THE CASE FOR PETROLEUM PIPELINE DEREGULATION

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I. INTRODUCTION

The petroleum pipeline industry is at a regulatory crossroads. Down one road lies the path heavily trodden in the past; the road of regulation. Down the other road lies a way less traveled, but one that is gaining more and more adherents, the road of deregulation. The time is propitious since the Federal Energy Regulatory Commission (FERC) as well is at a crossroads. Before it lies the choice of pursuing the road well worn, or the road less traveled by, since the entire issue of petroleum pipeline regulation is now pending before it.[1] Which road the FERC takes, and which road the Congress can take, can make all the difference to the petroleum pipeline industry, to the petroleum industry, and to the nation. The road FERC can take only entails regulation since it is limited by its statutory mandate to establish just and reasonable rates for oil pipelines. Within that statutory mandate it has much flexibility since it can impose a rigorous form of regulation or it can impose a more relaxed form of regulation. This article will not discuss the various modes of regulation that the FERC can adopt since that issue has been discussed extensively elsewhere.[2] The road Congress can take ranges from complete deregulation of petroleum pipelines to doing nothing.

This article proposes that the road less traveled by be chosen. The case for pipeline deregulation is strong and should be tested now since pipeline regulatory choices are under consideration. This article looks at the petroleum pipeline industry in general, describing its characteristics. It describes the evolution of the present regulatory structure. It discusses the choices now available to FERC and to the Congress. Finally, it examines the deregulation option and concludes with the reasons why deregulation ought to be tried now.

II. PETROLEUM PIPELINE INDUSTRY CHARACTERISTICS

The petroleum pipeline industry is an invisible industry because the overwhelming portion of its facilities are buried beneath the earth. Despite its invisibility it is a substantial carrier of all intercity freight, representing about 24 percent of total 1977 intercity freight.[3]

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[1]Two major proceedings involving petroleum pipelines are now pending, Williams Pipeline and Trans Alaska Pipeline System. Both will be discussed *infra*.

[2]Navarro and Stauffer, *The Legal History and Economic Implications of Oil Pipeline Regulation*, 2 Energy L.J. 291 (1981).

[3]National Petroleum Council, *Petroleum Storage and Transportation Capacities, Petroleum Pipeline:* Vol. III, 4 (1979). (Hereinafter cited as "NPC.")

A. *Industry Statistics*

The interstate petroleum pipeline network is extensive, estimated at about 227,000 miles of pipe.[4] Pipeline mileage does not tell the whole story about pipeline transportation because the capacities of the pipelines vary substantially. Capacity of a pipeline normally is considered to be the volume of liquid that can be moved through the pipeline between two points during a given time period using existing equipment.[5] Because of the wide capacity variations among pipelines, another measure has been used to indicate differences among pipelines other than length, namely, the barrel-mile. This measurement indicates the number of barrels that can be shipped through one mile of pipeline in a given time period. The barrel-mile measure, therefore, is the product of multiplying the capacity of the line by the length of the line.[6]

Crude and product flows through the pipeline system tend to be monodirectional.[7] The major crude flows are from the Southwest to the Gulf Coast and to the Central and Upper Midwest, and from the Gulf Coast to the Central and Upper Midwest. These flows represent the natural distribution pattern from the crude producing fields in Texas, Louisiana, New Mexico, and Oklahoma to the major refining complexes along the Gulf Coast, and Central and Upper Midwest.[8] They also represent the major crude flows of imported crude to inland refineries, predominantly from the Gulf Coast to the Central and Upper Midwest. A comparison of refinery receipts of both do-

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[4]Id. Private carriers are estimated at about 16,000 miles and gathering lines are estimated at about 67,800 miles. Petroleum pipelines normally are considered common carriers due to their inclusion within the coverage of the Interstate Commerce Act (ICA), discussed *infra*. Private carriers do not fall within ICA covrage. See NPC 3 for estimate on private carrier mileage, NPC C-1. The industry normally is compartmentalized according to the type of liquids transported, that is, crude, refined products, and liquid petroleum gases/natural gas liquids. Crude pipelines are divided between trunk lines—long distance transporters from crude producing fields to refineries, and gathering lines. Gathering lines exist in crude oil producing fields, usually range in size from two to eight inches, and carry crude from small lease tanks at the wellhead to central areas, large tanks or tank farms, for pumping into larger crude trunk lines. For more detail, see L. Coburn, *United States Petroleum Pipelines: An Empirical Analysis of Pipeline Sizing*, Appendix II (1980). (Hereinafter cited as "Coburn.") Refined product pipelines move light refined products—gasolines, aviation fuels, distillates—from refineries to terminals located in or near consumption markets. Coburn II-5-II-7. Liquid petroleum gases (LPG) and natural gas liquids (NGL) pipelines move natural gas products from field gas plants or fractionation facilities to refineries or distribution terminals. LPG pipelines batch ethanes, propanes, butanes, and natural gasolines to distribution terminals or refineries. NGL pipelines move natural gases from field separation plants to a central fractionation plant where ethanes, propanes, butanes, and natural gasolines are separated. NPC E-1. The 227,060 miles of petroleum pipelines, therefore, consist of 145,770 miles of crude pipelines, 63,700 miles of refined product pipelines, and 17,590 miles of LPG-NGL pipelines. NPC 4.

[5]The capacity of a pipeline is dependent upon a number of variables, the most important being pipeline diameter, pipeline length, pumping equipment in place, locational differences, pipeline topography, viscosity, temperature, and gravity of the liquid being pumped. Coburn Appendix II.

[6]Id. at xi. Barrel-miles for the petroleum pipeline system are in excess of 4 trillion barrel-miles [4,068,906,850] divided into 2.4 trillion crude barrel-miles and 1.7 trillion refined product barrel-miles. Id. at Appendix 1. Some care must be taken in how the barrel-mile number is derived because pipeline capacities can vary substantially over the length of a line due to changes in pipeline diameter. A simple capacity-length calculation will be misleading if diameter changes are substantial. Therefore, more accuracy will be achieved by dividing a pipeline system into segments with varying capacities and lengths.

[7]Id. at Appendix II contains a short, but complete description of how pipelines operate. Essentially, the liquid is pushed through the pipeline by increasing the pressure on the liquid using pumps spaced along the pipeline. While the direction of flow can be reversed, operational adjustments are necessary which require time.

[8]Congressional Research Service, *National Energy Transportation*, Vol. I, Current Systems and Movements, Pub. No. 95-15, Senate Comm. on Energy and Natural Resources and Senate Comm. on Commerce, Science, and Transportation, 95th Cong., 1st Sess., 1977.

mestic and imported crude oil by types of transportation will illustrate these flows more dramatically.[9]

Refined product flows from the Gulf Coast to the Southeast and Northeast, with some movement from the Gulf Coast to the Central and Upper Midwest.[10] For the movements to the East Coast, pipelines accounted for about 68 percent, while tankers and barges accounted for about 32 percent. For the movements to the Midwest, pipelines accounted for about 77 percent, and tankers and barges accounted for the remaining 23 percent.[11]

B. *Pipeline Ownership*

The petroleum pipeline industry is highly integrated. Most of the systems are owned by integrated oil companies; only a small number of pipelines are owned by companies not otherwise affiliated with the oil industry (denominated independents). The industry also is significantly jointly owned, that is, there a substantial number of pipelines owned or operated by more than one oil company.

In a recent study by DOE,[12] 147 pipeline systems were identified, 88 were owned by majors, 36 were owned by nonmajors, and 23 were owned by independents.[13] DOE's study also considered pipeline ownership based upon barrel-miles. For 114 pipeline systems the majors accounted for 91.03 percent of total barrel-miles, nonmajors for 2.48 percent, and independents for 6.09 percent.[14] The predominance of the majors is indicated also by examining the market shares of the top firms in the industry. The four largest systems, all owned by majors, comprise 51.14 percent of total barrel-miles. Of the eight largest firms, seven are owned by majors. While these eight systems comprise 66.74 percent of total barrel-miles, the one independent has a 2.03 percent

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[9]Refineries located in coastal areas receive crude by both pipeline and water (tankers and barges). On the East Coast, for example, of domestic receipts of crude oil, about 34 percent arrived by pipeline and about 55 percent arrived by water. Of foreign crude oil receipts on the East Coast (foreign receipts overwhelmed domestic receipts by a factor of eight), 5 percent arrived by pipeline while 95 percent arrived by tanker or barge. On the Gulf Coast, of domestic receipts of crude oil, 80 percent arrived by pipeline and 17 percent by tanker and barge; of foreign receipts (foreign receipts represented only 41 percent of combined receipts), 4 percent were pipeline deliveries and 96 percent were water deliveries. In the landlocked areas of the Midwest and Great Plains, the deliveries are almost entirely by pipeline. In the Midwest, for example, of domestic receipts of crude oil, 97 percent arrived by pipeline, and only 1 percent arrived by barge or tanker; of foreign receipts, 96 percent arrived by pipeline and 4 percent arrived by barge or tanker (foreign receipts constituted about 37 percent of total refinery receipts). In the Great Plains the disparity is equally striking: of domestic receipts, 93 percent arrived by pipeline, and less than one percent arrived by tanker or barge; and of foreign receipts, all arrived by pipeline (foreign receipts constituted only 11 percent of refinery inputs). Lastly, on the West Coast, domestic crude is delivered more evenly, 50 percent by pipeline and 41 percent by tanker or barge, while for foreign crude only 10 percent arrived by pipeline and 90 percent arrived by tanker or barge (foreign receipts accounted for 36 percent of total receipts). Department of Energy, DOE/EIA 0108(80), *Crude Petroleum, Petroleum Products, and Natural Gas Liquids: 1980 (Final Summary)*, Table 13 (1981).

[10]Congressional Research Service, *supra* note 8.

[11]Department of Energy, *supra* note 9, at Table 26.

[12]Coburn, *supra* note 4.

[13]In this study majors were identified as the largest 18 oil companies: Amerada Hess Corporation, Ashland Oil, Inc., Atlantic Richfield Company, Cities Service Company, Conoco, Inc., Exxon Corporation, Getty Oil Company, Gulf Oil Corporation, Marathon Oil Company, Mobil Oil Corporation, Phillips Petroleum Company, Shell Oil Company, Standard Oil Company of California, Standard Oil Company of Indiana, Standard Oil Company of Ohio, Sun Oil Company, Texaco, Inc., and Union Oil Company of California. Id. at 40-44, 59.

[14]While DOE's study identified 147 pipeline systems, not all submitted data to DOE. Only a total of 92 companies submitted data, while an additional 22 (92 + 22 = 114) were undivided interest systems included within the data of the 92 reporting companies. Id. at 40. Undivided interest pipelines are similar to joint venture pipelines, except that a separate stock company is not formed and each owner posts its own tariff for transportation through its share of the joint facility. Id. at VI-1-VI-11.

share, so that the seven majors comprise 64.71 percent. Of the twenty largest firms, majors comprise sixteen. The twenty largest represent 83.84 percent of total barrel-miles with the majors accounting for 77.28 percent of that total. In addition, jointly owned systems comprise a significant portion of the total barrel-miles. Of the twenty largest systems, eleven are jointly owned and operated; these eleven account for 62.86 percent of total barrel-miles. If all jointly owned lines are considered, this total would be increased to 75.09 percent of total barrel-miles.[15]

III. EVOLUTION OF PETROLEUM PIPELINE REGULATION

A. *Federal Regulatory Authority Extended to Pipelines*

The oil industry came into being in the U.S. on August 27, 1859, when Colonel Edwin Drake brought in the first oil well located near Titusville, Pennsylvania.[16] The petroleum pipeline industry was not far behind, the first successful pipeline was completed in October 1865 by Samuel Van Syckel.[17] By today's standards this pipeline was a rather sorry affair, consisting of a mere two inch diameter line running six miles. But its success started a series of events that made the ownership of pipelines one of the most important aspects in the struggle for control of the oil industry.

The early struggle for transportation dominance existed between railroads and pipelines.[18] Pipelines were used to transport crude from the producing fields to rail bulkheads, where the crude was transferred to the railroad for long distance shipment. By the mid-1870s, long distance pipeline transportation became a reality and the struggle for transportation control shifted to pipeline ownership as rail transportation became of lesser importance.[19]

John D. Rockefeller recognized the importance of controlling crude production fields through ownership of the means of transportation. He used control first of railroads and then of pipelines to further his goal of dominating the oil industry. Rockefeller at first used the rails to transport crude from the fields to his refineries in large consuming areas. He offered the railroads large volume shipments of crude oil in return for favorable rates. Railroads were played off against each other and a system of rate favoritism was maintained. As pipeline transportation proved itself, Rockefeller used gathering lines to transport crude to the railheads and later was able to build or acquire pipelines that ran parallel to the railroads as a further method of maintaining his competitive advantage. The control over pipelines became

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[15]Id. at 40-44.

[16]Staff of Subcomm. on Antitrust and Monopoly of the Senate Comm. on the Judiciary, 95th Cong., 2d sess., *Oil Company Ownership of Pipelines*, 25 (Comm. Print 1978). (Hereinafter cited as "Senate Pipeline Report.")

[17]Coburn III-1, Association of Oil Pipe Lines, *Pipeline Transportation: A Review of the Oil Pipeline Industry*, 3-4 (1976).

[18]Senate Pipeline Report 25-26; Coburn III-3-6.

[19]Senate Pipeline Report 26-27.

the major factor that permitted Rockefeller and his Standard Oil Trust to achieve its dominant position over the oil industry during the late 1800s.[20]

During this same period, the railroads were exerting their power through the establishment of railroad monopolies, abusing competitors through various rate schemes.[21] President Theodore Roosevelt capitalized upon these abuses and requested the Congress to extend the Interstate Commerce Commission's (ICC) power to set maximum rates, to eliminate rebating and to extend ICC's powers generally. In 1906, Representative William P. Hepburn introduced the legislation requested by the President.[22]

The Hepburn bill became the vehicle for attacking the powers of the Standard Oil Trust. Senator Henry Cabot Lodge offered an amendment to the Hepburn bill to extend ICC powers to oil pipelines. The Lodge amendment stirred an enormous amount of controversy. Its supporters argued that pipelines ought to be common carriers and that the abuses perpetrated by the Standard Oil Trust and documented by the Bureau of Corporations (the predecessor agency to the Federal Trade Commission) ought to be brought under federal control. Its opponents argued that pipelines were merely plant facilities of refineries and that, unlike railroads, they ought to remain in the private domain of their owners. Furthermore, they argued that there should be no ownership separation between the operation and ownership of the goods transported.[23]

The result of the countervailing forces was the passage of the Hepburn Act on June 29, 1906, extending common carrier and rate regulation to petroleum pipelines, but not requiring any divorcement of ownership from the goods transported.[24] Each side claimed victory and in truth each had achieved a measure of victory. Petroleum pipelines now for the first time in their 41 years of operation were designated common carriers. A federal agency was given authority to set maximum rates for the transportation of oil through pipelines. The oil industry could claim, however, that integrated operations could continue since divorcement of operations was not required. Thus, the pattern established by the Standard Oil Trust, that is, of integrating backward into pipeline operations to control producing fields, could be continued by other companies either starting anew or growing as a result of the Standard Oil divestiture decree of 1911.[25]

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[20]Id.

