individual rights." If one discovered such acts and analyzed them, one could infer a restraint of trade and a violation of the law.

But a careful reading of the Supreme Court decision does not substantiate the widely held view that Standard Oil was convicted by the employment of "reason" as a "standard" in a careful examination of Standard's conduct-performance. While White maintained that a "rule of reason" *should* apply to such activities, there is little to indicate that the Court actually applied a reasonable standard to Standard Oil's conduct-performance. The application of such a standard would have required a careful and methodical sifting of all the conflicting evidence concerning rebates, railroad discriminations, predatory practices, the setting-up of bogus independents, industrial espionage, and other alleged "unfair" competitive practices mentioned in the government's long petition. Yet no such "sifting" was detailed in the Supreme Court decision (nor, of course, in the lower court decision), and consequently, *no specific finding of guilt was made with regard to any of these allegations*. We are simply told, with regard to these "acts," that

no disinterested mind can survey the period in question without being irresistibly driven to the conclusion that the very genius for commercial development and organization which it would seem was manifested from the beginning *soon begot an intent and purpose to exclude others* which was frequently manifested by acts and dealings wholly inconsistent with the theory that they were made with the single conception of advancing the development of business power by *usual* methods, but which, on the contrary, necessarily involved *the intent to drive others from the field and to exclude them from their right to trade*, and thus accomplish the mastery which was the end in view.³⁸

³⁷Ibid., p. 58. [Emphasis added.]

³⁸Ibid., p. 76. [Emphasis added.]

But how can a "disinterested mind" be driven "irresistibly" to a "conclusion" without facts, and economic analysis applied to those facts? What are these "usual methods" of business development that the court refers to, and are Standard's "unusual" methods to be judged automatically unreasonable because they are not "usual"? How did Standard Oil exclude competitors "from their right to trade," and were these "unreasonable" exclusions? Had the "acts" worked an "injury to the public"? Had Standard raised prices, restricted outputs, repressed technological change, produced shoddy products, and driven its competition from the market through predatory practices? These are crucial questions that a "rule of reason" would provoke and did provoke in many subsequent cases. But these issues were not analyzed in the Standard Oil decision.³⁹

Now, the conduct-performance record of the industry indicates that petroleum prices fell, costs fell, outputs expanded, product quality improved, and hundreds of firms at one time or another produced and sold refined petroleum products in competition with Standard Oil. Many competitors, of course, particularly in the early period, had left the market for one reason or another. Many sold out to the Standard organization (and many were glad to); but, surely, their *rights*—and the subsequent rights of any other refiner to compete and trade—were not involved or infringed. The oil markets were legally open, and Standard was not able to obtain artificial or political exclusions. All had the *right* to trade. Whether they were equipped to trade efficiently in competition with the Standard organization, and *did* trade efficiently, are other questions. If they were excluded because they did not have tank cars, pipelines, barrel factories, can factories, exporting firms, good locations, crude supplies, storage facilities, and the consequent ability to obtain rebates from the railroads when necessary, surely, their "right to trade" is not at issue. They were excluded because they could not match the economic advantages of Standard Oil. The significant point here is that the Supreme Court did *not* analyze these issues.

How, then, was Standard Oil of New Jersey convicted? On what basis was the firm found guilty of violating sections 1 and 2 of the Sherman Act? After Justice White had detailed his rule of reason, he turned to an examination of "the facts and the application of the statute to them." Beyond dispute were (1) "the creation of the Standard Oil Company of Ohio"; (2) "the organization of the Standard

³⁹Though a great portion of the actual trial was taken up with these charges, Standard Oil offered rebuttal on all points. See Hidy and Hidy, *Pioneering in Big Business*, pp. 693–97.

