

29. Economic Conclusions

Previous chapters have described thousands of U.S. oil and gas interventions at all levels of government over a 167-year period.¹ These interventions were categorized and chronologically traced within the major industry sectors of exploration and production, transportation and transmission, refining, and marketing and distribution. That division was necessary to avoid the undue complexity that a purely chronological treatment would have created.

This chapter revisits these interventions in terms of new themes and new categories to uncover interrelationships that span industry sectors and periods. Whereas the earlier analysis may have strongly suggested certain patterns and imperatives, this chapter attempts to crystallize major economic themes shared by diverse oil and gas interventions.

The chapter surveys the failure of government intervention in oil and gas markets in contrast to the coordination and growth evident in free-market settings. This is followed by a theoretical section explaining the dynamics of government intervention, that is, the process by which attempts to alter market outcomes lead to ever-widening intrusions in the economy. This perspective will clarify the relationships among the multitude of oil and gas regulations, taxes, and subsidies.

The next section explores a major attribute of intervention, unintended consequences, which are divided into unpredicted and unpredictable outcomes. Then the aspects of intervention that cause major economic distortions are examined: nonneutrality, challenges to integration, challenges to cooperation, challenges to rivalry, instability, superfluous entrepreneurship, wealth redistribution under the Emergency Petroleum Allocation Act from 1973 to 1981, and conflict. The chapter concludes with an overview of the costs and consequences of intervention to indicate the great—actually, incalculable—sums involved.

Failure of Intervention

Government intervention in oil and gas markets has consistently failed to enhance social welfare, although certain people and groups have benefited. That failure, highlights of which follow, suggests the working of immutable economic law.

Historical Record

Early oil-pipeline regulation and antitrust challenges to Standard Oil were attacks on the market's response to crude-oil overproduction and refining overcapacity. Dissolution of the Standard Trust, as critics of the combination admitted, created negative side effects more than promoted competition. "It is no reflection upon the high purpose and public zeal," said A. G. Maguire in 1919, "to say that experience has shown that action to be an economic mistake and that the new

¹ The modern oil industry dates from the Drake well in 1859, but if manufactured-gas regulation is included, the history of intervention dates from 1817.

order which it established accentuated rather than retarded the conditions which it was designed to correct."²

Rate and service regulation of gas-distribution companies in the late nineteenth century did not balance the public interest with the private interest but institutionalized a private-public monopoly. It also invited the circumvention of the law that led to a widely recognized "breakdown of regulation," followed by more regulation, and hence more problems.

Early petroleum leasing on public land was marred by uncertainty, overproduction, and waste, which led to the abrupt withdrawal of land in the name of conservation after the turn of the century. The brief experience with a wellhead tax in the mid-1860s disrupted the oil region and inspired early political activism. Another prominent example was the infamous oil-well torpedo monopoly, a patent awarded by the U.S. Patent Office in 1864 despite claims of independent discovery of the well-rejuvenation technique. That was a textbook case of restraint of trade—less supply at higher prices—that had no free-market counterpart.³

Beginning with World War I, intervention became more varied and recurrent, easily exceeding the prior negative experience. With major private cooperative efforts to meet wartime demand ruled out by antitrust law, and given the authorities' proclivity for regulation, market competition was displaced by cartelization via price controls, allocation directives, and other interventions. The postwar drilling boom from a return to market conditions demonstrated the self-defeating nature of the wartime policies. Massive public-land withdrawals before the war were badly timed, and reformed leasing under the 1920 Mineral Leasing Act continued to be a poor cousin to private-land leasing and development.

The grand experiment in conservation regulation by the southwestern oil states from 1927 to 1935 not only failed to directly address the conservation problem but encouraged overdrilling, overproduction sprees and shutdowns, resource misallocation, lawlessness, and politicization. Concurrent New Deal measures to promote recovery in the oil industry were ineffectual, inimical to higher employment, and a distraction from needed resource reallocations and new business strategies. Artificial stability after 1935 would require more intervention and create attendant problems in the next decades.

World War II petroleum planning aggravated and prolonged the errors of World War I. Competition and innovation were banished in favor of sweeping directives and cartelized reliance on the preexisting industry structure. Crude output was discouraged by price controls

² A. G. Maguire, *Prices and Marketing Practices Covering the Distribution of Gasoline and Kerosene throughout the United States* (Washington, DC: Government Printing Office, 1919), p. 6. Maguire was director of the Bureau of Prices and Licenses in Mark Requa's Oil Division of the U. S. Fuel Administration.

³ See chapter 10, pp. 585–87.

and the rationing of wellhead equipment. Inefficiency, corruption, black markets, and shortages plagued gasoline marketing.

Shortages and havoc on the home front were not necessary to ensure ample fuel for the war effort. Higher wartime prices to clear the market could have provided enough for both fronts by encouraging greater conservation at home. Postwar government interference came perilously close to causing unprecedented peacetime oil shortages, while spot shortages of natural gas foreshadowed future regulatory crises.

The magnitude of World War II's distortions was avoided during the Korean conflict because of the limited military emergency and the fact that the planning effort barely got off the ground. But near-shortages of heating oil during two consecutive winters warned of the perils of planning.

The Mandatory Oil Import Program (MOIP), which lasted from 1959 to the early 1970s, was blatantly anti-consumer, as were the oil tariffs in the Revenue Act of 1932. Industry distortions resulted from both protectionist experiences. The 1932 tariffs, which lingered for decades, hurt export markets for oil (the United States was a net exporter until 1947) and rescued market-demand proration in Texas and Oklahoma from a political demise.

The MOIP rescued market- demand proration from foreign competition, subsidized a vulnerable underclass of small inland refiners, set a nationalistic tone in world oil markets, and inspired the formation of the Organization of Petroleum Exporting Countries (OPEC). After the MOIP's demise, constituent refiners and marketers left unprotected against market forces would usher in a new regulatory era that would last until 1981.

Interstate natural-gas pipeline regulation, which began with the Natural Gas Act in 1938 to plug the regulatory gap created by state and local gas distribution regulation, revealed another regulatory gap at the wellhead. This was selectively addressed by regulation beginning in 1940 and more comprehensively addressed in 1954 with a Supreme Court decision extending "just and reasonable" price ceilings to all natural gas dedicated to interstate commerce.

The Natural Gas Act delayed, and sometimes altogether blocked, new pipeline entry and thus competition to established natural-gas pipelines and incumbent fuels. Public-utility regulation at the wholesale level increased the cost of doing business that firms passed through to consumers. "Gold-plated" pipelines, extensive gathering systems, and risky supplemental gas projects padded the rate base to the detriment of downstream parties. The regulatory disintegration of the natural-gas industry into the production, transmission, and distribution phases created coordination problems in the 1970s and 1980s when winter shortages and then the "gas bubble" emerged.

Wellhead price regulation, which made natural gas a completely regulated industry, discouraged supply and slowed market expansion. It also artificially encouraged consumption in major interstate markets, contributing to shortages in the 1970s that, in turn, led to contract practices that would create overpricing and surpluses in the next decade. Shortages also encouraged quick-

fix gas-supply projects that turned out to be expensive malinvestments. Resort to high-priced gas imports to augment short supply contradicted the domestic price control program and exposed the futility of the entire regulatory effort. Allocation regulation, meanwhile, only reshuffled the constricted supply to the most politically favored groups.

In gasoline marketing, functional disintegration as a result of state and federal taxes in the mid-1930s (the Iowa plan) created an underclass of independent lessees that was vulnerable to the vicissitudes of market competition.⁴ Cooperative internal relationships within an integrated refiner-marketer structure were replaced with antagonistic relationships, and dealer-supplier security was replaced with insecurity. The highly competitive environment of gasoline marketing created interventionist pressures that would result in a raft of anti-consumer restrictions on the supply and sale of gasoline. The use of antitrust law by less efficient competitors against their more efficient brethren was one strategy; below-cost laws and self-serve restrictions, among other service-station regulations, were other strategies.

Taxation of the industry—from the excise tax on crude production in 1865 to the Windfall Profit Tax of 1980—created problems. The depletion allowance deduction in the Internal Revenue Service Code encouraged offset drilling in the very period when the states passed laws to restrict drilling. Nonneutral tax provisions at the extraction level contributed to relative overproduction that caused instability and competitive variances for downstream parties. Gasoline taxes financed government expansion into areas once occupied by private firms and created controversy over the diversion of money from road building to a variety of government projects.

Public land leasing hampered unitization efforts, fell prey to environmental politics and underdevelopment, and suffered through decades of mismanagement that stubbornly resisted reform. Unrealized production during the 1970s' energy crisis was a widely recognized shortcoming of the Interior Department's bureaucratic decisions regarding mineral extraction on the public domain.

The Export-Import Bank financed oil and gas projects in the very countries that earlier had nationalized U.S. oil and gas assets. Taxpayer commitments also subsidized irresponsible economic policies by the host governments. Regulation of intermodal transportation—trucks, railcars, and pipelines—wastefully cross-subsidized competitors, restricted competition, and raised rates that oil-product consumers had to bear.

The experience of energy-crisis regulation in the 1970s was a monument to failure that shook the confidence and resolve of even the most ardent industry foes. In addition to disruptive natural-gas shortages, oil price and allocation controls created distortions at every industry level. The most visible results were two periods of gasoline shortages that tested the civility of the country.

⁴ See chapter 23, pp. 1385–93, and this chapter, pp. 1784, 1799, 1803.

Besides physical shortages, record increases in energy prices destabilized many businesses and spawned malinvestments as the skyrocketing prices of the 1970s were followed by large declines in the 1980s. The oil-trading boom and the small-refiner upsurge were other monuments to distortions created by price and allocation regulation. The entitlements program, which literally lifted world oil prices and subsidized OPEC, was self-defeating regulation at its worst.

Five legacies of the energy crisis remained in 1984. The Strategic Petroleum Reserve, amounting to a \$15-billion taxpayer commitment, has soured as an investment and has little prospect or plan for productive use. The synthetic fuels program and synfuel subsidies by the Department of Energy have degenerated into project-specific boondoggles at taxpayer expense. The oil-export ban continues despite surplus conditions and depressed crude prices on the West Coast where Alaskan oil is forced on area refiners. The Windfall Profit Tax continues to be collected despite depressed producer economics due to falling prices. Uneconomic energy audits that have unintendedly benefited affluent homeowners at the expense of general ratepayers, finally, linger with the one salvation of low participation rates.

Behind the pronounced effects of oil and gas intervention are subtle effects that are too numerous to review. By no means did the previous chapters unearth them all; in addition to shortcomings of the author's research into recognized and reported consequences, there were consequences that went undetected or went unreported by the people involved. Economic theory suggests that the effects of government intervention on the market order are worse than any historical record can reveal.

The coordination and growth provided by the oft-unappreciated market stand in stark contrast to intervention. The Rockefeller decades turned industry instability into broad consumer gains in the United States and abroad. Standard Oil's record of investment, pricing, output, and employment speaks for itself.

Before and after World War I, the industry grew dramatically. The great Southwest oil discoveries in the 1920s and 1930s were a consumer bonanza despite reactionary attempts by vested interests, from wellhead to pump, to preserve preperiod profits through cartelization and regulation. Despite mandatory proration, oil tariffs, and other intervention, a buyer's market for crude oil prevailed from the 1930s until interrupted by World War II petroleum planning.

Postwar problems, followed by controls during the Korean conflict, delayed the return of the buyer's market. But from 1953 until the early 1970s, consumers enjoyed falling real prices for gasoline and other petroleum products and convenient service despite wellhead proration, import controls, and nuisance service-station regulation.

On another major energy front, the natural-gas market grew through the 1960s, although not all was well. This market was living on borrowed time; production disincentives from stringent ceiling prices were depleting the slack between available supply and demand in major interstate markets.

The 1970s were a violent departure from the dependable, cheap energy enjoyed for decades, although from 1975 to 1978 oil prices and markets were stable. After shortages in the summer of 1979 and record prices that peaked in 1980-81, a return to free-market conditions falsified many price forecasts and revealed investments as unsound. The industry consolidated and retrenched as prices stabilized and then fell. The new pro-consumer era promised to continue as long as pricing, allocation, and imports were left to the market, and taxes were not significantly increased.

Necessary Failure

Intervention has failed in a variety of settings and despite a variety of (often well intentioned) purposes. It has failed on the local, state, and federal level. It has failed in war, in peace, and during transition periods. It has proved disappointing when based on unsophisticated information and when econometric modeling guided the planners.

Isolated regulation has failed, partial regulation has failed, and comprehensive regulation has failed. The resolve of lawmakers and regulators has not changed the outcome. Well-intended intervention has not been appreciably different from special-interest laws—where those polar extremes have existed.