[21]Id. at 99.

[22]Id.

[23]Id. at 99-102.

[24]34 Stat. 584 (1906); 49 U.S.C. 1.

[25]*Standard Oil Co. of N.J. v. United States*, 221 U.S. 1 (1911). See also, E. Mitchell, ed., *Vertical Integration in the Oil Industry*, (1976) for an excellent discussion of the reintegration of the companies spun off as a result of this decree.

B. *Statutory Authority Over Petroleum Pipelines*

The Hepburn Act amended the Interstate Commerce Act (ICA) which is the statutory authority over petroleum pipelines.[26] Section 1(1) of ICA provides:

> The provisions of this chapter shall apply to common carriers engaged in . . .
>
> (b) The transportation of oil or other commodity, except water and except natural or artificial gas by pipelines, or partly by pipeline and partly by railroads or water.

The most important regulatory provisions of ICA require that all pipelines: charge just and reasonable rates for their service;[27] provide and furnish transportation upon reasonable request;[28] establish reasonable through routes with other carriers;[29] and establish just and reasonable rates for through transportation.[30] Authority is granted under ICA to establish just and reasonable rates either for single carrier transportation or for through transportation.[31] Pipelines cannot receive rebates,[32] cannot make or give unreasonable preferences or advantages to shippers,[33] cannot charge more for a short haul than for a long haul.[34] Tariffs for rates and service must be filed with the Commission.[35] The Commission can conduct investigations and hearings upon complaint or on its own initiative.[36] It can suspend newly filed rates up to seven months pending investigation.[37]

The Commission has no power to require certificates of public convenience and necessity prior to the commencement of operations. Pipelines do not need Commission permission to abandon or terminate service. The commodities clause of ICA does not apply to common carrier pipelines, nor do provisions regarding the extension of credit, nor those concerning merger, consolidation, common control, or interlocking directorates. The Commission cannot order extension of lines nor can it order pipelines to provide facilities needed to provide adequate service such as storage or tankage for terminal operations.[38]

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[26]The Interstate Commerce Act was recodified without substantive change by Pub. L. 95-473 (Oct. 17, 1978), 92 Stat. 1337, 49 U.S.C. 10101 *et seq.* The recodification expressly provided that the previous codification or numeration would apply to oil pipeline matters. Revised Interstate Commerce Act, Pub. L. 95-473, section 4(c), 92 Stat. 1470 (1978). Jurisdiction over petroleum pipelines, however, was transferred to FERC in the Department of Energy Organization Act, on October 1, 1977. Pub. L. 95-91, section 402(b), 91 Stat. 584 (1977), 42 U.S.C. 7155, 7172(b).

[27]49 U.S.C. 1(5).

[28]49 U.S.C. 1(4).

[29]Id.

[30]Id.

[31]49 U.S.C. 15(1), (3), (6).

[32]49 U.S.C. 2 and 49 U.S.C. 41, 43.

[33]49 U.S.C. 3(1).

[34]49 U.S.C. 4(1).

[35]49 U.S.C. 6.

[36]49 U.S.C. 13(1), (2).

[37]49 U.S.C. 15(7).

[38]See generally, W. Jones, *Authority of the Department of Energy to Regulate Anticompetitive Aspects of Petroleum Pipeline Operations*, (1978).

C. *Regulation Under the ICC*

Regulation under the ICC could be characterized as one of benign neglect. The ICC did little to enforce its authority, other than to establish general principles under which the industry has operated.

1. General Statutory Authority

The ICC initiated action to define its authority shortly after the passage of the Hepburn Act.[39] The ICC directed pipeline operators to file with the Commission schedules of their rates and charges for the transportation of oil. The pipeline operators resisted on the ground that they were not common carriers, since their practice was to purchase oil in the field and to transport only that oil which they owned. With one exception the Supreme Court in *The Pipe Line Cases* sustained the ICC's assertion of authority over the pipelines, ruling that the pipelines were common carriers subject to the requirements of the Interstate Commerce Act.[40] The Court held that the evident purpose of the statute "was to bring within its scope pipe lines that although not technically common carriers yet were carrying all oil offered, if only the offerors would sell at their price."[41] Only one exception was made to this general ruling, known as the Uncle Sam exception, for a pipeline engaged solely in transporting oil from its wells across a state line to its own refinery for its own use.[42]

A series of other cases ensued over the years which further delineated the ICC's authority over pipelines. These cases support the following conclusions:

- An interstate petroleum pipeline which holds itself out to transport petroleum from others for shipment in its own lines, is a common carrier for all purposes.[43]
- An interstate petroleum pipeline which connects producing and refining facilities which are under common ownership with the pipeline is not a common carrier for any purpose.[44]
- An interstate petroleum pipeline which ships its own refined products and no others, between its own refinery and its own terminals, interconnecting with no other pipelines, is a common carrier for reporting purposes, but not for tariff and rate purposes, at least where there is no demand by others to use the pipeline.[45]

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[39] *In the matter of Pipe Lines*, 24 I.C.C. 1 (1912).
[40] *The Pipe Line Cases*, 234 U.S. 548 (1914).
[41] Id. at 560.
[42] Id. at 562.
[43] *The Pipe Line Cases*, 234 U.S. 548 (1914), and *Valvoline Oil Co. v. United States*, 308 U.S. 141 (1939).
[44] *The Pipe Line Cases*, 234 U.S. 548 (1914).
[45] *Champlin Refining Co. v. United States*, 329 U.S. 29 (1946), and *United States v. Champlin Refining Co.*, 341 U.S. 290 (1951).

Besides these few efforts by the ICC to establish the contours of its regulatory authority, the greatest portion of the ICC's regulatory efforts relating to petroleum pipelines has been concerned with valuation.[46] The valuation procedure, initially responsive to constitutional requirements that utility rates be fixed in relation to the "fair value" of the utility's property, is now archaic.[47] Yet the ICC continued using valuation practices eliminated in the case of most other regulated companies as a consequence of the *Hope* decision of 1944.[48]

2. Rate Regulation

Through this somewhat circuitous route, we arrive at the activities of the ICC in the area of rate regulation. It was not until 1940 that the ICC expressed an opinion on the reasonableness of rates for petroleum pipelines. *Reduced Pipe Line Rates and Gathering Charges* dealt with the issue of the rates of 35 companies engaged in the transportation of crude oil gathering and trunkline systems.[49] The systems under review essentially were considered plant facilities by the Commission, that is, the shipper and owner were the same company, transporting oil purchased in the field over pipelines owned or affiliated with the company refining the crude oil. The ICC found that despite the lack of independent shippers the rates were unreasonable since the rates were "not made with any relation to the cost of service (or) the benefits directly derived from common-carrier operations."[50] The ICC adopted as its standard of reasonableness for pipeline rates the ability of the carrier to earn 8 percent on the valuation of its crude oil pipelines.[51]

The ICC found that 14 of the respondents were not earning more than the 8 percent standard, but that the earnings of the remaining 21 were excessive. Therefore, the ICC entered an order requiring these 21, within 60 days, to show cause why they should not reduce their existing rates, on a pro rata basis, to come within the 8 percent limitation. No order was entered regarding the reasonableness of any particular rate or rates since no evidence had been taken with respect to particular rates.[52]

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[46]49 U.S.C. 19a provides for valuation of carrier property. Valuation was used as the basis for ratesetting. For a description of the development of ICC's valuation procedures, see A. Johnson, *Petroleum Pipelines and Public Policy, 1906-1959*, 240-41, 391-95 (1967). For a recent treatment of the legal and economic implications of valuation, see P. Navarro and T. Stauffer, *The Legal History and Economic Implications of Oil Pipeline Regulation*, 2 Energy Law J. 291 (1981). (Hereinafter cited as "Navarro and Stauffer.")

[47]Fair value ratemaking was disavowed in *F.P.C. v. Hope Natural Gas Co.*, 320 U.S. 591 (1944), and specifically with reference to petroleum pipelines, see *Farmers Union Central Exchange v. F.E.R.C.*, 584 F.2d 408 (D.C. Cir. 1978), *cert. denied sub nom. Williams Pipe Line Co. v. F.E.R.C.*, 439 U.S. 995 (1978).

[48]The Supreme Court's decision in *Hope* provided the criteria for a reasonable return for rate regulation purposes. Returns to capital are adequate if they are "commensurate with returns on investment in other enterprises having corresponding risks" and "assure confidence in the financial integrity of the enterprise, so as to . . . attract capital." *Hope*, 320 U.S. at 603. Prior methodologies used for determining reasonable returns were rejected because they were too arbitrary and did not permit a meaningful basis for comparing returns with reference to capital markets, the method chosen in *Hope* for ensuring meaningful returns.

[49]*Reduced Pipe Line Rates and Gathering Charges*, 243 I.C.C. 115 (1940).

[50]Id. at 139.

[51]Id. at 142-44.

[52]Id.

The reasonableness of rates on product pipelines was considered by the ICC in *Petroleum Rail Shippers' Association* v. *Alton and Southern Railroad.*[53] The ICC had under consideration the specific rates of two pipelines and determined that for refined petroleum pipelines rates should be established based on valuation and a rate of return of 10 percent.[54]

In another rate related case of the 1940s, the ICC considered the reasonableness of the rates on several crude pipelines.[55] The ICC relied upon the valuations of the pipelines where available and used the 8 percent rate of return standard espoused earlier in *Reduced Pipe Line Rates.*[56]

The ICC did not consider rate issues for pipelines again until a complaint was filed in 1971 by a group of midcontinent shippers.[57] The ICC, in examining the rates of a product pipeline, Williams, found that the pipeline's earnings were in conformity with its standard established in the *Petroleum Rail Shippers' Association* case.[58] While the ICC did provide some explanation of how it determined the reasonableness of its rates, it did not examine the reasonableness of Williams' rates on particular movements since they had not been challenged, although the complainants had challenged the reasonableness of Williams' joint rates with another carrier, Explorer. The ICC rejected any claims that the joint rates were unreasonable.[59]

The ICC's decision was appealed to the Court of Appeals for the D.C. Circuit which severely chastised the ICC for the manner in which it established the reasonableness criteria for pipeline ratemaking.[60] After taking the ICC to task for its out-of-date methodology, the Court remanded the proceeding because in the interim the Department of Energy Organization Act transferred jurisdiction over pipelines from the ICC to the FERC.[61] The Court acceded to the FERC's request that it be given a chance to reexamine the entire ratemaking methodology for petroleum pipelines.

D. *Rate Regulation at the FERC*

The experience at the FERC so far has been limited to a thorough reevaluation of pipeline ratemaking methodology. While the FERC has continued using the regulatory scheme inherited from the ICC, the FERC has been reevaluating the entire system of rate regulation in the context of two proceedings, *Williams Pipe Line Company,*[62] and *Trans Alaska Pipeline System.*[63] A brief description of these two proceedings will place the overall regulatory dilemma into sharper focus.

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[53]243 I.C.C. 589 (1941).

[54]Id. at 662.

[55]*Minnelusa Oil Corp. v. Continental Pipe Line Company,* 258 I.C.C. 41 (1944).

[56]Id. at 48.

[57]Protests were filed against tentative ICC valuations of Williams Brothers Pipe Line Company, I.C.C. Valuation Dkt. No. 1423 (1971 Report), and against specific Williams' tariffs, I.C.C. Dkt. IS-9098. The only exception applied to rates on shipments of propane, see *Pipeline Rates on Propane from Southwest to Midwest,* 318 I.C.C. 615 (Div. 2 1962).

[58]*Petroleum Products, Williams Brothers Pipe Line Co.,* 351 I.C.C. 102 (Div. 2 1975), *aff'd on reconsideration,* 355 I.C.C. 479 (1976).

[59]Id.

[60]*Farmers Union Central Exchange v. F.E.R.C.*, *supra* note 47.

[61]Id. at 421.

[62]F.E.R.C. Dkt. No. OR79-1.

[63]F.E.R.C. Dkt. No. OR78-1.

1. Williams Pipe Line Company

The Williams proceeding commenced under the ICC's regime in 1971. It led to a reaffirmation of the ICC's traditional ratemaking methodology and resulted in a strong repudiation of the ICC's methodology by the Court of Appeals for the D.C. Circuit. As a result, upon transfer of the case to the FERC, the FERC held a hearing in the fall of 1979.[64]

The issues, although somewhat complex, can be distilled into two primary factions. The petroleum pipelines have argued that the ICC's methodology has worked well, so why tamper with it. In the words of one oil pipeline advocate, "if it ain't broke, why fix it." The other faction, composed of the midcontinent shippers, the Departments of Energy and Justice, and the staff of the FERC, has urged that the ICC's methodology is out-of-date and inconsistent with legal principles established over the past 40 years. Some other regulatory mechanism must be established, especially in light of the *Farmers Union* case.[65]

On the oil pipeline side, the advocates have urged that the hybrid methodology used by the ICC is consistent with present law, and even if the exact formula used by the ICC has some difficulties, it can be corrected without abandoning the entire process. This they urge would provide a workable solution, without transforming present regulation radically while permitting a smooth transition to the FERC's regulatory regime.[66]

On the opposing side, the advocates have urged that sound regulatory principles require the abandonment of the ICC's hybrid methodology and the use of the more modern ratemaking methodology of original cost, or some variation of original cost. This methodology has met with approval by the courts, by most regulatory commissions at the state level, and permits ease of regulation with minimum burden.[67]

The resolution of these issues is an important one for the industry. The mode of regulation affects rate of return, the trend path of rates over time, and the incentives to invest in new pipeline facilities.[68]

2. Trans Alaska Pipeline System

The opening of the Trans Alaska Pipeline System (TAPS) engendered a heated battle over the reasonableness of the rates filed by its owners. Upon the filing of the rates, the State of Alaska and the Department of Justice joined the fray over the rates. After a court determination that the ICC had

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[64]At the FERC hearing, 15 parties participated, presenting 49 witnesses and over 8,000 pages of testimony. The Commissioners have sat through two oral arguments on the case, the first on June 30-July 1, 1980, and the second on November 19, 1981. A decision by the Commission has been promised shortly. 47 Foster Oil Pipeline Report 5 (November 1981).