Oil Trust in 1882"; and (3) "the increase of the capital of the Standard Oil Company of New Jersey and the acquisition by that company of the shares of the stock of the other corporations in exchange for its certificates."⁴⁰

Now this latter aggregation of a "vast amount of property and the possibilities of far-reaching control" over the trade and commerce in petroleum and its products "*operated to destroy the 'potentiality of competition' which otherwise would have existed....*" The lower court had concluded that Standard thus violated sections 1 and 2 of the Sherman Act. Justice White saw "no cause to doubt the correctness of these conclusions."⁴¹

But what were the conclusions and how were they reached? Was Standard guilty simply because it had formally created a holding company in 1899 made up of firms allied to it since the early 1880s, and that act had per se destroyed the "potentiality of competition" in the petroleum industry? Moreover, was the Court simply concluding that the destruction of *potential* competition between the now merged firms automatically constituted an illegal restraint of trade, just as the lower court had done? White attempted to explain why the Supreme Court had affirmed the lower court decision:

Because the unification of power and control over petroleum and its products which was the *inevitable* result of the *combining in the New Jersey corporation* by the increase of its stock and the transfer to it of the stocks of so many other corporations, aggregating so vast a capital, gives rise, *in and of itself*, in the absence of countervailing circumstances, to say the least, to the *prima facie* presumption of intent and purpose to maintain the dominancy over the oil industry, not as a result of *normal methods of industrial development*, but by *new means of combination*. . . .⁴²

Now this is hardly a sophisticated "rule of reason" approach. White simply reiterated that the creation of the holding company in 1899, or the *formal* merger of firms that had been allied with Standard for almost twenty years (the "new means of combination"), was "in and of itself" "*prima facie*" proof of intent and purpose to monopolize, and that this "unification of power and control over petroleum" was an "inevitable result" of the "combination." But it should be apparent that this reasoning is thoroughly circular. Later, he added that "the exercise of the power which resulted from that organization fortified the foregoing conclusions," since

the acquisition here and there which ensued of every efficient

⁴⁰221 U.S. 70.

⁴¹*Ibid.*, p. 74. (Emphasis added.)

⁴²*Ibid.*, p. 75. (Emphasis added.)

means by which competition could have been asserted, the slow but resistless methods which followed by which means of transportation were absorbed and brought under control, the system of marketing which was adopted by which the company was *divided into districts and the trade in each district in oil was turned over to a designated corporation within the combination, and all others were excluded*, all lead the mind up to a conviction of a purpose and intent which we think so certain as practically to cause the subject *not to be within the domain of reasonable contention*.⁴³

But surely the "reasonableness" of Standard's acquisitions *can* be debated (it was, during the trial), and surely it is not always unreasonable for a holding company to designate the selling markets of its *own subsidiaries* and to "exclude all others." Though these activities might not have been "normal" or "usual" for the day, they presumably were not (and are not) to be considered inherently unreasonable. And finally, it must be the strangest feat of judicial logic in memory, to have argued that a "rule of reason" applied to Sherman Act allegations and then to have dismissed the entire subject in reference to Standard Oil as practically "not within the domain of reasonable contention."

In conclusion, while the essence of a conduct-performance "rule of reason" may have been *suggested* in the Standard Oil case of 1911, there is little, if any, concrete evidence that it was carefully *applied* in that case. No economic analysis of Standard Oil's conduct-performance in the period under consideration was made by the Court to determine whether its activities were "reasonable." Standard was convicted and (partially) dissolved in 1911, but an economic analysis of conduct-performance had little, if anything, to do with that decision.

Intervention in the Petroleum Industry

The early years of the petroleum industry just reviewed (1846-1911) are remarkable in that they represent a virtual textbook-example of a *free* and *competitive* market. There was little governmental regulation or subsidization during this period (no price controls, entry restrictions, tariffs, allocation controls, or quotas) and, not coincidentally, the industry experienced a phenomenal growth and development. As we have seen, outputs of kerosene and related products were enormously expanded, and prices were reduced, during most of the period. And even though these years of intense development were dominated by Standard Oil of

⁴³Ibid., pp. 76-77. (Emphasis added.)