Intervention has failed when the regulators and regulation were "captured" by their subjects and when aspirations for consumer welfare were high. Success evaded many objectives: "just and reasonable" prices, conservation, national security, efficiency, equity, competition, stability, order, adequate supply, correlative rights, and import independence. The "constructive balance" of regulation between the interests of consumers and producers has been a mirage. Previous chapters have documented that intervention has not succeeded for the general public, as it did, at least for a time, for certain individuals and groups.

The unhappy past of oil and gas intervention was not the unlucky outcome of legislative blunders, administrative shortcomings, or external factors. It was the inherent result of its own illogic: the substitution of nonmarket forces for market forces. This conclusion is less a historical generality than a verdict of economic theory. Necessary economic relations must overpower attempts by authorities to improve conditions by intervention. As Ludwig von Mises stated:

Only the insane venture to disregard physical and biological laws. But it is quite common to disdain praxeological laws. Rulers do not like to admit that their power is restricted by any laws other than those of physics and biology. They never ascribe their failures and frustrations to the violation of economic law.⁵

⁵ Ludwig von Mises, [*Human Action: A Treatise on Economics*](#), 3rd rev. ed. (Chicago, IL: Henry Regnery Company, 1963), p. 762. Also see the discussion in Murray Rothbard, "[Ludwig von Mises and the Paradigm for Our Age](#)," in *Egalitarianism as a Revolt against Nature and Other Essays* (Washington, DC: Libertarian Review Press, 1974), p. 142.

This is most clearly seen with price and allocation controls, but it is evident with a variety of less pronounced interventions.

An important conclusion, relevant to the public policy positions of chapter 31, is that the future of intervention holds no more promise than the past. In fact, to the extent that complexity increases in an economy, conscious attempts to design satisfactory outcomes by governmental decree can be even more futile and self-defeating than before. The fact that energy markets are much larger and more complicated than decades ago makes this true with oil and gas as well.

Interrelationships of Intervention

A Theory of Interventionist Dynamics

Government intervention has a dynamic quality because it both fails to solve perceived problems and creates new problems. The cumulative path of intervention was explained by von Mises, who recognized that intervention not only fails to achieve well-intentioned ends but also necessitates successive reforms that either reinstate the market or insert the government deeper into the economy.⁶ Intervention thus is an unstable half-way house between the free market and total planning.

Mises rejected intervention as a viable, long-term form of economic organization:

“Interventionism cannot be considered as an economic system destined to stay. It is a method for the transformation of capitalism into socialism by a series of successive steps.”⁷ Donald Lavoie elaborated on Mises's point.

In an economy that is founded on private property, voluntary exchange, and the market process, attempts to violently manipulate the outcomes of this process lead to reactions that the intervener can neither specifically predict nor effectively prevent. Efforts to make the initial intervention work as designed must take the form of ever-wider and more obtrusive interventions, which are in further conflict with the workings of the market mechanism. In the end the interventionists must either expand their activities to the point where the process has been completely sabotaged or they must abandon their quest to control the market. Any "middle way" . . . would consist in a series of haphazard shocks to the economic system, scarcely any more deserving of the label "policy" than it would be to call throwing a monkey wrench into a complex piece of machinery "engineering."⁸

⁶ Mises's earliest exposition of spiraling intervention in 1912 used an example that has become a classic—partial price controls that in the face of inadequate supply and excessive demand require “compulsory production, universal obligation to labor, rationing of consumption, and, finally, official regulation of the whole of production and consumption.” [*The Theory of Money and Credit*](#) (Indianapolis, IN: Liberty Classics, 1980), p. 281.

⁷ Ludwig von Mises, “Middle-of-the Road Policy Leads to Socialism,” [*Planning for Freedom*](#) (South Holland, IL: Libertarian Press, 1974), p. 28.

⁸ Donald Lavoie, “The Development of the Misesian Theory of Interventionism,” in [*Method, Process, and Austrian Economics: Essays in Honor of Ludwig von Mises*](#), ed. Israel Kirzner (Lexington, MA: Lexington Books, 1982), p. 180.

The dynamic quality of intervention has been noted by many economists active in the regulatory field in recent decades. In a 1970 article, James McKie introduced the term "tar-baby effect" to describe the plight of regulators who find partial regulation frustrated by profit-maximizing behavior within prescribed constraints. The mirage of effective regulation, he explained, is always a regulation away because each constraint creates a "compensatory variation" by entrepreneurs. Like an entanglement with a creature of tar, the more the government tries to regulate, the more enmeshed it becomes in a bad situation.⁹ McKie's example concerns public-utility regulation, where rate controls require ever-widening intrusions into managerial decisions to minimize costs.

Another economist, Paul Joskow, restated the Mises interventionist thesis in relation to U.S. regulation:

A regulatory agency may attempt to implement some policy using a particular regulatory instrument, but the effect ... is not what is expected or is undesirable in terms of some other objective of the regulatory commission. The agency then tries to correct its initial inadequacy or mistake by extending its regulations to other aspects of firm or industry behavior or even to other industries.... Regulating competitive market structures is like trying to plug a leaky dike. The hand of regulation plugs up one hole only to find that a leak springs up somewhere else. Regulation in the U.S. often seems to be at least one leak behind.¹⁰

Economists and other writers in the oil and gas area have emphasized the interrelationship of interventions. Alfred Kahn linked the depletion allowance, market-demand proration, and import quotas to illustrate the "historical principle" of "one interference with competition necessitates another and yet another."¹¹

Arlon Tussing, Connie Barlow, and Milton Copulos have emphasized the special propensity of energy regulation to spawn distortion and grow.¹² The Federal Power Commission (FPC), for example, "sought continually to extend or expand its jurisdiction and the comprehensiveness of its regulation of the industry."¹³ It is not coincidental that major regulatory efforts became more

⁹ James W. McKie, ["Regulation and the Free Market: The Problem of Boundaries,"](#) *Bell Journal of Economics and Management Science* 1 (Spring 1970): 8, 9.

¹⁰ Paul Joskow, ["Regulatory Activities by Government Agencies,"](#) Massachusetts Institute of Technology, Department of Economics Working Paper, No. 171 (December 1975), p. 57.

¹¹ Alfred E. Kahn, [The Economics of Regulation](#), 2 vols. (New York: John Wiley & Sons, 1971), vol. 2, pp. 28–29. Also see Alfred E. Kahn, ["The Depletion Allowance in the Context of Cartelization,"](#) *American Economic Review* 54, no. 4, part 1 (June 1964), pp. 286–314. Kahn may be recognized as the father of the Mises interventionist thesis in petroleum.

¹² See Arlon R. Tussing and Connie C. Barlow, [The Natural Gas Industry: Evolution, Structure, and Economics](#) (Cambridge, MA: Ballinger Publishing, 1984), chap. 5; and Milton R. Copulos, ["Why Reagan Should Keep His Word and Shut Down DOE,"](#) Heritage Foundation Backgrounder no. 258, March 30, 1983, p. 3.

¹³ Richard Rosen, "Post-World War II Growth of Gas Industry," in American Gas Association, *Regulation of the Gas Industry*, 4 vols. (New York: Matthew Bender, 1982), vol. 1, p. 3-27.

politicized (i.e., removed from their original purposes and less focused) the longer they were in effect.¹⁴

A distinction can be made between *effective intervention*, which actually restricts market activity, and *superfluous intervention*, which does not influence market behavior (although it potentially could do so). For effective intervention, a historical-theoretical distinction can be made between *dormant intervention*, which being relatively innocuous and stable does not prompt further intervention, and *malignant intervention*, which does prompt further intervention.

While a sophisticated analyst can classify an intervention as dormant or malignant before its implementation, unintended consequences produced by the indeterminable complexity of the real world can falsify any prediction. A classification after the fact can be made more confidently.

A third important distinction for the historical study of interventionist dynamics is between *basis-point intervention*, initial government action that proves dormant or malignant, and *cumulative intervention*, government action traceable to a previous government measure. Misapplications of private-property rights, as well as property-rights violations, can be basis-point interventions that may lead to cumulative intervention. An intervention also can be partly cumulative and partly basis point, judged by the motivations of the political interests driving the intervention.

In a mixed economy, there can be many basis-point interventions at work simultaneously and many related cumulative interventions. Strings of intervention can work themselves out in isolation, although they begin to overlap as the scope of intervention grows in an economy.

Historical Review

Much oil and gas intervention has been a direct or indirect outgrowth of previous intervention. This is unsurprising given the propensity of intervention to follow problems and problems to follow intervention. Examination of these linked interventions reveals a second major theme of intervention. Intervention not only creates economic distortion; it also tends to expand from its own shortcomings.

Nineteenth-Century Gas Distribution. Municipal intervention into manufactured-gas distribution, dating from 1817, was the opening act of oil and gas regulation in the United States. In part, it was a cumulative intervention from the basis-point intervention of government ownership and operation of the streets and sidewalks. Municipal property had to be torn up to install gas pipelines, and contracts for street lighting were municipal contracts. In the absence of incorporation law, special state charters kept business on a government leash. Not surprisingly, the introduction of gas lighting came with franchises and ordinances. In some cases, the municipality assumed the lighting function completely.

¹⁴ See chapter 30, generally.

The second phase of nineteenth-century gas-distribution regulation was entirely cumulative intervention. Beginning in the 1880s, gas companies sought franchise protection as a matter of course and, in return, accepted rate regulation and public-utility service obligations. Entry barriers and rate regulation were interdependent; without one, agreement between industry and government would have been difficult.

Once in place under the purview of state utility commissions, effective rate and service regulation "in the public interest" was a tar-baby exercise. Numerous amendments to gas-utility regulation were made as state commissions grappled with circumventions associated with affiliate companies, cost padding, watered stock, and creative accounting. Inefficiency and corruption were also cause for amendment. Continued problems led to a widely recognized "breakdown of regulation" several decades later, inspiring federal intervention to supplement state efforts to regulate manufactured/natural gas.

Nineteenth-Century Oil Pipelines. The oil industry mostly operated in a free market in the nineteenth century. But several interventions and property-rights problems formed basis-point distortions that created cumulative intervention. Oil pipelines were at the center of early controversy. The railroads' eminent-domain rights and liberal land grants enabled them to obstruct the rights-of-way of rival oil pipelines. "Free pipeline" laws (eminent-domain rights) were enacted by oil states to neutralize that obstruction. Without eminent domain and with less railroad territory to block pipeline crossings, industry and government would have been less persuaded to enact "corrective" or "neutralizing" condemnation rights for oil pipelines.

Another early state-level oil-pipeline regulation, the common-carrier requirement to accept all oil tendered for shipment, was partly basis-point and partly cumulative intervention. As an unprecedented political victory for one industry group, producers, over another industry group, pipelines, it represented a basis-point intervention. But it was cumulative to the extent that crude-oil overproduction and consequent transportation problems resulted from non-market factors such as public-land lease provisions and quasi-market factors such as the rule-of-capture legal framework. Common-carrier obligations were also cumulative to the extent that they accompanied eminent-domain privileges. Like the franchise-rate regulation tradeoff for gas utilities, it would have been more difficult to enact common-carrier law without the concession of eminent domain.

Miscellaneous. Government land ownership was a basis-point intervention that yielded cumulative lease regulation, withdrawals of public land from mineral development, and amended lease regulation. Early casing and plugging requirements were, in part, the cumulative result of the rule-of-capture legal assignment that gave rise to blackmail.

State antitrust law was a basis-point intervention to protect local firms from out-of-state corporations, primarily Standard Oil. Federal antitrust law, on the other hand, was cumulative because of its close association with tariffs and state antitrust law. Federal railroad regulation was

also cumulative to the extent that interstate regulation addressed problems that purely intrastate regulation could not.

Other nineteenth-century oil interventions were basis point and either dormant or removed without compensating intervention. The obvious distortions of petroleum taxation during the Civil War, for example, led to its repeal before further intervention (such as subsidies for marginal wells) could be enacted.¹⁵ The oil-well torpedo patent monopoly, which raised costs for many producers needing to stimulate production by exploding their well depths, similarly, was a basis-point intervention that distorted the market yet did not inspire other government measures. Safety standards for kerosene and the regulation of kerosene storage, finally, were basis-point interventions that proved dormant.

Twentieth Century

Nineteenth-century intervention in oil and gas pales in comparison with twentieth-century intervention. The precedent of intervention in the oil and gas industry and in the general economy increased the demand for basis-point intervention, and with more basis points came more cumulative intervention.¹⁶ In three areas — transportation, manufactured/natural gas, and public lands — nineteenth-century intervention worked through cumulative phases. Wartime and peacetime crises accelerated the interventionist process with important consequences.