[65]Id. at 507, App. 1-15, summarizes the arguments of the major actors at the most recent oral argument held November 19, 1981. See text at note 60 for brief explanation of *Farmers Union* case.

[66]Id.

[67]Id.

[68]For an excellent exegesis on these issues, see Navarro and Stauffer and P. Navarro, P. Petersen, and T. Stauffer, *A Critical Comparison of Utility-Type Ratemaking Methodologies in Oil Pipeline Regulation*, 12 Bell J. of Economics 392 (1981).

the power to suspend the rates and investigate their reasonableness a thorough examination of their validity ensued.[69]

The hearing concerning the rates on TAPS also was transferred to the FERC in 1977.[70] On February 1, 1980, an Administrative Law Judge (ALJ) issued an initial decision, rejected the valuation methodology relying heavily upon the D.C. Circuit Court of Appeals opinion in *Farmers Union* which pointed out the many problems inherent in the ICC's approach.[71] Instead, the ALJ adopted the approach to rate base formulation taken in *Hope* and relied upon by the FERC in its regulation of other industries.[72] The decision was appealed to the Commission, oral argument was heard on July 1, 1980, with no resolution of the issues to date.

Again, the issues concern the continued use of the ICC's methodology versus some more modern ratemaking approach, such as original cost. Although the overall issues are similar to Williams, the context in which they arise is different due to the unique nature of TAPS, its high transportation cost versus the wellhead cost of the crude oil, and the impact on the royalties paid to the State of Alaska.[73] Another aspect of TAPS is that it may indicate that the FERC is willing to impose a different mode of regulation on a pipeline with unique characteristics.

3. Rate Regulation Alternatives

The alternatives available to the FERC, while obvious, are worth summarizing. It could continue the ICC's regulatory approach discussed in section III.C. *supra*. This would mean continuation of a hybrid methodology based on valuation with industry-wide rate of return guidelines. Pipeline-by-pipeline regulation would be avoided, except in unusual circumstances.

It could change to an original cost approach as adopted by the ALJ in TAPS, or some variation of original cost. Here it has two major regulatory approaches. It could impose a tight form of regulation, similar to its regulation of natural gas pipelines, examining the rates of each and every pipeline subject to its jurisdiction. Or it could impose a lighter form of regulation, indicating what the new methodology is, establishing a rate of return guideline for the industry, and avoiding individual consideration of rates unless warranted by complaint of shippers or the FERC staff.

A tight form of regulation would impose substantial costs on the FERC and the industry. The benefits to be derived from such tight regulation are speculative at best. Using a lighter form of regulation may result in achieving the same objectives without heavy regulatory costs.

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[69] *Trans Alaska Pipeline System (Rate Filing)*, 355 I.C.C. 80, *aff'd sub nom. Mobil Alaska Pipeline Co. v. I.C.C.*, 557 F.2d 775 (5th Cir. 1977), *aff'd sub nom. Trans Alaska Pipeline Rate Cases*, 436 U.S. 631 (1978).

[70] The hearings were held in 1978 and part of 1979, producing almost 24,000 pages of transcript, 947 exhibits, and the testimony of 82 witnesses. *Trans-Alaska Pipeline System*, Initial Decision Phase I Issues, Slip Opinion 8, February 1, 1980.

[71] Id. at 15.

[72] Id. at 18 *et seq.*

[73] Id. TAPS is unique because it is the only facility transporting oil from the North Slope. The likelihood of another pipeline entering the market is very low, so that it truly has monopoly power. TAPS is discussed in more detail in section IV.E. *infra*.

No matter which way the FERC goes in the present situation, it must live within its statutory mandate to impose some form of rate regulation on the industry. The most direct and unambiguous route is for the Congress to solve the rate regulation morass. Rate regulation can be eliminated by an act of Congress. The following analysis explores the considerations attendant to such an action.

IV. DEREGULATION OF PETROLEUM PIPELINES

The question most often asked in the debate over deregulation of petroleum pipelines is, why deregulate? The essential question, however, is the obverse, why regulate? If regulation cannot be justified, then it should not be continued. This requires an understanding of why regulation was imposed initially, the costs and benefits of regulation, and the efficiency and competitive considerations of regulation.

A. *Why Regulate?*

Regulation of petroleum pipelines initially was justified to prevent abuses of monopolists such as the Standard Oil Trust.[74] The vital nature of pipelines as a tool to control the oil industry was recognized early in its history. The extension of common carrier obligations to pipelines was legislated in order to make sure that pipeline owners could not earn unreasonable profits from their pipeline control. Therefore, regulation was aimed at the monopoly power of the pipelines, and its imposition was an attempt to control the exercise of this monopoly power.[75]

The monopoly power of pipelines could be exercised through control over service or rates. Early regulation was aimed at both—guarantees of access, control over the level of rates, and their use in a discriminatory manner. Rates and access had to be regulated to assure equitable treatment.

This is a traditional justification for regulation: the natural monopoly conditions or the natural monopoly characteristics of the industry must be controlled since market forces will not work well to ensure competitive results. Regulatory commissions have been created to assure that the beneficial results of competition can be replicated through a regulatory regime.[76]

Pipelines fell within this justification because of their natural monopoly characteristics.[77] They exhibit substantial economies of scale so that average costs continue to decline over the entire range of output. Essentially, this means that the economic ideal is for one pipeline to serve an area in order to maximize efficiencies. Since no other pipeline would be built, the argument goes, regulation must be imposed to make sure that the pipeline monopolist does not exploit its monopoly power through denial of access, other service discrimination, or through rate exploitation.

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[74]Senate Pipeline Report 59-63, and *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1 (1911).

[75]See legislative history leading to passage of Hepburn Act in Senate Pipeline Report 99-102.

[76]This is an often cited justification for the imposition of regulation, see A. Kahn, *The Economics of Regulation: Principles and Institutions*, Vol. 1 "Economic Principles," 1-19 (1970), and C. Phillips, *The Economics of Regulation*, chap. 2 (1969).

[77]Coburn 15-16, and E. Mitchell, ed., *Oil Pipelines and Public Policy*, 3-12 (1979).

While it is clear that pipelines do have natural monopoly characteristics, it is unclear whether pipelines can exercise monopoly power. There are at least three ways a pipeline's monopoly power could be exercised: (1) charging prices that are higher than competitively determined prices; (2) discriminatory use of existing pipeline facilities; or (3) deliberately constructing pipelines that are smaller than the economically efficient size in the long run.

Taking the last first, pipeline undersizing caused by underconstruction of pipeline facilities has been alleged by some, including the Department of Justice, to be used by pipelines as a means of avoiding rate regulation and as a means of exercising monopoly and market power.[78] This theory rests on the notion that integrated oil companies have an incentive to undersize their pipeline facilities so that they can exercise market power in the upstream or downstream markets served by the pipeline and in which the oil companies participate. For example, a pipeline owner that markets gasoline in a market served by the pipeline has an incentive, so the argument goes, to undersize the pipeline so that the marginal barrel of gasoline sold in the downstream gasoline market is priced based on a higher cost transportation mode. The gasoline marketer which uses the pipeline will reap an economic rent because it can charge a gasoline price based upon the higher-cost transportation alternative, pocketing the rent garnered because it used a lower-cost pipeline. For this undersizing strategy to be successful, the pipeline owner must be a significant participant in the downstream market, the pipeline's throughput must comprise a significant share of the downstream market, and the pipeline's transportation cost must be lower than alternatives serving the market.

This undesizing theory was expounded in several case studies issued by the Department of Justice.[79] It was uncertain whether the theory was considered to be generally applicable until DOE issued a report using empirical data covering all jurisdictional pipelines over an extended period of time.[80] That report found that overall pipelines have not been undersized although in a small number of pipelines capacity problems existed. The report examined these situations to determine the causes of the capacity problems, which were quite varied, such as a shift in Canadian export policy which altered mid-continent transportation patterns. Therefore, the undersizing theory is not borne out by empirical evidence. Moreover, the theory postulates that undersizing would be used as a device to avoid rate regulation. But without rate regulation there would be no reason to undersize the pipeline because the integrated oil company could earn its rents directly through the pipeline by raising its rate, rather than through the more difficult method of undersizing and downstream market manipulation. Therefore, with rate deregulation, the rationale for resorting to undersizing disappears.

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[78]Coburn 11-26 and sources cited therein.

[79]Department of Justice, *Report of the Attorney General, pursuant to Section 7 of the Deepwater Port Act of 1974 on the Applications LOOP, Inc. and Seadock, Inc. for deepwater port licenses*, (November 5, 1976). Department of Justice, *Report of the Attorney General, pursuant to Section 19 of the Alaska Natural Gas Transportation Act of 1976*, (July 1977). Department of Justice, *Report of the Antitrust Division on the Competitive Implications of the Ownership and Operations by Standard Oil Company of Ohio on a Long Beach, California-Midland, Texas Crude Oil Pipeline*, (June 1978), and Department of Justice, *Antitrust Advice on the License Application of the Texas Deepwater Port Authority*, (July 1979).

[80]Coburn.

The second way monopoly power can be exercised is through the discriminatory use of existing pipeline facilities. Here, however, safeguards exist through the ability of the FERC to regulate service on pipelines and to act as a forum for the resolution of service complaints.[81] Existing service regulation would not be abandoned under any deregulation option. Therefore, service abuses could be dealt with, limiting the ability of pipelines to exercise this aspect of their monopoly power.

While this article advocates that service regulation should remain, an unanswered question is whether it is necessary. Rate regulation may be viewed as another form of access regulation, since a pipeline can limit or deny access through the rates charged. Therefore, if there is no reason to maintain rate regulation there may be no reason to maintain access regulation. Other aspects of service regulation may be necessary, such as the antidiscrimination provision to ensure that pipelines prorate space if demand exceeds space if demand exceeds capacity. The questions concerning service regulation remain unresolved in this article but require careful evaluation during any consideration of rate deregulation.

Lastly, pipelines could exercise their monopoly power by charging prices for transportation services that are higher than competitively determined prices. The ability of pipelines to engage in this tactic can be determined by examing the competitive process within which they operate. Assuming for the moment that pipelines could exercise this form of monopoly power, what is to be gained by regulation?

B. *Benefits and Costs of Regulation*

Regulation often is justified because the monopoly power of pipelines will lead to a misallocation of resources.[82] In an unregulated market, the firm can profit by raising pipeline transportation rates above the level that will yield a normal rate of return. The economic consequences of higher than competitive rates are that the end user in some regions will face higher prices and will transfer income to oil companies or transporters, creating consumption patterns that will be economically inefficient while total resources are misallocated. Alternatively, in some regions oil producers will face lower netback prices and therefore will produce at an economically inefficient rate. The economic consequences, therefore, can affect either consumers, shippers, or producers, or some combination.

The magnitude of these efficiency losses depends upon the elasticity of demand for pipeline services, which in turn depends upon the elasticity of final demand in the product market, the availability of alternative pipeline transportation, the potential for constructing a new pipeline, and the availability of alternative modes of transportation, primarily waterways and to a lesser extent rail or truck.

Each of the factors affecting elasticity of demand reflects the competitive structure, behavior, and performance of the industy. If the industry is

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[81] 49 U.S.C. 2, 3(1), 3(4), 6, 13(1), 13(2), and W. Jones, *supra* note 38.

[82] See Kahn, and Phillips, *supra* note 76.

not competitive, pipelines will be able to extract an economic rent in the absence of regulation. A careful review of the status of the industry relative to these factors is required to determine whether the industry is competitive and therefore to decide whether economic regulation is appropriate. These will be discussed later in this paper.[83]

1. Benefits of Regulation

There are three potential benefits from eliminating any potential monopoly power of pipelines through regulation. First, regulation can eliminate the economic rent garnered from other segments of the industry, namely, producers or consumers (both shippers and ultimate consumers). Second, regulation can eliminate the losses in social welfare or efficiency caused by prices that are higher than the competitive level, and leading to suboptimal production and consumption. Third, regulation can eliminate the ability of pipeline owners to use their monopoly power to control other markets.

The argument in favor of the first justification is the ability to eliminate economic rent. (Actually, this rent is not eliminated but is redistributed.) How does this rent occur in the first place? In a competitive environment, rates would be the lowest consistent with a reasonable return on investment, taking into account the opportunity cost of alternative investments.[84] The producer would have no ability to maintain higher rates over the long run since as new entry occurs rates would fall back to the competitive level. Since pipelines do have natural monopoly characteristics, and the industry does not conform to the competitive market, they have some control over the ability to set rates, even with free entry. As a result, rates on pipelines will tend to rise to the level of the next least costly alternative, but no higher, since shippers will shift to that alternative and abandon the pipeline. Assuming pipelines are less costly, and in almost every instance they are less costly than the alternative,[85] the owners of the pipelines will accrue a sum in excess of the competitively determined rates, an economic rent.

The consequences of this result are several. From a crude oil producer's point of view, higher pipeline transportation rates mean lower wellhead prices, and therefore a decreased incentive to produce, assuming that the transportation cost cannot be passed through downstream because of the existence of competitive markets. Thus, one direct effect of deregulation can

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[83]See Section IV.c. *infra*.

[84]F. Scherer, *Industrial Market Structure and Economic Performance*, chap. 2 (2d ed. 1980).

[85]Comparative transportation costs are:

	Cost/100 barrel-miles
Truck	$0.51 – $0.75
Rail	0.115 – 0.60
Barge	0.04 – 0.15
Pipeline	0.025 – 0.12
Tanker	0.01 – 0.06

Sources are Association of Oil Pipelines, *supra* note 17, and G. Wolbert, Jr., *U.S. Oil Pipe Lines*, Appendix A, 481 (1979).

be lower crude oil production. Another effect can be that consumers of petroleum products are paying more for their products than desirable, assuming the ability to pass through some higher costs. Either consumption will decrease caused by switching to some other alternative, or consumer costs will rise due to the inability to switch. The ultimate consequence from both perspectives is that crude oil production and petroleum consumption are not at optimal levels, leading to a less than optimal allocation of resources.

The question then is, is it realistic to assume that these efficiency consequences are large and that regulation is worthwhile? With respect to the crude oil producer, it is questionable whether unregulated rates will lead to less crude oil production. First, transportation costs are very small relative to the wellhead price of crude oil, except in Alaska. With crude oil prices in the $35.00 per barrel range and average pipeline transportation costs for the lower 48 states in the $0.30 to $0.70 per barrel range, the production disincentive is small, if not nonexistent.[86] Pipeline rates may rise with deregulation and, therefore, the question is whether the costs of regulation outweigh the transfer of wealth from oil producers to pipeline companies. Although this seems to imply purely a wealth transfer, there may be some losses along the way so that efficiency concerns are involved and not merely equity concerns.