New Jersey, the corporation was unable to prevent the entry and growth of many competitors (e.g., Shell, Gulf, Texaco, and Sun) or prevent a substantial decline in its own considerable market share. In short, the early years in petroleum were both *unregulated* and *competitive*, with no monopolistic abuse of either consumers or competitors.

Increasingly after 1911 there was active governmental intervention in the petroleum industry, and the industry itself, as well as the State, must bear a fundamental responsibility for that interventionism. Historically a substantial amount of petroleum regulation and legislation was supported, in whole or in part, by the industry in an attempt to further its own short-run business objectives. Unable to achieve "monopoly" power in a free market, various industry representatives and trade associations sought to transform the free petroleum market into a regulated and controlled market. Unfortunately, the regulated (petroleum) market has been predictably inefficient and has involved both a substantial loss of freedom and a serious misallocation of resources. It is not at all surprising to economists that just such an intervention eventually produced the energy crisis of the 1970s and 1980s.

The World War I Years

The laissez-faire era for petroleum ended rather abruptly during World War I. The war needs of the United States and the Allies were such, it was argued, that large and steady amounts of diesel fuel (the U.S. Navy was consuming almost 6 million barrels a year by 1918) had to be produced and diverted to wartime purposes. Similar reallocations of strategic resources were taking place throughout the oil industry (and, indeed, throughout the economy), and important executives in the industry agreed to cooperate with the government in the "emergency" wartime planning.

Most of the wartime planning arrangements in petroleum were assigned to the "commodities section" of the National Petroleum War Services Committee and to the Oil Division of the United States Fuel Administration. Revealingly, the chairman of the War Services Committee was A. C. Bedford, president of the world's largest oil firm, Standard Oil of New Jersey; and the director of the Oil Division was a California petroleum engineer (and protégé of Herbert Hoover), Mark Requa.⁴⁴ Bedford's appointment was in itself quite a remarkable development since, as historian Carl Sol-

⁴⁴Gerald D. Nash, *United States Oil Policy, 1890-1964* (Pittsburgh: University of Pittsburgh Press, 1968), p. 30.

berg has written, only "six years after the dissolution (of Standard Oil) its chief executive officer was in Washington helping direct industry's cooperation with government."⁴⁵ Even more interesting, perhaps, is the fact that when the War Services Committee was dissolved at the end of the hostilities, Bedford became the chairman of the newly formed trade association, the American Petroleum Institute. API was created, in its own words, "to afford a means of cooperation with the government in all matters of national concern."⁴⁶ Thus, in the short space of less than a decade, petroleum industry and federal government relations had taken a 180-degree turnabout from noninterference, even apathy, to vigorous "cooperation" (one might say collusion) and accommodation.

Scholars are unanimous in describing these wartime arrangements as "cooperative," as a unique experiment in government and (central) industry planning.⁴⁷ The Oil Division of the U.S. Fuel Administration, in cooperation with the War Services Committee, was responsible for fixing prices, determining outputs, and allocating crude supplies among various refiners. In short, these governmental organizations with the coordinating services of leading business interests had the legal power to operate the various parts of the oil industry as a cartel, eliminating what was described as "unnecessary waste" (competition) and making centralized pricing and allocative decisions for the industry as a whole. Thus, the wartime experiment in "planning" (i.e., planning by political agents to satisfy political interests rather than by consumers, investors, and entrepreneurs to meet consumer demand) created what had previously been unobtainable in the petroleum industry: a governmentally sanctioned cartel in oil.

The Postwar Years

When the war ended, a strong sentiment existed among leading oil-industry leaders for continuing the War Services Committee's policy of cooperation and "supervised competition" toward the petroleum industry. For example, most influential oil spokesmen heartily approved of President Coolidge's Federal Oil Conservation Board, created in 1924, and most endorsed that board's early recommendations for compulsory withholding of resources and even state proration.⁴⁸ The American Petroleum Institute consistently

⁴⁵Carl Solberg, *Oil Power* (New York: Mason Charter, 1976), p. 73.

