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TERMINAL OPERATORS IN THE NORTHEAST NO. 2
HEATING OIL MARKET.

The City University of New York, Ph.D., 1974
Business Administration

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1974

THE EFFECTS OF STRUCTURAL CHANGES ON INDEPENDENT
TERMINAL OPERATORS IN THE NORTHEAST
NO. 2 HEATING OIL MARKET

by

HERBERT WILLIAM KRUPP

A dissertation submitted to the Graduate
Faculty in Business in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy, The City University
of New York.

1974

This manuscript has been read and accepted for the Graduate Faculty in Business Administration in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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ACKNOWLEDGMENTS

There are many people I wish to thank for making this dissertation possible. Their advice, criticism and assistance have been invaluable.

In particular, I wish to thank Mr. Joseph Lerner, Chief Energy Economist at OEP (now defunct) and Mr. John Zentay, attorney for several independent fuel oil marketers, for their guidance during the early stages of the investigation. Thankful acknowledgment is also due Mr. John Winger, Vice President in Chase Manhattan Bank's Energy Division, for the use of the bank's research facilities. In addition, I wish to gratefully acknowledge the cooperation and assistance of Mr. Daniel Harris, Chairman of the Oil Import Appeals Board, Mr. Lewis Flagg, III, former Chairman, and Dr. Carl Kelley, assistant to the Chairman. Special recognition is also due Mr. Peter Ryan, a personal friend and Vice President at Chase Manhattan, for providing me with some useful contacts in the industry.

To the members of my dissertation committee--Professors Peter Gutmann, Steven Lustgarten and Simon Whitney--I am especially indebted. After struggling through several unwieldy versions of the dissertation, they provided much-needed criticisms and suggestions.

Most of all I owe thanks to my wife, Eileen, who in recent years not only supported me--financially as well as psychologically--but also bore an unfair share of the household chores and took full responsibility for the typing of the dissertation and its drafts. Without her the dissertation would hardly have been completed.

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CHAPTER I*

THE PROBLEM

Of the thousands of petroleum firms operating within the United States, twenty-eight produce 69 per cent of the country's crude oil and refine 87 per cent of the country's petroleum.¹ These companies are fully integrated and typically dominate the markets in which they compete. They sell most of their output under a brand name and, when market conditions permit, shun short-term price competition. For the most part, they are responsible for the technological advances made within the industry. These firms are commonly referred to as the "majors."

In contrast to the majors, the so-called "independents" confine the bulk of their operations to one or two phases of the industry and to a limited geographic market. Typically they are smaller, less brand conscious, and more price competitive than the major petroleum firms. Their investments in assets may vary from a delivery truck or two to millions of dollars for refineries, crude producing properties and equipment, and marketing outlets.

*Footnotes are at the end of each chapter.

Independents' Contribution to Competition

The significant role played by independents in maintaining price competition has been described well by Melvin G. de Chazeau and Alfred E. Kahn in their comprehensive study, Integration and Competition in the Petroleum Industry.² Without the independents, the authors contend, the majors would soon recognize their mutual interdependence and attempt to stabilize the markets in which they operate. The likelihood of "a socially acceptable level of product prices" would be diminished.³

Within most petroleum markets, the independents add to price competition because they must operate in an aggressive and flexible manner in order to survive. In referring to their effects on competition de Chazeau and Kahn assert:

And because they have neither the security nor the sunk investments of their larger rivals, they characteristically use price more willingly and flexibly to attract customers when demand is slack and to increase temporary profits when demand is strong. They may have to be more willing to experiment and to innovate, in order to offset the strategic advantages and possibly the superior efficiency of their bigger competitors. More readily able to move in and out of market situations in response to short-run profit considerations, the independent may play a role entirely disproportionate to its size in keeping markets competitive, flexible, and dynamic and in preventing a recognition of interdependence and the possible bureaucratic conservatism that go with size and quasipermanent life from stultifying competition.⁴

The Federal Trade Commission agreed with de Chazeau and Kahn stating:

The record is clear that independent refiners and marketers exert a beneficial influence upon competition that is disproportionate to their actual representation within the petroleum industry. They have long been innovators of marketing methods and have been the primary agents in translating efficiencies at the production and distribution levels into lower prices at the retail level.⁵

The Allegations

Most petroleum economists probably would concur with the authors and the F.T.C. that the independents indeed play a vital role in the preservation of price competition within the petroleum industry. For this reason, economists and other interested parties, such as the F.T.C. and the Justice Department, took notice when, in the late 1960's, independent wholesalers (primarily independent terminal operators) began to complain of diminishing supplies, declining market shares and narrowing profit margins in the Northeast home heating fuel market.⁶ Because these terminal operators capture about 30 per cent of this market, any deterioration in their competitive ability would inevitably reduce price competition.⁷

Profit margins

Specifically, beginning with the 1966-67 heating season, independents began to complain that their net profit margins were being squeezed by the major petroleum companies, some of whom were engaging "in price wars to eliminate the independents."⁸ One very large terminal operator griped before a federal agency "that it has been forced to pay more than the posted (cargo) price and to sell for less than the posted (tank car or under the rack) price. The result is a severe squeeze on petitioner's operating margins."⁹ Another company complained that "independents currently operate either at a loss or at profit ratios substantially reduced from those prevailing" during the 1950's.¹⁰

The Cabinet Task Force agreed with the terminal operators, asserting that the independents' problem apparently stemmed from "a competitive squeeze vis-à-vis their supplier-competitors, the forward-integrated refiners."¹¹ And a White House statement in 1970 recognized the concern of many members of Congress "over the price" of heating fuel oil to independents, particularly in the New England and Middle Atlantic markets.¹²

Supply and sales volume

Not only were margins being squeezed, but sales were also being curtailed because of shortages of economically-priced heating fuel oil in the supply market. Or so it was alleged. One independent trade association grumbled before a congressional committee that, beginning with the winter of 1966-67, "many of our members were forced increasingly to rely on the spot market for supplies as contracts were terminated by the majors. Many terminal operators experienced absolute shortages of product, and many deepwater terminal tanks were empty for weeks during the several recent winters."¹³ A congressional subcommittee staff report agreed that a shortage indeed existed. Additionally, it accused the refiners of creating the shortage "to take from the terminal operators the customers he could no longer keep for lack of supply. In short, the independent terminal operator was being pushed out of business by an illegal conspiracy of the refiners who had previously supplied him."¹⁴

A federal agency pronouncement in 1968 summarized very well some of the basic supply complaints voiced by the independents during the late 1960's. In part the agency stated:

Supply to a number of independent distributors at the cargo terminal level and some retailers has been, and continues to be, particularly stringent. The distress of these companies is reflected in reduction of share of the market and, in extreme cases, in decline of sales volume. On the other hand, prime suppliers and their affiliates (the major refiners) have apparently enjoyed improvement of competitive position, which they probably could not have gained in the absence of rigid controls on imports of finished products.¹⁵

The Mandatory Oil Import Program

Almost all of the wholesalers in some way blamed the Mandatory Oil Import Program for their economic troubles. It is easy to understand why. The program restricted imports of crude oil and products after March of 1959. With the exception of one firm, the independents had been precluded from importing any distillate at all. They felt discriminated against, for the price of domestic distillate exceeded the price of foreign distillate by 2 or 3 cents.¹⁶

Independents were prone to attack the Import Program for two other reasons as well. First, by blaming the program for their economic troubles, they hoped to persuade policy-makers to draw up legislation or draft regulations granting them import allocations. (In effect, granting them a subsidy.) Second, many of the complaints against the Program were made before the federal Oil Import Appeals Board (OIAB). This Board was empowered to grant emergency import allocations to any firm, but only if the firm could prove that the Import Program had caused it severe economic hardship. Therefore, in order to win their appeal and secure an allocation, the independents had to blame the Program.

Besides voicing their complaints before the OIAB, the independents stated their case before congressional committees and federal agencies on numerous occasions, as well as to the press. In a press release in 1969, an independent association stated that "oil import controls have been a strong factor enabling the fully integrated oil companies to achieve greater control over both wholesale and retail markets. Competition from independent distributors with terminal facilities has been seriously diminished over the past ten years because the economic benefits of foreign oil have been exclusively available to refiners."¹⁷

Another independent testified to the OIAB that "the Oil Import Control Program in its present form is clearly responsible for the current deterioration of competition in the domestic oil and gas industry." While the refiners' sales and profits grow "the smaller independents . . . find their sales relative to the growth of the industry change, if at all, only downward." Moreover, since the Program's inception profit ratios were reduced substantially. As a result "increasingly, the independents have been forced to capitulate to the major oil companies and the number of truly 'independent' distributors able to survive is now very small indeed."¹⁸

This was a recurrent theme among the independents. The Import Program pinched profits so much that independents could not survive. They were forced to accept the invitation offers of the major petroleum companies. It was either merge or go bankrupt. For example, the New England Institute contended before the Senate Subcommittee on Small Business that many acquisitions resulted from "the insidious attrition

to broad free competition that has taken place in the New England wholesale oil marketplace as a result of the economic climate fostered by the oil import quota system."¹⁹

Before the same committee, the Independent Fuel Terminal Association complained "that the import program penalizes the independent terminal operator in two ways--one, by providing our competitors [the majors] with a direct subsidy in terms of low-cost overseas products and two, by creating market conditions which force us to operate on very narrow--and at times, nonexistent--margins of profit."²⁰ Later, the Association stated "given the competitive advantages of the Oil Import Program ... the major companies have increased, since 1959, their market control of the oil heating market--largely through acquisition--and have accelerated the pace of vertical integration."²¹ Similar complaints have been presented before other legislative committees and administrative agencies by these associations and other associations representing independent marketers.

Allegations

Without question, the wholesalers were correct in asserting that the refiners acquired many terminal operators after the Program was implemented in 1959. This cannot be disputed. What can be disputed, however, is whether the Program was responsible for these acquisitions. Little or no concrete evidence was provided by the independents to support their contention that the Program permitted the majors to squeeze profits and, in turn, force the independents to merge. In fact, the independents provided little concrete evidence

that their profits were actually squeezed. In short, the allegations remained largely unsubstantiated.

Though the allegations were unsubstantiated, Eastern politicians eloquently supported the views of their constituents, the independent terminal operators. Because these politicians had access to the press, their statements strongly influenced public opinion. As a result, great pressure was generated and exerted on the Johnson and Nixon administrations to ease the alleged plight of the independents by revising the Oil Import Program to ensure their survival.

Eventually, the Nixon administration yielded to the pressure. In the summer of 1970, the President granted import allocations to the independent terminal operators for the first time--40,000 barrels per day.²² In effect, the independents secured a subsidy potentially worth fifteen million dollars per year.²³ The government granted this subsidy largely on the basis of the allegations of the independents.

Need for An Objective Study

Obviously the independents were promoting their own interest when testifying that the Oil Import Program was responsible for their economic hardship. Consequently, complete objectivity could hardly be expected from their testimony.

Similarly, complete objectivity could not be expected from those segments of the petroleum industry who were then deriving benefits from the Import Program and who denied the allegations of the terminal operators. For example, the independent refiners and the major refiners disputed the claims of the independents because they wished to avoid

changes in the Import Program that would force them to share their valuable import allocations with newly eligible recipients. The crude producers and some integrated companies objected because they wanted the federal government to continue its strict limitation on all foreign imports. They knew too well from past experience that additional imports of cheap foreign crude or foreign refined products would eventually exert a downward pressure on the price of domestic crude oil. Thus, their statements could not be assumed to be any more objective than those of the operators themselves.

For the independents, the refiners, the producers, and the politicians, rhetoric was the order of the day. Facts and figures were thrown around carelessly, sometimes with great emotion, to support this thesis or that hypothesis. But seldom were they accompanied by the detailed analysis required to back up a particular conclusion. Often statistics were misused to "prove" a particular argument. Actually very little was proved by any of the arguments.

In an attempt to separate rhetoric from the facts, several investigations were conducted by government bodies in the late 1960's and early 1970's. These studies, however, were quite limited in scope, being primarily concerned, for the most part, with whether or not industry supplies were adequate. Not one study investigated if profits of independents had actually declined or if the Import Program had actually squeezed the profits of the independents.

Apparently a need exists for a complete and objective analysis of the Northeast home heating fuel market. The dissertation attempts to partially fulfill that need by investigating the market from 1959,

when the Import Program was promulgated, through 1969.

To extend the study beyond 1969 is impractical. The many changes that occurred during the early 1970's, such as the revision of the Oil Import Program, the introduction of price controls and the rise in foreign No. 2 oil prices, have radically altered the structure of the home heating market. It would be impossible to adequately analyze the competitive effects of these structural changes within the allotted time. Nevertheless, it is hoped that the dissertation has some relevancy and will prove useful as a potential foundation for other investigations, the results of which will provide policy-makers with the tools necessary to successfully regulate competition within the heating fuel market.

Dissertation Objectives

Concisely stated, the dissertation has two main objectives. The first is to test independents' allegations that the Import Program, by granting refiners the power to squeeze their profits, forced many independents to merge. The second principal objective is to determine how other structural changes, in addition to the Import Program, influenced the market behavior of refiners and thus the profits of independents.

Sources of Information

The dissertation relied heavily on statistics gathered and published by the federal government, particularly by the Department of Interior's Bureau of Mines Division. Many prices come from Platt's Annual Oil Price Handbook.²⁴ Other sources of data include the Texas Railroad Commission, congressional hearings, and trade journals.²⁵

A most vital source of data originated from the testimony of the independent terminal operators themselves before the Oil Import Appeals Board. Altogether seventeen of the twenty-three independents operating within the Northeast testified at least once between 1968 and 1970. As noted, their objective in doing so was to obtain an emergency import allocation from the OIAB.

Before testifying, each firm completed a questionnaire prepared by the Board covering sales, profits, costs and related factors. For those firms that petitioned the Board in all three years, data were available for the years 1966-1969. However not all firms testified in each year, so that accounting information from these firms is incomplete.