Second, many oil producers also are pipeline operators and owners. In this instance, the production disincentive disappears entirely, since pipeline rates become meaningless. The oil is shipped at cost no matter what the rate is, since the rate is purely an accounting transfer and nothing more to the producer-transporter. This is somewhat over-simplified since the transfer cost may not be at the appropriate level based on a profit maximizing strategy taking into account the opportunity cost of the service, that is, what others would be willing to pay.

Deregulation, however, may have one side effect that has nothing to do with efficiency, namely, alter the revenues collected by the federal government under the windfall profits tax.[87] The crude oil windfall profits tax is calculated as a percentage of the difference between the wellhead price of crude and a base price. The cost of transportation directly affects the wellhead price, since increased transportation costs reduce wellhead prices. The base price, however, is not affected. Thus, an increase in transportation costs in the lower 48 narrows the difference between the wellhead price and the base price so that the crude oil windfall profits tax liability is reduced. Depending upon the ability of pipeline owners which also are crude producers to raise pipeline transportation rates, independent producers may be affected substantially. For the latter, higher transportation rates are real out-of-pocket costs, but they also lower wellhead prices and lower crude oil windfall tax liability.

The crude oil windfall profits effect is one-sided with respect to North Slope crude. When the tariffs on the Trans Alaska Pipeline System (TAPS) go down, changes occur both in the wellhead price and the base price. The well-

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[86]J. Piercey, *The Pipeline Segment of the Domestic Petroleum Industry: Structure and Conduct*, 112 (1978) (Ph.D. Dissertation, University of Oklahoma), estimates 1975 average expense per 1000 barrel-miles is $0.34 for crude and $0.38 for product, while 1975 average revenue per 1000 barrel-miles is $0.60 for crude and $0.71 for product.

[87]Crude Oil Windfall Profit Tax Act of 1980, Pub. L. 96-223, Apr. 2, 1980, 94 Stat. 229, 26 U.S.C. 4986 *et seq.*

head price increases due to the netback effect, the base price increases also because the crude oil windfall profits statute requires an adjustment to the base price of North Slope crude oil when the TAPS tariff decreases.[88] Thus there is no effect on windfall profit collections. If tariffs go up, however, no adjustment is made to the base price, the wellhead price decreases, the base price remains unchanged, and windfall profit collections decline. Therefore, there is a one-sided incentive from the crude oil windfall profits tax to shift costs between the wellhead and the pipeline.

In the case of Alaska, however, there are other incentives to shift costs between the wellhead and the pipeline. The primary owners of the pipeline also are the primary producers on the North Slope.[89] Increases in pipeline rates will lower wellhead prices since the final price of North Slope depends upon a competitively determined landed price on the West Coast. Higher transportation costs cannot be passed through downstream, but are reflected upstream in lower wellhead prices. Lower wellhead prices, in turn, will mean lower royalty payments to the State of Alaska. Therefore, North Slope crude oil producers can maximize their overall earnings by keeping wellhead prices low and raising pipeline rates. For the owners of both crude and pipeline this becomes an internal transfer. But for the crude producers with no pipeline ownership, this can befome a real disincentive to produce, since the pipeline cost represents about 18 percent of wellhead prices ($6.20 per barrel pipeline tariff versus $35.00 per barrel wellhead price).[90] This represents an important consideration in any examination of whether to keep TAPS regulated while lower 48 rates are deregulated.

The effect on the consumer of increased pipeline rates is more difficult to determine. In 1979, total pipeline revenue was about $5.78 billion, with about $2.74 billion attributable to TAPS.[91] This leaves about $3.04 billion in revenue for the lower 48 states. If regulation keeps prices 20 percent lower than without regulation, total wealth transfer would approximate $600 million. While this is a significant sum, it translates into about 8.4 cents for every barrel of liquid carried in the system or 0.2 cents per gallon of liquid carried.[92] The worst case probably would mean a 100 percent increase in rates, doubling revenues with the per gallon impact at 1 cent. In some cases the wealth transfer may be from producers to pipelines rather than from consumers to pipelines. The effect would be incalculable.

Another benefit derived from regulation is the gain in efficiency or social welfare. Rates that are above costs lead to suboptimal allocation of resources,

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[88]94 Stat. 249, 26 U.S.C. 4996.

[89]Atlantic Richfield Co., Exxon Corporation, and Standard Oil Company (Ohio) in conjunction with BP, Ltd. are the largest owners of both the pipeline and the producing fields.

[90]See *Trans-Alaska Pipeline System*, Initial Decision Phase I Issues, February 1, 1980.

[91]Revenue for 1979 obtained from *Oil & Gas Journal*, Aug. 11, 1980, at 86. TAPS revenue derived by multiplying 1979 TAPS capacity of 1,210 MM BPD from EIA data, by the weighted average tariff of $6.20 per barrel from TAPS Initial Decision.

[92]EIA data indicate about 7,118,444,000 barrels carried in 1979, Department of Energy, DOE/EIA-0108(79), *Crude Petroleum, Petroleum Products, and Natural Gas Liquids: 1979 (Final Summary)*. Tables 13 and 28 (1980). Also, there are 42 gallons to the barrel.

which not only produce the income transfers indicated above, but actual deadweight losses to society.[93] One estimate puts this loss at about $12.7 million per year, a rather small sum.[94] Thus, the benefits of regulation in this instance appear minimal.

The other form of efficiency loss from increased pricing is the misutilization of pipeline facilities. It would take the form of missizing the pipeline in the first instance or underutilizing the pipeline once built. Initial missizing could lead to overall higher transportation costs if higher cost alternatives must be used. Underutilization of existing facilities could lead to higher unit costs, since at some point unit costs rise dramatically as throughout falls off.[95] Quantifying these costs would be impossible, but they may be substantial.

Finally, regulation could be a means of eliminating or dampening the ability of pipeline owners to use their market power to control other markets. The argument here is that a small number of oil companies control the markets for petroleum products. If this is the case, then these companies already are profit maximizing through their present control of refining and marketing. Lifting pipeline rates will not add to this profit maximizing price. Higher rates may shift the profit among the various industry segments.

The companies also may exert some measure of control over crude purchasing. This control probably exists now anyway since it is rare that more than one pipeline serves a producing field.[96] Thus, higher rates may transfer some profit from producers to transporters, with little effect on production. Furthermore, if rates increase too much, there may be some incentive for a new gathering system to enter the field. Therefore, deregulating pipeline rates is unlikely to add to any existing control oil companies may have over downstream or upstream markets.

2. Costs of Regulation

On the other side of the issue, regulation can impose substantial costs. First, there are the administrative costs associated with regulation, which tend to increase as the specificity of regulation increases. Second, regulation tends

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[93]In the competitive model, the firm produces the maximum output for the least cost (price equals long run marginal cost). Regulation attempts to replicate the competitive model so that resources are allocated in the most efficient way. If regulation is lifted and pipelines can exert some monopoly power, the equilibrium established in the competitive model is upset and the firm is able to reduce output and raise its price (price exceeds long run marginal cost). In this process, the firm earns something more than it should if it were producing at the maximum level under the competitive model. The extra earnings are an economic rent. But when the firm earns this rent it does not obtain the full amount between the monopoly price-output combination and the competitive price-output combination. Some value to society is lost along the way, called a deadweight loss. Scherer, *supra* note 84, at 16-18.

[94]The assumptions used to derive this figure are: transportation costs increase by $0.50/bbl, total pipeline movements are 7,118 million barrels, crude price is $35/bbl and elasticity of final demand is 0.5. The elasticity of demand number is a good approximation based upon the range identified in T. Morlan, D. Skelly, and A. Reznek, *Price Elasticities of Demand for Motor Gasoline and Other Petroleum Products*, (1981). A recent article indicated that a $24 million deadweight loss is reason for concern, W. Landes and R. Posner, *Market Power in Antitrust Cases*, 94 Harv. L. Rev. 937, 954 (1981).

[95]Throughput-unit cost relationships depend upon pipeline size. Unit cost increase are much more dramatic for pipelines less than 24 inches in diameter; while pipelines with diameters of 24 inches or more unit costs are quite insensitive through a broad range of volumes up to about 50 percent of capacity. After that unit costs increase dramatically. Coburn 143, and Wolbert, *supra* note 85, at 496.

[96]For a comprehensive discussionof Texas crude production, see Staff of the Subcomm. on Monopolies and Commercial Law of the House Comm. on the Judiciary, 96th Cong., 1st Sess., *Interdependence in Domestic Crude Oil: Joint Ventures, Farm Outs, Exchanges, and Gathering Lines*, (Comm. Print 1979).

to distort investment decisions if it imposes a rate of return that is too low. Third, regulation can create managerial disincentives to keep costs to their minimum. The first two costs have been observed in regulation of the electric power industry.

It is clear from experience that any form of regulation imposes administrative costs, both those related to supporting an administrative oversight organization and those related to industry compliance with regulatory requirements. It is not unreasonable to expect that oil pipeline regulatory costs would be similar to those for gas pipelines.[97] In fiscal year 1981, the FERC spent about $39 million on gas pipeline regulation.[98] The regulatory expenditures incurred by the industry and other interested parties must be included also. One estimate indicated that this regulatory expense was at least equal to the expense of the FERC.[99] More than likely, this expense will exceed those of the FERC by a substantial portion. Thus, direct administrative costs will be at least $80 million per year.

The second cost of regulation is the distortion caused by improper investment decisions because regulation may result in rates of return that are too low. In this situation, the pipeline industry may refuse to invest in new capacity to meet new demand. Or the industry may invest only when no other alternative is available. The costs of such investment distortions are incalculable, but could be very high.

The likelihood that the FERC will establish a rate of return below the cost of capital is high. Present experience with the electric utility industry indicates that the percent rate of return for investor-owned utilities is substantially below market costs of capital.[100] The Secretary of Energy has called for a rate of return at least four percentage points higher.[101] With pipelines differing from electric utilities in terms of not being franchised public utilities with an obligation to provide service, it is highly likely that private investors will not be willing to invest in new facilities. This is especially so in view of the common carrier requirements and the free rider problems that result.[102] The trade-off is one of having no new facilities with the ensuing higher costs associated with alternative transportation modes, or new pipeline facilities that earn some limited economic rent due to their monopoly characteristics. In this situation, the cost clearly outweigh the benefits of regulation.

Finally, regulation creates a disincentive for pipeline management to keep costs low since under a regulatory regime all costs can be passed along. If regulation permits, and in essence guarantees a fair rate of profit that can be passed through to ratepayers, the incentive to keep costs as low as possible

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[97]The rationale for this assertion is that FERC closely regulates the rates of each gas pipeline company. A tight regulatory approach to oil pipelines would require similar costs.

[98]Conversation with Robert E. Anderson, Deputy Director, Office of Regulatory Analysis, FERC.

[99]Id.

[100]C. Studness, "Third-Quarter Electric Utility Financial Results," *Public Utilities Fortnightly,* December 17, 1981, at 47-48, and Department of Energy, *DOE's Role in Restoring the Financial Health of the Electric Utility Industry,* September 29, 1981 (Working paper).

[101]Speech by James B. Edwards, Seminar on Utility Finances before the U.S. National Committee of the World Energy Conf. and the Edison Electric Institute, Oct. 28, 1981.

[102]ICA requires jurisdictional pipelines to provide services on a common carrier basis. Therefore, once a pipeline is built nonowners can require the pipeline to provide space in the line even if it is full by forcing the line to prorate space. Owners view these shippers as free-riders since the shippers do not have to invest anything to obtain space in the line.

disappears. The only remaining incentive is created by regulatory lag in granting rate increases or rate reductions when costs change. Until rates are changed to reflect changes in costs, the utility has the incentive to keep costs down and enjoy a short-lived increase in profits. But this incentive is very short-lived, while long-run incentives tend toward less efficiency and technological innovation. With pipeline revenues approximating $3 billion per year (excluding TAPS), a small percentage increase in costs could be substantial, a five percent increase amounting to $150 million per year.

Before concluding this section concerning the desirability of regulation or deregulation, the last question that must be addressed is the competitive process within which the industry operates. If it is clear that the industry is noncompetitive, then the economic rents that could be garnered by the industry may be substantial. If the industry faces some competition, then the economic rents may be dampened. This aspect of the industry will be discussed next.

C. *Competition Issues*

The competition issues depend upon the structure of the oil pipeline industry, that is, how they are owned, by whom, the level of concentration, and the conditions of entry. These issues, in turn, depend to a large extent upon the availability of alternative methods of transportation (water, truck, and rail) and upon interpipeline rivalry. To the extent that waterborne alternatives are available, the inherent monopoly power of pipelines is dampened. Also, the greater the interpipeline rivalry, the lesser the ability of an individual pipeline to exert any inherent monopoly power. Therefore, the monopoly power of pipelines can be dampened in several ways: through competition with alternative transportation methods; through interpipeline rivalry; through regulation; and through the structure of the industry (levels of concentration and conditions of entry).

Competition analysis is undertaken through the use of an analytic methodology that relies upon the structure, behavior, and performance of an industry.[103] Structure is indicative of the ability and likelihood of firms in an industry to act independently or interdependently. The concentration of the firms in the industry is an aspect of structure that yields an objective criterion from which subjective judgments can be drawn. The conditions of entry, another aspect of structure, play an equal, if not paramount role, since high concentration can be undermined through entry. The behavior of firms in the industry often follows from the industry structure and indicates its competitive or anticompetitive tendencies. Industry performance is examined to determine whether the industry yields competitive or noncompetitive results, e.g., are profits at or above competitive levels.

Industry structure is analyzed in the context of product and geographic markets.[104] The major criterion used to determine product markets is the degree of substitutability among products. In this instance, the relevant

[103]Scherer, *supra* note 84.
[104]Id.

product market is the transportation of crude oil and refined products.[105] In many short-haul markets, transportation alternatives exist among various types of transport modes, namely, pipeline, barge, tanker, truck, or railroad.[106] In long-distance transportation, however, the market is usually limited to pipeline and waterborne alternatives (barge and tanker), since the costs of railroad and truck are so high that they do not represent long-term alternatives.[107] Therefore, the focus will be upon petroleum transportation by pipeline and water.

Geographically, transportation markets are much more difficult to delineate. Some studies have focused upon national transportation markets.[108] A national geographic market leads to meaningless results, since transportation is regional, at least. For example, transportation entities in California do not compete with like entities on the East Coast.