⁴⁶Quoted in D. T. Armentano, "Petroleum, Politics, and Prices," *Reason*, June 1974, p. 10.

⁴⁷See, for instance, Nash, *United States Oil Policy*, pp. 24-38.

⁴⁸*Ibid.*, pp. 84-85.

advocated enforced "cooperation" among oil companies and various regulatory schemes to limit production.⁴⁹ A majority of the API directors, led by the outspoken Henry Doherty of Cities Service Company,⁵⁰ favored federal regulation of production in 1927. More explicitly interventionist, the Independent Petroleum Association of America (IPAA) never even pretended to hide behind the mantle of free enterprise. They consistently advocated strong state control over crude-oil production and a tariff on foreign crude oil, and even sanctioned the declaration of martial law and the use of National Guard troops in order to enforce proration by armed force in Texas and Oklahoma during the early 1930s. (Much to the delight of the so-called independents, by the way, eastern Texas crude-oil prices rose from 10 cents a barrel in August of 1931 to 85 cents a barrel in June of 1932.)⁵¹

The 1930s and Beyond

But it was during the depression of the 1930s, and particularly with respect to the National Industrial Recovery Act of 1933, that all measure of pretense concerning "free enterprise" was abandoned by oil businessmen.⁵² Under the act's separate oil-code section, which was actually written by the American Petroleum Institute, the production of crude oil was to be coordinated by law with demand (as determined by the state and its political clients). State proration laws were to receive federal support. Interstate and foreign shipments of oil were restricted to quotas determined by Secretary of the Interior Ickes and a Petroleum Administrative Board. The Reserve Act of 1932 had already imposed import duties on crude and even higher duties on refined products, mostly at the urging of the IPAA. By the end of 1933, in sum, government and business interests had succeeded in cartelizing petroleum production.

There were four "problems" that would have made the producer cartel unstable, and they were all eventually "accommodated." In 1935 the Interstate Compact to Conserve Oil and Gas was created (C. B. Ames of Texaco had been a leading industry advocate of this legislation) to coordinate and dovetail decisions on proration in the

⁴⁹Erich W. Zimmerman, *Conservation in the Production of Petroleum: A Study in Industrial Control*, Petroleum Monograph Series, vol. 2 (New Haven: Yale University Press, 1957), p. 115.

⁵⁰Nash, *United States Oil Policy*, p. 91.

⁵¹*Ibid.*, p. 118.

⁵²For a review of production controls in petroleum, see Stephen L. McDonald, *Petroleum Conservation in the United States* (Baltimore: The Johns Hopkins Press, 1971); or see Wallace Lovejoy and Paul Homan, *Economic Aspects of Conservation Regulation* (Baltimore: The Johns Hopkins Press, 1967).

various states. Then when the Supreme Court swept the entire National Industrial Recovery Act away in 1935, the Congress—without hearings—passed Texas Senator Connally's bill (dubbed the Connally "Hot Oil" act) that made it illegal to transport interstate oil produced in violation of state proration requirements. And, finally, the courts, including the Supreme Court, declared state proration to be perfectly constitutional since its announced intent was "conservation" of resources in the "public interest" with only an incidental effect on price.

The final loophole in the crude-oil cartel was closed by President Eisenhower in 1959. At the intense urging of small independent crude-oil producers, mandatory import quotas were imposed on foreign crude oil. Import controls were also endorsed by API and the National Petroleum Council.⁵³ Thus the last vestige of a dwindling laissez-faire in crude-oil production and selling was eliminated, and the industry-government arrangement legitimizing control over crude-oil supplies was virtually complete.

World War II and Middle East Oil

During World War II and the immediate postwar period, intense cooperation and accommodation occurred between the petroleum industry and government. Wartime emergency regulation recreated the militarist, central planning-and-allocation system of World War I. Further, the federal government directly supported the oil industry's war effort with generous tanker subsidies, important pipeline construction, and various other direct and indirect subsidies. In the immediate postwar period, under the auspices of Marshall Plan reconstruction, a substantial portion of the European recovery aid from the United States taxpayers went directly to pay for oil shipped by large American oil companies exploiting "concessions" in several Persian Gulf countries.⁵⁴ The oil was sold profitably at prices based on the higher Texas crude-oil rates, and not on local market conditions.