Unfortunately, the data were far from perfect. That is, each set of data (profit data, sales data, cost data, etc.) presented to the OIAB proved deficient in some respect. The deficiencies stemmed essentially from errors in calculation, variations in the definitions of the accounting terms, omissions in the responses to the Board's questions, and arbitrariness in the allocation of the overhead costs. Despite their many shortcomings, the data provided industry observers with an unprecedented opportunity to analyze the structure of the Northeast wholesale distillate market, to investigate the behavior of its participants and to test the allegations of the independents.

Procedure for Next Chapter

The Northeast home heating fuel market is a rather complex market. Few individuals outside of the petroleum industry know much about it. Therefore, to prepare the reader for the body of the

dissertation, Chapter II is devoted to describing the heating fuel oil market. In addition, because the Oil Import Program profoundly affected the market structure of the industry, the chapter briefly describes some essential elements of the Program. Finally, having provided the background necessary for an understanding of the market, Chapter II ends with an outline of the remainder of the dissertation.

FOOTNOTES FOR CHAPTER I

1. Chase Manhattan Bank, 1968 Annual Financial Analysis of a Group of Petroleum Companies, June 1969, cited by Paul Meadows, U.S., Department of Interior, Petroleum, Mineral Facts and Problems, Bulletin 650 (Washington, D.C.: Government Printing Office, 1970), p. 150.

2. (New Haven, Conn.: Yale University Press, 1959). In particular, see pp. 382-385.

3. Ibid., p. 385.

4. Ibid., p. 383.

5. The Federal Trade Commission, Report on Anticompetitive Practices in the Marketing of Gasoline, cited by Arthur T. Soule, President of the Independent Fuel Terminal Operators Association, U.S., Congress, Senate, Committee of the Judiciary, Governmental Intervention in the Petroleum Industry, Hearings before the Subcommittee on Antitrust and Monopoly, on S.R. 40, 91st Cong., 1st sess., 1969, Part 3, p. 1205.

6. As used in the dissertation, independent terminal operators are wholesalers with deepwater facilities able to receive ocean-going tankers. For a more precise definition see Appendix A, page 158. The term "Northeast" refers to the New England States plus New Jersey and New York. Home heating fuel is primarily No. 2 fuel oil, which is a distillate heating oil. See Appendix B, page 159 for precise definitions.

7. See Table 8, page 84.

8. Independent Terminal Operators Association (press release, Washington, D.C.: December 5, 1969), p. 2.

9. U.S., Department of Interior, Oil Import Appeals Board (OIAB), Decision on Northeast Equities, Inc., Q-23 (f.p.) (1968).

For a discussion of posted prices see page 23.

10. OIAB, Testimony of Northville Dock Corporation, S-1970 (f.p.).

11. U.S., Cabinet Task Force on Oil Import Control, The Oil Import Question (Washington, D.C.: Government Printing Office, 1970), Appendix L.

12. OIAB, Testimony of Northville Dock Corporation, citing a June 17, 1970 White House statement, T37 (f.p.) (1971).

13. U.S., Congress, House, Committee on Banking, Housing and Urban Affairs, Adequacy and Cost of Fuel Oil, Hearings before the Subcommittee on Small Business, 92d Cong., 1st sess., 1971, pp. 29-30. Statment by Arthur T. Soule, President of the Independent Fuel Terminal Operators Association.

The spot market referred to in the quote is where noncontractual oil is sold. See page 23 for discussion.

14. U.S., Congress, House, Select Committee on Small Business, Impact of Oil Company Ownership of Petroleum Product Pipelines, Hearings before the Subcommittee on Special Small Business Problems, Staff Study, on H.R. 5 and 19, 92d Cong., 2d sess., 1972, Appendix L, p. A177.

15. OIAB, Decision on Patchogue Oil Terminal Corporation, Q-9 (f.p.) (1968).

16. See Table 30 in Appendix Q, page 195.

17. Independent Terminal Operators Association (press release), p. 1 (see footnote 8).

18. OIAB, Northville (1970).

19. U.S., Congress, Senate, Governmental Intervention, p. 1317. Statement by Robert De Blois, President of New England Fuel Institute.

20. Ibid., p. 1204. Statement by Arthur T. Soule, President of the Independent Fuel Terminal Operators Association.

21. Ibid., p. 1206.

22. One barrel is equal to 42 gallons.

23. This estimate assumes a 2-1/2 cent differential between the domestic and foreign price. Actually, the subsidy turned out to be somewhat smaller because the foreign crude price rose relative to the domestic price in 1970.

24. (New York: McGraw Hill, Inc.)

25. The Texas Railroad Commission regulates crude production in that state.

CHAPTER II

BACKGROUND

The Northeast No. 2 Heating Oil Market

Definition of the product

No. 2 heating oil is only one of several refined products originating from the distillate fraction of the typical refiner's output slate.¹ The product is used primarily by homeowners, but a small amount is used by business establishments as well. The heating oil is well suited for small users because of its easy flowing and easy igniting characteristics. In addition, its low-sulfur levels meet all the current and proposed air quality standards set by the federal, state and local authorities.

Distillate-type heating oils, among which No. 2 oil is included, should not be confused with residual-type heating oils which are dark in color, relatively high in sulfur content, and high in viscosity. Because of their high viscosity, residual heating oils will not flow unless heated. Their special characteristics limit their use to large commercial and industrial users.

Supply and demand

Among the eight states situated in the Northeast, No. 2 oil sales averaged 565,000 barrels per day in 1968, accounting for almost

half of all the No. 2 consumed within this country.² The annual wholesale value of the sales approximated one billion dollars.³

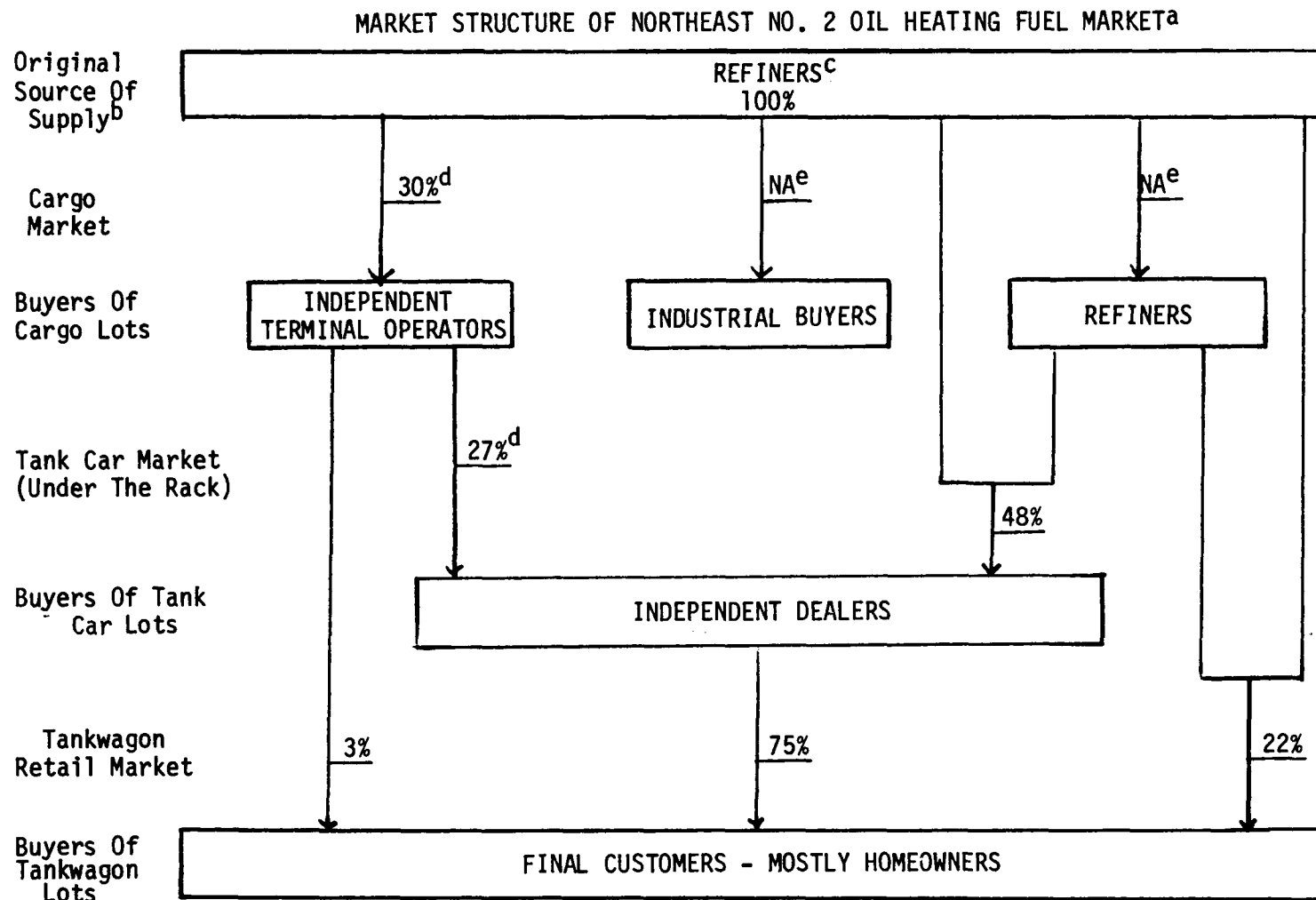
Domestic firms manufacture 90-95 per cent of all the distillate consumed on the East Coast.⁴ Only about one-third, however, originates from refineries located in that region.⁵ The remainder, except for an occasional shipment from some inland refinery, comes from refineries situated along the Gulf Coast. Most distillate from the Gulf moves into the East Coast by tanker or via two large pipelines. Neither pipeline extends beyond the New Jersey-New York area. Therefore New England, having no refineries of its own, relies almost exclusively on tanker shipments for its heating fuel (as well as for its other products).

Distribution structure

Figure 1 on the next page portrays the Northeast No. 2 heating oil market. It shows that most distillate passes through two or three distribution levels before reaching the final consumer. Only about 20 per cent is sold directly by refiners to home owners or to small business establishments. Independent firms retail the remainder.

Independent dealer-retailers.--Dealers obtain about two-thirds of their No. 2 oil requirements from refiners. The rest comes from independent deepwater terminal operators (see section below on terminal operators). In most cases, the dealers pick up the oil in their own trucks at the terminal racks of the sellers. From there, they haul it to final consumers or to bulk plants (i.e., small storage facilities). Eventually the heating oil is transferred to delivery trucks--either

FIGURE 1



See Appendix C, page 160 for footnotes.

the dealer's own trucks or those of independent peddlers--and transported to the homeowners.⁶

Independent terminal operators.--Almost one out of every three barrels manufactured (or imported) by the refiners is sold directly to the independent terminal operators. As defined in the dissertation, these operators are relatively large, nonintegrated, jobbers with deep-water facilities. These facilities permit them to receive ocean-going tankers and to store large quantities of distillate.⁷ Simply stated, their main function is to act as wholesalers for the smaller independent dealer-retailers, although most terminal operators sell at retail too (about 10 per cent of their volume). Moreover, a few sell No. 2 oil to barge terminal operators and pipeline terminal operators. These are operators of terminals without deepwater facilities.

Cargo-market.--The market in which the independent terminal operators procure most of their No. 2 heating oil is known as the cargo market (or the refinery market). Within this market, terminal operators in 1968 were forced to rely on very few refiners for most of their heating oil requirements. Approximately twenty refiners participated in this market, with ten of them supplying about 95 per cent of all the needs of the independent terminal operators (see Table 1). Just three firms, American, Exxon, and Phillips, furnished an estimated 75 per cent of all their requirements. Exxon supplied thirteen of the seventeen testifying independents, whereas no other refiner supplied more than four independents, and most supplied only one or two.

TABLE 1
PRINCIPAL DOMESTIC REFINER-SUPPLIERS OF THE NORTHEAST
INDEPENDENT TERMINAL OPERATORS, 1968
NO. 2 HEATING OIL^a

Refiners	Millions Of Gallons ^b	Number Of Independents Supplied	Market Share (Per cent)	Cumulative Market Share (Per cent)
Exxon (Std. Oil/N.J.)	630	13	40.4	40.4
American (Std. Oil/Ind.)	351	4	22.5	62.9
Phillips Petroleum Co.	225	2	14.4	77.3
Sun Oil Co.	87	2	5.6	82.9
Coastal States Gas Prod. Co.	61	2	3.9	86.8
Sinclair Oil Co.	33	1	2.1	88.9
Gulf Oil Corp.	24	2	1.5	90.4
Getty Oil Co. (Tidewater)	20	3	1.3	91.7
Shell Companies	19	3	1.3	93.0
Royal (Southwestern Oil Corp.)	13	1	0.8	93.8
Other	98		6.2	100.0
Total	1,561	33	100.0	

^aDerived from Table 14 in Appendix D, page 162. Shipments to one independent terminal operator, accounting for almost one-quarter of all shipments, were estimated.

^bThe relatively minor amount (7 per cent) of No. 2 sold at premium prices is not included in this column. A premium price has been defined arbitrarily as a price 3 mills or more above the posted cargo price.

Tank car market.--The market in which the independent operators sell most of their distillate, the tank car market, is far less concentrated than the cargo market. Here over twenty independent terminal operators compete with at least twenty refiners and perhaps forty or fifty other independent wholesalers for the dealer-retailer business.⁸ Frequently the competing refiners are the same ones who supply terminal operators with No. 2 oil. (See Table 2 on page 21 for a list of potential refiner-competitors and refiner-suppliers.)

The other independents who compete with the independent terminal operators in the tank car market are mostly terminal operators without deepwater facilities. That is, these firms own terminal facilities too but they are geared to receive or ship distillate by pipeline or barge. Unlike the independent deepwater terminal operators, they are not equipped to receive ocean-going tankers. Moreover, they are generally smaller than the deepwater firms, and seem to rely more on retail sales than do most of the deepwater terminal operators. Although there are few statistics available for pipeline and barge operators, verbal evidence indicates that they play a minor role in the tank car market, as compared with the independent terminal operators and the refiners.