Others have focused upon particular regions to discuss competition.[109] The Piercey study used the five Petroleum Administration for Defense Districts (PADD) as geographic markets. Again, this may be too broad, since transport entities in one part of the PADD may not compete with entities in other parts of the PADD. In support of this approach, however, one could argue that this is the best level for data, and the industry traditionally has broken itself down into these areas and considers them acceptable geographic markets. But rigorous geographic determinations would reject these aggregations and therefore something better must be used.

Another approach is to examine the transportation services available between areas, a corridor approach to transportation markets. This approach has been criticized as being too limited since it may not indicate the entire range of options at either the origin or destination.[110] For example, a refiner in Houston could send its product via one group of pipelines to the East Coast, or through another group of pipelines to the Midwest. Or buyers at destination points may have pipelines from more than one corridor at their disposal.

Finally, a recent attempt to define markets focuses upon four types of buying-selling arrangements: those for buying crude, those for selling crude at the refinery, those for selling products at the refinery, and those for selling products to consumers.[111]

This paper uses several approaches in order to determine the competitiveness of the industry. It will rely upon the four-arrangements approach, the corridor approach, and some modifications of the two.

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[105]The delineation of a product market is relatively straightforward. Transportation is what is under consideration and nothing substitutes for it, unlike the electric power industry where transporttion of fuel may be substituted by transmission of electric power.

[106]See relative transportation costs, *supra* note 85, and Association of Oil Pipe Lines, *Shifts in Petroleum Transportation,* (September 1981).

[107]See *supra* note 106.

[108]M. Piette, *The U.S. Petroleum Pipeline Industry: A Study of Vertical Integration,* (1977) (Ph.D. Dissertation, Florida State Univ.).

[109]Piercey, *supra* note 86.

[110]J. Hansen, *Competitive Aspects of the United States Petroleum Pipeline Industry: Implications for Regulatory Policy,* 65-66, (1980) (Ph.D. Dissertation, Yale Univ.) (Hereinafter cited as: "Hansen.").

[111]Id.

1. Corridor Markets

The corridor approach focuses upon groups of crude pipelines primarily from producing areas to refining areas. One recent study identified 10 crude corridors.[112] For products, the focus is upon groups of pipelines from refining areas to consuming areas. In the same recent study, five product corridors were identified.[113] These corridors include not only pipelines, but water transportation also. In reviewing the corridors identified in DOE's study, the number of crude corridors were overstated, so that in retrospect there should be seven or eight corridors. Using the data gathered for DOE's study, concentration ratios based upon capacity can be derived for these corridors. Table I indicates these concentration ratios. It should be noted that in several instances more than one pipeline owned by the same company is included. The reason for this is that often there is more than one routing even though both are owned by the same company. Aggregating these routings according to companies would change the concentration ratios.

The concentration ratio results indicate that in most of the corridors four-firm and eight-firm concentration is high. In only one of the corridors does the four-firm concentration ratio fall below 50, the cutoff usually referred to as indicating high concentration. This same market also has an eight-firm concentration ratio of less than 80. In most of the other markets, four-firm concentrations exceed 70 and eight-firm concentrations exceed 90. One is tempted to conclude from this that the structure of the industry, at least based upon concentration ratios, indicates anticompetitive tendencies. This conclusion cannot be reached yet for several reasons. First, water transportation has not been factored in and, second, entry barriers have not been discussed. A third consideration is the utilization of this capacity and how it affects incentives to compete. These considerations will be discussed after the discussion of the four types of buying-selling arrangements approach.

2. Four-Arrangement Approach

The four-arrangement approach, that is, reducing the industry into four component parts, has been developed very recently and the findings have not been examined in any depth. The four components discussed were those for buying crude, those for selling crude at the refinery, those for selling products at the refinery, and those for selling products to consumers. Some examination of these components is necessary to determine the competitiveness of the pipeline industry.

[112]Coburn, *supra* note 4.
[113]Id.

a. *Crude buying markets:* Crude gathering markets were delineated on a state basis, for no other reason than that was the only data available. Whether these areas can be considered markets is open to substantial question; however, there is no better way to delineate them given the data available.[114] In the seventeen states where receipts by interstate pipelines accounted for more than 75 percent of total crude production, four-firm concentrations ranged from 48 percent to 100 percent, with a weighted average at 64 percent. The major problem with this data is that intrastate pipelines have not been included. This may alter substantially the concentration ratios since in many states intrastate pipelines are significant gatherers. For example, Permian pipeline gathered about 5.2 percent of 1974 Texas production and was the seventh largest gatherer in the State.[115] Scurlock pipeline also operates an extensive gathering system and gathered about 2.6 percent of total 1974 Texas production, the eleventh largest gatherer in the State.[116] Even with intrastate gatherers, however, and using the Judiciary Committee data, pipeline concentration ratios remain high and tend to indicate the existence of monopsony power on the part of crude oil gatherers.

b. *Refinery crude purchasing markets:* Refinery crude purchasing markets were grouped by Hansen into 39 separate refinery markets where refining capacity exceeded 50,000 barrels per day.[117] A determination was made based upon the location of the refineries in each market whether they could receive crude by water.[118] A further determination was made using a map to determine the number of pipelines serving each refinery market. The Hansen study concluded that in the most important refinery markets, water transportation was available to compete with pipeline transportation. Also, in most of those markets a substantial number of pipelines were available to compete with each other. The study concluded that this segment of the industry was competitive, or that the availability of waterborne transportation would erode any potential competitive problem with pipeline transportation.[119]

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[114]Crude purchasing essentially is an international market. The price of crude paid to producers in the Yates Field in Texas, for example, in part is determined by the price of crude in Saudi Arabia. Moreover, crude buyers can substitute crude from one part of the world with crude from another, with some crude specification limitations. While a rigorous shipments analysis has not been undertaken, a quick perusal of available data indicates that neither Texas nor Louisiana, the two largest crude producing states, can be considered discrete geographic markets. See Department of Energy, *supra* note 92 for data, and G. Werden, *The Use and Misuse of Shipments Data in Defining Geographic Markets,* 26 Antitrust Bulletin 719 (1981), and K. Elzinga, *Defining Geographic Market Boundaries,* 26 Antitrust Bulletin, 739 (1981) for a discussion of the shipments data approach to geographic definition.

[115]Staff of the Subcomm. on Monopolies and Commercial Law of the House Comm. on the Judiciary, *supra* note 96, at 34.

[116]Id.

[117]The 39 markets in order of size are: 1. Port Arthur, Tex.-Lake Charles, La.; 2. Houston-Texas City, Tex.; 3. Los Angeles, Cal.; 4. Chicago, Ill.-Hammond, Ind.; 5. Philadelphia, Pa.; 6. Richmond, Cal.; 7. Baton Rouge, La.; 8. New Orleans, La.; 9. St. Louis, Mo.; 10. Corpus Christi, Tex.; 11. Linden, N.J.; 12. Ferndale, Wash.; 13. Southwest, Ind.-Southeast, Ill.; 14. Toledo, Ohio; 15. Pascagoula, Miss.; 16. Ponca City, Okla.; 17. Kansas City, Mo.; 18. Cushing-Tulsa, Okla.; 19. Wichita, Kan.; 20. St. Paul, Minn.; 21. Bakersfield, Cal.; 22. Amarillo, Tex.; 23. Lima, Ohio; 24. Midland-Odessa, Tex.; 25. Salt Lake City, Utah; 26. Delaware City, Del.; 27. Billings, Mont.; 28. Catlettsburg, Ky.; 29. Buffalo, N.Y.; 30. El Paso, Tex.; 31. Casper, Wyo.; 32. Wrenshall, Minn.-Superior, Wis.; 33. Detroit, Mich.; 34. Shreveport, La.; 35. Warren, Pa.; 36. El Dorado, Ark.; 37. Canton, Ohio; 38. McPherson, Kan.; 39. Denver, Colo. These 39 refinery markets represented 98 percent of 1977 Continental U.S. refinery capacity. Hansen 79-83.

[118]Eighteen of the 39 were considered to lie on major waterways, namely 1-12, 14, 15, 26, 29, 32, and 33. The 18 account for about 78 percent of 1977 refinery capacity of the 39 markets. Hansen 79-84.

[119]Id. at 88.

The analysis used in the Hansen study is flawed. First, the number of pipelines was examined without considering their capacity. Concentration, therefore, could not be analyzed. Also, the visual inspection of the number of pipelines available in any location is not always a good indicator of whether capacity is available into the market since the pipeline may not actually serve the market. Second, the study assumed that, if a refinery market was located on a major waterway, waterborne transportation was available as a viable competitor. This inference is improper since data exist to determine whether a state receives crude by water. This data will be used later on in this article. Finally, too many refinery markets were delineated, since in many cases, the areas were too narrowly drawn which can overstate the degree of concentration in the markets as discussed below.

The foundation laid by the Hansen study can be augmented by using capacity data of individual pipelines.[120] Using this data, concentration ratios can be calculated based upon the 39 markets delineated and on a smaller number of markets that may make more economic sense. Also, using other data, an accurate determination can be made whether the refinery market receives crude via water.

Using the capacity data where available,[121] 24 of the markets had pipeline capacity in excess of refinery capacity, three had no pipelines at all, only water, and seven had refining capacity in excess of pipeline capacity. For these seven markets, however, waterborne transportation was available, pipeline capacity caught up in later years, or data were incomplete. Thus, overall, there was at least a balance between refinery capacity and pipeline capacity and more often than not pipeline capacity exceeded refinery capacity.

The second step in using the capacity data is to determine concentration ratios for the 34 markets. The weighted average concentration ratios for the 34 markets are 79.29 and 90.39 for four and eight firms, respectively, both very high and indicative of anticompetitive structural tendencies. In only one market, the Midland-Odessa area, did four-firm concentration fall below 50.

The Hansen study, too, indicated that refinery markets were highly concentrated, but indicated that many were located on major waterways. This ability to receive crude by water provided ample competition to dampen any potential monopoly power on the part of the pipelines, Hansen concluded. Hansen found that of the 39 markets, eighteen lie on major waterways. The eighteen represented about 78 percent of the refinery capacity of the 39 markets. But using DOE data indicating receipts of domestic and foreign crude by mode, actually only thirteen of the eighteen markets receive crude by water. Importantly, two of the top twelve markets do not receive crude by water or only negligible amounts.[122] While Hansen generally is correct, his overall conclusion is not as strong.

Finally, Hansen identified too many markets because he included too many markets where only a very small number of refineries operated served by one or two pipelines. An example is Catlettsburg, Kentucky. There is only one

[120]The DOE/EIA data that forms the basis of the Coburn study are available for this purpose.

[121]In 34 of 39 markets data are available. Those markets where data are not available are: Los Angeles, Cal.; Richmond, Cal.; Bakersfield, Cal.; Shreveport, La.; and El Dorado, Ark.

[122]The five markets that do not receive crude by water or receive only negligible amounts are: 4 (negligible), 9, 14, 32 and 33, Department of Energy, *supra* note 92, Table 13.

refinery located there, Ashland, and served by one pipeline, owned by Ashland. But a careful examination of the pipeline system indicates that Ashland has several alternatives available to it for receiving crude using a number of different combinations of pipelines. All must go through the Ashland pipeline to Catlettsburg, but that pipeline can receive from a numbr of different pipelines.

Perhaps a better approach is to examine major interconnecting points on the system, that is, points where many pipelines enter and then radiate out. Refineries ultimately served by one or two pipelines (usually owned by that refinery) can receive crude from various sources at the interconnection point. The interconnection points may be stated as follows: West and Northwest Texas (including Midland, Odessa, Wichita Falls, Corsicana, Teague, and Wortham, Texas); Longview, Texas; Houston-Port Arthur, Texas; South Louisiana; Cushing, Oklahoma; Patoka, Illinois; Chicago, Illilnois; and Fort Laramie, Wyoming. From these major interconnection points the smaller refinery markets can receive crude. The number of pipelines serving each of these areas is substantially larger than the number of pipelines serving most of the 39 markets indicated by Hansen. Moreover, in each of these markets capacity is considerable. Concentration ratios for them are much more like the concentration ratios for the corridors identified earlier than for the weighted average ratios identified using the 39-market approach.

What becomes clear using this interconnection approach and relying upon existing data is that the major refinery complexes that ring the coastal areas of the country are served both by pipelines and by waterborne transportation, except for the Pennsylvania-Delaware-New Jersey area, which is served exclusively by water. Any potential pipeline monopoly power in these markets, and the potential is substantial, is ameliorated by the existence of crude arriving by water. It is the interior of the country that relies principally on pipelines, since negligible amounts of crude arrive by water. While these markets are served by a large number of pipelines, it is also true that the capacity available is highly concentrated in a small number of pipelines, often owned in an interrelated fashion.[123]

c. *Refinery product sales markets:* The Hansen study utilized a similar approach to its refinery product sales markets as in its refinery crude purchasing markets. It utilized the 39 markets; however, Hansen was able to find state-wide data indicating receipts of product by product pipelines. Thus, he was able to indicate concentration ratios for the states in which the 39 refinery markets were located. Relying upon this data, Hansen calculated the weighted average four-firm concentration ratio for the 27 states at 74.6, with the range from a low of 60.13 to a high of 100.[124] Without considering waterborne trans-

[123]Hansen accounted for ownership in computing concentration ratios. If that were done in this paper, concentration would increase.

[124]Hansen at 89.

portation he concluded that concentration of the receiving pipelines is extremely high. But since about 75 percent of refinery capacity is located on significant waterways, he concluded that waterborne transportation is available to ameliorate any potential pipeline monopsony power.[125]

Hansen's approach in this market is better than his approach in the crude selling markets since he does have some state-wide data available. One minor flaw, however, is that he aggregated both refined product pipelines and LPG/NGL pipelines. Rarely do refined products and LPG/NGL liquids use the same pipeline. A better approach would have been to segregate the two types of pipelines in order to obtain a clearer picture of pipeline monopsony power.

The same DOE data used in the crude selling markets is available to examine the refined product sales markets. In the 39 markets delineated by Hansen, refinery capacity exceeds pipeline capacity in 21, while pipeline capacity exceeds refinery capacity in 18. This is less of a problem than it appears. In many of the markets where refinery capacity exceeds pipeline capacity, the market is located in or near large metropolitan areas or adjacent to navigable waterways. Therefore, the need for pipeline capacity is reduced since deliveries can be made locally by truck, or can be made to waterborne entities. Similarly, for many inland refining areas where refinery capacity exceeds pipeline capacity, truck transportation plays a large role in relatively short-haul deliveries. Therefore, the existence of more areas with greater refinery capacity than pipeline capacity is easily explained and may not result in a competitive problem.