Government and industry worked together during those years to control foreign oil sources, especially in the Middle East. With State Department assistance, foreign oil concessions were gained by American oil companies in many important Persian Gulf countries. This development was encouraged for a variety of reasons. In the first place, the domestic proration cartel required *worldwide* supply

⁵³Robert Engler, *The Brotherhood of Oil: Energy Policy and the Public Interest* (Chicago: University of Chicago Press, 1977), p. 96.

⁵⁴Solberg, *Oil Power*, p. 181.

control, and the foreign supplies were cheap and the wells incredibly prolific. Secondly, after 1950, "royalty payments" to foreign governments became "taxes" and were deductible dollar-for-dollar from domestic tax obligations; such a development greatly encouraged foreign oil investments. And finally, the U.S. (military) strategic thinking in the post-World War II period was to "secure cheap foreign oil under American control" and, accordingly, conserve domestic supplies of petroleum for "national security" purposes. Thus, not surprisingly, the strategy and policy objectives of the government and the oil industry with respect to foreign oil were in remarkable coincidence during this period. And with world oil supplies under fairly tight control, the price of crude oil remained remarkably (and uncharacteristically) stable between 1947 and 1967.

The Late 1960s

The era of stability in oil prices ended abruptly toward the end of the 1960s. There were many reasons for this development, and some are clearly related to the previous discussion. For example, after 1969—and especially at the time of the OPEC boycott in late 1973—it became increasingly evident that the American oil companies were losing their nearly unilateral power to determine production levels and prices for foreign crude oil.

Although American companies held important concessions abroad, host foreign governments increasingly decided to withdraw a portion, and eventually all, of these so-called concessionary privileges. They demanded and received an increase in their royalty, and then, in many important producing areas (Saudi Arabia in particular) assumed strong national control over crude-oil production. Thus, lacking defensible property rights, the American oil companies proceeded to lose control over resources that they had never really owned (controlled) in the first place. The result was a sharp increase in the posted price for foreign oil and the beginning of what the public calls the "energy crisis."

A second factor that led to higher oil prices (and in some cases, temporary shortages) was the higher costs imposed on the industry (at least initially) by antipollution laws and concern for a cleaner environment. In the short period from 1967 to 1971, emission-control equipment on automobiles sharply increased gasoline consumption; the Alaskan pipeline was delayed for five years because of environmentalist legal challenges; the oil spill off Santa Barbara in 1969 prompted a four-year moratorium on California offshore drilling, and a two-year federal moratorium; oil-refinery construc-

tion was repeatedly delayed (or abandoned altogether) because of environmentalist concern; and, most importantly, the Clean Air Act and various state laws restricting sulfur emissions prompted a massive industry shift from cheaper high-sulfur ("dirty") fuel oil to low-sulfur oil, especially by electric utilities in the Northeast.⁵⁵

It is not being suggested that this concern for a cleaner environment was (or is) misplaced; far from it. Rather, the point is that this sharp shift in environmental concern in the late 1960s tended to increase the demand, decrease the supply, and otherwise increase the cost (and price) of oil and oil products.

Even more deeply, perhaps, this environmental concern can be understood as a political backlash against the cavalier views on pollution held by most oil executives up to that time. Pollution, after all, is a nonvoluntary exchange that, like theft, violates the fundamental assumption of the market economy, that is, the sanctity of property rights. It is a market "intervention" in precisely the same respect as the interventions that have been reviewed in this report: It tends to promote the interests of some at the expense of others. Unfortunately, the present environmental restrictions are not based on property rights; rather than instituting property rights in air, water, land, and other resources in conjunction with a system of common-law torts for property violations, the present restrictions on pollution activity are political and bureaucratic and hence subject to the prevailing political winds, which may well be "anti-environmental" in the future.