World War I. Antitrust attacks which culminated in the dissolution of the Standard Oil Trust in 1911 proved ironic with the cooperation and pooling of World War I industrial policy. Just three years earlier, the Federal Trade Commission was formed to check interfirm cooperation. Another irony was the withdrawal of 5.5 million acres of federal land, centered in California, from petroleum development in 1909-10, shortly before increased oil output became a major wartime priority. Both antitrust and federal-land policy became basis-point interventions for wartime petroleum planning, which sought to promote supply and interfirm cooperation.

Corporate taxation also hampered private-sector efforts during the war. Rates doubled in 1918 and an excess-profits tax implemented. Inflation, another basis-point intervention, also made the maiden experience with petroleum planning cumulative. Price controls on petroleum prices were in response to the Federal Reserve System's expansionary monetary policy. The act also imposed allocation controls; authorities knew the two went together.

Wartime intervention introduced cumulative forces elsewhere. The Revenue Act of 1909, which taxed corporations for the first time, led to special tax provisions to promote exploration and

¹⁵ In a broader sense, if war is considered a basis-point intervention, then related revenue via taxation and import tariffs would be a cumulative intervention.

¹⁶ The proliferation of special-interest groups in the oil and gas industry, building on precedent and working in defensive and retaliatory ways, was behind the increased political activity as explained in the next chapter.

production. Tanker requisitions for war service created problems for private industry that the U.S. Shipping Board felt compelled to remedy.

Deteriorating condition of railroads under strict price regulation by the Interstate Commerce Commission (ICC) led to nationalization in late 1917, as well as government transportation edicts involving oil tank cars during the war. Shortages of skilled workers from military conscription led to rules that excluded oil workers, among others, from the draft. Price regulation at a time of growing demand bred shortages of materials and mandatory allocation of drilling and refining equipment. Despite the lifting of most controls at war's end, several substantial federal interventions remained: antitrust law, public-land leasing, taxation, and railroad regulation.

State Conservation Regulation. In the 1920s and 1930s, a voluntary effort to lower drilling costs and preserve reservoir performance degenerated into a regulatory effort to stabilize prices. Voluntary “conservation” reform encountered interventionist barriers: state and federal antitrust law, federal tax incentives, common-carrier and common-purchaser pipeline laws, federal-land lease policies, and conservation law itself.

The rule of capture, an imperfect assignment of property rights to underground oil and gas reservoirs, was a basis-point intervention compared to a homestead theory of first title.¹⁷ Judicial activism (intervention) via implicit covenants in lease agreement by either discouraging cooperative solutions or encouraged autonomous behavior (offset drilling and drainage competition), which made mandatory reform an exercise in cumulative intervention. The cumulative process became more encompassing as state regulation became more complex and comprehensive and as federal intervention expanded.

The cumulative process began when oil states began prorating large fields threatening the historic level of prices. Because other output was free to increase to take advantage of higher prices created by lower output elsewhere, state authorities limited production in other fields. With Texas and Oklahoma fully prorated in 1928, unregulated neighboring Louisiana, New Mexico, Arkansas, and Kansas stood to reap artificial market-share gains.

Under political pressures, the four states adopted proration in 1935.¹⁸ The Interstate Oil Compact Commission was formed the same year with an antitrust exemption from Congress to provide statistical support and coordinate production shares for its state members. Thus, partial state

¹⁷ “Because much of the common law is inherently hostile to sound conservation practices in the production of oil and gas, states enacted legislation to override this law and appointed regulatory agencies to administer and enforce the new statutory regimes.” Jacqueline Lang Weaver, *Unitization of Oil and Gas Fields in Texas: A Study of Legislative, Administrative, and Judicial Policies* (Washington, DC: Resources for the Future, 1986), p. 261.

¹⁸ California, an important oil state, escaped regulation because of its geographical separation from the southwest and midcontinent regions. Illinois enjoyed an unregulated production spree at the expense of nearby oil states, but production fell off before political pressure became pronounced enough to introduce regulation.

regulation grew in classic fashion to statewide control and then to interstate coordination. Federal intervention would be next.

The cumulative process showed that conservation law was malignant, not dormant. Enforcement of such a difficult and artificial system led to martial law in 1931 in the Oklahoma City and East Texas fields, a notorious cumulative intervention. The resumption of production and a hot-oil war brought numerous reporting requirements for producers, transporters, and refiners: the federal one-mill crude tax of 1934; the federal and state tender system; the New Deal's Oil Code; and the Connally Hot-Oil Act of 1935, prohibiting interstate transportation of illegal oil.

Another chain of intervention developed from the per-well allowable assignments under proration, which created incentives to increase the number of wells in proven areas to qualify for more allowables. That led to a new emphasis for well-spacing law to reduce unnecessary wells. That, in turn, created a problem of correlative rights for small-tract owners who could not drill and who faced drainage by neighboring wells.

While Texas responded by allowing a small-tract exception to its spacing rule, other states enacted forced pooling and unitization laws in the 1940s and 1950s. Texas enacted mandatory pooling in 1965 after decades of institutionalized overdrilling. Mandatory-cooperation laws represented the highest cumulative phase of an interventionist process that began with basis-point barriers to voluntary cooperation aimed at reforming production practices.

The New Deal. The National Industrial Recovery Act and other federal New Deal legislation occurred during the height of state oil-conservation regulation. Franklin Roosevelt's New Deal sought to promote economic recovery from the most severe and lengthy depression in U.S. history. Federal Reserve policies that created the depression were themselves cumulative interventions. The recovery programs, which began under Herbert Hoover, were cumulative interventions that prevented market adjustment and recovery. Labor regulation, for example, kept real wages artificially high and perpetuated unemployment.

The Code of Fair Competition for the Petroleum Industry (Oil Code) of 1933 was the central New Deal intervention outside of piecemeal federal help for state conservation efforts. In its first year, the code was modified hundreds of times—a case of "the spider becoming entangled in his own web."¹⁹ Its worst effects were mitigated; price controls were removed from the code before it was implemented, and other requirements centering on gasoline marketing proved unenforceable. Production allowables pursuant to the Oil Code substituted for state proration, and product allowables had more bark than bite. The demise of the Oil Code in 1935 led to its replacement by the Connally Hot Oil Act, leaving industry practices controlled. Federal-level

¹⁹ Myron W. Watkins, *Oil: Stabilization or Conservation? A Case Study in the Organization of Industrial Control* (New York: Harper & Brothers, 1937), pp. 182–83.

investigations of the industry continued, moreover, as the government both promoted cartelization and prosecuted cooperation.

A legacy of the Great Depression that particularly affected the oil and gas industry was securities regulation. In an elusive effort to restore investor confidence, the Federal Securities Act of 1933 regulated new stock offerings. Partial regulation, as precedent would have it, would turn into comprehensive regulation. In 1934, circulating securities became regulated, and the Securities and Exchange Commission (SEC) founded. Futures trading became regulated in 1936; over-the-counter stocks in 1938; investment trusts in 1940; and in brokerage houses in 1964.

Hundreds of amendments and administrative rulings by the SEC, many targeted at upstream oil and gas firms, would follow. Accounting theory and practice became prescribed, supplementing and even replacing best practices. All this activity was a cumulative federal effort to shore up state "blue sky" (securities) laws and prevent another Great Depression. Further, as Thomas McCraw stated, "Regulation of the securities industry was intimately tied to regulation of the banking system."²⁰

Transportation. Federal regulation of interstate railroads, beginning in 1887 following state regulation, was the beginning of a cumulative process. "The story of the ICC," remarked Alfred Kahn, "illustrates... the necessity for limitations on competition to become more extensive and thorough if they are to succeed."²¹ In fact, the Interstate Commerce Act has never satisfactorily governed transportation and remained in flux into the 1980s.

After several decades of cartelized railroad regulation, replete with administrative rulings and amendments, oil pipelines joined the ICC fold in 1906. This new area of interstate control was relatively uneventful. The commission's attention remained on railroad regulation, which entered into a new phase of consumerist price regulation in 1910. Rate-increase denials led to deteriorated service, which culminated in a polar case of cumulative intervention in 1917—nationalization. Privatization several years later returned the railroads to public-utility control, which was overhauled to the industry's advantage beginning in 1920.

The next cumulative phase of ICC regulation came with the rise of the interstate trucking industry in the 1920s. Motor carriers were not regulated and enjoyed tax-financed routes, while railroads were regulated under a high-rate umbrella. Consequently, nonspecific business was leaving the railroads and going to trucks.

The first response was for railroads to persuade state officials to regulate intrastate for-hire trucking. Entry restrictions, higher rate schedules, increased taxes, reduced speed limits, load limits, and size limits all effectively increased the cost and rates of trucking to enhance the

²⁰ Thomas K. McCraw, *Prophets of Regulation* (Cambridge, MA: Harvard University Press, 1984), p. 165.

²¹ Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions, vol. 2*, p. 28.

competitive position of railroads. This left an interstate regulatory gap, and the ICC placed federal controls on motor carriage in 1935 to regulate entry, rates, and service. The Motor Carrier Act of 1935 was passed for the dual purpose of "protecting railroads against the intensified competition of motor carriers and protecting motor carriers from one another."²²

Transportation regulation became comprehensive when water carriers were brought under the protectionist umbrella of the ICC with the Water Carrier Act of 1940. Transportation planning was now fully intermodal, and regulators grappled with the unprecedented complexity their decisions had created, not only for a particular mode but in the relative positions of all other transportation alternatives.

Growing inefficiency in the regulated industries made transportation reform imperative. Facing the fundamental choice of more regulation or less, Congress opted for the latter. With interstate trucking and railroad regulation relaxed in 1980, the debate on extending deregulation or reimposing regulation continued. The middle way remains unstable; the cumulative process promises to either unwind or intensify.

World War II. On the eve of World War II, four basis-point interventions significantly affected the war economy: antitrust law, monetary inflation, increasing taxation, and transportation regulation. Antitrust strictures on cooperation were fresh on the minds of the oil community because of the 1936 Madison trial and the 1940 Mother Hubbard suit. The call for "teamwork of the highest order" could not be expected to strike a responsive chord.²³

Expansionary monetary policy created inflationary pressures and the apparent need for the government to prevent wartime "profiteering." By 1944, the corporate tax rate stood at 24 percent, and the excess-profits tax reached an all-time high of 95 percent. This diminished incentives and reduced the ability of oil firms to expand internally.

Truck and rail transportation under state and federal regulation was characterized by high rates, excess capacity, and service restrictions that could not satisfy heavy wartime demands. That invited a larger federal role. Interstate oil pipelines were in the middle of lawsuits with the Justice Department that resulted in profit and dividend regulation in 1941. Almost thirty

²² Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, vol. 2, p. 14.

²³ Quoting the statement of Petroleum Administration for War deputy coordinator Ralph K. Davies on June 19, 1941. This meeting between Davies and 1,000 oilmen "launched the Government-industry partnership plan." [John Frey and H. Chandler Ide, A History of the Petroleum Administration for War](#) (Washington, DC: Government Printing Office, 1946), p. 56. Also causing the industry to be reluctant to cooperate was the potential \$2.5-billion liability of three major interstate oil pipelines pursuant to a Justice Department interpretation that dividends to the parent were rebates in violation of the Elkins Act. The suit became public on September 30, 1941, the same day as the Mother Hubbard antitrust suit, and was settled later in the year.

government agencies regulated oil and gas in peacetime, but war would bring even more intervention.²⁴

World War II cumulative intervention was akin to earlier wartime planning. Price controls in production, refining, and marketing necessitated allocation regulation. Economic distortions and political pressures led to hundreds of amendments to the General Maximum Price Regulations during their four-year existence. The military draft created shortages of skilled labor that required special deferments. Tanker requisitions at the beginning of the war and inefficiencies created by state and federal regulation put the Office of Defense Transportation in the transportation coordination business. A stream of administrative regulations directing oil movements, many rigid and counterproductive compared to market-driven outcomes, was issued.

Price controls on equipment, coupled with high government demand, led to allocation control by the Office of Production Management. Scarce materials led to well-spacing orders and enforced pooling. With stripper wells threatened by price controls, a policy of cash subsidies from the Treasury was chosen over relaxed price regulation.

Another ill-fated supply response was federal subsidies for synthetic fuels in the final two years of the war. Refinery yields were directed by decree in the absence of price incentives. The crowning distortion of price controls, gasoline shortages, led to coupon rationing, first regionally and then nationally. Planning and enforcement problems with gasoline and fuel-oil rationing led to a tar-baby exercise by regulators in search of equity and stability. The suspension of antitrust law in 1942 was anticlimactic in the face of advanced cumulative intervention.

Korean Conflict. Antitrust law, rising prices from monetary expansion, state conservation regulation, and state and federal transportation regulation again stood in the way of a full private-sector response to the demands of war. Antitrust was a particularly significant basis-point intervention. Bruce Brown, chief oil and gas planner during the Korean conflict, identified a "fear of prosecution by the Department of Justice" as the "principal present deterrent to our being able to supply the military with petroleum."²⁵ Another basis-point problem was the Tidelands controversy between state and federal authorities, which cooled offshore drilling to the detriment of maximum wartime domestic crude production.