There are twenty-three independent deepwater terminal operators competing in the Northeast, as noted above. Altogether, they supply about 35 per cent of the tank car market in that region.⁹ With such a large market share, the terminal operators have the potential ability to greatly influence the degree of competition prevailing in the tank car market, assuming that supplies in the highly concentrated cargo

TABLE 2
POTENTIAL REFINER-SUPPLIERS IN THE CARGO MARKET AND
REFINER-COMPETITORS IN THE TANK CAR MARKET^a
(DECEMBER 31, 1969)

Refiners ^b	Refining Capacity ^c (Thous. of barrels per day)	Share of Capacity (Per cent)	Share of Capacity (Cumulative Per cent)
Exxon (Std. Oil/N.J.)	967.0	17.5	17.5
Texaco Inc.	585.0	10.6	28.1
Gulf Oil Co.	510.3	9.2	37.3
Mobil Oil Corp.	409.8	7.4	44.7
Shell Companies	382.0	6.9	51.6
Atlantic Richfield Co.	360.0	6.5	58.1
American (Std. Oil/Ind.)	310.3	5.6	63.7
Standard of California	223.0	4.0	67.7
Cities Service Co.	205.0	3.7	71.4
Sun Oil Co.	204.2	3.7	75.1
British Petroleum Co.	189.0	3.4	78.5
Getty Oil Co.	140.0	2.5	81.0
Coastal States Gas. Prod. Co.	135.0	2.5	83.5
Amerada Hess Corp.	120.0	2.3	85.8
Union Oil. Co. of Calif.	105.0	1.9	87.7
Phillips Petroleum Co.	85.0	1.5	89.2
Tenneco Inc.	81.0	1.5	90.7
Continental Oil Co.	71.0	1.3	92.0
Signal Oil and Gas Co.	70.0	1.3	93.3
Celanese Corp.	52.5	1.0	94.3
Texas City Refining, Inc.	50.0	0.9	95.2
Marathon Oil Co.	48.1	0.9	96.1
Royal (Southwestern Oil Corp.)	43.5	0.8	96.9
Crown Central Pet. Corp.	40.0	0.7	97.6

^aSource: U.S., Department of Interior, Bureau of Mines,
Petroleum Refineries in the United States, 1970.

^bThese refiners are all located on the East and Gulf Coasts. All are capable of supplying independent terminal operators in the cargo market. Only ten, however, supplied independents with 95 per cent of their requirements in the late 1960's. In addition, many of these refiners competed with terminal operators for the business of dealer-retailers in the tank car market.

^cTable lists refining capacity because data on No. 2 oil production by refiner is unavailable.

market are readily available at reasonable prices.

Prices

When the independent terminal operators buy their distillate in the cargo market, they pay refiners a price approximately equal to the delivered cargo price posted (listed) by the majors. This price includes tanker transportation costs. Usually a discount is offered from this posted price by refiners for cash payments, volume purchases, summer allowances and so on. Sometimes the independents must pay premiums above the posted cargo price. Premium purchases are relatively rare, however, accounting for 5-10 per cent of all purchases.¹⁰

Whether premiums or discounts prevail in the cargo market depends, of course, on the supply-demand situation during any given period.

When independent terminal operators sell their distillate to independent dealer-retailers, they quote a price related to the tank car price posted by the majors. This is an F.O.B. price. In most cases, discounts are offered, usually larger than those offered at the cargo level to the terminal operators (at least in the 1966-69 period). As in the cargo market, the size of the discount in the tank car market varies with market conditions. Generally, discounts are larger during the off-season summer months. This is true in the cargo market as well.

Price leader

As would be expected in a market dominated by relatively few sellers with a homogeneous product, a price leader has emerged--Exxon.

Usually, but not always, when Exxon changes the posted tank car or cargo price, the other refiners follow within a few days. Occasionally, other refiners initiate price increases, but they are not always successful.

Margins

The gross margin on a terminal operator's wholesale business is equal to the effective (or actual) selling price he receives from dealers in the tank car market minus the effective purchase price he pays refiners (and occasionally other independents) in the cargo market. From these gross margins the terminal operator must cover his operating (administrative, storage, and selling) costs. The net profit margin is equal to his gross margin minus his operating costs. It is the profit earned per gallon by the independent. For the relatively small amount of distillate that he retails, the gross margin is equal to the price he charges homeowners (commonly known as the tankwagon price) minus the effective cargo price. Although this margin is five to ten times greater than the wholesaling margin, retailing costs are proportionately higher.

Contracts

The independent terminal operators buy most of their distillate under contract from the refiners, usually at the posted cargo price or at some price tied into the posted cargo price. The contract usually states a minimum and maximum number of gallons to be purchased during the year. No. 2 oil not purchased under contract is bought on the spot market at prices reflecting existing market conditions. In most

cases, the contracts are negotiated before mid-year, although during periods of market uncertainty either the independents or the majors may resist signing a contract until later in the year.

The terminal operators benefit from purchasing the bulk of their requirements under contract because it provides some insurance against running out of oil during the winter season. Furthermore, in most cases, the independents profit from the price-protection and deferred-payment plans offered by the refiners. The price-protection plan provides for a refund to independent terminal operators if prices slump during off-season summer months. Thus, independents may build up inventories in the summer without fear of a price-break that would lessen the value of their inventories (or alternatively, squeeze their gross margins).¹¹ The deferred-payment plan, by permitting the independents to pay for summer purchases in the autumn, allows the independents to save on interest payments they would otherwise be obligated to pay.

The two plans offered by the refiners to the terminal operators reduce both the risk and cost for independents to build up summer inventories. The refiners also benefit from the plans because distillate demand is more evenly spread out, leading to the better utilization of refining and storage capacity.

The Mandatory Oil Import Program¹²

The Mandatory Oil Import Program greatly influenced competition in the Northeast distillate market. Therefore, to understand its effects on competition, some pertinent aspects of the Program will be briefly

discussed in this chapter. No attempt to thoroughly describe the Program has been made. Moreover, the description is valid only for those states situated east of the Rockies (Districts I-IV).¹³

Reasons for program

The Oil Import Program was initiated by the executive order of President Eisenhower in March, 1959. The President, as well as other petroleum and defense experts within the community, believed that a continuation of the expansion of crude oil and petroleum product imports would endanger the national security of the United States. Between 1954 and 1959 alone, crude oil and product imports had increased by over 60 per cent.¹⁴ Most certainly this trend would have continued without government intervention because domestic petroleum prices at that time greatly exceeded foreign petroleum prices.

It was hoped that the Program, by permitting the maintenance of relatively high domestic crude prices, would induce additional exploration of domestic crude oil. Obviously it also protected the crude profits of the producers which perhaps accounts, as much as anything else, for the enactment of the Oil Import Program.

Size of quotas

Between 1959 and 1963 industry crude imports were limited to 9 per cent of domestic crude oil demand, east of the Rockies. After 1963, they were limited to 12.2 per cent of domestic crude oil production. Refined products were even more severely controlled than crude oil because the government wished to avoid the exportation of refinery capacity overseas. Excluding residual oil, which was more loosely controlled than

other products, overall product imports were fixed at their 1957 levels. No provision was made in the Program to allow product imports to grow with domestic demand.

Eligibility for allocations

Eligibility for a crude allocation was virtually limited to refiners of crude oil until 1965 when petrochemical firms became eligible too. The actual size of the allocation hinged on either the firm's crude oil refinery inputs of the preceding year, or on some percentage of its 1958 crude oil imports--whichever was bigger. The Department of the Interior determined the historical percentage in each year. Because the percentage usually declined annually, refiners increasingly switched to refinery inputs as the basis for their import allocation.

Refined product allocations were limited to those firms which imported refined products in 1957. Each recipient was permitted to import any combination of products it desired, regardless of what combination of products it imported in 1957. Most of the product allocation went to refiners although Metropolitan, an independent terminal operator, received a substantial allocation of 80 million gallons per year. The allocation exceeded the entire sales volume of many independent terminal operators. The discriminatory nature of product allocation perhaps accounted for the fact that Metropolitan was the largest independent operating on the East Coast in 1970.

The sliding scale system

By granting crude allocations based on a sliding scale, the distribution of import tickets was designed to enhance the competitive ability of the smaller, less integrated, refiners. Imported crude was allocated such that the smaller the actual level of refinery inputs in the preceding year, the greater the proportion of imported crude permitted.

It was claimed that, by enabling the independent refiners to compete more effectively with the large integrated firms, the Program encouraged the maintenance of a greater and more widely dispersed nationwide refining capacity which was less vulnerable to nuclear attack. In reality, the sliding scale may have been established because of the pressure group activity of small business groups, although government economists in the Justice Department also favored this method as a way of maintaining competition. Moreover, the large historical importers favored the sliding scale as well because it curtailed imports to some of their principal competitors--the large major refiners with no history of importing crude oil.

Exchange system

Before the Import Program, most of the foreign crude oil was processed in East Coast refineries although by the late 1950s some Gulf Coast refiners were beginning to use foreign crude. After the introduction of the Program, only the East Coast tidewater refiners found it advantageous to run imported crude oil. The other refiners found it more profitable to exchange their allocation tickets for

domestic crude located near their own refineries. This was particularly true for land-locked refiners, for whom the delivered price of foreign crude exceeded the delivered price of domestic crude.

The exchange process was a simple one. Upon receipt of the import tickets, the inland refiner purchased foreign crude and had it delivered to an East Coast refiner. In return, the East Coast refiner delivered domestic crude to the inland refinery, either its own crude or purchased crude. The crude exchange ratio depended on the relative quality of the two crudes, relative bargaining power of the exchangers, tanker rates, and on the general market for import tickets. Although it could not be sold directly, the import ticket was valued at approximately \$1.25--the difference between the domestic delivered price on the East Coast and the foreign delivered price.¹⁵

Outline - Chapters III-VIII

Having described the fundamental characteristics of the Northeast No. 2 fuel oil market and having noted some salient points about the Import Program, it is now possible to discuss the outline of the remainder of the dissertation.

The body of the dissertation begins with Chapter III. The chapter tests the independents' principal allegation: was the Import Program responsible for a squeeze in profits that forced numerous terminal operators into mergers with integrated petroleum companies?

It will be seen that profits indeed slumped during the late 1960's; and they slumped sharply, as alleged. It will also be seen, however, that most independents were acquired long before their profits

declined. Moreover, it was the refiners who solicited the independents to merge, not the other way around. Excess refining capacity during the early 1960's placed a premium on marketing outlets; the refiners paid top dollar to secure the outlets of the independent terminal operators. In short, most independents were not forced into acquisitions because of the Import Program's adverse effects on their profits, although the Program probably did contribute to some acquisitions during the late 1960's.

Nevertheless, profits were low and falling fast by the late 1960's. And the independents were correct in blaming the Import Program for their economic hardships, as will be seen throughout the dissertation.

Chapter IV investigates the principal changes in market structure since 1959, the year in which the Import Program was implemented. It will be seen that in addition to the acquisition of independent terminal operators, integrated petroleum firms acquired independent refiners as well. This further increased concentration in the cargo market, the supply market of the independents, and in turn, strengthened the market power of the refiners. Additionally, other structural changes such as the introduction of the Colonial Pipeline and the advent of hydrocracking are investigated. It will be seen that the Import Program prompted many of these changes.

By the middle 1960's the structural changes in the distillate market had altered the face of competition considerably. The market power of the refiners had increased greatly and their behavior reflected the newly acquired market power. How the profits of the independents were affected by the behavioral changes of the refiners is examined in

Chapters V through VII.

Chapter V discusses the independents' sales and supplies. Certain conclusions stand out. First of all, domestic shipments to independents as a whole increased at a higher percentage rate over the four-year period than shipments made by the rest of the industry. Some refiners increased shipments to independents; others reduced shipments. But overall deliveries to independents increased significantly. Obviously then, there was no conspiracy on the part of the refiners to squeeze out the independents and to create shortages.

On the other hand, Chapter V demonstrates that some independents, particularly in the New York area, did indeed suffer from shortages of distillate. About half the firms surveyed received less domestic supplies in 1969 than they did in 1966. But because of emergency import allocations granted by the OIAB, sales for twelve of the fourteen independents were higher in 1969 than they were in 1966. Some were substantially higher. At the same time, however, profits for all twelve firms were lower in 1969 than they were in 1966. Obviously, then, profits necessarily declined because net profit margins declined.

Chapters VI and VII examine why this happened. It will be seen that costs per gallon rose while gross margins declined. The newly acquired market power of the refiners, stemming from the structural changes of the 1960's, and the structural changes themselves, unrelated to any market power, accounted for the profit margin squeeze.

The final chapter, Chapter VIII, ties together and summarizes the more important conclusions reached in the dissertation.

FOOTNOTES FOR CHAPTER II

1. See Appendix B., page 159 for discussion of refined distillate products.

2. U.S., Department of Interior, Bureau of Mines, Mineral Industry Surveys, Shipments of Fuel Oil and Kerosine in 1968 (Washington, D.C.: September 18, 1969), p. 4.

3. The average wholesale price (posted tank car price) per barrel in 1968 was \$4.56 in New York (see Table 13, page 113 for tank car prices). Multiplying this amount by 207 million barrels per year (equal to 565 thousand barrels per day) equals 944 million dollars.

4. U.S., Department of Interior, Bureau of Mines, Mineral Industry Surveys, Crude Petroleum, Petroleum Products, and Natural Gas-Liquids (Washington, D.C.: 1960's). The percentage figures were calculated from various statistics given in Surveys during the 1960's. They refer to total distillate fuel oil on entire East Coast. Statistics are not available for No. 2 oil in Northeast.

5. Ibid. Most refiners on the East Coast are in the Middle Atlantic States--New York, New Jersey, Pennsylvania and Delaware.

6. A peddler is a dealer-retailer without storage facilities.

7. For a more precise description of these facilities see Appendix A, page 158.

8. In New England alone there are at least 26 additional independent wholesalers. See Office of Emergency Preparedness, Review of the Number 2 Fuel Oil Import Program (Washington, D.C.: Government Printing Office, October 28, 1971), p. 18.

9. Thirty per cent of all No. 2 heating oil consumed in the Northeast passes through the facilities of the independent terminal operators. At the tank car level, however, terminal operators capture 36 per cent of the market.