Price Regulation and Allocation Controls: The Energy Crisis

Natural gas prices at the wellhead came under Federal Power Commission regulation beginning in 1954 with the *Phillips* decision, and rates were effectively frozen during the entire decade of the 1960s. Prices for crude oil produced domestically were regulated under the Nixon controls of August 1971, and have been controlled by the Federal Energy Administration (FEA) and the Department of Energy ever since. As a direct result of the price regulation, both interstate natural gas and "old" domestically produced oil sell well below free-market or world market prices.

Price fixing in crude oil and natural gas resulted in predictable consequences.⁵⁶ Natural gas shortages brought about by govern-

⁵⁵*National Petroleum News*, December 1973, p. 32. See also *National Petroleum News Factbook* (New York: McGraw-Hill, mid-May, 1973), p. 77.

⁵⁶For a review of the economic effects of regulation in petroleum, see Walter Mead, "Petroleum: An Unregulated Industry?" in *Energy Supply and Government Policy*, ed.

mental price-fixing in the interstate pipelines prompted the rationing and federal allocation of gas. Shortages in domestic crude oil prompted refiners to increase their demand for imported crude, which propped up the OPEC cartel's pricing system. In addition, regulation of the price of crude oil affected some refiners more severely than others and resulted in important competitive difficulties in the marketplace. Historically, many independent refiners had relied on "cheap" foreign crude in order to compete with larger companies that had their own captive domestic supplies. In the 1970s, however, as foreign crude prices skyrocketed and domestic prices remained regulated, independent refiners and marketers began to complain bitterly that the crude-oil cost differentials made effective competition with the larger corporations all but impossible. Thus, to remedy the competitive inequities produced by its own crude-oil price regulation, the FEA instituted various buy-sell and entitlements programs to ensure independent refiners "fair" access to crude oil.

There is little evidence that the entire oil and natural gas industries favored the initial system of price controls established in 1954; indeed, there is some evidence that certain segments of the industries bitterly opposed such regulation.⁵⁷ What does seem certain, however, is that after the oil price regulation was in place for some months, independent oil refiners and marketers began to lobby frantically for an extension and continuation of the control program and for modifications that would enhance their ability to maintain or increase their market share vis-à-vis the major oil companies.⁵⁸ Led in their interventionist efforts by the Independent Refiners Association of America, oil representatives testified before various congressional committees that the very survival of the independent refiner and marketer depended mightily upon continued "government action to allocate crude oil and petroleum products."⁵⁹ And although oil men occasionally gave lip service to the desirability of

Robert Kalter and William Vogely (Ithaca, N.Y.: Cornell University Press, 1976). See also Edward Mitchell, *U.S. Energy Policy: A Primer* (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1974); and Paul MacAvoy, "The Regulation Induced Shortage of Natural Gas," *Journal of Law and Economics* 14 (April 1971).

⁵⁷For a description of the gas and oil industries' opposition to wellhead price controls in the *Phillips* case, see Robert Engler, *The Politics of Oil* (Chicago: University of Chicago Press, 1967), pp. 130-31.

⁵⁸See, for instance, the testimony of Ashland Oil, *Oversight-Mandatory Petroleum Allocation*, Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, 93rd Cong., 2nd sess. (Washington: 1974), part 1, pp. 102 ff. Also see Engler, *The Brotherhood of Oil*, p. 253.

⁵⁹*Oil and Gas Journal*, June 24, 1974, p. 90.

a return to the free market, such visions were always framed in very long-run terms; in the short run, the talk was of "working within the control system," offering "improvements," perhaps, in the regulations, and fighting to keep those parts of the system that benefited—and still benefit today—specific companies or specific segments of the industry.