The decision to control oil prices in early 1951 found patriotism thin among those who remembered the last wartime planning experience. The *Saturday Evening Post* editorialized:

The history of controls during the late war indicates that, whatever their part in winning the war, one control inevitably led to another. The experience of the war also showed that, given the power to do almost anything, the authorities did a great many things which had little to do with the emergency.... When controls are

²⁴ [*Nation's Business*, August 1941](#), p. 24.

²⁵ Bruce Brown, *Oil Men in Washington* (El Dorado, AK: Evanil Press, 1965), p. 21.

invoked for no better purpose than to “bring the war home to the civilians,” the limit of bureaucratic impertinence is at hand.²⁶

Although the Korean conflict's relatively brief petroleum-planning experience prevented the scale of intervention and distortion that occurred in World War II, price controls caused scattered fuel-oil and lead-additive shortages that led to allocation directives. Materials allocation also followed price constraints. Synthetic-fuel subsidies continued until 1955 with little success. A regulatory-induced tank-car crisis expanded ICC involvement. Basis-point and cumulative interventions were in clear view.

Natural Gas. The cumulative process of manufactured- and natural-gas regulation has one of the longest histories of any economic intervention in the U.S. economy. Arlon Tussing and Connie Barlow remarked:

A fascinating theme that runs through the long, convoluted history of natural gas regulation is the seemingly inexorable expansion of government intervention. Regulation seems to have spawned further regulation; soon after one regulatory gap was filled, another appeared.²⁷

Distribution regulation in the nineteenth century set the stage for twentieth-century developments. Spot shortages under price controls in West Virginia during consecutive winters in 1916–18 disrupted business activity and led the state to restrict natural-gas exports attracted to nearby states by higher prices. This cumulative intervention was ruled unconstitutional in 1923.

In the next decade, the major natural-gas issue became rising prices at the city gate due to the inability of state authorities to effectively regulate southwestern gas prices, which created a constituency to regulate interstate gas pipelines. That “regulatory gap” was addressed in 1938 with the Natural Gas Act, which subjected interstate carriers to traditional public-utility regulation of rates and service.

FPC regulation under the Natural Gas Act, entirely cumulative intervention, would grow in complexity as hearings became more politicized and new jurisdictional questions came into play. Volume 1 of the FPC reports (which also covered electricity matters, which the FPC began regulating in 1935), which was under 1,000 pages, covered from 1931 until mid-1939. Volume 2, over 1,000 pages, went from mid-1939 through 1941. In the mid-1940s, weighty volumes were published yearly, and in the mid-1950s, they became semiannual.

By this time, the new regulatory gap was wellhead gas pricing, which to critics frustrated the intent of downstream cost-based ratemaking to lower prices for consumers. Affiliated production of interstate pipelines was first regulated on a case-by-case basis in the 1940s, and in 1954, all

²⁶ “Controls Should Be Tested from Past Experience,” Editorial, *Saturday Evening Post*, February 3, 1951, p. 10.

²⁷ Arlon R. Tussing and Connie C. Barlow, [“The Rise and Fall of Regulation in the Natural Gas Industry,”](#) *Public Utilities Fortnightly*, March 4, 1982, p. 15.

gas production dedicated interstate came under Natural Gas Act rate regulation. Wellhead regulation would go through four controversial phases in the next three decades, the problems of each phase leading to the next.

Gas-industry regulation had marched from the municipal level to the state level and then to the federal level. On the federal level, regulation had gone from interstate carriers to interstate-carrier production and finally to all interstate production.²⁸ This left intrastate production as the regulatory gap, and in 1978 it became regulated with the Natural Gas Policy Act. FPC reports, meanwhile, grew to three volumes per year in 1973 and four volumes per year a year later. The last volume before the FPC became the Federal Energy Regulatory Commission was 3,000 pages and covered April, May, and June 1977. Natural-gas regulation was comprehensive, complex, and cumulative.

The distortions of natural-gas regulation added new areas of control. The search for “just and reasonable” wellhead prices led to various pricing methodologies—first individual firm, then production area, then national—and finally to shortages and allocation controls. Natural-gas imports to alleviate the crisis created controversy and more regulation.

Later, surpluses of natural gas inspired a new regulatory area of partially voided pipeline-distribution sales contracts and mandatory open-access transportation. The new regulatory regime promises further episodes in cumulative intervention, a far cry from the original complaints of duplicate facilities and “tearing up the streets” that inaugurated gas regulation a century ago.

Gasoline Marketing. The retail gasoline market has been an arena for malignant basis-point, and thus cumulative, intervention. Road ownership by state governments led to gasoline-tax finance that swept the country in the 1919–29 period. Over thirty states increased their levies in response to declining revenue in the 1929–39 period, which lowered gasoline demand and industry revenue, adding to profitability problems and increasing pressure for nonmarket solutions.²⁹

The introduction of a federal tax in the same period underwrote highway planning and contributed to industry problems. Marketing instability and nonmarket solutions were also encouraged by one-price laws that contributed to overpricing by major chains, encouraging over-entry by independents. The key development was in 1935 when a trio of taxes changed the face of gasoline marketing. The most important was the chain-store tax that progressively taxed companies in proportion to their number of outlets. Combined with the Social Security tax and an unemployment-compensation tax on company employees, the new tax made the chains'

²⁸ Natural gas pipeline safety regulation, forgotten amid more consequential regulation, began on the state level as a basis-point intervention and graduated to a federal law in 1968 to achieve standardization, a cumulative intervention. Numerous amendments have continued the cumulative process.

²⁹ This assumes that because of tax-revenue diversions, the tax reduced demand and profitability more than road upgrades increased gasoline demand and industry profitability.

continued profitability dependent on functional disintegration (the Iowa plan). Lease arrangements replaced salaried employees with independent operators, and islands of cooperation in an intensely competitive environment were fragmented into autonomous rivalry between individual lessee dealers.

Antitrust law, already a barrier to cooperative solutions, became much more so in the new era of competition among multitudinous independent lessees. In the fury of competitive battle, interrupted only by World War II and the Korean conflict, regulation became a refuge, and independent lessees joined independent producers as the most interventionist-minded groups in the petroleum industry. If antitrust law had not ruled out cooperation, independent dealers would not have lobbied as hard for entry restrictions, self-service bans, sign laws, lease protection, premium restrictions, and divorcement-divestiture laws. And they would have filed fewer antitrust suits.

Antitrust controversies surrounding lease agreements, specifically exclusive-dealer clauses and wholesale-retail price discrimination, were directly tied to the Iowa plan. Integrated firms would have internalized conflicts, not externalized them as political conflicts. There also would have been less interventionist pressure to continue and expand Nixon-imposed price and allocation regulation through the Emergency Petroleum Allocation Act that was passed in 1973 and would not be repealed until 1981.

With price and allocation deregulation in early 1981, state regulation returned to the fore. Gasoline-station regulation in the 1980s continued to feature the competitive problems of lessee dealers ancestral to functional divorcement from basis-point taxation five decades before.

Oil-Import Regulation. Oil-import regulation was closely associated with state wellhead conservation regulation, particularly limiting production to predetermined market demand. The sizable tariffs introduced in 1932 were the quid pro quo given to domestic producers by the multinational majors who sought the survival of market-demand proration. Cumulative intervention with the MOIP, which began in 1959 and went through a decade of fine-tuning in response to economic distortion and politics, again rescued market-demand proration for the southwestern oil-state cartel.

State regulation raised industry costs and buoyed prices to keep stripper wells economical. The Pyrrhic victory enhanced the competitive position of flush output from foreign fields. As imports increased, market-demand factors fell in Texas, Oklahoma, and other southwestern oil states, further increasing the cost per unit of output. This subsidized imports more, which made quotas imperative if proration was to survive. Without the basis-point intervention of state regulation, a lower cost, lower price, and more integrated domestic industry would have competed better with foreign production and avoided the political pressures to adopt protectionism in the 1930s and again in the 1950s and 1960s.

Public Land. The checkered history of petroleum leasing on government land is entirely cumulative intervention from the basis-point intervention of government ownership. Overdrilling and breakneck extraction early in the century led to public-land withdrawals, the establishment of four Naval Petroleum Reserves between 1912 and 1923, and the Mineral Leasing Act of 1920. Continued developmental problems led to lease cancellations and land withdrawals in 1929 and mandatory unitization several years later. The 1920 law would be periodically amended to reduce mismanagement, a longstanding problem first thoroughly documented in 1959.

Offshore exploration/production has been separately regulated under federal law, but they too have been subject to start-stop leasing, controversy, and amendment. They have been particularly complicated by environmental regulation, itself partly cumulative intervention stemming from onshore and offshore government ownership. Controversy has been the hallmark of government-land leasing, and all indications are that it will continue to run a cumulative course short of privatization.

Petroleum Pipelines. As in the last century, oil pipeline intervention by various oil states was closely related to property-rights problems and other government intervention. In that respect, it was cumulative, not basis-point, intervention. The definition of land ownership to include the airspace above the surface and ground beneath the surface aided obstructionism that inspired state eminent-domain laws and, for wartime purposes, the federal Cole Act of 1941. In some laws, the obligation of common carriage was imposed on companies in return for condemnation rights, making the former cumulative to the latter.

Common-carrier and common-purchaser laws were directly related to producer unrest in times of overproduction. The self-interest of unrestricted output was traceable to a variety of government interventions that prevented wellhead cooperation and discouraged more disciplined production: antitrust law, tax incentives, mandatory proration rules, shutdowns, and pipeline regulation itself. With more disciplined production and greater integration between the production and transportation stages, the political drive for forced carriage for all comers would have been mitigated.

On the federal side, the Hepburn Amendment, which began federal regulation of interstate oil pipelines in 1906, was partly basis point and partly traceable to interstate commerce regulation embodied in the Interstate Commerce Act of 1887. Regulatory parameters for interstates set in 1940 and 1941, and the drive for regulatory reform in the 1980s, were basis-point extensions for the most part.³⁰

The Trans-Alaskan Pipeline System controversy, which began in 1977, is traceable to state and federal regulations, primarily environmental, that turned a planned \$900-million, three-year

³⁰ To the extent that malincentives under cost-plus ratemaking increased rates enough to trigger shipper complaints and consequent regulatory reform, heavy handed regulation based on original depreciated cost would be cumulative to light-handed regulation based on replacement cost.

project into a \$9-billion, eight-year project. The huge cost overrun led to record-high transportation rates that were challenged by regulators and other interests. With fewer regulatory impediments and lower costs, lower rates might have escaped legal challenge altogether.

Energy-Crisis Period. Petroleum intervention in the 1970s is a monument to the cumulative regulatory process and regulatory failure. From a basis point of inflationary monetary policy came the Economic Stabilization Act of 1970 and President Nixon's wage and price controls the next year. This led to unprecedented and unpredicted developments in the oil sector. In 1972-73, shortages of selected oil products appeared, the Energy Policy Office was created, and price and allocation controls were enacted in the Emergency Petroleum Allocation Act (EPAA).

The new federal bureaucracy and allocation regulation were also the cumulative result of intervention elsewhere: 1) natural-gas price controls, creating interstate shortages and forced substitutions to scarce fuel oil and 2) previous intervention, such as chain-store taxation and the MOIP, which created an interventionist constituency of vulnerable independent marketers and refiners that successfully lobbied for the EPAA.

The EPAA directly linked price controls and allocation controls. "The creation of Part 210," stated the Federal Energy Office, "recognizes the compelling necessity of viewing both allocation and price problems within the context of a single regulatory framework."³¹ The buy-sell program and the supplier-purchaser rule would have long complicated careers amid self-made distortions. The same was true with price controls that went through five different phases under Nixon and broke into two crude-oil tiers in 1974, three tiers in 1976, five tiers in 1977, and eight and then eleven tiers in 1979.

Refinery price and yield regulation became so complicated that lawmakers openly declared the regulations incomprehensible. New regulations such as the old-oil refinery entitlements program and the layering rule attempted to mitigate the distortions and close loopholes in preexisting intervention. The original EPAA regulations, which covered twenty-seven pages in the *Federal Register* in early 1974, were supplemented by over 5,000 pages of amendments in the first two years.³²

In the seven years of the EPAA, there would be "no fewer than six different regulatory agencies and seven distinct price control regimes, each successively more complicated and pervasive."³³

³¹ [39 Fed. Reg. 1924](#) (January 15, 1974).

³² William A. Johnson, ["Why U.S. Energy Policy Has Failed,"](#) in *Energy Supply and Government Policy*, ed. Robert J. Kalter and William A. Vogely (Ithaca, NY: Cornell University Press, 1976), p. 297.