Where pipelines do exist (in 36 of 39 markets) the weighted average concentration ratios are very high.[126] Four-firm concentration is 79.62 and eight-firm concentration is 95.81. The four-firm concentration ratios range from 64 to 100.

The same kinds of problems exist in the 39 refinery product selling markets as outlined in the 39 refinery crude purchasing markets. Some attempt has been made to group the pipelines into corridors. With product pipelines, however, there are fewer recognizable corridors. There appear to be at least five major corridors, three thin corridors and a massive maze that is difficult to define as a corridor. The major corridors identified are the Gulf Coast-South and Northeast, Linden-Philadelphia-Delaware-west, Texas Gulf Coast-north, Cushing, Oklahoma-north and west, and Cushing, Oklahoma-north and east. The massive maze is the upper midcontinent. The three thin corridors are the upper Great Plains, the West Slope of Cascades, and California.[127]

In the major corridors, concentration is high. Only two pipelines comprise the Gulf Coast-South and Northeast corridor, Colonial and Plantation. For the other corridors the breakdown is as follows: Linden-Philadelphia-Delaware-west, six pipelines with four-firm concentration of 93.78; Texas

[125]Id. at 96. Hansen referred to the pipelines' power in terms of monopsony since he viewed them as receivers or buyers of product. Strictly speaking, however, the pipelines do not buy the product but sell transportation. Therefore, it may be more accurate to use the term monopoly power.

[126]Using DOE's data, no pipelines distributing from the market were found in three markets: Catlettsburg, Ky.; Wrenshall, Minn.-Superior, Wis.; and Warren, Pa.

[127]These corridors are not the same ones identified in DOE's study since that study was examining a different phenomenon, namely capacity utilization.

Gulf Coast-north, seven pipelines with four-firm concentration of 89.95; Cushing-north and west, ten pipelines with four and eight-firm concentration of 80.65 and 96.59, respectively; and Cushing-north and east, four pipelines. (See Table II)

The maze of the upper midcontinent has not been broken down into concentration ratios because the systems criss-cross through the area producing no definable pattern. In the thin corridors no more than two pipelines exist in any one of them, except for California. (See Table II)

Finally, it is possible to develop the same type of major interconnection analysis used in the crude pipeline section. The major interconnection points would be the Louisiana-Texas Gulf Coast-north and northeast. Cushing radiating in all directions, the Linden-Philadelphia-Delaware refinery area radiating west and north, and the upper midcontinent area. While more systems would be added to the ones indicated in the corridor analysis, concentration still would be high. For example, the lines radiating out of the Louisiana-Texas Gulf Coast would mean aggregating the Gulf Coast to the South and Northeast and the Texas Gulf Coast-north. This would yield nine pipelines radiating out of the area, with four-firm concentration of 92.79 and eight-firm concentration of 99.48. Similar manipulations could be made for other areas; however, the concentration ratios would remain very high.

Two ameliorating factors are present. The first is the availability of water transportation and the second is the greater reliance upon trucks for product transportation. The percentage of products carried on waterborne commerce is somewhat greater than the percentage for crude. The Association of Oil Pipe Lines indicates that almost half of the ton miles of products carried in domestic commerce is carried by water carriers, while only about 41 percent of crude is so carried.[128] Furthermore, there are more water terminals for products than for crude so that some refining centers that do not receive crude by water do distribute or receive products by water.[129]

Secondly, truck transportation plays a much larger role in product distribution than in crude collection and distribution. Almost two and one-half times as much product than crude is carried by truck.[130] In fact, on a tonnage basis, truck transportation almost equals pipeline transportation. The distance disparity is apparent when ton-miles are compared. Here, water carriers rank first, pipelines rank a close second, and trucks a distant third. Since many refineries are located near large consumption areas, pickups by truck at refineries are substantial (if tons are compared) while the distance traveled is small compared to pipelines (if ton-miles are compared). Therefore, even with high pipeline concentration, transportation choices by many refiners are not limited to only pipelines. This imposes some upper limit on the ability of pipelines to exert their apparent monopsony power.[131]

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[128]Association of Oil Pipe Lines, *Shifts in Petroleum Transportation*, (September 1981).

[129]Department of Energy, *supra* note 92, Tables 26 and 27.

[130]Association of Oil Pipe Lines, *supra* note 128.

[131]See discussion in note 125.

d. *Product consumption markets:* The Hansen study relied upon Standard Metropolitan Statistical Areas (SMSAs) as the basis for market definition. Given that most products are sold locally, and that there is little opportunity for consumers to obtain products other than on a local basis, this characterization is appropriate. Hansen examined 61 SMSAs with population in excess of 500,000. Twenty-eight markets were located on significant waterways. The remaining 33 were subject to varying degrees of transportation alternatives, either from rival pipelines, or nearby refineries.[132]

Whatever monopoly power may exist in these markets is strongly tempered by the highly competitive nature of many of the product consumption markets. Gasoline, the largest of the markets under consideration here, is highly competitive.[133] Transportation problems do not appear to stymie the competitive forces in the gasoline market. It is doubtful that the inland markets served by one or two pipelines will be any less competitive if pipeline rates were deregulated as long as access to a pipeline is ensured.

The focus in this section has been on one aspect of structure, namely concentration. While concentration is an important indicator of the ability of firms to act in an interdependent manner, it is not the only predictor. The other aspect, which many state is more important, is the nature of conditions of entry.[134]

The conditions of entry are important because if it is easy to enter the industry the effect of high concentration can be undermined by new and potential entrants. Potential competitors can impose substantial limits on the ability of existing firms to exert market power. If entry conditions are relatively difficult (if substantial barriers to entry exist), then high concentration is important since the market power it indicates will not be undermined easily by new and potential entrants.[135]

Entry into the pipeline industry is not restricted by regulation in the sense that a certificate of public convenience and necessity must be obtained from a regulatory agency. While environmental permits may be necessary, these are not the types of entry barriers that are usually associated with a regulated industry, nor do they usually prevent the entry of pipelines into the industry.

As pipelines are built into more environmentally sensitive areas, however, the difficulties associated with obtaining the necessary environmental permits may increase. For example, the proposed Northern Tier Pipeline, from Port Angeles, Washington, to Clearbrook, Minnesota, has been delayed for a number of years because of the need to obtain approximately 1,400 permits, including many environmental permits. The pipeline now faces a particularly difficult obstacle since the Governor of the State of Washington has denied an environmental permit for the pipeline because its route crosses under Puget Sound, an environmentally sensitive area. Another example of environmental difficulties existed with TAPS which necessitated the passage of special legislation to expedite the environmental permitting process.[136]

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[132]Hansen 96-98.

[133]J. Delaney, R. Fenili, and H. Field, *The State of Competition in Gasoline Marketing* (1981).

[134]Scherer, *supra* note 84.

[135]Id. at 11, 236.

[136]Trans-Alaska Pipeline Authorization Act, Pub. L. 93-153, Nov. 16, 1973, 87 Stat. 584, 43 U.S.C. 1651 *et seq.*

Environmental permits may take on an attribute of a barrier to entry. While most writers think of a barrier to entry in terms of the cost advantage an industry member has over the potential entrant,[137] they often neglect the importance of legal restrictions. For example, a legal restriction, such as an environmental permit, although costing the same to industry members and new entrants, may become a barrier to entry if new entrants cannot obtain one because the permitting authority refuses to grant more.[138] In this instance, entry may be impossible.

Pipelines must obtain rights-of-way in order to be built. The ability to obtain these rights-of-way may turn into an entry barrier if the same kind of reasoning applicable to environmental permits is applied to rights-of-way.[139] In the past the acquisition of rights-of-way has not been a serious problem. Many states have eminent domain laws giving the pipeline the power to condemn private land for use as a right-of-way.[140] Even with eminent domain authority securing the right-of-way may be a time-consuming task.[141] Eminent domain authority does not exist at the federal level; however, its nonexistence has not precluded extensive pipeline cosntruction.[142] For pipelines which cross federal lands, the Secretary of the Interior controls the permitting process.[143] While the Secretary has the right to attach various conditions to the permit, it has not been an obstacle to entry into the industry. On the whole, while the theoretical existence of a legal restriction in obtaining the necessary right-of-way is possible,[144] in practice few, if any, pipelines have been stymied because of the lack of rights-of-way.[145]

While entry is not regulated, two conditions of entry can make the pipeline industry relatively difficult to enter by nonoil companies because they give existing companies a substantial advantage over new entrants. One is economies of scale and the other is access to capital.

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[137]J. Bain, *Industrial Organization*, 1968; J. Ferguson, *Advertising and Competition: Theory, Measurement, Fact*, 1974; G. Stigler, *The Organization of Industry*, 1968.

[138]H. Demsetz, *Barriers to Entry*, 72 American Econ. Rev. 47 (1982).

[139]Id.

[140]At least 22 states have laws relating to eminent domain and/or common carrier responsibilities of pipelines: Arizona, Arkansas, California, Colorado, Indiana, Kansas, Kentucky, Louisiana, Michigan, Montana, Nebraska, Nevada, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, West Virginia, and Wyoming. A. Johnson, *Petroleum Pipelines and Public Policy, 1906-1959*, 21, 189 (1967). See also W. Beard, *Regulation of Pipe Lines as Common Carriers*, 39-42 (1941).

[141]Colonial Pipeline's problems in securing rights-of-way in Pennsylvania are an example. G. Wolbert, Jr., *supra* note 85, at 123.

[142]During World War II two pipelines encountered difficulty in obtaining rights-of-way. Congress enacted the Cole Act, 55 Stat. 610, 15 U.S.C. note prec. 715, July 1, 1941, which enabled interstate pipelines to exercise the right of eminent domain when the President determined that such action was in the interest of national defense. This solved the pipelines' problem. Id. at 20.

[143]30 U.S.C. 185. It should be noted that any statute which deregulates pipelines must also revise this section of the Mineral Leasing Act. All pipelines receiving a permit crossing federal lands must be operated as common carriers. 30 U.S.C. 185 r (1). The pipeline must transport all oil without discrimination without regard to whether it was produced on federal land. 30 U.S.C. 185 r (2)(A). All oil owned by the government or owned by any lessee of government land has the right to have their oil carried at reasonable rates and without discrimination. 30 U.S.C. 185 r (4). A substantial number of pipelines hold permits to cross federal lands. See, Hearings before the Subcomm. on Public Lands of the House Comm. on Interior and Insular Affairs, 93rd Cong., 1st Sess., *Oil and Natural Gas Pipeline Rights-of-Way*, 112-114 (1973).

[144]*Supra* note 138.

[145]In other industries access to rights-of-way is a particular problem. For example, coal slurry pipelines have not been built because of the lack of either state or federal eminent domain authority. Without such authority, railroads have been able to stop or greatly delay the entry of coal slurry pipelines. Federal eminent domain legislation has been thwarted thus far in the Congress.

Pipelines exhibit substantial economies of scale. This means that as the size of the pipeline diameter increases, throughput increases geometrically while unit costs increase linearly. Thus, as throughput rises, unit costs decrease throughout the entire range of pipeline diameters.[146]

This implies that a new pipeline constructed to compete with existing pipelines must be of sufficient size to utilize the economies of scale inherent in pipelines. This means that sufficient volume must be available before a new pipeline will be built; otherwise the new pipeline will not enter if it cannot cover total cost. Since existing pipelines can expand more cheaply than new pipelines can be built up to some limit, this imparts an advantage to existing industry members. Furthermore, the new pipeline may have to enter at a size that is too large for the present market, thereby lowering the prices that can be charged by all industry members, which may forestall entry until the market grows sufficiently. Counterbalancing this advantage to existing industry members is that existing pipelines, in general, are not very big relative to the size of the market, so that new pipelines may not have to overcome substantial scale economies of existing pipelines.[147] While scale economies could be a barrier to entry, the proliferation of pipelines over the years is one indicator that entry into the industry has not been forestalled due to this factor. Whether this will hold for the future is less certain, because of the existence of a new generation of large diameter pipelines, and because the need for new pipelines is small given the slow growth in demand.

The second entry condition that may pose a barrier is access to capital. Pipelines are highly capital intensive, requiring substantial amounts of money initially in order to construct the pipeline. Operating costs once the pipeline is built and sufficient throughput is available are low by comparison. Financing of pipelines traditionally has been done either internally by the oil company for wholly owned lines (or undivided interest lines) or by the signing of throughput guarantees when joint ventures are involved.[148] Throughput guarantees represent long-term commitments by the shipper-owner to use the pipeline at a certain level or cover all of its share of the operating and interest costs. These guarantees are highly valued by the investment community since they reduce the risk element substantially. Independent companies unable to obtain such guarantees face greater problems in arranging financing. Therefore, oil company-sponsored pipelines have an external financing advantage over independently owned pipelines. Internal financing is on an equal footing, however. Therefore, depending upon the size of the pipeline and the need for external financing, nonoil companies may be disadvantaged in obtaining throughput agreements usually needed for financing, and in their ability to obtain capital.

[146]Coburn II-19-23.
[147]See Coburn 58, 64-65.
[148]Wolbert, *supra* note 85, at 229 *et seq.*

Entry theory recently has focused not only on the ability to enter an industry but also the ability to exit an industry.[149] This evolution of entry theory, which is part of what has become known as the theory of contestable markets,[150] posits that for an industry to be perfectly contestable entry must be free and exit absolutely costless. Free entry is used not in the sense that entry is costless or easy, "but that the entrant suffers no disadvantage in terms of production technique or perceived product quality relative to the incumbent."[151] Additionally, exit must be free and costless which means "that any firm can leave without impediment, and in the process of departure can recoup any costs incurred in the entry process. If all capital is salable or reusable without loss other than that corresponding to normal user-cost and depreciation, then any risk of entry is eliminated."[152]

Since the above analysis indicates that the entry into the pipeline industry is relatively free, the next question, then, is whether the pipeline industry permits free exit, that is, is exit costless, or are there costs associated with exit that impose entry barriers. Of course, it must be borne in mind that perfect contestability, like perfect competition, is merely a model against which economists measure the real world. Thus, absolutely free exit may never exist, but relatively free exit may be the optimum.

The issue, then, for the pipeline industry is not only whether entry is relatively easy, but also whether exit is relatively easy. In examining this question it is important to bear in mind whether costs are sunk costs, or merely fixed costs.[153] For example, airplanes might be individually costly; however, the costs are not sunk since their mobility from market to market and their ability to be resold makes the fixed cost unimportant as an entry barrier to a particular route.[154] An airport terminal, however, may be not only a fixed cost, but a sunk cost, since its mobility is limited and its resale value uncertain.