Take, for instance, the classic interventionist debate that occurred over the so-called small-refiner bias in the entitlements program administered by the FEA.⁶⁰ The Justice Department itself had maintained that the small-refiner entitlements bias represented an enormous subsidy to small refiners, amounting in the first six months of 1976 to some \$211 million. Yet Frank Woods, Jr., chairman of the American Petroleum Refiners Association, and Jason Dryer, executive secretary of the Independent Refiners Association of America, testified before the FEA that the small-refiner bias ought to be continued in the interests of "fair competition" with larger and more efficient refiners. Several small refiners that directly benefited from the entitlements bias also strongly supported the continuation of the program. The larger refiners, as might be expected, opposed the continuation of the entitlements bias and, indeed, of the entire entitlements program itself.

The same sort of industry split occurred with respect to the continuation of the FEA's mandatory "buy-sell" program.⁶¹ Crude-oil sellers and the Justice Department argued that the program ought to be abandoned since the conditions that gave rise to it—the oil embargo—had clearly ended. Crude-oil buyers, on the other hand, argued before the FEA that the program had to be continued. The Independent Refiners Association of America went on record as strongly favoring continued government allocation of crude oil. Though forced to admit that small refiners had *physical* access to foreign crude, it maintained that such refiners still did not have "adequate access in *economic* terms." Further they argued that since the supplies of domestic crude were shrinking, the buy-sell arrangements for foreign oil would become more necessary, even "critically important," as time went on.

Interventionist politics has not, of course, been a monopoly of small refiners or the trade associations that represent their interests. The larger refiners and the more prestigious trade associations have habitually supported particular governmental energy controls, ERDA (Energy Research and Development Administration)

⁶⁰*Oil and Gas Journal*, March 21, 1977, pp. 70–71.

⁶¹*Oil and Gas Journal*, April 25, 1977, p. 84.

subsidies for energy development, forced conservation, and import restrictions. Thornton Bradshaw, board chairman of ARCO, has repeatedly championed governmentally enforced "conservation," and has even been totally explicit in recommending *permanent* national planning in energy.⁶² During the oil boycott, leading oil executives from Texaco, Exxon, and ARCO supported stern federal "conservationist" measures including gasoline rationing.⁶³ The American Petroleum Institute, supposedly committed to an unregulated market in petroleum (as a long-run goal), has repeatedly adopted public positions at variance with that alleged commitment.⁶⁴ The same can easily be said of several other trade associations in petroleum such as the Kansas Independent Producers, the Texas Independent Producers and Royalty Owners Association, and the National Congress of Petroleum Retailers.⁶⁵ All have given lip service to popular support for a return to the free market while at the same time recommending continued controls or regulations designed to further their own self-interest or the self-interest of their members.

The predictable result of this process has been the piecemeal creation of a crazy-quilt system of regulatory privileges and punishments that makes no economic sense whatever, but necessarily generates vast uncertainty and misallocation of energy resources.⁶⁶ In short, business-generated interventionism led directly to the (still unresolved) energy crisis of the 1970s and 1980s.

Conclusion

The political-economy message of this study should be apparent. Monopoly power in petroleum has *not* been a product of the free market; it has resulted solely from political interventionism. Furthermore, that power has not increased industrial concentration (Exxon's share of refining was 9.5 percent in 1920 and 9.5 percent in 1977), nor has it brought the companies exorbitant profits (the earnings of the major oil companies are entirely consistent with competition). The subsidization and regulation that promised *ex ante* short-run gains has generated, and continues to generate, *ex post* welfare losses for the society as a whole.

⁶²Thornton Bradshaw, "My Case for National Planning," *Fortune*, February 1977.

⁶³*Oil and Gas Journal*, December 3, 1973, p. 13.

⁶⁴API has, for instance, supported some import controls. See Engler, *The Brotherhood of Oil*, p. 90.

⁶⁵*The Oil Daily*, April 13, 1977, p. 8. See also *Oil Gram*, December 15, 1976.

⁶⁶Ken Arrow and Joseph Kalt, "Why Oil Prices Should Be Decontrolled," *Regulation*, September/October 1979, pp. 13-17.