This percentage is derived from Figure 1 by dividing 27, the per cent of all industry shipments received by independent dealers from independent terminal operators, by 75, the per cent of all industry shipments received by independent dealers from all sources.

10. See Table 19 in Appendix K, page 171.

11. The demand for heating oil is, of course, seasonal. Until recently prices fluctuated seasonally, reaching their low during the summer months. Occasionally, however, prices continued to fall thereafter.

When prices fell those refiners who had built up inventories during the summer but had no price-production plans suffered from a margin squeeze. That is, their selling price in the autumn (or winter) was low relative to their purchase price in the summer. To reduce the risk of a margin squeeze, and thus induce terminal operators to build up inventories in the summer, refiners offered operators price-protection plans.

12. For a good description of Oil Import Program from which statistics in this section have been derived see: Edward H. Shaffer, The Oil Import Program of the United States (New York: Praeger Publishers, Inc., 1968).

13. For statistical purposes the federal government divides the country into five main districts called Petroleum Administration for Defense Districts. District I represents all the East Coast states. Districts I-IV includes all those states east of the Rockies, and District V embraces the West Coast states.

Because crude supply conditions differed significantly on the West Coast (District V) in 1959, and because the West Coast market was said to be separated from the other geographical markets, the Import Program was drawn up differently for the two areas.

14. Department of the Army, Waterborne Commerce of the United States, in Petroleum Facts and Figures, compiled by the American Petroleum Institute (Washington, D.C.: American Petroleum Institute, 1971), p. 258.

15. The \$1.25 figure has been the figure generally quoted by petroleum experts throughout most of the 1960's.

CHAPTER III

THE IMPORT PROGRAM, ACQUISITIONS, AND PROFITS

It was seen in Chapter I that the independent terminal operators claimed their profits were being squeezed because of the Import Program. Indeed, they were squeezed to the point where many independents were forced to accept the acquisition bids of integrated petroleum firms. Or so it was alleged.

Was the allegation a valid one? Were profits really being squeezed? If so, was the Import Program responsible for the squeeze? Did the squeeze, in fact, lead to acquisitions? Moreover, were there any other factors that caused independents to merge? This chapter attempts to answer these questions.

The Import Program

The independents' hypotheses

The independents essentially formulated two main hypotheses concerning the Import Program. The first stated that the Program, by providing product or crude allocations only to refiners, discriminated against the independent terminal operators, who were ineligible for import allocations. Allegedly, by reducing the refiners' costs, cheap imports enabled refiners to undersell the independents and steal their former customers. Consequently, independents' sales declined, gross

margins narrowed, and profits slumped.

This hypothesis is invalid. Admittedly, cheap imported crude oil or distillate lowers the average total cost of distillate for refiners, as the independents contended. Costs reduced through import allocations, however, are no different than costs reduced in some other manner (e.g., through an advance in technology, or through a reduction in taxes). Lower costs, no matter what the reason, would be passed on to terminal operators via competition in the cargo market.

The independents, however, complained that competition no longer prevailed in the cargo market. According to their second main hypothesis, the Import Program, by cutting off foreign supplies to independents, increased the monopoly power of refiner-suppliers in that market. The suppliers thus were able to squeeze the profit margins of independents and force them into being acquired. As proof, one trade association listed 19 independent terminal operators acquired since the Program was implemented in 1959 (see Table 3, page 35).

The independents' second hypothesis, unlike the first, theoretically is a plausible one. The Import Program certainly reduced the number of potential suppliers in the cargo market. With increased concentration, the domestic refiners, who post both the cargo and tank car price, conceivably could have squeezed the margins of the independents. The subsidization "of some levels of operations by the profits or returns made at other levels" indeed was theoretically possible.¹

A margin squeeze, however, would be possible only if the Program provided refiners with "a sufficient degree of control over the market at the earlier level of operation [in the cargo market] to be able to

TABLE 3
INDEPENDENT TERMINAL OPERATORS ACQUIRED SINCE 1959^a

Year ^b		Independent Terminal Operators ^c	Acquired By
<u>1959-1963</u>			
1959	1	Atlantic Sales Terminal Corp.*	Shell (Sprague)
1961	2	Ballard Oil Co.*	Amerada Hess
1960	3	Blue Ridge Fuel*	Texaco
1960	4	Buckley Brothers*	Shell
1959	5	Coastal Petroleum	Continental
1962	6	Delhi Taylor Oil Co.* ^d	Amerada Hess
1960	7	Ford Oil Co.*	Texaco
1958	8	Hartol Petroleum Corp.*	Tenneco
1960	9	Hoffman Fuel Co.	Standard of California
1963	10	Jenney Manufacturing Co.	Cities Service
1959	11	Paragon Oil*	Texaco
1961	12	Southland Oil Corp.* ^d	Signal
1963	13	T.A.D. Jones	Gulf
1962	14	White Fuel Corp.	Texaco
<u>1968-1969</u>			
1969	15	C. H. Sprague & Sons*	Shell
1969	16	Deepwater Oil Co. (Whale)*	American
1968	17	Mid Hudson Oil Co.	Amerada Hess
1968	18	State Fuel	Amerada Hess
1968	19	Southern State Oil Co. ^d	Kerr McGee

^aSource: U.S., Congress, Senate, Committee on the Judiciary, The Petroleum Industry, Governmental Intervention in the Petroleum Industry, Hearings, before the Subcommittee on Antitrust and Monopoly, on S.R. 40, 91st Cong., 1st sess., 1969, Part 3, p. 1486. (Arthur T. Soule, President of the Independent Fuel Terminal Operators Association, presented the table to the committee.)

^bAcquisition dates were not included in the testimony and were derived from several sources: Moody's, National Petroleum News, annual corporation reports, and OIAB testimony.

^cFor firms with an asterisk, see notes in Appendix E, page 163.

^dThese independents operated in the Southeast--not the Northeast.

follow an independent price policy, and if the competitor-customer[s did] not possess a similar independence in price policy at the subsequent level of operation [in the tank car market]." The refiner-suppliers could then use their "control to squeeze [their] competitor-customer[s] at the later level."²

Although the second hypothesis is plausible, it too is fundamentally invalid. The independent association that provided the list of acquisitions in Table 3, failed to note that almost three-quarters of all acquisitions occurred between 1959 and 1963. During this period the market power of refiners was limited, the supplies of distillate were excessive, and the profits of independents were seemingly high. Clearly, at this time, few if any independents were forced out of the industry by unfavorable market conditions stemming from the Import Program.³

Competitive conditions for independents during 1959-63 period

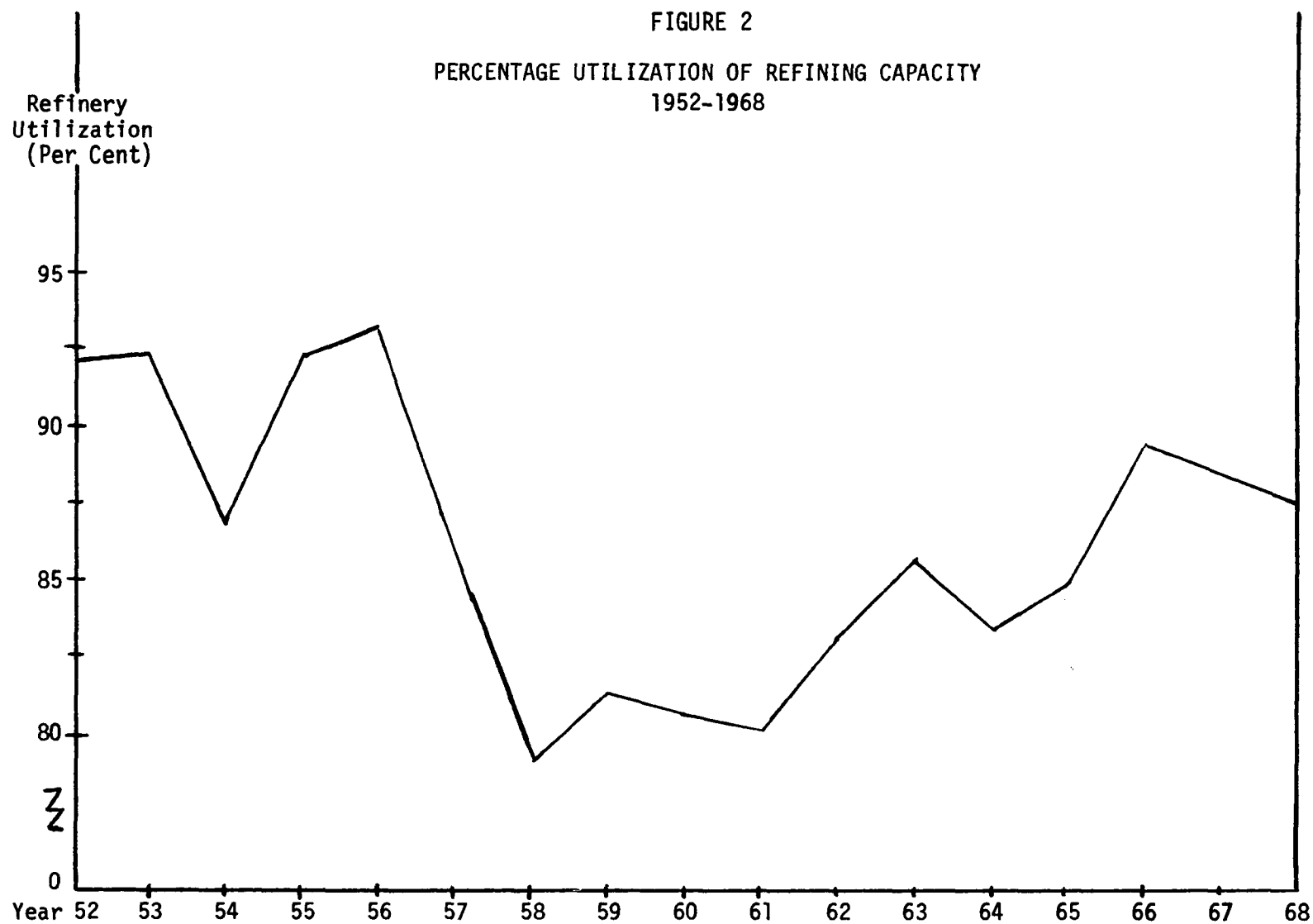
Supplies and suppliers.--In the late 1950's and early 1960's more refiners participated in the No. 2 heating oil market than in later years. At that time, virtually all the majors manufactured more distillate than they could directly distribute through their own integrated marketing channels. Consequently, they still required the marketing connections and terminal facilities of the independent terminal operators to sell their excess heating oil. Moreover, the Gulf independent refiners relied quite heavily on the Northeast terminal operators to move their No. 2 oil for only a few of them were integrated forward into marketing.

Not only were cargo suppliers more numerous during the 1959-63

period than in the late 1960's, but also distillate supplies were more abundant in those years, for the refining sector of the industry suffered from an excess of capacity (see Figure 2, page 38). Thus, periodically, the pressure of bulging inventories on limited storage facilities forced the refiners to dump distillate on the cargo market at very low prices. In particular, the independent refiners, frequently faced with the prospect of shutting down their refineries if inventories continued to rise, were prone to dump. Occasionally, market conditions deteriorated to the point where tankers were loaded at the Gulf "without a home," shipped North, and sold "on the water" at distress prices.⁴

Profits.--Given the excess supplies of No. 2 oil, the many refiners in the cargo market and the great mobility (and aggressiveness) of the independent terminal operators, cargo prices were beaten down in the late 1950's and early 1960's. Competition appears to have forced the terminal operators to pass on most, but not all, of their lower costs to dealer-retailers in the tank car market. That is, terminal operators most likely earned above-normal profits in those years.⁵

There are several factors that point to this conclusion. First of all posted margins were high. For example, in 1962 refiners posted a 10 mill margin, over 50 per cent larger than margins posted in the late 1960's. Presumably, effective or actual margins reflected the larger posted margins to some degree. Secondly, sales apparently increased, based on some fragmentary evidence. Data on four independents indicate a 12 per cent growth in sales between 1962 and 1963, while sales for the rest of the industry declined slightly (see Table 4, page 39).⁶ In short, high posted margins and increasing sales imply that



Source: American Petroleum Institute, Petroleum Facts and Figures, pp. 140-146 and 154.

TABLE 4

INDEPENDENT TERMINAL OPERATORS' NO. 2
HEATING OIL SALES BEFORE 1966^a
(THOUSANDS OF GALLONS)

Firms	1962	1963	1964	1965	1966
Cirillo	131,700	149,100	133,100	157,700	158,900
Northeast	192,800 ^b	227,700 ^b	261,100 ^b	295,700 ^b	327,992
Northville	211,054 ^b	226,044 ^b	212,525 ^b	233,642 ^b	304,143
Patterson	8,783	7,993	7,540	7,973	8,504
Patchogue	51,660 ^c	51,660	52,500	58,800	63,584
Sears	20,403 ^c	20,403 ^b	23,302 ^b	17,664 ^b	12,379
Tappan Tanker	845 ^c	845 ^b	1,045 ^b	843 ^b	1,433 ^b
Subtotal: First Four Firms	544,337	610,837	614,265	695,015	799,539
Total: All Firms	617,245	683,745	691,112	772,322	876,935
Industry Sales (Northeast) ^d	8,129,058	8,149,974	7,865,466	8,486,184	8,207,934

^aSource: Independent terminal operators' testimony before the OIAB, 1968-1970.

^bYear ending May or June.

^cSales in 1962 are unavailable. Therefore assumed these sales were equal to 1963 sales.

^dU.S., Department of Interior, Bureau of Mines, "Shipments of Fuel Oil and Kerosene," Mineral Industry Surveys, in Petroleum Facts and Figures, p. 335.

the independents' profits were reasonably high during this period.