Pipelines are characterized by high fixed costs, namely, the costs associated with buying pipe and related facilities and initial construction. Whether these costs are also sunk costs is an open question that requires additional investigation. Some considerations can provide insight. For small pipeline systems, such as gathering lines, it is relatively easy to reuse the pipe for other gathering systems. The gathering pipelines usually are not buried, or if they are buried, it is in shallow ditches. Thus, the salvage value is high. For

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[149]W. Baumol, *Contestable Markets: An Uprising in the Theory of Industry Structure*, 72 American Econ. Rev. 1 (1982); E. Bailey, *Contestability and the Design of Regulatory and Antitrust Policy*, 71 American Econ. Rev. 178 (1981).

[150]Baumol indicates that a perfectly contestable market is a benchmark for desirable industrial organization. The characteristics of a perfectly contestable market are: (1) entry is absolutely free and exit is absolutely costless; (2) it never offers more than a normal rate of profit—its economic profits must be zero or negative; (3) there is an absence of any sort of inefficiency in production in industry equilibrium; and (4) in long-run equilibrium no product can be sold at a price that is less than its marginal cost. W. Baumol, *Contestable Markets: An Uprising in the Theory of Industry Structure*, 72 American Econ. Rev. 1-5 (1982).

[151]Id. at 3-4.

[152]Id. at 4.

[153]E. Bailey, *Contestability and the Design of Regulatory and Antitrust Policy*, 71 American Econ. Rev. 178 (1981). Bailey, citing the work of Demsetz, indicates that "it is sunk costs and not economies of scale which constitute the barrier to entry that confers monopoly power. It is primarily the risk involved in expending large sums of money in order to acquire sunk-cost facilities that deters new entry when an otherwise profitable entry opportunity arises. Potential competition becomes an ever more effective force as the extent of large irretrievable entry costs declines." Id. at 178-179.

[154]Id. at 179.

larger systems, the salvage value is highly uncertain. It may be impossible to take the pipe out of the ground because of the enormous expense involved or because of environmental or other reasons. The pipeline can be resold, however. Additionally, the right-of-way may be valuable not only to other petroleum pipelines, but to other types of pipelines, such as natural gas or coal slurry. For these larger lines, there is relatively little experience in industry exit since, overwhelmingly, the lines remain in service. More data and investigation are required to answer this question and to determine whether the fixed costs associated with pipelines truly are sunk costs and whether exit is relatively costly or costless.

Entry conditions, therefore, may pose a barrier in some instances, but generally it may be concluded that the barriers are not substantial nor insurmountable. High concentration ratios, therefore, are less of a problem because of the relative ease with which other companies can enter the industry, and perhaps exit the industry.[155]

Finally, a last consideration is the incentive to keep pipelines utilized. While operating costs of a pipeline are relatively low, at some point of utilization the unit cost of throughput starts to increase dramatically. In large diameter pipelines this point is at about 50 percent of utilization.[156] Therefore, these pipelines have an incentive to use at least 50 percent of their capacity; otherwise, unit costs become substantial and impose severe transportation penalties. In times of weak demand this means that rivalry among pipelines for volume increases. Logically, pipelines would have few or no incentives to increase prices to a monopoly level since this may drive away potential users of the line. The demand for pipeline services relative to pipeline capacity therefore becomes an important factor in keeping pipeline rates competitive.

In high demand periods, however, the incentives may run the other way. That is, a pipeline may want to discourage shipments and may raise rates for its customers. The owner of the pipeline still ships at cost, while nonowners must bear the full brunt of the price. It is because of this possibility that even in a fully deregulated environment there ought to be some mechanism to institute price regulation in particular cases if it can be shown that rates are excessive.

D. *Continuing Indirect Regulatory Control Over Rates and Rates of Return*

The previous section indicated that market forces can ensure competitive rates and reasonable rates of return in a deregulated environment; however, a regulatory mechanism exists that indirectly may achieve the same result. This mechanism is the antirebate provisions of the Interstate Commerce Act.[157]

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[155] Another study has concluded that the petroleum pipeline industry is competitive. That study analizes rate of return in the industry and concludes that competition is the constraining force yielding reasonable rates of return and not regulation or the Consent Decree. E. Mitchell, *A Study of Oil Pipeline Competition*, 1982.

[156] *Supra* note 95.

[157] 49 U.S.C. 2 and 49 U.S.C. 41, 43 (the latter are known as the Elkins Act).

The antirebate provisions of ICA prohibit a pipeline from paying one shipper to use the pipeline without also paying other shippers. These provisions created a problem for a pipeline owned by an oil company also shipping in the pipeline, if the shipper-owner received a dividend as a return on its investment. The question raised is, are dividends rebates?[158] The U.S. charged in a series of cases filed on September 30, 1940, that dividends paid to shipper-owners were rebates and violated the Elkins Act.[159] Due to the exigencies of World War II, the cases were settled on December 23, 1941, through a consent decree that permitted pipelines to pay a dividend of 7 percent on the valuation of the pipeline. The settlement of these Elkins Act cases became known as the Elkins Act Consent Decree, or just the Consent Decree.[160]

The Consent Decree has provided an upper limit on rate of return for pipelines, but it also has provided an incentive to alter the capital structure for pipelines so that they use small proportions of equity and high proportions of debt. This skewing of the capital structure occurs because the valuation methodology upon which the dividend limitation is based allows for recovery of interest expenses separate from the normal recovery through the allowed percentage rate of return.[161] As a result, many pipeline stock companies have only 10 percent equity and 90 percent debt.

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[158]There is another question that has been discussed extensively in the literature on oil pipelines and that is, does the dividend confer a cost advantage to the owner-shipper that can be used in an anticompetitive manner? This issue stems from the situation that owner-shippers receiving a dividend are shipping at cost, while nonowner-shippers are shipping at something above cost. Many have argued that this situation is inherently unfair (see Senate Pipeline Report 85-86) while others have indicated that the owner-shipper is merely receiving its normal return on investment for the risk it took for building the pipeline in the first place. More fundamentally, however, the question is whether the dividend includes something more than a normal return on investment and whether this extra return can be used in a competitively advantageous manner. While no one has been able to prove whether the dividend has been used in an anticompetitive manner in upstream markets, DOE has shown conclusively that it has not been used in gasoline marketing, at least during the last decade. In a study released in January 1981, DOE concludes that profits from upstream segments have not been used to subsidize gasoline marketing during the 1970s. Delaney, Fenili, and Field, *The State of Competition in Gasoline Marketing*, 1981. Given the highly competitive nature of gasoline marketing, it is very unlikely that in a deregulated environment, that any returns above a normal return on investment to pipeline shipper-owners that also market gasoline will be used in downstream marketing in an anticompetitive manner.

[159]The cases are cited and discussed in Senate Pipeline Report 119-122.

[160]Id. at 122-123.

[161]An example may help to illustrate this concept.

	Pipeline A	Pipeline B
Equity	$1,000,000	$ 100,000
Debt	—	900,000
Total Valuation	1,000,000	1,000,000
Interest at 10%	—0—	90,000
Dividend Return to Equity (7% of total valuation)	70,000	70,000
Total Allowed Return to Capital	70,000	160,000

Pipeline A, 100 percent equity financed, receives a total return to capital of $70,000. Pipeline B, which has only 10 percent equity, receives the same dollar return to equity of $70,000, but, it also receives $90,000 in interest recovery through its rates, for a total dollar return to capital of $160,000. Thus, the higher the percentage of debt, the higher dollar return to capital and, in turn, the higher total percentage return to capital. D. Mead, *Exxon Paper on TAPS Deregulation*, 2-3 (October 27, 1981), memorandum to Robert Means, Director, Office of Regulatory Analysis, FERC, attached to letter from Means to Frank L. Heard, Jr., General Counsel, Exxon Pipeline Company, October 27, 1981.

Recently, the Department of Justice has moved to vacate the Consent Decree.[162] If the Consent Decree is vacated, what is the status of dividends paid by the pipeline to shipper-owners? Do they become rebates subject to the prohibitions of the Elkins Act? The Department of Justice has taken the following position:

> The theory of the complaint [Elkins Act cases] was that any dividend or other payment made by a pipeline company to a shipper-owner not equally available to a non-owner-shipper constituted an unlawful rebate. This theory, however, is not consistent with the requirement that the owners of a regulated private business are entitled to fair compensation for the use of their assets employed in the venture. *See, e.g., Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944) (*"Hope"*). Under the Interstate Commerce Act and other federal regulatory statutes, regulated enterprises are entitled to charge "just and reasonable" rates, *see, e.g.*, 49 U.S.C. §1(5), and these have been defined by the Supreme Court to be rates which will yield sufficient revenue to cover both operating expenses and the "capital costs of the business", including "service on the debt and dividends on the stock". *Id.* Thus, if revenues are lawfully collected under Section 1(5) of the Interstate Commerce Act, 49 U.S.C. §1(5), dividends paid from those revenues would pass muster under the Elkins Act, even if paid to shipper-owners.[163]

Thus, in a regulated environment, dividends which fell within the permissible returns on investment established by *Hope* would not be considered rebates and would not violate the Elkins Act.

Would this logic apply to a deregulated environment? There is no rational reason why it should not. The complication, of course, is that what may be considered a reasonable return in deregulated industry may not be considered reasonable in a regulated industry. There is a substantial potential that FERC may become embroiled in the same types of issues that are now before it in *Williams* and *TAPS* if nonowner-shippers complain to FERC that the dividends paid by pipelines to shipper-owners appear unreasonable. It is clear that the Elkins Act and other antirebate provisions of ICA could be used by aggrieved parties as a mechanism to prevent unreasonably high rates and unreasonable returns on investment. A deregulation statute must come to grips with this problem, either by repealing the applicability of the Elkins Act to pipelines, as suggested by the Departments of Energy and Justice,[164] or by clarifying what is a permissible dividend.

Another question related to continuing regulation is whether other words in ICA would provide a mechanism for challenging monopolistic rate practices in a deregulated environment. For example, do the terms undue or unreasonable preference, advantage, prejudice, or discrimination provide a method of challenging unreasonably high rates?[165]

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[162] *U.S. v. The Atlantic Refining Company, et al.*, Civil Action No. 14060 (D.D.C. November 16, 1981), Motion of the United States To Vacate The Final Judgment And For Other Relief.

[163] *U.S. v. The Atlantic Refining Company, et al.*, Statement of Points And Authorities In Support Of Motion Of The United States of America To Vacate The Final Judgment And For Other Relief, 12.

[164] Statement of Leonard L. Coburn, Acting Director, Office of Competition, Department of Energy, and Testimony of William F. Baxter, Assistant Attorney General, Antitrust Division, Department of Justice, before the Subcomm. on Fossil and Synthetic Fuels of the House Comm. on Energy and Commerce, May 10, 1982.

[165] 49 U.S.C. 3(1), 13(4).

The discrimination term has been used to mean charging one shipper a higher rate for similar shipments to the same destination.[166] The ICC has found with respect to a challenge by nonowner-shippers alleging that the payment of dividends to owner-shippers was an unjust discrimination and undue prejudice, that a dividend payment that fell within the ICC's determination of reasonableness will remove any unjust discrimination and undue prejudice.[167] This seems to imply that rates yielding returns above the ICC's determination of reasonableness would be unjustly discriminatory or unduly prejudicial.

Again, we are treading on uncertain ground. The deregulation statute must clarify what these terms mean or else repeal their applicability to pipelines, as suggested by the Departments of Energy and Justice.[168].

E. *Special Cases*

In any deregulation scenario there always will be the special case that will be pointed to to indicate why deregulation should not be implemented. One such case may be the Trans Alaska Pipeline System (TAPS). There may be others as well.

TAPS is the only transportation system from the North Slope of Alaska to Valdez, located in Southern Alaska, where ocean tankers can transport the crude oil elsewhere. It is owned in an undivided interest basis[169] by eight major oil companies, namely, Amerada Hess, Arco, BP, Exxon, Mobil, Phillips, Sohio, and Union.[170] Three of the eight, Arco, BP/Sohio, and Exxon, which own about 90 percent of the pipeline, also are the largest owners of the Prudhoe Bay Field on the North Slope.

TAPS may be a special case because competition will not reduce or eliminate the monopoly power inherent in the pipeline. The owners can adversely affect many interests, including independent crude oil producers, nonowner-shippers, the State of Alaska, and the nation.

One argument raised by the owners of TAPS is that because it is operated as an undivided interest line, with eight separate tariffs, it functions as if eight separate lines existed within one physical facility. This is true to some extent. In times of slack demand, there may be intense rivalry among the eight owners to fill each's portion of the line. One example of differences among the eight occurred when tariffs were filed initially, the rates for transportation ranged from a low of $6.04 to a high of $6.44. This range has been extended to a low of $5.30 because Exxon had to lower its tariff due to Consent Decree limitations.

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[166]49 U.S.C. 2, 3(1), *Potomac Elec. Power Co. v. Penn Central*, 356 I.C.C. 815, 827 (1977); *Lynchburg Traffic Bureau v. U.S.*, 225 F.Supp. 874 (W.D.Va. 1963), *aff'd* 377 U.S. 270 (1964).

[167]*Minnelusa Oil Corp. v. Continental Pipe Line Co.*, 258 I.C.C. 41 (1944); *Pipeline Rates on Propane from Southwest to Midwest*, 318 I.C.C. 615 (Div. 2 1982).

[168]*Supra* note 164.

[169]*Supra* note 14.

[170]Ownership shares are distributed among the eight in the following manner: Sohio 33.24%, Arco 20.96%, Exxon 19.93%, BP 16.15%, Mobil 4.98%, Union 1.63%, and Amerada Hess 1.46%. BP owns a controlling interest in Sohio; therefore, their ownership shares should be combined to present a truer picture of control.

There are several considerations, however, that mitigate this rivalry. First, the three principal owners of TAPS are also the principal owners of the Prudhoe Bay Field, and other areas on the North Slope. The incentives of these owners appear to be to maintain higher transportation rates and lower wellhead prices due primarily to the tax structure. They maximize their profits through higher transportation rates. As a result, profit maximization may override the incentives to compete for transportation services. While the economic incentives to shift profits may be entirely rational, the effect may be anticompetitive as discussed in the next paragraph. Second, in a tight market the rivalry among the eight owners is likely to disappear since TAPS is the only method of transporting the crude and the pipeline will be full anyway. In the tight market situation the monopoly power of the pipeline could be used to set rates above a competitive level. This is a very real possibility that may put TAPS into a special category.