³³ Joseph P. Kalt, ["The Creation, Growth, and Entrenchment of Special Interests in Oil Price Policy,"](#) in *The Political Economy of Deregulation*, ed. Roger G. Noll and Bruce M. Owen (Washington, DC: American Enterprise Institute, 1983), p. 98.

Even Sen. Edward Kennedy (D-Mass.), who traditionally favored interventionist responses to industry problems, complained about the "outrageous weed garden of [petroleum] regulation."³⁴

The unprecedented peacetime exercise in cumulative intervention went far beyond the EPAA. Between 1977 and 1980, over 300 energy bills were considered in Congress. States considered many more. Dozens of new state and federal laws mandated energy efficiency and conservation. New state energy bureaucracies such as the California Energy Commission were created. Major federal laws created the Windfall Profit Tax, the Strategic Petroleum Reserve, and the Synthetic Fuels Corporation. These interventions, in turn, created problems that necessitated modifying intervention. One journalist's comment was illustrative. "The troubled U.S. effort to build a strategic stockpile reflects a general frustration generated by the energy crisis: every solution to the problem seems to create tremendous problems of its own."³⁵

Conclusion. Reexamining the history of major oil and gas intervention within the basis-point, cumulative framework documents the interrelationships of intervention and the propensity of market interference to expand from its own shortcomings. In retrospect, the great majority of basis-point interventions were malignant, as were many cumulative interventions that followed, creating economic distortion and political pressure for reform.

Several patterns can be recognized. Jurisdictionally, there has been a progression from state regulation to complementary federal regulation. That was the case with railroad regulation, trucking regulation, securities regulation, natural-gas pipeline regulation, pipeline-safety law, and service-station franchise regulation. (It was also true with electricity, an energy industry not covered in this book.)

In most cases, jurisdictional expansion was undertaken to close regulatory gaps. In several cases, federal regulation reflected a desire of the regulated industry itself for a common standard to replace disparate state and local standards. Federal intervention also followed state regulation of oil pipelines, although not to address problems caused by the previous state regulation.

Sectorally, regulation faced all-or-nothing choices. If petroleum-price regulation failed to cover each industry phase and all firms within each phase, the unregulated segment would profiteer at the expense of the regulated segment and defeat the purposes of the regulation. With World War I, World War II, the Korean conflict, and regulation pursuant to the Economic Stabilization Act and the EPAA, oil-price controls covered all parties: producers, refiners, resellers, and marketers. With natural gas, authorities were slower to learn; it took decades before comprehensive regulation was implemented.

³⁴ [124 Cong. Rec. S17071 \(daily ed. June 9, 1978\)](#) (statement of Sen. Kennedy). Quoted in Jeffrey Burt and Abigail Watts-FitzGerald, "The Crude Oil Entitlements Program," in *Petroleum Regulation Handbook*, ed. Joseph C. Bell (New York: Executive Enterprises, 1980), p. 146.

³⁵ David Pauly, *Newsweek*, July 2, 1979, p. 61.

Within industry sectors, the flaws of partial regulation have led to total coverage. Fuel-oil licensing in World War I, coupon rationing of gasoline and fuel oil in World War II, and the Small Business Exemption under Phase II regulation under Nixon's Cost of Living Council were examples. Voluntary gasoline rationing in World War I also went from one geographical region to the entire country in the quest for equity and effectiveness.

The need to regulate close substitutes was apparent in transportation, where federal railroad regulation (1887) was joined by similar controls over oil pipelines (1906), motor carriers (1935), and water carriers (1940). With the partial deregulation of railroads and trucking in 1980, the two closest intermodal substitutes, a cumulative deregulatory process began.

There are exceptions to the jurisdictional, geographical, intersectoral, intrasectoral, and intermodal tendency to eschew partial regulation. One example is the long-time lapse preceding total regulation. Other examples are the categories of wellhead oil and gas output not covered by price controls in the 1970s and 1980s; exemptions were allowed that openly contradicted the regulatory program to avoid unpalatable distortions. Stripper oil, for example, was not price-regulated under the EPAA for fear that the wells would be plugged and lost forever. Unregulated prices for oil imports under the EPAA, and light-handed regulation of natural-gas imports during the interstate shortages, were other enduring exceptions that defeated regulatory purposes but dared not be closed.

Unintended Consequences

Economics has been defined as the study of the unintended consequences of human action.³⁶ While some economic effects of purposeful action are immediately visible and intended, others are subtle, delayed, and wholly unintended. This is true of market and nonmarket actions.

The theory of *spontaneous order* identifies the price system, entrepreneurship, and freely evolving institutions as responsible for the unintended channeling of self-interest into the general interest. The complementary theory of *imposed disorder* also recognizes unintended consequences but concludes that, unlike market behavior, government intervention's unintended consequences are counterproductive to the common good. Some intentions of intervention, albeit narrow, can be and have been realized, but the general effects are contrary to the stated intentions of the lawmakers.³⁷ "From their point of view," states von Mises, "intervention is not only useless, but wholly unsuitable because it aggravates the 'evil' it is meant to alleviate."³⁸

³⁶ F. A. Hayek, *The Counter-Revolution of Science: Studies on the Abuse of Reason* (New York: The Free Press of Glencoe, 1955), ch. 4, ["The Individualist and 'Compositive' Method of the Social Sciences,"](#) p. 39.

³⁷ The political side of intervention, which covers the less publicized intentions behind government activism, is discussed in the next chapter.

³⁸ Ludwig von Mises, [A Critique of Interventionism](#) (New Rochelle, NY: Arlington House, 1977), p. 25.

The phenomenon of unintended consequences is a major feature of intervention. It relates to the intervention's inherent distortion and tendency to expand when introduced piecemeal, as discussed earlier. This section documents the cleavage between the *intention* and *result*, while distinguishing between unintended consequences that are predictable and those that are not.

Unintended Consequences: Predictable

To present every example of the gulf between reality and the stated intentions of intervention would require a recapitulation of the preceding chapters. As a rule, every piece of well-intended legislation causes unintended economic distortion, an outcome that economic science could predict.

Wartime petroleum planning predictably reduced, rather than increased, coordination between supply and demand throughout the industry. Petroleum price regulation under the EPAA, which promised to "assure the American consumer an adequate supply of oil at reasonable prices,"³⁹ predictably created shortages and invited allocation regulation. The subsequent breakdown of the price-control program and resulting higher prices were also foreseeable.

Oil-price controls in World War II, and natural-gas price ceilings a decade later, produced what critics warned against— reduced supply and consequent problems. Predictable failures resulted from contradictory energy policies such as mandatory conservation edicts when demand was artificially stimulated by price ceilings during the 1971–81 period.⁴⁰

Economic calculation problems with government-owned assets, such as public lands and the Strategic Petroleum Reserve, were not surprising. The opportunistic behavior invited by regulatory loopholes was partly foreseeable. The failure of partial regulation, which permits private activity to escape to the unregulated sector, occurred often enough to be recognized and predicted.

Unintended Consequences: Unpredicted and Unpredictable

Intervention that impinges on complex market forces can produce both unpredicted and unpredictable results. Although the past is some guide, each episode is unique.

Increased ownership concentration and the prolonged absence of direct competition between the Standard Oil Trust affiliates after the 1911 breakup were unforeseen by friend and foe. The breakdown of gas regulation at the state level due to profit-maximizing industry strategies was unanticipated. The detrimental effect of various state and federal interventions on wellhead petroleum-conservation efforts in the 1925–35 period was a striking example of unimagined consequences.

³⁹ Cost of Living Council, as quoted in [“Tough New Price Controls Guarantee Oil Shortages,”](#) *Oil & Gas Journal*, March 12, 1973, p. 43.

⁴⁰ William A. Johnson, [“Why U.S. Energy Policy Has Failed,”](#) p. 280.

The architects of federal antitrust policy and their critics scarcely imagined the opportunities it precluded in wartime and the shelter it gave to less efficient competitors in peacetime. The competitive antagonism and regulatory pressures created by tax-induced functional divorcement of gasoline stations in the 1930s were unintended and unpredicted. The role of the MOIP in inspiring the formation of OPEC in 1960 was not envisioned by the proponents of national-security protectionism.

The 1970s were a fertile period of nonmarket surprises. The Federal Energy Office correctly predicted that "unanticipated problems with the regulations will surely arise."⁴¹ The effects of subsidies for small refiners for stationary-source air pollution were not recognized, much less calculated. Downstream independents who labored to pass the EPAA unexpectedly came to be disadvantaged by its provisions and would later favor deregulation. The oil-trading boom that left the goals of federal energy policy in shambles was not only unforeseen by legislators but unrecognized after the fact by leading academic studies of oil regulation of the period.

The framers of the Natural Gas Policy Act of 1978, much less anyone else, did not know that ceiling prices would become floor prices within five years and thus work to increase prices rather than restrain them. Nor was it anticipated that deep-gas production incentives would lead to a boom-bust drilling cycle that would reverberate against leading U.S. financial institutions. The 1970s' experience, in contrast to the industry downturn in the 1980s after deregulation, led one oil industry executive to prefer

a politician . . . who would be more blatantly anti-oil, pro-consumer. In short I'd like to vote for a politician who would truly set out to do me in. . . . While screaming "don't throw me in that briar patch," I will be studying his proposed new regulations carefully, looking for the loopholes that will allow me once again to prosper in the oil and gas business.⁴²

The cumulative process of intervention, particularly in its advanced stages, magnifies unpredictability. The momentum from partial regulation to total intervention is predictable, but the side effects of expanding regulatory sequences are much more difficult to anticipate.

Major Economic Distortions

The rest of chapter 29 revisits the major distortions created by government intervention in oil and gas markets from eight angles. All are forms of economic inefficiency, defined as an avoidable misallocation of resources that occurs because a superior outcome was prevented by prohibition, a lack of incentive, or the stifling of entrepreneurial discovery.

⁴¹ [39 Fed. Reg. 1924 \(January 15, 1974\)](#). Also see [39 Fed. Reg. 44405 \(December 24, 1974\)](#).

Representative Clarence Brown (R-Ohio) retrospectively spoke of "the unintended collateral consequences of the implementation of a legitimate legislative goal." *Petroleum Marketing Management*, November 1980, p. 24.

⁴² Bill Dutcher, "An Oilman Looks Kindly on Mondale," *Wall Street Journal*, August 7, 1984, p. 32.

Nonneutrality

Taxes, subsidies, or regulations that seek impartiality between firms must choose between simplicity and uniform application, on the one hand, and complexity and tailored application to their subject classes, on the other.⁴³ Either approach changes the relative competitive positions of firms. Intervention is inherently nonneutral and thus discriminatory because legislators and regulators are not omniscient to make the results equal to the goals.

Simple and Uniform. One strategy that regulators can apply in the search of equity and simplicity is to impose the same requirements on all firms or individuals in an industry. But inequality can still result because different firms have different capabilities to discharge their requirements.

Larger firms with in-house expertise and scale economies, able to spread their regulatory costs over higher sales volume, benefit relative to smaller firms. Henry Demarest Lloyd complained that state petroleum inspection and storage laws in the nineteenth century were inspired not by an abstract concern for safety but by powerful business interests seeking to harm smaller rivals.⁴⁴ The sudden public-utility status of natural-gas producers in 1954 created a decidedly nonneutral situation for smaller operators who strained to meet their filing requirements with the FPC.

Oil price and allocation regulation in the 1970s created this problem. With Department of Energy regulations reaching 50,000 pages by 1979, independents, particularly mom-and-pop gasoline marketers, struggled to comply. The *National Petroleum News* commented:

This has been a bonecrusher for small jobbers and retailers. Big companies, with legal staffs and government experts, can cope with them. Small companies must do it with minimum manpower and/ or assistance while devoting full time to normal job routines.⁴⁵

The result was unintentional violation of the law; others relied on trade association expertise to comply.

A second source of nonneutrality under the same requirement concerns the timing of controls. Base-period price and allocation regulation locked firms in different relative situations that were not "normal." Dates used to set price ceilings during World War I (August 9, 1918), World War II (October 1, 1941), the Korean conflict (January 25, 1951), the Cost of Living Council phases

⁴³ Purposefully nonneutral legislation seeks to benefit one group over another group. Two prominent examples from the oil and gas industry are preferential treatment of stripper wells over flush production under state conservation regulation, as well as independents over integrated companies in the federal tax code.

⁴⁴ Henry Demarest Lloyd, *Wealth against Commonwealth* (New York: Harper & Brothers, 1894), pp. 215–17.

⁴⁵ *National Petroleum News*, September 1979, p. 43. Cited hereafter as *NPN*. Also see William A. Johnson, "[Why U.S. Energy Policy Has Failed](#)," p. 298. Accounting and reporting requirements of the quasi-governmental Financial Accounting Standards Board also created a "standards overload" for small firms compared to larger firms in the 1970s. *Houston Business Journal*, October 24, 1983, p. 16B.