This view is supported by entry figures. As shown in Table 5 page 41, at least three independent terminal operators entered the whole-sale business between 1959 and 1963 (another entered in 1966). In addition, one very large independent acquired one of its four terminals during this period. By 1968, independent operators who had entered the market (or expanded) during this period captured almost one-third of all independent sales. Clearly wholesaling profits must have been reasonably high to attract these entrants.⁷

Summary.--All in all the evidence points to normal or above-normal profits through at least 1963. The number of refiner-suppliers was large, refining (and producing) capacity was excessive and posted margins were high. In addition, fragmentary evidence points to a growth in sales for the independents and entry into the wholesaling level of the industry was high. Finally, trade journal articles clearly indicate that competitive conditions were quite favorable for the independents at the time. Certainly profits were not being squeezed by refiners. Therefore, the Import Program in no way forced independents to merge during the 1959-63 period.

Reasons behind Acquisitions

Residual oil import allocations

Although the Import Program forced few or no independents to merge, it may have induced some refiners to acquire independents. Because some large refiners imported little or no residual fuel oil in their own names in 1957, the base year on which product allocations were calculated, they

TABLE 5
ENTRY OF INDEPENDENT TERMINAL OPERATORS
INTO THE NORTHEAST WHOLESALE
NO. 2 HEATING FUEL MARKET
SINCE 1957^a

Independent Terminal Operators	
Cirillo	- Was a retailer until it constructed its first deep-water terminal about 1960.
Gibbs	- Was a retailer until it purchased a deepwater terminal from a refiner in 1966.
Howard Coal	- Was a retailer until it constructed its first deep-water terminal in 1962.
Northeast	- Was a retailer until it built its first terminal in 1958. Thereafter it built one in 1960 and one in 1965. In 1966 the company purchased another terminal from a refiner.
Northville	- Was a retailer until it built its first deepwater terminal in 1957. Seemingly the company constructed one or more terminals sometime in the late 1950's or early 1960's.
Tappan Tanker	- Built a deepwater terminal in 1962.

^aIndependent terminal operators' testimony before the OIAB, 1968-70.

Still other testifying independents probably entered the industry during the late 1950's or early 1960's, but failed to provide such information to the Board. Moreover other non-testifying independents also entered during this period.

Platt's Oilgram Price Service (February 26, 1962, page 1A) noted that four or five terminals were being constructed at the time and that another three had been constructed in 1960 and 1961. Although some were probably built by refiners, the fact that so many were being constructed suggests that profits at the wholesaling level were high.

Note that no independents entered the industry after 1966.

received little or no allocations under the Import Program. (Most residual burned in the United States is imported.) Meanwhile some independent terminal operators, who were large importers of record in 1957 (often for refiners), received very large allocations. These allocations, most likely, prompted some refiners to acquire independents.

Between the introduction of the Program in 1959 and 1961, when it was revised to permit all terminal owners to import residual oil regardless of their importing record, three independents with large residual quotas were acquired. One of the acquired firms, Paragon, sold residual and distillate fuel oil from Maryland to Maine and operated a fleet of about eight tankers, some of which were owned by Paragon and were valued at \$40,000,000. (Paragon, had it remained independent, would be the largest independent on the East Coast today.)⁸

When Texaco acquired Paragon in 1959 it received, along with all the marketing and transportation facilities, a 58,000 barrels-per-day allocation, equal to about 15 per cent of the entire residual quota. Moreover, the allocation was 65 times larger than Texaco's. Because the price of domestic residual oil exceeded foreign residual oil by about 40 cents, the allocation alone was valued at eight and one half million dollars per annum (to Paragon). In addition to the Texaco acquisitions, Shell obtained Buckley Brothers in 1959. It had a quota of 4,250 barrels-per-day, slightly larger than Shell's. Finally Hess acquired Ballard--possibly for its 4,000 barrels-per-day quota--although Hess already enjoyed the benefits of a 39,000 barrels-per-day quota and may not have needed the additional allocation. It seems likely that these allocations prompted refiners to acquire independents.

At first glance, it may seem that the acquiring firms gained nothing from the acquisition of the independents' residual allocations. For example, to Paragon the allocation was valued at eight and one-half million dollars annually. The value was obtained by multiplying the number of barrels allocated (21 million barrels) by the difference between the domestic and foreign price of residual (40 cents). When Texaco acquired Paragon, it theoretically had to pay the owners the present value of such expected earnings. Thus Texaco would apparently gain nothing by obtaining Paragon's allocation.

This conclusion is false. The value of the allocation to Texaco was much larger than it was to Paragon. Given the enormous degree of excess capacity in the foreign petroleum industry (in part due to the Import Program's sudden restriction on imports), the marginal cost of producing and refining an extra barrel of residual was quite low--far below the foreign price of distillate that Paragon had to pay. Thus the value of the allocation to Texaco--equal to the number of barrels allocated multiplied by the difference between the domestic price and the marginal cost of residual--greatly exceeded the value to Paragon. Therefore Texaco, and other refiners with foreign facilities, benefited from the acquisition of residual allocations.⁹

The three aforementioned acquisitions together foreclosed a substantial share of the cargo market to the remaining refiner-suppliers in a period of excess refining (and producing) capacity. "To forestall further erosion of their market positions," these refiners possibly were induced to acquire still other independents. This, in turn, set off a chain reaction of mergers.¹⁰ Thus the Import Program may have encouraged

still more acquisitions in the 1959-63 period.

Changing age distribution of independents

Another factor that probably contributed to the acquisition movement was the increasing number of jobbers approaching retirement age. A National Petroleum Survey (NPN) in 1961 indicated that only 10 per cent of all jobbers exceeded the age of fifty in 1953, whereas by 1961, 39 per cent exceeded that age. Among the larger jobbers selling over five million gallons a year, such as the terminal operators, over half the owners were over fifty years old. Certainly there were many more distributors ready for retirement in 1961 than in earlier years.¹¹

Although the NPN Survey covered all independent jobbers--small as well as large, gasoline as well as distillate--it seems likely that the independent fuel oil terminal operators who were included in the survey also showed an increasing proportion of members over fifty years old. Therefore, more terminal operators were eligible for acquisition during the early 1960's than a decade earlier.

Excess capacity

Excess refining and producing capacity probably accounted most for the acquisition trend occurring between 1959 and 1963. In an attempt to insure the reasonable utilization of capacity, integrated petroleum firms acquired the controlled marketing outlets of the independent terminal operators. "Two bad summers for gasoline and two disappointing winters for fuel oil have refiners spending millions to protect themselves from one another. The favored method is to buy an independent with substantial

gallonage in a sizeable market."¹² Thus, the overwhelming impetus to merge originated with the majors--not with the independents. "The buy-or-merge pressure is downward from the big companies, rather than jobbers looking for a way out."¹³

The acquisition movement represented a defensive reaction by the integrated refiners to the conditions of surplus existing at the time. The majors were vulnerable to abrupt and significant losses in volume, if a large distributor, such as an independent terminal operator, suddenly switched brands. To prevent the pirating of their distributors, some of the majors attempted to protect themselves by acquiring distribution outlets. They paid well for the protection. "In almost all cases, the independent distributors being acquired by larger firms are getting very favorable terms."¹⁴

Selling in cargo market.--Of course if refiners were solely interested in increasing (or preventing a decrease in) the utilization of refining capacity to minimize average costs, they need not have acquired controlled outlets. They simply could have operated their refineries at high levels, sold as much product as possible through their integrated or contractual outlets, and then dumped the remainder on the spot markets, mostly on the Gulf cargo market.

This procedure, however, would have proved economically disastrous for all refiners. In the short run the demand for petroleum products is highly price-inelastic. Home owners will not raise the thermostat very much because heating fuel oil drops a few cents per gallon and car-owners will not drive very much more because gasoline declines a little in price.

Moreover, the spot cargo market is an extremely thin market. Transactions may not occur for days or even weeks. To suddenly dump large quantities of incremental product on this market would drastically reduce cargo prices.¹⁵

Independent terminal operators, after procuring the surplus distillate at distress prices in the cargo market, would then pass along most of the lower prices to buyers in the wholesale and retail markets. In an effort to remain competitive, the majors would also lower their prices in these markets. Eventually, the entire price structure of the industry would decline.¹⁶

For this reason the major refiners, even where capacity utilization is low, will seldom increase production very much if the incremental product must be sold on the open cargo market. To do so would reduce revenues (and profits) for all firms. That is, marginal costs would ultimately exceed marginal revenues as the negative impact on prices of the extra output gradually worked its way through the product markets.

Marketing through controlled outlets.--If the incremental product, however, were marketed through controlled outlets--under contractual arrangements or through integrated channels--the integrated firm could increase output with less fear of breaking the industry's price structure. Thus, given the excess capacity of the industry (and the low marginal costs associated with the excess) during the 1959-63 period, many refiners acquired independent terminal operators (with their captive customers) in an effort to better utilize their capacity without further weakening the price of distillate.¹⁷

Through the acquisition of an independent terminal operator, a refiner in effect acquired most of the independent's dealer-customers--customers less inclined to quibble over price. Admittedly each dealer was quite mobile. Still his bargaining leverage vis-à-vis the refiner was limited compared with that of a terminal operator-customer. In those days each terminal operator was highly mobile. Refiners desperately needed their marketing connections and storage facilities. The sudden withdrawal of a terminal operator's demand could greatly affect the operations of a refinery, perhaps forcing it to curtail production. On the other hand, the withdrawal of a particular dealer's business would hardly affect the operations of a refinery. Therefore the dealer's bargaining leverage was limited relative to that of a terminal operator.

Moreover, refiners with terminal facilities could reduce price competition somewhat by differentiating the product--something he could do less well in the cargo market. By extending credit, by painting dealers' trucks, by offering dealers a brand name or free advertising, and by providing a secure source of supply, the acquiring refiner could--to some degree--differentiate his product (at a cost). Furthermore the geographical convenience of a refiner's terminal facilities also differentiated the refiner's distillate.

Payment for terminal facilities.--Theoretically, the acquiring refiners had to pay the independents the present value of expected earnings derived from their terminal facilities, including excess profits, if any. Symbolically, the payment can be expressed as:

$$(A) \quad PV_i = \sum_{t=1}^n \frac{(TCP_t - CP_t - ATC_t) Q_t}{(1 + k)^t}$$

Where PV_i = present value of the terminal facilities (to the independent)

n = expected economic life of the terminal facilities.

TCP_t = expected average tank car price (selling price) of No. 2 oil per gallon in each year.

CP_t = expected average cargo price (purchase price) of No. 2 oil per gallon in each year.

ATC_t = expected average total cost of wholesaling per gallon in each year.

Q_t = expected sales (in gallons) each year.

k = required rate of return.

For the integrated firm the present value of the terminal facilities can be expressed as:

$$(B) \quad PV_r = \sum_{t=1}^n \frac{(TCP_t - CP_t - ATC_t) Q_t + D_t (CP_t - MC_t)}{(1 + k)^t}$$

Where PV_r = present value of the terminal facilities (to the refiner)

D_t = expected additional sales (in gallons) to the integrated firm resulting from the acquisition.

MC_t = expected marginal cost of refining a gallon of No. 2 (which includes the marginal cost of producing or buying crude).

Assume TCP_t , ATC_t , Q_t and k are identical in both equations. In this case the present value of the terminal facilities is greater for the refiner than for the independent. This is true because CP_t exceeds MC_t , and D_t is positive.¹⁸ (Possibly the present value of terminal facilities to integrated refiners would be greater because they enjoyed certain tax benefits [oil depletion allowance, etc.] that were unavailable to the independent. For practical reasons tax effects have been ignored.)

Reasons why D_t is positive.--Refiners sometimes acquired terminal operators that they formerly had not supplied at all. However, in most

cases, it seems they acquired independents that they had supplied partially before the acquisition. Clearly in these cases the acquisition increased the total sales (and expected total sales) of the acquiring refiner. Therefore D_t is positive here.

Even in those cases where the terminal operator had formerly received all of its requirements from the acquiring refiner, " D_t " would be positive. D_t represents expected sales. And expected sales through a refiner-owned terminal would be greater than through a highly mobile independent terminal operator who was free to switch refiner-suppliers, especially during this period of enormous excess capacity.

Reasons why CP_t exceeds MC_t .--In theory, each refiner in the oligopolistic cargo market faces a downward sloping demand curve. Thus his marginal revenue curve is downward sloping as well. To maximize profits, each refiner will equate marginal cost with marginal revenue. At this level of output, the cargo price will exceed the marginal cost.

In reality, each refiner is able to discriminate somewhat among buyers. He knows that sometimes he will be able to lower price on a cargo or two without having to lower his other prices, especially if he is able to keep the transaction price secret. Yet if a refiner were to increase output by a significant amount, he would eventually exert a downward pressure on the entire price structure. Therefore his marginal revenue curve is in reality downward sloping. He will thus increase output only to the point where this curve intersects the marginal cost curve. At this level of output the cargo price will exceed the marginal cost.¹⁹

Said differently, during the late 1950's and early 1960's integrated refiners operated their refineries and producing properties significantly below capacity levels. At that time producing wells under

prorationing in Texas were permitted by the state to operate only eight or nine days in each month. Given the extremely low variable- to fixed-cost ratio of producing wells and the excess capacity of the crude industry, marginal costs undoubtedly were low compared with crude prices. Moreover, refiners were operating their facilities at only about 80 per cent of capacity. Clearly the marginal costs of refining a gallon of distillate (including the marginal cost of producing crude) had to be low relative to the cargo price.

Summary.--Refiners acquired independent terminal operators for three possible reasons:

1. The Import Program, by granting some independents very large historical residual allocations, probably prompted some refiners to acquire independents for their valuable import tickets. This may have induced still other refiners to defensively acquire independent terminal operators themselves.
2. The increase in the average age of terminal operators meant more independents were ready for retirement. One way for an independent to retire would be to sell his terminal facilities to an integrated refiner.
3. The excess refining (and producing capacity) almost certainly encouraged the large petroleum firms to acquire independent terminal operators. The controlled outlets of the acquired firms permitted them to more efficiently utilize their refining and producing facilities without severely depressing the distillate price structure. The acquisitions, however, foreclosed much of the cargo market to the remaining refiners in that market.