The interests of crude oil producers, shippers, the State of Alaska, and the nation are involved. High transportation rates will mean lower wellhead prices, since the markets within which Alaskan crude is sold can be considered competitive, preventing the passthrough of high transportation costs. The high transportation costs, instead, will translate into lower netbacks at the wellhead. Since TAPS' tariffs are a large part of the wellhead price, about 20 percent, the wellhead impact can be substantial. Lower wellhead prices affect incentives to explore for and develop oil. Lower wellhead prices also may have an anticompetitive effect by foreclosing the North Slope to nonowner-shippers. The wellhead price may be forced so low that companies which do not own a share of the pipeline will have little or no incentive to enter the North Slope area because returns will be inadequate. Not only is there the interest of crude oil producers but a substantial national interest in maintaining incentives for North Slope exploration and development in order to reduce imports. Furthermore, federal leasing from the National Petroleum Reserve in Alaska located on the North Slope may be adversely affected. Bids for leases may be low reflecting the bidder's high cost that must be paid for using the pipeline. Alternatively, little or no interest may be shown in these federal lease sales, precluding any development.[171]

Nonowner-shippers, which can be considered consumers of transportation, are affected by changing tariffs. They are better off as rates go down and worse off as rates go up. For them, the rate is the real cost of transportation, since there is no dividend to lower the nominal tariff rate. Owners complain that nonowner-shippers are free-riders, that is, they make no investment but have all the rights of owners since the pipeline is a common carrier. While the free-rider complaint is real, owner-shippers are compensated in the form of a reasonable return on investment. Anything above a reasonable level is over-compensation. In this instance, the free-rider complaint disappears. Therefore, the market power inherent in the pipeline must be reduced to the level of producing reasonable rates; otherwise, nonowner-shippers will be disad-

[171]"May NPR-A lease sale to offer 3.5 million acres," 80 *Oil & Gas Journal* 85, (April 26, 1982).

vantaged. Furthermore, the pipeline is a common carrier which requires that all shippers be treated in a nondiscriminatory manner. While the owners of the pipeline have stated that they are quite willing to sell a portion of the pipeline, nonowners should not be required to buy into the pipeline in order to ship. Shipping without ownership is part and parcel of the common carrier requirements of pipelines, which receive public benefits in the form of eminent domain as a *quid pro quo*.

Finally, the State of Alaska has an interest in the price of oil at the wellhead since it derives a 12.5 percent royalty based on that price. This is a substantial interest even though it may be derived directly from producers and indirectly from the federal government.[172] But this is the way the royalty system has worked ever since its inception and there does not appear to be a good reason to single out Alaska for different treatment.

One final argument made by the TAPS owners is that if TAPS is singled out and not deregulated exceptions can be made for other pipelines into other frontier areas. This could create a chilling effect on the private construction of new projects. Federal government involvement may become necessary. This is unlikely to happen. Oil companies have assumed great risks in other times of uncertainty in order to exploit crude oil resources. New pipelines currently are being built into frontier areas even with the present uncertainty over rates. Therefore, as long as rate regulation is reasonable, there should be no inhibitions or disincentives to build new pipelines.

In summary, TAPS may be a special case. Market forces appear to be inadequate to reduce the monopoly power of the pipeline. The question to be resolved, therefore, is whether regulation should remain in order to protect the various interests involved. Because of the substantial impact of TAPS, this question should be resolved by excepting TAPS from the deregulation statute.

There may be other special cases which have not been singled out. Rather than trying to speculate about which pipeline may be a special case, it would be preferable to deregulate the remaining pipelines, but at the same time provide a clear-cut mechanism whereby a pipeline that does abuse its monopoly power can become subject to rate regulation again. What is required is a clear-cut statement in the deregulation law that aggrieved persons can initiate a proceeding before FERC to reinstitute rate regulation based on an abuse of monopoly power.

The form of rate regulation chosen should not rely upon the traditional approach using the concept of just and reasonable rates. Relying upon this traditional public utility type approach would require the same analysis now occurring in the *Williams* and *TAPS* proceedings and would not resolve the problems FERC now faces in those proceedings. Rather, the complainant would have the burden of showing that the rate is excessive, that is, that the rates charged were above normal competitive rates due to inadequate competition based upon a showing that market forces were insufficient to induce a

[172] In an analysis by Exxon, it is stated that every $1.00 reduction in TAPS' tariffs bestows a 25-cent benefit on Alaska, 13 cents coming from the TAPS owners and 12 cents indirectly through the federal income tax. Exxon, *Deregulation of TAPS*, 5 (September 16, 1981).

normal rate of return. Therefore, the test developed by FERC would be a market-based test comparing the pipeline in question to similar pipelines that were subject to competition. If the complainant's burden were met, the pipeline could rebut the evidence by showing that special circumstances warranted the higher rates. Such circumstances could include higher risk, unusual construction problems, unusual environmental problems, and other factors. This market-based test undoubtedly would create its own set of problems, but at least it would depart from the public utility type of regulation and introduce more flexibility into the rate regulation process.

In the rate proceeding, the burden would be on the complainants to make an affirmative showing that the pipeline should be subject to rate regulation. Placing the burden on complainants should reduce frivolous complaints, since the pipeline could continue to charge its deregulated rates until ordered to do otherwise. An evidentiary hearing would permit a full airing of views and provide the appropriate process to determine the validity of the complaint. In this way, other special cases can be dealt with, without trying to make a prior determination about which pipeline should be treated as a special case.

V. A POLICY FOR DEREGULATION OF PETROLEUM PIPELINES

The analysis leads to the conclusion that in most situations the ability of petroleum pipelines to exert monopoly or monopsony power is circumscribed. Structurally, pipeline concentration is high, however, in many instances this concentrated structure is undermined by the existence of waterborne, and in some instances, truck transportation. Entry, on the other hand, is relatively easy, further limiting the ability of a pipeline to exert any inherent monopoly or monopsony power. Finally, competition in end-use markets will limit the ability of pipelines to pass along excessive rates. The general conclusion, therefore, is that rate deregulation of petroleum pipelines should be pursued.

Despite this general conclusion, there are problems. First, there is some incentive to shift costs from crude to transportation to limit windfall profits tax exposure. There also may be some incentive to shift these costs as a means of limiting rivalry. In some downstream markets not served by anything but pipelines, some monopoly situations may exist. Again, competition in end-use markets may ameliorate this monopoly power to some extent, but there remains a real ability to shift costs or to charge excessive transportation rates.

The deregulation proposal advanced here is not all-encompassing because of these potential problems. It does not advocate full deregulation with no backstops. What it does do is to present a first step, albeit a large one, that preserves the ability to reimpose some form of rate regulation if the case requires it.

The policy that should be followed, therefore, is one of eliminating all rate regulation for interstate petroleum pipeline transportation in the lower forty-eight states. Special cases may be found which require the reimposition of rate regulation. For example, TAPS should be a special case because of the serious monopoly problems inherent there. Moreover, the deregulation legislation must provide for the reimpoosition of rate regulation upon a showing in an administrtive proceeding that the pipeline in question is charging excessive rates and abusing its monopoly or monopsony position. The form of rate regulation relied upon should not be the traditional one using the concepts of just and reasonable, but should use a market-based test. This proposal should go a long way toward reducing a major regulatory burden imposed on the oil industry, and at the same time could solve some of the thorny rate regulation problems now before FERC. It is in the interest of industry and consumers without jeopardizing the competitive system.

TABLE I

CRUDE PIPELINE CORRIDORS — 1979

Company Rank / Corridor	Alaska	Capacity[1]	CR	Wyoming West	Capacity	CR	Wyoming East	Capacity	CR
1.	Trans Alaska Pipeline System	1210	100	Chevron	110	71.90	Platte	150	58.37
2.				Amoco	43	22.10	Amoco	107	41.63
3.									
4.									
CR 4		1210	100		153		100	257	100
5.									
6.									
7.									
8.									
CR 8									

[1]All capacity in thousand barrels per day.

TABLE I—Continued

CRUDE PIPELINE CORRIDORS — 1979

Company Rank	Corridor: Texas to Cushing, OK	Capacity	CR	Cushing, OK North	Capacity	CR	Gulf Coast Upper Mid-Continent	Capacity	CR
1.	Texoma	400	21.76	Ozark	322	19.71	Capline	1209	73.36
2.	Basin	394	21.44	Cushing-Chicago	295	18.05	Mid-Valley	277	16.81
3.	Seaway	314	17.08	Osage	280	17.14	Mobil	162	9.83
4.	Amoco	285	15.51	Amoco	260	15.91			
CR 4		1393	75.79		1157	70.80		1648	100
5.	Arco	160	8.71	Texaco-Cities Service	137	8.38			
6.	Amoco	135	7.34	Williams	106	6.49			
7.	Texaco-Cities Service	61	3.32	Phillips	91	5.57			
8.	Shell	46	2.50	Continental	72	4.41			
CR 8		1979	97.66		1563	95.65			
Others	Continental	25		Shell	39				
	Texaco-Cities Service	18		Texaco-Cities Service	32				
		1838			1634				

TABLE I—Continued

CRUDE PIPELINE CORRIDORS — 1979

Company Rank	Corridor	Gulf Coast to Upper MidContinent	Capacity	CR
'1.		Capline	1209	27.80
2.		Chicap	490	11.27
3.		Texoma	400	9.20
4.		Ozark	322	7.40
CR 4			2421	55.67
5.		Seaway	314	7.22
6.		Cushing-Chicago	295	6.78
7.		Mid-Valley	277	6.37
8.		Amoco	260	5.98
CR 8			3567	82.02
Others		Woodpat	251	
		Mobil	162	
		Texaco-Cities Service	161	
		Texaco-Cities Service	137	
		Shell	39	
		Texaco-Cities Service	32	
			4349	

TABLE I—Continued

CRUDE PIPELINE CORRIDORS — 1979

Company Rank	Corridor	Upper MidContinent	Capacity	CR	Upper MidContinent	Capacity	CR	West Texas	Capacity	CR
1.		Lakehead	740	17.56	Lakehead	740	23.75	Basin	347	20.29
2.		Lakehead	710	16.85	Chicap	490	15.73	West Texas Gulf	335	19.90
3.		Chicap	490	11.63	Marathon	336	10.78	Mesa	316	18.48
4.		Marathon	336	7.98	Marathon-Mid-Valley	302	9.69	Mobil	250	14.62
CR 4			2276	54.02		1868	59.95		1148	67.13
5.		Marathon	315	7.48	Woodpat	251	8.06	Arco	170	9.94
6.		Marathon-Mid-Valley	302	7.17	Marathon	174	5.58	Phillips	98	5.73
7.		Woodpat	251	5.96	Texaco-Cities Service	161	5.17	Texas	65	3.80
8.		Marathon	174	4.13	Tecumseh	117	3.75	Phillips	63	3.68
CR 8			3318	78.36		2571	82.51		1644	96.14
Others		Texaco-Cities Service	161		Texas	104		Exxon	38	
		Tecumseh	117		Texas	89		Shell	28	
		Texas	104		Buckeye	87			1710	
		Texas	89		Marathon	60				
		Buckeye	87		Marathon	48				
		Marathon	72		Sohio	47				
		Marathon	60		Pure	35				
		Marathon	48		Sohio	25				
		Sohio	47		Texas	25				
		Pure	35		Marathon	17				
		Sohio	25		Marathon	8				
		Texas	25			3116				
		Marathon	17							
		Marathon	8							
			4213							

TABLE I—Continued

CRUDE PIPELINE CORRIDORS D 1979

Company Rank / Corridor	West Texas to TX Gulf	Capacity	CR	East Texas & LA to TX Gulf	Capacity	CR	All Texas & LA to TX Gulf	Capacity	CR
1.	Rancho	385	61.11	Texas	360	56.34	Rancho	385	12.92
2.	Exxon	130	20.63	East Texas Main Line	63	9.86	Texas	360	12.08
3.	Texas-New Mexico	68	10.79	Mobil	61	9.55	Basin	347	11.65
4.	Amdel	47	7.46	Pure	50	7.82	West Texas Gulf	335	11.25
CR 4		630	100		534	83.57		1427	47.90
5.				Shell	45	7.04	Mesa	316	10.61
6.				Black Lake	32	5.01	Mobil	250	8.39
7.				Neale	28	4.38	Arco	170	5.71
8.							Exxon	130	4.36
CR 8					639	100		2293	76.97
Others							Phillips	98	
							Texas-New Mexico	68	
							Texas	65	
							Phillips	63	
							East Texas Main Line	63	
							Mobil	61	
							Pure	50	
							Amdel	47	
							Shell	45	
							Exxon	38	
							Black Lake	32	
							Shell	28	
							Neale	28	
								2979	

TABLE II

PRODUCT PIPELINE CORRIDORS — 1979

Company Rank	Corridor: Gulf Coast-South & Northeast	Capacity[1]	CR	Linden-Philadelphia Delaware-West	Capacity	CR
1.	Colonial	1908	81.36	Buckeye	321	42.46
2.	Plantation	437	18.64	Laurel	180	23.81
3.				Arco	134	17.72
4.				Mobil	74	9.79
CR 4		2345	100		709	93.78
5.				Sun	36	4.76
6.				Getty	11	1.46
7.						
8.						
CR 8					756	100

[1]All capacity in thousand barrels per day.

TABLE II—Continued

PRODUCT PIPELINE CORRIDORS — 1979

Company Rank	Corridor	Texas Gulf Coast-north	Capacity	CR	Cushing-north & west	Capacity	CR
1.		Explorer	380	41.53	Williams	248	38.39
2.		Texas Eastern Trans.	300	32.79	Phillips	131	20.28
3.		Mobil	95	10.38	Kaneb	93	14.40
4.		Gulf	48	5.25	Chase	49	7.59
CR 4			823	89.95		521	80.65
5.		Arco	47	5.14	Cherokee	28	4.33
6.		Exxon	28	3.06	Mobil	27	4.18
7.		Mobil	17	1.86	Arco	25	3.87
8.					Amoco	23	3.56
CR 8			915	100		624	96.59
Others					Getty	12	1.86
					Texaco-Cities Service	10	1.55
						646	100

TABLE II—Continued

PRODUCT PIPELINE CORRIDORS — 1979

Company Rank	Corridor	Cushing-north & east	Capacity	CR	Upper Great Plains	Capacity	CR	West Slope Cascades	Capacity	CR
1.		Explorer	290	59.06	Chevron	64	51.61	Olympic	170	100
2.		Phillips	105	21.38	Yellowstone	60	48.39			
3.		Cherokee	73	14.87						
4.		Williams	23	4.68						
CR 4			491	100		124	100		170	100