(August 15, 1971), and the EPAA (May 15, 1973) caught some firms in price wars, others in relatively normal situations, and still others in high-margin positions. A new base date mitigated some situations, even by replacing a single day with a period average. But that only traded one set of inequities for a lesser one.

Complex and Tailored. In the search for equity and effectiveness, regulators may implement different provisions for different firms. Tailored provisions can be applied from the beginning, as was done with the Windfall Profit Tax, which had higher tax rates for majors than independents. Another example is opening industry regulation that controlled large but not small firms in World War I and in Phases II and III of the Cost of Living Council regulations in the early 1970s. Special treatment of small refiners under the MOIP, the Old-Oil Entitlements Program, and the lead phase-down program are other examples.

Uniform intervention can change into complex, tailored intervention because of distortions and industry pressure. Tailored programs can grow for the same reasons. Examples include well-spacing policy in Texas, stripper-well and other high-cost crude categories under the EPAA, and high-cost gas categories under the Natural Gas Policy Act.

The favoritism of administrative regulation toward smaller firms was stated by David Bardin, head of the Department of Energy's Energy Regulatory Administration in 1979:

We start off with some feelings, not that we like someone better than someone else, but that small business has its own special contributions to make to society, and that it's the responsibility of the government to be particularly sensitive to the smallest and medium-sized businesses in the economy.⁴⁶

Anticipating compliance difficulties under EPAA, rulemakers allowed relief if "serious hardship" or "gross inequity" was demonstrated by firms. The Office of Hearings and Appeals was swamped by requests, which altered—but did not remove—the nonneutral effect of regulation on relative competitive positions.

Antitrust law from the beginning has discriminated against big firms to the advantage of smaller firms. Since at least 1911, forced divestiture, blocked mergers, and cease-and-desist orders have skewed the competitive process away from scale economies toward the more-firms-the-better goal of the law.

Challenges to Integration

Market forces throughout the history of the oil and gas industry have encouraged integration of the complementary industry sectors of production, transportation, refining, and marketing to

⁴⁶ *NPN*, September 1979, p. 46.

lower costs and reduce risk.⁴⁷ Government intervention has worked against this trend with negative results for consumers and industry stability.

Beginning with common-carrier pipeline obligations and restrictions on multiphase incorporation in oil states such as Pennsylvania (1883) and Texas (1897), a barrier was created against combined production, pipeline, and refining operations. "Discrimination" against less competitive producers by pipelines in a free market would have encouraged distress combinations or self-help integration to internalize profits and reduce uncertainty. As it was, the political "solution" to overproduction and related producer problems continued instability for many of the independents involved.

Journalistic and political sentiment in favor of nonintegrated firms against the Standard Oil Trust continued the bias past the turn of the century. Every attack on Standard by the several states and the federal government was an attack on profit-driven integration and consolidation. Divestiture in 1911 undid integration for some trust affiliates and created imbalances where integration remained. De facto integration under World War I planning (as in later war periods) was a break from previous public policy but was temporary and, more important, not consumer directed.

State conservation law in the 1915–35 period was a frontal blow to consolidation and integration. Common-carrier and common-purchaser requirements by oil states saved producers from themselves by penalizing pipelines. Producers had less reason to integrate and practice disciplined production so long as pipelines could be required to transport for them.

Market-demand proration kept marginal producers in business and discouraged (distress) mergers and cost-minimizing integration. The fateful decision to declare martial law and shut down the Oklahoma City and East Texas fields in 1931 prevented a major transfer of market share from nonintegrated independents to major integrated companies. Had Humble Oil and other industry leaders been in greater control of the major fields, in place of hundreds of vulnerable independents, the cumulative intervention that followed that continued to discourage integration could have been avoided.

Another blow to integration occurred in the downstream sector. State chain-store taxation and federal taxes in the 1935–40 period functionally divorced service stations from their supplier-owners. Salaried employees were replaced by independent operators in a franchise relationship, and company rules were replaced by lease covenants modified by antitrust considerations. The

⁴⁷ For an analysis of the rise of multi-phase operations in the U.S. petroleum industry, see John G. McLean and Robert W. Haigh, *The Growth of Integrated Oil Companies* (Boston, MA: Graduate School of Business, Harvard University, 1954); and Melvin G. de Chazeau and Alfred E. Kahn, *Integration and Competition in the Petroleum Industry* (New Haven, CT: Yale University Press, 1959). A theoretical justification for integration to reduce risk is presented in Benjamin Klein, Robert G. Crawford, and Armen A. Alchian, "[Vertical Integration, Appropriable Rents, and the Competitive Contracting Process](#)," *Journal of Law and Economics* 21, no. 2 (October 1978), pp. 297–326.

two arrangements were very different; arm's length, potentially antagonistic relationships replaced integration.

Formal disintegration of refiner-suppliers and marketers has been the subject of state regulation in recent decades. Several states, including Maryland, enacted divestiture-divorcement statutes, which received the following censure from Supreme Court Justice Harry Blackmun in a dissenting opinion: "A national economy would hardly flourish if each State could effectively insist that local nonintegrated dealers handle product retailing to the exclusion of out-of-state integrated firms."⁴⁸

Another factor discouraging integration has been the favorable tax treatment of independents. The Windfall Profit Tax and the depletion allowance have discriminated against majors to benefit nonintegrated firms.

Similar developments occurred in the manufactured- and natural-gas industry. Early gas works that distilled gas from coal in urban markets were integrated through the production, transmission, and distribution phases. After the turn of the century, intrastate pipelines continued to be closely aligned with the final seller. With the advent of long-distance pipelines in the mid-1920s, distribution companies again led the way.⁴⁹

Common-carrier requirements that were imposed on intrastate natural-gas pipelines, like those on intrastate oil pipelines, reduced the advantage of integration and consolidation for many gas producers. Replacement of company rules and norms with mandatory carriage (and equal takes per customer after capacity was reached) replaced market relations with political ones.

Formal disintegration began with the Public Utility Holding Company Act of 1935, which prohibited gas distributors from owning interstate pipelines. Separations followed, and by World War II, the industry was distinctly divided between transmission and distribution.

The separation of production properties from interstate pipelines was next. Beginning in 1940, pipeline reserves dedicated to interstate commerce were valued at cost for rate setting under the Natural Gas Act, whereupon pipelines sold their properties to receive market value. By 1950, a division of the industry into three parts—production, transmission, and distribution—was evident. In the early 1970s, transmission companies again cultivated production, but this was too little too late and led to new problems. Aggressive contracting with independent producers in the 1970s led to surplus deliverability and take-or-pay problems in the 1980s. Integration and intracompany resolution could have avoided these difficulties.

Challenges to Cooperation

Cooperation is as integral to market order as autonomous competition. Cooperation is not only integration and consolidation between firms; it is also formal or informal interfirm agreements in

⁴⁸ [Exxon Corp. v. Governor of Maryland](#), 437 U.S. 117 at 141 (1978).

⁴⁹ Arlon R. Tussing and Connie C. Barlow, [The Natural Gas Industry](#), pp. 204–5.

the absence of antitrust constraints. The appropriate balance between rivalry and cooperation will vary with market conditions, but both are essential to efficiency and coordination in a complex economy.⁵⁰

At the beginning of the industry, before the advent of state and federal antitrust law, cooperation and competition existed side by side. “Voluntary associational activity flourished at all levels of the industry,” noted Arthur Johnson. “On the producers' level it ranged from partnership and corporation alliances in drilling to a general Petroleum Producers' Association.”⁵¹

Cartel efforts to limit drilling and raise prices, however, were no match for market (profit) incentives for individual firms to cheat and to entry by new firms. Market competition limited cooperation.

In the era before Standard Oil, the large number and high costs of refiners bred instability. That instability called for consolidation and scale economies that inspired the career of the oil industry's most famous entrepreneur. George Stocking explained:

An economic situation had arisen wherein competition threatened loss, and centralized control meant economies and increased profit. Such a situation awaits only the appearance of shrewd business acumen and judgment until monopoly will develop. Mr. Rockefeller afforded these qualities in high degree.⁵²

The answer was cooperation, not by an artificial cartel but by formal mergers and clear instructions to nonaffiliated producers on what supply was marketable via pipeline practices. Despite pipeline regulation and antitrust challenges, consolidation and quota assignments by Standard to its upstream suppliers promoted industry efficiency and continually declining prices for consumers.

The advantages of market consolidation and cooperation were forgotten in the 1930s when overproduction and over-drilling threatened many firms in the industry. Unitization agreements and other legal instruments of cooperation to limit drilling and moderate drainage competition were needed. Short of this, distress mergers and integration were necessary to promote reform. Instead, intervention carried the day to preserve many hundreds of small-tract drillers. Decades of waste and cumulative intervention were the legacy. Contrary to the theory of perfect competition, more rivalry meant more economic waste.

Maximum-acreage lease requirements on the government domain contributed to over-drilling and drainage competition from numerous common-pool owners. At the gasoline retail level, a

⁵⁰ See the discussions in chapter 1, pp. 16-17, and chapter 26, pp. 1541-46.

⁵¹ Arthur M. Johnson, “Public Policy and Concentration in the Petroleum Industry, 1870–1911,” in *Oil's First Century: Papers*, ed. Ralph Hidy (Boston, MA: Harvard University, Graduate School of Business, 1960), p. 45.

⁵² George Ward Stocking, *The Oil Industry and the Competitive System: A Study in Waste* (Boston, MA: Houghton Mifflin, 1925; Westport, CT: Hyperion Press, 1976), p. 13.

bastion of rivalry and instability, cooperation and consolidation were prevented by intervention. Taxation that required functional divorcement to maintain profitability was the major blow that replaced cooperation within large major-brand chains with unstable competition between small branded and unbranded dealers. Antitrust law that prevented informal cooperation between stations in the heat of battle added to instability and pressured rivals to seek regulatory relief.

Challenges to Rivalry

Competition between business rivals is a familiar characteristic of the market economy. It is a powerful force that resists artificial attempts to suppress it as the following list of unsuccessful cartelization attempts attests: the Petroleum Producers Agency (1872), South Improvement Company Association (1872), Petroleum Refiners Association (1873), American Petroleum Institute Code of Fair Competition (1928), National Industrial Recovery Act's Code of Fair Competition for the Petroleum Industry (1933), National Petroleum Agency (1934), Pacific Coast Stabilization Plan (1934), and East Coast Marketing Agreement (1935). Voluntary attempts to restrict production in the major southwestern fields in the 1920s suffered fell short, as did voluntary import quotas in the 1950s.

Government interventions that have foreclosed competition in oil and gas are too numerous to detail except for the most important. Franchise protection for gas-distribution companies was a major impediment to competitive pricing and expanded markets that even would-be entrants with executed contracts could not penetrate. Another major nineteenth-century assault on competition was the cartelization of interstate railroads by the Interstate Commerce Act of 1887. A third example of the period was the Roberts torpedo patent, a legal monopoly that was the most damaging monopoly in the history of U.S. oil production.

Wartime cartelization in World War I, World War II, and the Korean conflict restricted entry by new firms and stymied the growth of small firms in favor of the status quo.

In peacetime, oil-import restrictions—from tariffs in the 1930s to quotas in the 1960s—shielded domestic firms from competition from the world oil market. During the energy crisis in the 1970s, regulatory-induced shortages of natural gas and oil products minimized rivalry until the shortages were over and market relations were reestablished.

Instability

Instability in the oil industry has been positive and negative. Positive instability has come from major oil discoveries and technological breakthroughs that enlarged the market and lowered prices for consumers, albeit threatening the competitive position of incumbent firms. The relocation of the industry to the Southwest following major crude discoveries in Texas and Oklahoma in the first decades of the new century created new winners and losers. While firms such as Humble Oil and Shell Oil thrived in the new oil center, Standard Oil—primarily for regulatory reasons—did not. Most firms that did not become active in the Southwest faced eroded prices without the offset of higher volumes.

On the negative side, instability from government intervention has been detrimental to the industry and consumers alike. The dollar-per-barrel crude tax in 1865 created an industry depression until the tax was repealed a year later. The 1870s deflation, caused by government withdrawals of circulating greenbacks, and recognized as the "longest contraction in the U.S. record,"⁵³ depressed oil refining (along with other sectors of the economy) that Rockefeller worked to consolidate.

Public-land production alternated between quick drilling and overproduction from lease incentives, on the one hand, and abrupt withdrawals and underproduction on the other. World War I petroleum planning arrested the industry growth enjoyed before and after the war. The Great Depression weakened the demand for oil products at a vulnerable time for many firms.