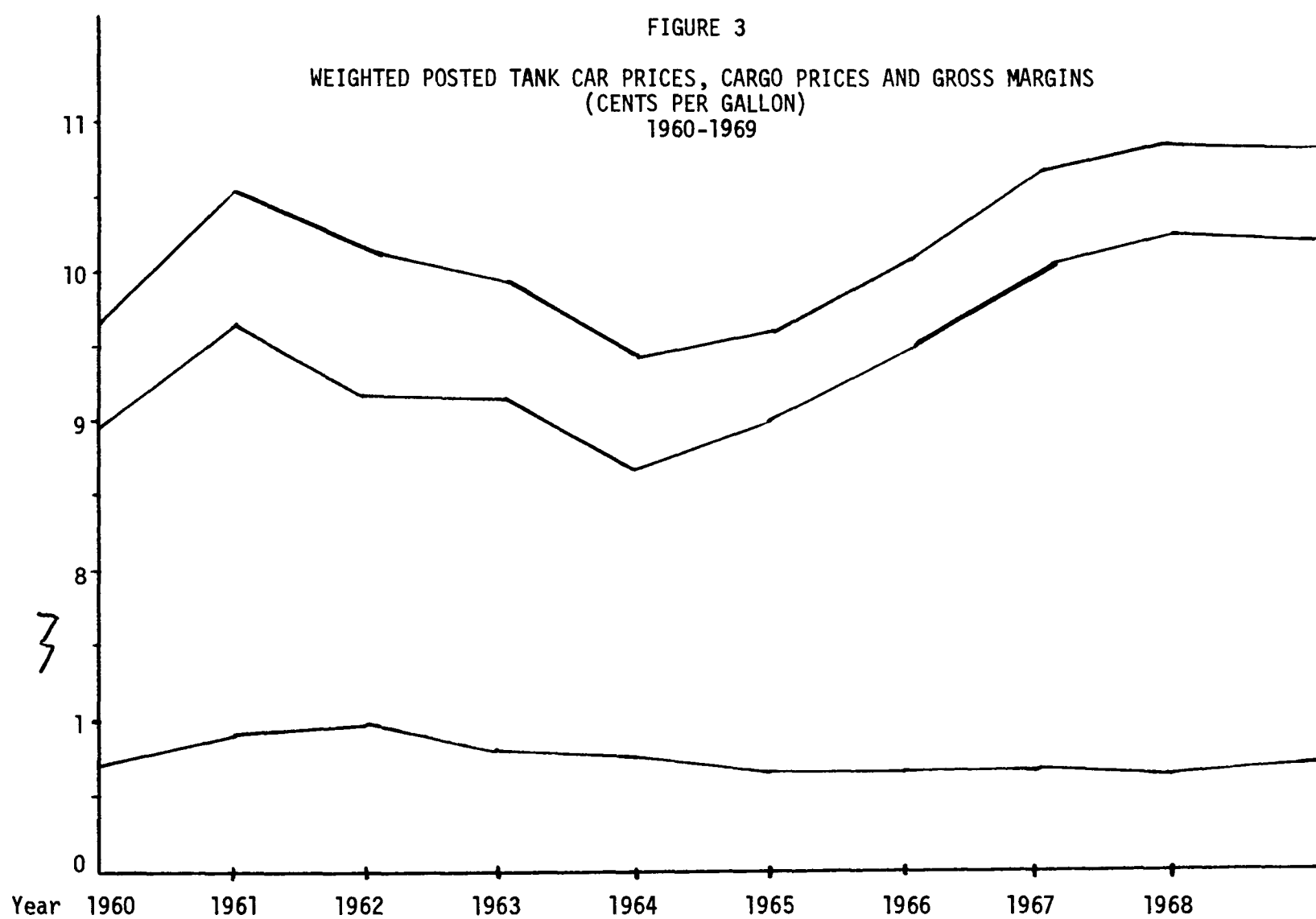
Profits after 1963

The middle 1960's

Because no terminal operators testified before the OIAB until 1967 (most did not until 1968), no actual profit data are available before 1966. Nevertheless it is possible to estimate the trend in profits from other evidence that is available.

All the evidence points to declining profits through the middle 1960's. By this time the market power of the refiners had increased from earlier years for several reasons. First, concentration in the cargo market had increased significantly with the acquisition of the terminal operators and independent refiners. (See page 61 for discussion on independent refiners.) Secondly by 1965 much of the excess refining capacity of earlier years had been absorbed by the growth in demand for refined products. Thirdly, the construction of terminal facilities by both the independent operators and the major refiners significantly increased the terminal capacity of the industry. Finally the completion of a major pipeline (Colonial) in 1965 greatly added to the market power of refiners (see page 122 for discussion of the pipeline's effects on competition). Given these changes, by 1965 the bargaining power had shifted away from the independents to the refiners.

The price behavior of refiners reflected the shift in power. Posted price statistics indicate that the weighted gross margin in 1962 exceeded the margin in 1966 by over 50 per cent (see Figure 3 on page 52). If it is assumed that actual gross margins declined proportionately in those years, and for simplicity that operating



Source: Platt's Oil Price Handbook. Monthly prices weighted by percentages derived in Table 21, page 176.

costs per gallon were identical in 1962 and 1966, then it can be concluded that the independents would have to at least double their sales volume to prevent a decline in net profits.²⁰

And this is a conservative estimate. Given perhaps a more realistic assumption about operating costs (i.e., that costs increased), sales would have had to triple or quadruple to preclude a net profit decline. Since it is highly improbable that sales actually doubled or even tripled or quadrupled in just a four-year period when industry sales essentially remained unchanged, it can be concluded with a reasonable degree of confidence that net profits declined between 1962 and 1966 (see Table 4, page 39, for industry sales).

This conclusion is supported by entry figures. After 1963 only one independent entered the wholesaling business (although another independent wholesaler did purchase an additional terminal facility in 1966).

Actual profits (1966-1969)

Reliability of the data.--Before discussing profits for this period, a word about the reliability of the data is in order. Profit data have been taken from the testimony of independents before the OIAB. Each firm's objective in testifying was to convince the Board that the Oil Import Program had, in some manner, created an economic hardship for the petitioner. A successful petition entitled the terminal operator to import a certain quantity of foreign oil. The greater the hardship suffered by the firm, the greater the allocation granted by the Board. And, as noted earlier, because the delivered

price of domestic No. 2 exceeded the foreign price by 2 or 3 cents per gallon, an import allocation was, in effect, a subsidy for the independent.

Given a situation where the greatest apparent hardship provided the largest import allocation, or subsidy, each independent naturally endeavored to paint as dark an economic picture as possible for the Board. The more dismal the picture, the greater the allocation granted. Therefore, where the opportunity existed to minimize recorded distillate profits, some independents may possibly have capitalized on that opportunity.

Without getting into the technicalities of accounting procedure, it is clear that many methods are available to the accountant to deflate recorded profits if this is desirable for one reason or another. To give just one example, overhead costs among the several products typically handled by the independent must somehow be allocated to each particular product. To a large extent, the allocation is necessarily arbitrary. Thus, to build up its case, a petitioning firm could purposely inflate distillate overhead costs with the objective of deflating its distillate profits.

Whether or not the independents purposely deflated profits in the manner described above, or in any other manner, is impossible to determine. The independents revealed little or nothing to the OIAB on their accounting methods. Even if many independents did lawfully understate their recorded profits, and there is no evidence to support this view, the profit data presented to the OIAB would still prove useful in depicting a trend in profits. This assumes that independents used

consistent accounting procedures over the 1966-69 period--seemingly a reasonably assumption.

Results of sample

Bearing in mind the above shortcomings, Table 6 on page 56 shows that the profits of the independents declined sharply over the four-year period, from a high of plus one million dollars in 1966 to a low of minus two million dollars in 1969. Of the thirteen firms listed in the table, nine and eleven firms enjoyed positive profits in 1966 and 1967, respectively. By 1968, however, the profit picture had radically changed and the number of firms maintaining a positive level of profits declined to three. By 1969, just one firm earned a positive level of profits.

Clearly profits declined sharply between 1966 and 1969. Moreover, as shown earlier, they had declined during the middle 1960's as well. It seems likely that at least some of the five acquisitions occurring during this period stemmed from a squeeze on profits. Undoubtedly, the Import Program contributed to this squeeze, although many other factors were also involved. Thus the Import Program contributed to the profit squeeze of independents, that, in all likelihood, forced some independents to merge during the late 1960's.

TABLE 6
NET NO. 2 OIL PROFITS OF NORTHEAST
INDEPENDENT TERMINAL OPERATORS^a
1966-1969

Independent Terminal Operators	1966	1967	1968	1969
Burns Brothers	\$ (10,000) ^b	\$ 34,000	\$ (181,000)	\$ (270,000)
Central Petroleum	24,600	17,500 ^c	(184,000)	(279,000)
Cirillo Brothers	(213,000)	34,000	(224,000)	(148,000)
Gibbs Oil	32,414	18,048	42,021	(40,272)
Howard Coal	372,245	169,529	(210,157)	(340,262)
Northeast Petroleum	188,687	92,455	204,852 ^d	(92,279) ^d
Northville Industries	440,000	417,000	(170,000)	(337,000)
Patchogue Oil	8,287	10,635	(35,186)	(43,935)
Patterson Fuel	20,013	18,066	(3,023)	12,624
Tappan Tanker	(52,256) ^e	(52,256)	(46,871)	(47,521)
Union Oil	(18,442)	(79,621)	(236,736)	(302,128)
Wellen Oil	77,470	84,420	30,362	(31,868)
Wyatt, Incorporated	67,511 ^e	67,511	(23,655)	(48,861) ^f
Total	<u>937,529</u>	<u>831,287</u>	<u>(1,037,393)</u>	<u>(1,968,502)</u>
Positive-Profit Firms	9	11	3	1
Negative-Profit Firms	4	2	10	12

^aSource: Independent terminal operators' testimony before the Oil Import Appeals Board, 1968-1970.

^bFiscal year ending April 30, 1967.

^cTestimony in 1968 listed profits of \$19,000. Testimony in 1970 revised to \$17,500. No explanation given.

^dNortheast failed to include earnings realized on foreign oil, which approximated \$850,000 and \$500,000 (before taxes) in 1968 and 1969, respectively. See Appendix F, page 164 for method used to calculate these estimates.

^eBecause no profit data available for 1966 assumed equal to 1967 profits.

^fWyatt failed to include earnings realized on foreign oil, which approximated \$85,000 (before taxes) in 1969. See Appendix F, page 164 for method used to calculate this estimate.

Conclusion

The evidence discussed in this chapter strongly suggests that profits of the independents declined from above-normal levels in the early 1960's to below-normal levels by the late 1960's. Since most acquisitions occurred during the early 1960's, most independents were not forced to merge because of the Import Program.

Rather it was seen that refiners sought independent terminal operators primarily for their captive customers in an effort to increase the utilization of their refining and producing facilities. To a lesser degree the Import Program's method of allocating residual oil and the rising average age of independent operators contributed to the acquisition movement as well. Some acquisitions occurring in the late 1960's, however, very likely stemmed from a profit squeeze in which the Import Program played some role by cutting off independents from alternative foreign sources of supply.

It was seen that profits declined during the middle 1960's because the market structure of the industry had radically altered: concentration in the cargo market had increased, excess refining (and producing) capacity had decreased, terminal capacity was less tight and the Colonial Pipeline was introduced. All these changes to some extent were prompted by the Oil Import Program, as will be seen in later chapters. Together they increased the bargaining power of refiner-suppliers vis-à-vis their independent-customers. As a result profits slumped.

After 1966 profits continued to decline. Exactly why will be the topic of investigation throughout the remainder of the dissertation.

FOOTNOTES FOR CHAPTER III

1. Eugene M. Singer, Antitrust Economics (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968), p. 215. The quote was in reference to Alcoa. The Government (in United States V. Aluminum Co. of America, 148 F. 2nd 416 (2nd Cir., 1945) accused Alcoa of squeezing the profits of independent fabricators who rolled aluminum ingots into sheets. The fabricators for all their ingots relied on Alcoa, the only U.S. producer of virgin aluminum. Alcoa also competed with the independents in the subsequent (sheet) market. Since Alcoa allegedly set both the ingot and sheet price it could squeeze the gross margins of the independents until they were forced out of business. The Government accused Alcoa of doing just this.

2. Corwin D. Edwards, "Vertical Integration and the Monopoly Problem," Industrial Organization and Public Policy, compiler Werner Sichel, editor, Jesse W. Markham (Boston: Houghton Mifflin Company, 1967), p. 180.

3. Very likely some of the remaining five firms acquired in the late 1960's were forced to merge because of a squeeze in profits. See page 55 for discussion.

4. "Market Trend," Petroleum Week, 9 (November 27, 1959), 46.

5. Terminal operators apparently did not have to pass on entirely the lower costs because they possessed some degree of monopoly power. See discussion on page 47.

6. See gross margins in Figure 3, page 52.

7. Very likely other testifying independents entered the industry at the time but did not make this fact known to the OIAB. Moreover no entry information is available on non-testifying firms.

With one exception (Gibbs in 1966), no independent entered the industry after 1963, although one (Northeast) purchased a terminal in 1966.

8. Information on Paragon in this and the next paragraph was derived from: "What's behind All These Acquisitions," National Petroleum News, LI (August 1959), 101-102.

Data on allocations have been derived from: U.S., Department of the Interior, Allocations, Residual Oil Used for April 1-June 30, 1959.

9. Between 1952 and 1963 extraction costs (which approximate marginal costs) in Lybia and the Middle East averaged about 5 cents per barrel. In South America, extraction costs were somewhat higher, but still far below the price of foreign crude oil. Since residual oil is derived from crude oil, the marginal costs of refining residual would be low compared with the foreign residual price.

The extraction costs estimate were derived from: Paul G. Bradley, The Economics of Crude Petroleum Production (New York: Humanities Press, 1967), p. 104.

10. Merton J. Peck and J. J. McGowan, "Vertical Integration in Cement," Antitrust Bulletin, XII (Summer, 1967), 520. The Federal Trade Commission claimed the chain reaction theory--that "one merger sets off an ever increasing rate of acquisitions"--was valid in the cement industry. Peck and McGowan disputed this.

11. "New NPN Survey" The Big Trends in Oil Jobbing Today," National Petroleum News, LIII (September, 1961), 150.

12. "What's behind All These Acquisitions," National Petroleum News, LI (August, 1959), 101-102.