World War II, like the previous war, reshaped industry growth on a large scale. The Korean conflict cooled the industry revival of the late 1940s. After the conflict, twenty years of stability descended on oil markets, except for the Suez Crisis in 1956. This era, however, was artificially fostered by maintained prices from state oil proration policies and the MOIP, which prevented the very price instability that was needed for consumer, and ultimately industry, welfare.

The 1970s was an unprecedented decade of oil-industry instability and peacetime crises that led to a different kind of instability in the 1980s. Petroleum-price controls beginning in 1971 prevented appropriate responses to growing incentives for producers to produce and consumers to conserve. A tangled web of regulation under the EPAA rearranged profitability within the industry to create booms in certain sectors and limit prosperity in others.

Regulation worked to reduce domestic oil output and increase world petroleum prices in the 1970s. When prices began to fall from increased oil conservation in the early 1980s, the boom abruptly ended and turned to bust. While the 1970s boom would have taken place without U.S. price regulation—if for no other reason than increasing demand, the Aramco nationalization, and world production cutbacks—U.S. policies contributed to the cycle by artificially reducing domestic oil supply, raising world oil prices, and feeding bullish expectations.

These expectations were reversed after oil prices were deregulated in 1981, putting the industry in a downward spin. Mandatory conservation requirements on automobiles, appliances, buildings, and boilers that came into their own in the early 1980s aggravated the downward phase of the cycle.

The natural-gas cycle paralleled and reinforced the oil cycle in the 1971–84 period. Price regulation increasingly distorted supply and demand in the 1960s, and shortages appeared during the cold winters of 1971–72 and 1976–77.

⁵³ Milton Friedman and Anna Schwartz, *A Monetary History of the United States* (Princeton, NJ: Princeton University Press, 1963), p. 87.

The Natural Gas Policy Act of 1978 increased production incentives by deregulating deep gas and increasing prices for many regulated categories; a production boom resulted. As energy prices began to slide in 1981, however, the deep-gas boom went bust, hurting not only drillers but associated lending institutions.

Mandatory conservation of gas as a boiler fuel in Title II of the NGPA worsened the predicament. Regulation was also a cause of high-percentage take-or-pay contracts and pricing problems that hampered the industry's ability to adjust to market conditions. Such contract problems were a legacy of regulatory shortages and public-utility ratemaking. Pervasive controls on natural gas, like those on oil, contributed to a boom-bust cycle.

Cyclical oil and gas prices had pronounced effects outside the industry. The U.S. car industry was jolted by gasoline shortages in 1974. The following five years of ample supply and flat prices reintroduced the big-car mentality, but the summer shortages in 1979 destabilized the industry again. It was forced to undergo massive retooling to compete with small-car imports.⁵⁴ With a return to lower gasoline prices several years later, the pendulum swung back to bigger cars, which again required major new capital investments.

Oil-company diversification in the 1970s to escape regulation proved disappointing.⁵⁵ The economy of Houston, Texas, the fourth largest city in the United States, followed the oil cycle from boom to bust, as did other oil-dependent towns, cities, and states. Bad oil and gas loans pushed many lending institutions into insolvency, threatened others, and rocked the entire domestic financial system. The "multiplier effects" of destabilizing government policies in the oil and gas industry have magnified the economic costs of intervention.

Superfluous Entrepreneurship

Government intervention alters entrepreneurial opportunity. Market opportunities are lost, and new opportunities, although fewer, are created. While intervention can never eliminate entrepreneurship, it necessarily reduces it by extracting resources from the private sector, eliminating profit opportunities, removing incentives to exploit recognized profit opportunities, and hampering the very discovery of profitable opportunities.⁵⁶ Some lost opportunity, however, is regained by circumvention and other entrepreneurial activity in the face of constraints.

Superfluous entrepreneurship has been defined as "rational responses to irrational regulations."⁵⁷ It is profit-maximization under conditions modified by government intervention. It has a long

⁵⁴ William Tucker, "The Wreck of the Auto Industry," *Harper's*, November 1980, pp. 45-60.

⁵⁵ Said one financial analyst, "I can't think of one [oil company] diversification move that is unquestionably a success." *Houston Chronicle*, October 30, 1983, p. 4-1.

⁵⁶ Israel M. Kirzner, "[The Perils of Regulation: A Market-Process Approach](#)," in *Discovery and the Capitalist Process* (Chicago, IL: University of Chicago Press, 1985), pp. 137-45.

⁵⁷ Lawrence Kumins, [U.S. Refineries: A Background Study](#) (Washington, DC: Government Printing Office, 1980), p. 74.

history in the industry, beginning with cosmetic site work and other subterfuges to keep public-land mineral leases alive under the Oil Placer Act of 1897. Insider stock trading with Standard Oil affiliates after dissolution in 1911 was another notable case of government-created opportunities. The 1930s were a high-time for business opportunism and law breaking, featuring hot-oil activity with dummy derricks, bypass pipelines, secret well controls, nighttime production, brokering, false tenders, portable refineries, and circuitous interstate oil movements (including the 32-foot "world's shortest interstate pipeline").

The Iowa plan to escape chain-store taxation led an observer to state, "For every law enacted, which strives in a detail [sic] way to better conditions in an industry, there is devised a way to circumvent that law..."⁵⁸ Lessee relationships, replacing outright station sales to independent firms, were a species of superfluous entrepreneurship, which in turn was a defensive response to threatening intervention.

A famous industry example of opportunism in the face of regulatory constraints was the "Brownsville Loop" under the MOIP. Venezuelan oil escaped a quota constraint by being shipped by tanker to a U.S. port near Mexico, unloaded onto a truck bonded for export and thus free of the quota constraint, transported into Mexico, and trucked back to the United States to qualify for an overland exemption. It was then reloaded on the same tankers for East Coast destinations. Without the quota program, shipments would have gone straight from Venezuela to New York and other destinations; all other activity was superfluous entrepreneurship creating deadweight costs compared to its free-market counterpart.

EPAA regulation in the 1973–81 era created nonmarket opportunities and circumventions that rivaled the hot-oil industry of the 1930s. Tie-in arrangements to circumvent price ceilings were common: crude purchasers paid an inflated price for unregulated oil to obtain price-regulated oil, producers entered into processing agreements to turn regulated crude into unregulated product, and motorists bought various items at the service station to secure scarce gasoline.

Arbitrage reselling and certification swapping by the oil-trading industry were done on a much larger scale. It is the outstanding example of superfluous entrepreneurship not only in the oil industry but also any other regulated U.S. industry. Early in the program, William Johnson recognized the resourcefulness of industry entrepreneurs versus regulators. After explaining a complicated series of transactions that allowed private parties to escape threatening regulation, he concluded:

People in the oil industry are more knowledgeable than government officials about the industry, as well they should be. It is their business. They are also better motivated to find legal ways through and around the system. And, they are more numerous. In order to comply with the price control system, each major oil

⁵⁸ Henry E. Wormhoudt, "[How the Iowa Plan Started,](#)" *NPN*, October 28, 1936, p. 40.

company and many independents employ as many individuals as the government does in attempting to administer the program.⁵⁹

But instead of free market reform, as Johnson advocated, government officials intervened more to address the existing controls. The regulatory-induced oil-trading boom and the small-refiner boom, entirely superfluous entrepreneurship, blossomed in the period after Johnson's unheeded recommendation.

Another example of superfluous entrepreneurship occurred in conjunction with the U.S. Environmental Protection Agency's two-tiered lead phasedown program. Smaller refiners with lower standards purchased semi-refined gasoline and added lead that larger refiners could not. These "blenders" would not have had any purpose without lead regulation or under a single standard. Given the shakeout of underscaled refiners, they would not have survived.

Superfluous entrepreneurship is a cost of regulation. Given intervention, however, the activity had a positive side. Entrepreneurial responses to distorted situations—even black-market activity to break the constraints—benefit consumers by increasing supply, facilitating exchange, or adjusting prices to market-clearing levels.⁶⁰

Wealth Redistribution under the EPAA

Previous chapters have detailed the complex regulatory experience with price and allocation controls in the 1971–81 era. The episode was a monumental failure and a learning experience for legislators and regulators alike. Given its importance, a summary examination of the wealth effects within the industry and on consumers is merited.

The purpose of the Emergency Petroleum Allocation Act of 1973 was to insulate American consumers from record-high world energy prices, as well as to preserve the independent sector of the industry during shortages. The brunt of price regulation fell on oil producers and royalty owners. Maximum wellhead crude prices and cost-plus pricing at each successive stage were designed to create final product prices below the “artificial” world prices set by OPEC.

In fact, the price savings suggested by domestic price ceilings on crude oil hardly reached consumers, judging from the correspondence of domestic prices to world prices, the existence of refiner and marketer banks (unused ceiling-price credits) over much of the period, and the absence of product shortages except during 6 of almost 100 months of regulation.⁶¹ Maximum

⁵⁹ William Johnson, [“The Impact of Energy Controls on the Oil Industry: How to Worsen an Energy Crisis,”](#) in *Energy: The Policy Issues*, ed. Gary D. Eppen (Chicago, IL: University of Chicago Press, 1975), p. 118.

⁶⁰ Black-market or “racketeering” examples in the oil industry include oil-well torpedoing by moonlighters to break the Roberts monopoly, counterfeit tenders in the East Texas field in the 1930s, counterfeit ration coupons during World War II for gasoline and fuel oil, miscertification between crude tiers in the 1974–81 period, and counterfeit coupons in the 1970s for standby gasoline rationing.

⁶¹ See Charles E. Phelps and Rodney T. Smith, [Petroleum Regulation—The False Dilemma of Decontrol](#) (Santa Monica, CA: RAND Corporation, 1977); Charles E. Phelps and Rodney T. Smith, “The

prices on regulated crude-oil categories were virtually always effective, so between the field and pump (or burner tip) the floating economic rent leaked into the pockets of unintended constituencies. In identifying these beneficiaries, many themes previously discussed reemerge: unintended consequences, circumvention and superfluous entrepreneurship, and the tar-baby effect of regulation.

The most well known empirical study to date on the wealth effects of EPAA regulation, by Joseph Kalt, concluded that in the 1974–80 period, producing interests lost, in 1980 dollars, between \$14 billion and \$50 billion per year, refiners gained between \$9 billion and \$32 billion per year, and oil-product consumers gained between \$4 billion and \$12 billion per year from controls. Deadweight losses, representing pure inefficiencies of regulation, were estimated at between \$1 billion and \$5 billion per year. Another \$1 billion per year was attributed to private and public administrative costs.⁶²

Any empirical analysis estimating wealth effects of the EPAA is extremely complicated and problematic, as Kalt's wide numerical ranges suggest. Instead, the present analysis disaggregates the industry groups affected by regulation with special emphasis on oil resellers who, although neglected in many studies, including Kalt's, were among the primary beneficiaries of regulation. The major constituencies in the EPAA saga included not only producers, refiners, and consumers but also crude resellers, product resellers, and to a lesser extent, transporters (truck, rail, pipeline), wholesalers, and retailers.

As a group, royalty owners were least able to circumvent price regulation and the most harmed by the controls. Within this category, however, owners of exempt production (new oil from late 1973 to early 1976, stripper oil after September 1976, and other special categories after mid-1977) were subsidized by excess demand flowing from nonexempt and lower price production. The entitlements program, which began in late 1974 to lower the effective cost of unregulated crude oil to refiners, also increased the demand for and prices of exempt production. Depending on each royalty owner's portfolio of exempt and nonexempt crude, winners and losers were created. But because regulated crude predominated, losers far outdistanced winners in the production sector.

The above analysis applies not only to royalty owners but to producing companies that had title to wellhead production through lease agreements. But unlike royalty owners, producers could

Kaleidoscope of U.S. Oil Price Regulation (unpublished manuscript, 1980); Paul A. MacAvoy, [*Energy Policy: An Economic Analysis*](#) (New York: W. W. Norton, 1983), pp. 73–74; Joseph P. Kalt, *The Economics and Politics of Oil Price Regulation: Federal Policy in the Post-Embargo Era* (Cambridge, MA: MIT Press, 1981), pp. 213–21; and Robert T. Deacon, [“An Economic Analysis of Gasoline Price Controls,”](#) *Natural Resources Journal* 18, no. 4 (October 1978), pp. 801–14. Energy regulators admitted in 1978, “From the data available, it would seem that price regulations have not saved the consumers from increasing prices, nor have they restricted the industry's ability to make a reasonable profit.” [43 Fed. Reg. 14495 \(April 6, 1978\).](#)

⁶² Joseph Kalt, *The Economics and Politics of Oil Price Regulation*, pp. 233–34.

enter into processing agreements with refiners, retain title, and sell some of the resulting oil products at unregulated prices. (All products except gasoline became deregulated during the EPAA period beginning with fuel oil in mid-1976.) That let the producers recapture what the law denied them at the wellhead.