13. "Mergers Thin Bigtime Jobber Ranks," Petroleum Week, 9 (July 24, 1959), 15.

14. "Marketing--Now You Need It to Stay Alive," Petroleum Week, 9 (November 5, 1959), 73.

15. "The best guess is that the elasticity for gasoline is minus .2 The elasticity for home heating oil is probably a bit lower" Sanford Rose, "The Far-reaching Consequences of High-priced Oil," Fortune, LXXXIX (March, 1974), 106.

16. Usually the contract price at the cargo level and at other levels bears some relationship to spot cargo prices in the Gulf. "Such contractual provisions, it is maintained, merely reflect the inevitable fact that the entire price structure, whether contracts explicitly so provide or not, must bear some close relationship to those quotations [cargo spot prices]. The Gulf price signifies to all marketers in the South and on the Atlantic seaboard the price at which their competitors can purchase. So, a short-term industry-wide surplus of supply over demand at current prices, for example, will be reflected in distress cargoes at the Gulf" This, "in turn, can set off a general price decline throughout the industry." Harold Fleming, Oil Prices and Competition (New York: American Petroleum Institute, 1953), p. 181, paraphrased by de Chazeau and Kahn, Integration, p. 394.

17. Inevitably their sales increased largely at the expense of other refiners--mostly independents--who failed to integrate forward through acquisition or internal expansion.

18. PV_r probably exceeds PV_i for two other reasons as well. The risk factor, included in k may be smaller for the integrated firms because of the certainty of supplies--not a very important concern during the early 1960's but certainly one by the late 1960's. Moreover, the variables TCP_t and Q_t may be larger for the integrated refiner if he can offer dealers more secure supplies and brand identification.

19. Professor Bruce T. Allen suggests that vertical integration, absent economies of integration, cannot benefit the integrated firm ("Vertical Integration and Market Foreclosure," Journal of Law and Economics, XIV [April, 1971], 251-274). Thus producers who acquire marketers during periods of excess capacity to increase their sales volume and utilization of capacity gain nothing from the acquisitions. Indeed profits may actually decline if the acquiring firms attempt to utilize their own producing capacity at the expense of non-integrated producing firms.

Although Allen's model may apply in the cement industry, it does not in the petroleum industry. This is true because the model assumes that the marginal costs of production (refining) are equal to product prices in the intermediate market (the refining market).

Without question in the petroleum industry the cargo price (or intermediate price) exceeded the marginal costs of refining a barrel of distillate during the early 1960's. Professor Henry Steele has estimated that marginal costs of crude production are well under a \$1.00 per barrel in the relevant range of output. (U.S., Congress, Senate, Governmental Intervention, pp. 208-219.) Paul D. Torrey estimates producing costs--extraction costs--to be about 80 cents per barrel (1959). (Southwestern Legal Foundation, "Evaluation of Secondary Recovery Prospects," Economics of Petroleum Exploration Development and Property Evaluation [Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964], p. 198.) At the same time the price of crude in the Gulf exceeded \$3.00 per barrel. Thus the price of a barrel of No. 2 oil (about \$3.50 per barrel), which is derived from low marginal cost crude oil certainly exceeded the marginal cost of refining a barrel of No. 2 oil. Consequently Allen's model does not apply in the petroleum industry.

20. The annual posted (weighted) gross margin in 1966 was 6.5 in New York. This compares with 9.9 mills in 1962. Assume actual margins equal three quarters of posted margins, about the ratio that prevailed in the late 1960's according to OIAB data. Further assume constant costs of 3.0 mills per gallon.

Profits are equal to the margin minus the average operating costs multiplied by the quantity sold. In symbols, profits are equal to $(M-C)Q$, where M equals gross margins, C equals operating costs and Q equals quantity. Using the above figures and equating 1962 profits and 1966 profits indicates that sales (Q) would have to be 2.3 times as great in 1966 as in 1962 for profits to be equal.

CHAPTER IV

OTHER STRUCTURAL CHANGES

It was seen in the last chapter that concentration increased in the cargo market during the 1960's because refiners acquired many independent terminal operators. Other changes, which further affected the structure of the cargo market, also transpired during this period.

The principal changes were:

1. The acquisition of independent refiners by integrated refiners;
2. The advent of hydrocracking facilities;
3. The introduction of the Colonial Pipeline.

All three changes, as well as some less important changes that will be discussed later, greatly affected the market behavior of the refiner-suppliers and, in turn, the competitive ability of the independent terminal operators. This chapter confines itself solely to an investigation of why these changes occurred. Later chapters will examine how these changes affected market behavior and how the profits of independent terminal operators were affected by the changing market behavior.

Acquisition of Independent Refiners

Although no specific data are available, testimony given by the terminal operators to the OIAB indicate that the independent

refiners played an important supplying role in the cargo market during the late 1950's and early 1960's. By 1969, however, independent terminal operators received only 5 per cent of all their requirements from independent refiners.

One main reason for the decline in shipments is that six of the nine largest refiners--all with refining capacities of over 15,000 barrels a day--were acquired after 1958, five of them by 1964.¹ Between 1958 and 1968 their share of refining capacity on the East and Gulf Coasts declined from almost 10 per cent to less than 5 per cent (see Table on the next page). Why these acquisitions occurred will be investigated in this section.²

Unfortunately, a complete and thorough analysis of the acquisition trend would require time and effort far beyond that available for this part of the dissertation. In fact, an entire dissertation could be devoted to this topic alone. Therefore, for reasons of practicality, the scope of this section has been limited to a cursory examination of some of the more important factors responsible for the mergers consummated after 1958, the year in which independent refining capacity peaked in the Gulf.

Profit pinch forced acquisitions

All the available evidence seems to point to one conclusion: a severe reduction in profits beginning in the late 1950's forced independent refiners to merge with integrated petroleum firms. Profits declined mainly because of an excess of capacity in the refining sector and because of a decline in the relative price of foreign crude oil.

TABLE 7

REFINING STATISTICS OF INDEPENDENTS AS
 COMPARED WITH THE INDUSTRY ON THE
 EAST AND GULF COASTS^a

Year	1948	48/58	1958	58/68	1968
<u>CAPACITY</u>					
(Thousands of Barrels/Day)					
Industry	2,645		4,105		5,205
Independents	206		386		216
Other	2,439		3,719		4,989
<u>GROWTH RATE</u>					
(Per cent/Decade)					
Industry		55		27	
Independents		87		(44)	
Other		52		34	
<u>INDEPENDENT REFINERS</u>					
Share of Refining capacity (per cent)	7.8		9.4		4.1
Number of Refiners	8		9		4

^aSource: U.S., Department of Interior, Bureau of Mines, Petroleum Refineries in the United States, 1958 and 1968. Figures for 1948 derived from Daniel C. Hamilton, Competition in Oil (Cambridge, Mass.: Harvard University Press, 1958), p. 14. Only refiners with 15,000 barrels-per-day capacity or more are included.

That profits slumped in the refining sector seems indisputable. One study presented before a congressional committee in 1965 by Alfred Kahn noted that a refining margin squeeze in the Gulf "has been especially severe in the last 8 years or so, precisely because of the industry's general condition of excess capacity."³ To support his views, Kahn presented to the committee a chart showing calculated Gulf Coast refining margins. The chart demonstrated that margins fell steeply during the late 1950's and recovered somewhat by 1962, the last year shown on the diagram. Margins, however, never fully recovered to levels reached in the early 1950's.⁴ Furthermore, calculations by this researcher indicate that Gulf margins fell again after 1962 and did not recover until 1966.

While margins were falling, refining costs per barrel were rising, according to an authoritative source. Between 1951 and 1958 costs had increased by over 25 per cent. Thereafter, they stabilized and by 1965 had declined a per cent or two.⁵

Thus by the late 1950's and early 1960's refining margins had declined and operating costs had increased. In other words, net profit margins per barrel for the refining sector of the industry had shrunk. And for reasons given below, most or all independent refiners were probably unable to offset the decline in net profit margins with an increase in sales. Consequently, profits slumped.⁶ In turn, the slump in profits induced (or forced) independent refiners to merge with other petroleum companies.

Reasons for the decline in profits

Excess refining capacity.--Between 1957 and 1965 the refining sector was burdened with excess capacity. The excess capacity forced refiners to reduce prices in the highly competitive petroleum product markets. For example, between 1957--when prices had peaked--and 1964, Gulf cargo prices for the principal refined products sagged by about 15 per cent. Meanwhile, the Gulf crude price declined by only 6 per cent.⁷ Consequently, refining margins were squeezed

Majors decrease purchases.--For the independent refiners the profit picture appeared even more dismal than that of the integrated refiners. Until the mid-1950's or thereabouts some of the independents' main customers were the major refiners. At the time most majors manufactured less product than required by their integrated marketing outlets and, to supplement their own production, they relied on product purchases from independent refiners. This permitted the majors to utilize their own refineries at near capacity levels, even during slack demand periods.

During the early and middle 1950's the competitive situation began to change. The majors gradually built up their refining facilities to the point where most hardly needed the independent refiners to augment their own output. In fact, by the late 1950's, they too were burdened with excess refining capacity. Consequently sales to major refiner-customers declined.

Moreover, many majors were now selling product in the cargo market, competing with the independent refiners for the business of

independent terminal operators, industrial firms and other large users of petroleum products. Thus the supply curve in the cargo market had shifted to the right, while the demand curve had shifted to the left. Prices consequently declined somewhat more than in other wholesale and retail markets where the majors sold largely through integrated channels or controlled outlets (i.e., through contractual arrangements).⁸ Since the independent refiners sold most of their output on the cargo market, their average selling price declined more than that of the major firms.

Majors buy independent terminal operators.--Finally, independent refiners lost sales because many terminal operators were acquired by integrated petroleum companies during the late 1950's and early 1960's. These acquisitions foreclosed much of the wholesale market to the independent refiners. Entry by other terminal operators offset to some degree the loss in business stemming from the acquisitions. Nevertheless by 1963 or 1964, much of the wholesale market had been foreclosed to independent refiners.

Summary.--Excess refining capacity squeezed profits for all firms during the late 1950's and early 1960's. The integrated firms, however, softened the impact on their earnings by transferring much of the burden of excess refining capacity onto the independent refiners. They did this by reducing purchases from independent refiners and by acquiring the independent refiners' customers (the independent terminal operators). With profits severely squeezed, over half of the larger independent refiners had merged by 1964.

Motives of integrated refiners.--Clearly the actions of the integrated firms reduced profits for the independent refiners. Was this done purposely to squeeze out the independents and thus reduce the intensity of competition in the cargo market (and in subsequent markets as well)? It seems doubtful. Most likely the refiners merely exploited their superior strategic position to preserve their former profit levels as much as possible at the expense, unfortunately, of the independent refiners.

The rich financial resources of the integrated refiners permitted them to buy independent terminal operators in an effort to maintain or increase sales and to most efficiently utilize their refining and producing capacities. The purse strings of the independent refiners were simply too short to afford this kind of endeavor. Their sales declined accordingly.⁹

Moreover, the major refiners reacted to the condition of excess capacity as profit-maximizing integrated firms would be expected to act in a partially integrated industry. Corwin D. Edwards described these reactions in 1952 stating:

When markets are saturated and goods are hard to move, a vertically integrated concern continues to use components of its own make and to distribute its own manufactures. By discontinuing whatever supplementary purchases it may previously have made from independent suppliers, it may avoid reducing its productive operations by as much as the reduction in the sales of its end product. Thus it may transfer a part of the impact of a recession from itself to those independents. The non-integrated suppliers, including those who formerly sold to the integrated concern, must all try to move their goods to independent buyers; and those who succeed are likely to sell at prices that have fallen more sharply than the prices at which the buyers resell. Under such circumstances the independent purchaser [the independent terminal operator] may fare better than the vertically

integrated concern by obtaining supplies below cost; but the existence of the independent producer [the independent refiner] of those supplies may be jeopardized.¹⁰

Decline in the relative price of foreign crude oil.--Profits declined for the independent refiners for another reason. All the independents are located in the Gulf and refining margins there declined more steeply than in other parts of the nation during the late 1950's.

Until about 1950 the delivered foreign price of crude oil in the Northeast approximated the delivered domestic price. More exactly, the international petroleum firms pegged the foreign price to the domestic (Gulf) price. Beginning in the early 1950's, however, more and more petroleum firms discovered crude oil overseas. Competition intensified and the foreign price declined relative to the domestic price. Consequently East Coast refiners increasingly relied on foreign crude to meet their refining input requirements.

Eventually because of competitive forces, the price structure of petroleum products on the East Coast began to reflect somewhat the lower foreign crude price. But Gulf independents still processed high-priced domestic crude through about 1955. Because they sold much of their production on the East Coast, where refined prices had declined, their refining margins were squeezed.

To improve their competitive situation, independents belatedly began to import cheap foreign crude (and unfinished oil) during the middle 1950's. Because East and Gulf Coast ports are approximately equidistant from foreign ports, delivered crude prices to East and Gulf ports were about equal.

Nevertheless, Gulf refiners still suffered from a geographical disadvantage vis-à-vis the East Coast refiners. East Coast refiners were already located in the consuming area. The independent refiners in the Gulf (as well as other refiners in the Gulf) were not. They were still required to ship much of their output to the East Coast at a cost of 20 or 30 cents per barrel. Thus, to compete in the Northeast, Gulf independents were forced to absorb some transportation costs. Profit margins were squeezed.

The Import Program.--In one important respect the competitive situation would have worsened for the independent refiners without the intervention of the Import Program. By restricting imports, the Program virtually halted refinery construction on the East Coast. Without import restrictions, refining capacity on the East Coast would have expanded greatly because of the geographical advantage there in processing foreign oil. The East Coast would have gradually become less reliant on refineries located in the Gulf and the independents would have partially or completely lost their most important market. Therefore, in this respect, the Oil Import Program helped the independent refiners remain competitive.