Statutorily underpriced crude that was available for first purchasers presented huge opportunities for extracurricular gain. Gatherers who traditionally purchased crude and physically moved it to pipelines and other transportation points toward the refinery gate were limited to historical margins. Those margins became more and more constrained as oil prices rose. The gatherers' only legal claim on the available economic rent was to incur higher costs, which were encouraged by the cost-plus legal price maximums.

But between the producer and gatherer and between the gatherer and refiner, several hundred nouveaux crude-oil reselling firms went to work. Without movement, oil was bought and sold and rebought and resold at permissible markups to capture some of the floating economic rent. In some cases, the oil was miscertified from a lower priced to a higher priced tier to capture the lion's share of economic rent in one trade rather than many. (Robert Sutton of Oklahoma became a regulatory billionaire (or nearly so) via this illegality.) But in most cases, multiple resales at permitted margins captured returns in a subtle and legal manner.

In some cases, observance of the supplier-purchaser rule to preserve traditional producer-gatherer-refiner sales, or internal transactions within integrated firms, prevented the reseller daisy chain, resulting in underpriced crude at the refinery gate. For refiners, however, low feedstock costs were not necessarily as advantageous (as in a free market) because of the associated entitlements obligations and margin constraints.

The refiners' incentive was to trade the low-cost oil away at a margin and buy back higher priced oil for entitlements credit. That sent underpriced oil back into the oil-trading nexus despite its escape the first time around. Some small refiners established trading departments that made side profits in that manner, and the pure reseller firms welcomed more business on the other side of the transaction.

Passthrough costs in permitted selling prices were also ripe for dipping into the available economic rent. There was little incentive for cost-minimization; just the opposite. Outlandish expenditures by resellers on salary, office items, and client relations became the talk of the oil business.

The exchange of entitlements revenue among refiners in the 1974–81 period penalized large refiners by granting them less entitlement credit for running crude that was more expensive than the national average or granting them more entitlement obligations for running crude priced below the national average. The unambiguous winners of the crude-oil price equalization program were the small refiners, very few of which would have existed without the nonmarket subsidies.

The dozens of "teakettles" that entered under the entitlements program, joining the small refineries created by preferential quota rights under the MOIP who received a new lease on life in the 1970s. They joined oil resellers as the major domestic beneficiaries of price controls.

Foreign producers were also unambiguous beneficiaries of the entitlements program. Entitlements lowered the cost of foreign crude to stimulate the demand for imports. The gain of OPEC and other exporters of oil to the United States was the loss, in terms of opportunity cost, of domestic producers.

Once oil was refined and sold by refiners, another group of middlemen, product resellers, was positioned to buy and sell oil products that were relatively underpriced to market. Given the margin restrictions, multiple resales occurred to capture the available economic rent. But akin to miscertification on the crude-oil side, some product resellers doctored the paperwork to capture all of the available economic rent for themselves.

Jobbers also traded product where opportunities existed to make an extra margin. In the end, the gasoline retailer and fuel-oil distributor obtained product, added their cost and margin, and sold it for consumption. These parties passed through liberal costs, and judging from government audits, their margins were often above legal levels—another leak in what was intended for the consumer.⁶³ By this time, the wealth redistribution was complete; prices were at or near their unregulated levels. This was the result not of an industry conspiracy but of the fact that the consumer was the last claimant on the floating economic rent; earlier claimants had already perceived and exploited their opportunities.

Because regulation reduced domestic supply, increased demand, and created inefficiencies such as the gasoline lines, consumers joined wellhead interests as "losers" from regulation. The "winners" were regulators, crude-oil and product resellers, small refiners, crude importers, and countries exporting oil to the United States. Lawyers, accountants, and consultants specializing in oil regulation also gained, as they have since the beginning of intervention in the industry.⁶⁴

⁶³ Of the several thousand audits performed, over half led to accusations of maximum-price regulation violations. [49 Fed. Reg. 45446 \(November 18, 1984\)](#). Extrapolated over the entire dealer population, over 100,000 gasoline retailers were "overcharging" consumers.

⁶⁴ Oil and gas legal work has included regulatory issues in addition to common-law work. The first known legal case in the petroleum field was *Hail v. Reed* (54 Ky 479) in 1854 concerning oil recovery in a salt well. The first regulatory bonanza surrounded the Roberts torpedo monopoly in the 1870s. The paucity of day-to-day oil regulation in the last century was reflected by the fact that the Standard Trust had a legal staff of two, which was increased to three in 1902 and four in 1906. Ralph W. Hidy and Muriel E. Hidy, [Pioneering in Big Business, 1882–1911](#) (New York: Harper and Brothers, 1955), pp. 640–41. [Unnumbered vol. 1 of *History of Standard Oil Company (New Jersey)*, 3 vols., ed. The Business History Foundation, 1955–1971.] With federal antitrust challenges joining state challenges, Hidy and Hidy commented, "The lawyers had struck oil" ([p. 685](#)). Lawyers also struck oil with public-land disputes and the hot-oil war, where legal fees were sometimes paid in production interests. Natural-gas regulation and oil-import regulation gave oil a legal presence in Washington, D.C., in the 1950s.

Conflict

Human tension and harm to person and property can also result from government interference with market outcomes. They are the least quantifiable cost of government intervention but are arguably the most severe.

The market economy engenders a harmony of interests through voluntary exchange, the coordination of disparate plans, and economic progress. Intervention creates conflict because forced exchanges leave at least one party worse off, and market plans are frustrated.

In the nineteenth century, various government acts caused major consternation. The stiff crude-oil tax of 1865 embittered the oil community and led to the first industry excursion to Washington, D.C. The torpedo monopoly awarded by the U.S. Patent Office also inflamed producers and led to prolific litigation and dangerous black-market activity.

Obstruction of pipelines by government-subsidized railroads was a source of conflict. Lease violations and public-land withdrawals by authorities caused heated controversy among involved producers and in Congress. In the nineteenth century, established gas companies and the state legislatures denied entry to would-be gas companies, which created conflicts.

Government intervention and conflict continued hand-in-hand in the next century. "Gasless Sundays" in World War I created an open conflict between those who observed the rules and "slackers" who did not. The resulting vandalism was unprecedented in the history of the industry. Industry factions vied with each other and used the legislature and judiciary in the proration and hot-oil episodes of 1928–35. Violence, although rare, was always of concern. Highly unsafe clandestine conditions from such regulation, however, were responsible for several deaths.

In World War II, gasoline shortages as well as rationing inequities, violations, and abuses spawned conflict and wide disrespect for the law. Two major regulatory programs begun in the 1950s, wellhead gas-price controls and oil quotas, induced a level of political conflict within the industry not before seen on the federal level.

Natural-gas regulation was bitterly contested by producers over four decades. It began in the 1940s with the FPC's accelerating movement toward wellhead regulation. It continued with the Supreme Court's ruling in 1954 that such regulation was part of "just and reasonable" pricing

During the heyday of the EPAA, energy law reached its zenith. Houston law firms that opened Washington offices to serve energy clients included Vinson and Elkins (1973), Baker and Botts (1973), Bracewell and Patterson (1975), Butler and Binion (1976), Andrews and Kurth (1978), and Foreman and Dyess (1979). In 1980, the Federal Energy Bar Association (founded in 1946 as the Federal Power Bar Association) began publishing the *Energy Law Journal*. (The American Bar Association's *Natural Resources Lawyer* began publication in 1968.) With oil deregulation in early 1981, many gains of the previous decade were reversed, although natural-gas regulation and litigation, prominently including take-or-pay disputes, prevented a major bust in energy law.

under the Natural Gas Act. Two presidential vetoes on that issue antagonized upstream independents and major producers.

Consumerist pricing in the 1960s culminated with shortages in the 1970s. Conflict also existed in the natural-gas industry because of certification requirements for interstate pipeline firms—requirements that did not apply to interstate oil pipelines.

Conflict went international under the MOIP when oil-exporting countries were partially cut off from their most lucrative market. The formation of OPEC in the 1960s and the nationalization of U.S. producing interests by Saudi Arabia in the 1970s were related consequences.

The 1970s were an angry decade in the oil and gas market. Severe hardship from shortages and spiralling prices turned consumers against the industry. Natural-gas shortages experienced by the importing states, concurrent with surpluses in exporting states, fanned the fires of discontent. Severance taxes that benefited energy states at the expense of net-consuming states spawned sectionalism. The result was a score of political reprisals, beginning with the EPAA of 1973 and culminating in the Windfall Profit Tax of 1980.

The political unpopularity of the industry, "big oil" in particular, was matched by feuding within the industry when independents, as discussed in the next chapter, politically mobilized against the majors and smaller integrated companies.

In addition to regional and industry antagonism, a third area of conflict involved consumers. Gasoline shortages turned motorist against motorist and motorist against dealer. Diesel-fuel problems turned truckers against each other. Civility gave way to violence. Confrontations became commonplace, injuries proliferated, and several deaths were recorded. With rampant problems and blame everywhere, it was a decade to remember only because of its painful lessons.

Compared to the conflicts created by government intervention, market tensions have been petty. Market conflict is little more than competition—some firms and individuals besting other firms and individuals in the quest to serve consumers. The conflict of independents who could not match Standard Oil, for example, was quite different from the clash of interests created by the torpedo monopoly and exclusive franchise rights. The consumer was responsible for the former; government intervention was at the root of the latter two.

Conclusion: The Costs of Intervention

What has the monetary cost been of government intervention in oil and gas markets? Any estimate would be as difficult to approximate as it would be large. It would include all local, state, and federal budgets pertaining to oil and gas activity—legislative, administrative, and judicial—not associated with the common law. It would chronologically begin with the time and

expense of the Baltimore city council's regulation of gas lighting in 1817 and continue through many decades of accelerated government involvement.⁶⁵

The cost could be doubled to account for regulation-related expenses on the private side. Environmental expenditures by petroleum companies between 1966 and 1984 totaled \$40.6 billion,⁶⁶ although some of this expense could have been expected under a market-oriented approach to environmental maintenance and restitution.

Entrepreneurial distraction, managerial diversion, legal fees, accounting work, and consulting contracts unnecessary to consumer service in a free market would also prominently figure in the cost of intervention.

The industry tax bill would be another major cost of intervention. From the 1862 federal levy on kerosene to the 1980 Windfall Profit Tax, hundreds of billions of dollars have gone from the private sector to the public sector. A stocktaking in the mid-1930s counted more than 200 taxes applicable to the industry, totaling over \$1 billion.⁶⁷ Today the number of distinct taxes would be higher and the revenues many times greater due to inflation, increased energy prices, and expanded revenue needs at all levels of government that have been met by energy taxation.⁶⁸

A final area of estimation is entirely subjective and beyond the grasp of the economist or historian. It is the opportunity cost of intervention. It is what industry entrepreneurs and consumers would have done in the absence of government activity. It is the lower operating costs, resources available for other uses, and all other methods of efficient consumer service that would have been discovered and implemented but were not. This unquantifiable cost is arguably the most significant.⁶⁹

⁶⁵ In FY1984, 36 percent of the Department of Energy's budget of \$14.9 billion pertained to civilian energy regulation. Since its inception in 1978, nearly \$100 billion had been expended by the Department of Energy through FY1984. Nondefense items aside, some \$53 billion has been consumed on civilian energy initiatives.

⁶⁶ American Petroleum Institute, *Basic Petroleum Data Book*, September 1987, sec. V, table 11.

⁶⁷ B. H. Markham, "[Your Tax Bill](#)," *NPN*, February 5, 1936, p. 94.

⁶⁸ A compendium of state and local taxes on oil published in 1983 produced a 294-page book. See Donna Sammons Carpenter, *Petroleum Industry Taxes: A State-by-State Guide* (Washington, DC: McGraw-Hill, 1983). The largest twenty-four oil companies paid more than \$30 billion in taxes in 1983 alone. American Petroleum Institute, *Response*, March 1, 1985. By December 1984, collections from the Windfall Profit Tax stood at over \$72 billion. American Petroleum Institute, *Basic Petroleum Data Book*, January 1987, sec. V, table 15.

⁶⁹ Any . . . restriction, any coercion other than the enforcements of general rules, will aim at the achievement of some foreseeable result, but what is prevented by it will usually not be known. The direct effects of any interference with the market order will be near and clearly visible in most cases, while the more indirect and remote effects will mostly be unknown and will therefore be disregarded. We shall never be aware of all the costs of achieving particular results by such interference." F. A. Hayek, [Law, Legislation, and Liberty](#) (Chicago, IL: University of Chicago Press, 1973), vol. 1, *Rules and Order*, pp. 56–57.

The value of lost supply and the unnecessary cost of realized supply, added to government budgets for oil and gas intervention, industry compliance, and the tax bill, would be in the hundreds of billions of dollars. A more precise estimate awaits more research from an opportunity-cost perspective.