On the other hand, the Import Program in other respects impaired the competitive ability of the independent refiners. Admittedly, three refiners--Pontiac, Suntime and Delhi-Taylor--benefited from the Program. They received import tickets valued at 2-1/2 million dollars, whereas before 1959 they imported no crude oil.¹¹ Yet six other independents with a history of importing oil experienced a reduction in

their import allocations. Under the Program all historical refiners received a cutback from their 1958 voluntary quota. But the independents suffered from a much more severe reduction than the majors. The Program called for an allocation equal to 80 per cent of each firm's last crude quota under the Voluntary Import Program. Unfortunately in 1958 the independents had imported a very high proportion of unfinished oils, and unfinished oils were not included within the historical base on which allocations were calculated. Consequently in 1959 the six historical independents were allotted quotas equal to only 45 per cent of their 1958 quota, while the majors on the East Coast were allotted quotas equal to 75 per cent of their former quota. Whereas in 1958 all Gulf Coast independents accounted for 7 per cent of all foreign inputs, by 1959 they accounted for only 4-1/2 per cent. Obviously then, the Import Program in this sense raised the cost base of the Gulf independent refiners more than that of their East Coast competitors.

The Program inadvertently discriminated against the Gulf independent refiners in still another way. The majors had built up their crude imports before the Voluntary Import Program of 1957 was implemented. The Program severely curtailed increases. The independent refiners were latecomers and were still in the process of increasing imports when the Voluntary Program became law. Therefore, the Mandatory Import Program of 1959, which based its historical allocations on the 1958 allocation, locked the independents into a small percentage of their refinery inputs compared with their major competitors on the East Coast. For example, in the second half of 1964, seven large East

Coast refiners (majors) received 28 per cent of their East Coast refinery inputs from overseas--about double that of the Gulf Coast independents.¹²

Finally, the Program may have reduced the earnings of Gulf independents by impairing their competitive ability. Before the Program some independents sold products not only to East Coast customers, but also to customers in the Midwest and even on the West Coast. But after the Program was introduced, West Coast refiners, who received much higher allocations than the East Coast refiners, were able to secure the former business of the Gulf Coast independents. And in the Midwest, because refiners were able to import unrestricted quantities of Canadian Oil, they were able to undersell the Gulf Coast independents.¹³

To summarize, it has been suggested that the Oil Import Program damaged the competitive ability of the independent refiners on the Gulf Coast by granting larger import quotas to East Coast majors than to Gulf Coast independents and by impairing the competitive ability of the independents in the Midwest and West Coast. Yet, as already has been seen, even if the Program had not been introduced in 1959, the competitive situation for the independents would still have worsened. The net effect of the Program is unclear.

Another possibility.--Government programs may possibly have lowered the profits of independent refiners. Some economists have hypothesized that the combination of state prorationing systems (supported by the Import Program) and the federal tax depletion laws provided the majors with both the power and the incentive to maintain

high crude oil prices. Thus when refined product prices fell during the period of excess capacity (late 1950's and early 1960's) the majors resisted price reductions on crude oil and refining margins were squeezed. No attempt, however, has been made in the dissertation to validate this hypothesis.¹⁴

Hydrocracking

Before beginning the discussion on hydrocracking it would be helpful to first comment upon the refining process in a somewhat oversimplified manner.¹⁵ The process begins with crude oil (and other inputs) being heated in a distillate unit. Here the crude oil vaporizes and separates into its basic product components, such as gasoline, distillate and residual. Some of the output is then further processed to upgrade its quality before being shipped to the market. The remainder is sent to cracking units. These units essentially break up (crack) the heavier hydrocarbons into the more valuable lighter hydrocarbons (e.g., they crack distillate to make gasoline, or they crack residual to make distillate).

Until the 1960's the petroleum industry relied mostly on thermal and catalytic cracking units to meet their demands for lighter products such as gasoline, kerosene and distillate. Thermal units separate the heavier molecules by heating them under pressure. Catalytic units also heat under pressure, but add a catalyst which hastens and directs the cracking process. Hydrocracking units, introduced in the 1960's, are similar to catalytic crackers in that inputs are heated under pressure in the presence of a catalyst. They differ in that

hydrogen is also present and incorporated into the output.

In the past, especially before the introduction of the hydrocracker, petroleum firms were often forced to increase refinery runs during the summer to meet the summer requirements for gasoline. Many times this resulted in the excess production of distillate when demand was at its seasonal low. Consequently, refiners, pressed by limited storage facilities, frequently dumped distillate onto the cargo market at distress prices.

In recent years, many refiners have been able to control the supply of distillate more effectively through the use of the hydrocrackers. These refiners are now able to increase gasoline output, or any other light product, without having to increase refinery runs as much. In fact, refiners with hydrocracking facilities may significantly reduce distillate when gasoline output is increased because hydrocracking units may use distillate as a feedstock.

Before the advent of hydrocracking, about 25 to 35 per cent of the output of a typical catalytic cracker was in the form of No. 2 oil which, for economic and technological reasons, could not be further processed to reduce its volume.¹⁶ Thus refiners were often left with excess amounts of distillate. The hydrocracker solved this problem by reducing its output of No. 2 to 5 per cent. Moreover, it is able to use No. 2 oil as an input. Therefore, refineries with hydrocracking facilities can now reduce No. 2 oil output to virtually nothing, if market conditions warrant.

Reasons for hydrocracker's introduction

Price differential.--Although the cost of refining gasoline barely exceeds that of No. 2 oil, the price of gasoline has typically exceeded the No. 2 oil price by 3 cents per gallon during the late 1950's and early 1960's.¹⁷ This provided refiners with the incentive to build a commercial hydrocracker that would increase gasoline output at the expense of No. 2 oil. A further incentive was provided by the rapid growth in demand for kerosene jet fuel, a product that was also priced higher than No. 2 oil.

Excess capacity.--Moreover excess refining capacity after 1957 probably induced firms to invest in hydrocrackers. With capacity excessive, the return on additional refining equipment is obviously less than when it is tight. Consequently the return on hydrocracking equipment is greater, relative to that on conventional refining equipment, when refining capacity is excessive. Thus given limited capital budgets, refiners will tend to invest more in hydrocrackers during periods of excess capacity.

Government intervention.--Finally, government interventions in the petroleum market may have hastened the introduction of the hydrocrackers. First of all, because hydrocrackers are able to improve the quality of refined products by destroying waxes and eliminating sulfur to previously unsurpassed levels, the higher air quality standards of the federal, state and local governments may have induced refiners to construct hydrocrackers. Moreover, if Kahn's thesis that government intervention led to a squeeze on refining margins is correct, then the

intervention may have indirectly increased the pressure to develop new methods of production to increase refining margins.

Government intervention in the natural gas market probably hastened the introduction of the hydrocracker as well. For years, the price of natural gas has been regulated by the federal government below free market levels. This has reduced the demand for, and price of, distillate (and residual). Consequently, the gasoline-distillate price-differential was greater because of government intervention. The higher differential, by increasing the value of hydrocracking facilities, may have led to additional investment in such facilities.

Summary.--The installation of hydrocrackers permitted refiners to increase the production of lighter more valuable refined products, to control the supply of products more effectively, and to improve the quality of its output. Because of the hydrocracker's many advantages, its introduction into the petroleum industry was inevitable. The intervention of the federal government and a condition of excess capacity, however, may have hastened its introduction.

The Colonial Pipeline

Before the construction of the Colonial Pipeline, almost all the domestic petroleum consumed in the East Coast states between Maine and Virginia arrived by tanker from the Gulf Coast. The tankers either delivered finished petroleum products from Gulf Coast refineries, or delivered crude oil from Gulf Coast producers to be processed by East Coast refineries. After its completion, the pipeline, extending from

Houston, Texas to Linden, New Jersey, provided an alternative method of transportation to customers in the Middle Atlantic states, at least for the lighter products such as gasoline, kerosene and distillate. New England, however, still depended almost exclusively on tankers for the delivery of its petroleum requirements.

Import Program increased need for transportation facilities

Although perhaps unforeseen in 1959, the imposition of the Oil Import Program created the market conditions that eventually led to the construction of the Colonial Pipeline. As discussed earlier, beginning some time in the 1950's East Coast refiners enjoyed a competitive advantage over Gulf refiners in the Northeast refined product market. With the introduction of the Import Program, however, the advantage of locating a new refinery on the East Coast largely disappeared. And because the Gulf Coast offered other advantages, refinery construction in the 1950's was concentrated in that area. Over the years, as the East Coast became increasingly dependent on the Gulf Coast for refined products, additional transportation facilities were needed and the Colonial Pipeline was built.

Refiners chose to emphasize construction in the Gulf for several reasons:¹⁸

1. Labor costs were lower in the South than in the North.
2. Fuel to operate the refineries was cheaper down South.
3. Alternative markets existed in the Gulf. At the time, refiners could ship products to Northeast markets by tanker, to Southeast markets by pipeline, and to Midwest markets by pipeline or barge up the Mississippi. Occasionally, shipments were made to the West Coast as well.

Refineries located on the East Coast were largely limited to supplying the Northeast markets.

4. Petrochemical firms located in the Gulf provided refiners with a market for some of their minor products.

5. Handling costs are lower for Gulf Coast refiners than for East Coast refiners serving the New England product market. East Coast refiners are all located in the Middle Atlantic states. To supply New England, these refiners must first load their domestic crude into tankers at the Gulf. Then they must unload the crude in the Middle Atlantic states, refine it and reship the refined products to New England. Gulf Coast refiners simply load the crude at the Gulf, refine it there and ship the product directly to New England.

One disadvantage, however, of locating a refinery in the Gulf is that refined products are slightly more expensive to ship than crude because they are more corrosive, evaporate more easily and take up more tanker space per ton than crude.

Given the above advantages (of locating a refinery in the Gulf) refinery capacity increased there by a third between 1961 and 1969. Meanwhile, in the Northeast, new grass roots refinery construction ground to a halt, although some existing facilities were altered, expanded and modernized. Because of refiner retirements, refining capacity actually declined by almost 10 per cent between 1961 and 1969.¹⁹

East Coast demand for refined products increased during the early 1960's and was naturally expected to continue to increase for years to come. Moreover, refineries located in the Gulf were meeting the increase in East Coast demand and were expected to do so in the

future. A need was obviously developing for additional transportation facilities to move refined products from the South to the North. Industry members could continue to rely almost exclusively on tanker transportation, or they could build a product pipeline. They chose the pipeline.

Reasons for choosing a pipeline

They had several reasons. First, tanker transportation had proven unreliable on occasion. In June 1955, refiners were almost forced to shut down coastal plants when the National Maritime Union struck major oil tanker operators. By picketing refiners, the Union effectively blocked crude oil shipments until the strike was settled. Then, in 1961, an 18-day strike idled 114 tankers. The strike ended only after the Federal Government stepped in with an injunction.

Another reason was that recent technological breakthroughs in pipeline construction had reduced costs to a level that allowed pipeline tariffs to be competitive with American tanker rates. Nevertheless, economics alone would not have warranted the construction of a pipeline were it not for the Jones Act (The Merchant Marine Act of 1920), which requires Americans to construct and operate tankers between American ports. This requirement approximately doubled domestic tanker rates.²⁰

Industry leaders chose a pipeline over new tanker capacity for several additional reasons. Very briefly, tankers have proved unreliable during wartime conditions, being vulnerable to enemy submarines. Moreover, because shallow American ports precluded the use of huge super-tankers, many economies associated with large-scale tanker facilities

were unavailable to coastal shippers. In addition pipeline transportation costs to inland cities in the Southeast were considerably lower than alternative rates of transportation. Thus Colonial offered its owners--the majors--an opportunity to expand their market shares in the Southeast.

Finally, and perhaps most importantly, excess producing and refining capacity during the late 1950's and early 1960's frequently resulted in unmanageable inventories. As a result refined product prices had declined from their peak levels of 1958. To stabilize or increase prices refiners needed some instrument to more effectively control supply. The pipeline was that instrument (see discussion on page 122).

Without excess capacity the need to control supply would have been less urgent. Therefore the advantage of a pipeline over additional tank ship facilities would not have been as great. Thus, possibly, the pipeline would not have been built.

Summary

By restricting shipments of foreign crude oil into the United States, the Oil Import Program eliminated the geographical advantage of locating a refinery in the Northeast. Consequently, given the several advantages of refining in the Gulf, capacity increased greatly there, while declining slightly in the North. As demand increased in the North, it became apparent that additional transportation facilities would soon be needed--either tanker or pipeline. Because the pipeline offered owners many advantages, it was chosen over new tanker capacity.

FOOTNOTES FOR CHAPTER IV

1. Signal Oil acquired Eastern States (62 thousand barrels-per-day capacity) in 1959; Murphy acquired Ingram (16 thousand barrels) in 1961; Amerada Hess acquired Delhi Taylor (36 thousand barrels) in 1963; Marathon acquired Republic Oil (42 thousand barrels) in 1963; Gulf acquired Pontiac Oil (40 thousand barrels) in 1964; and Sun Oil acquired Suntime (65 thousand barrels) in 1968. Information on acquisitions has been derived from the trade literature.

2. One independent, Coastal States, entered the refining industry during the early 1960's with the acquisition of a refinery from Sinclair. By the late 1960's Coastal was the only independent supplying independent terminal operators with substantial quantities of No. 2 oil (at least to the testifying terminal operators).

Very likely the Colonial Pipeline also reduced shipments to terminal operators from independent refiners in the Gulf. (See page 94 for a discussion on the pipeline's efforts on product shipments.)

3. U.S., Congress, Senate, Committee on the Judiciary, Mergers and Other Factors Affecting Industry Concentration, Hearings before the Subcommittee on Antitrust and Monopoly, on S.R. 40, 89th Cong., 1st sess., 1965, p. 598.

4. Ibid., p. 599.

5. W. L. Nelson, Guide to Refining Operating Costs, 2nd ed. (Tulsa, Oklahoma: Petroleum Publishing Company, 1970), pp. 7-8.

6. That independent refiners indeed suffered from financial difficulties during the early 1960's may be verified from a reading of the trade literature and testimony of independent refiners before the OIAB during this period.

7. Platt's Oil Price Handbook in Petroleum Facts and Figures, pp. 451, 455 and 458.

8. From an examination of the posted data it is impossible to determine how much more Gulf cargo prices fell than other refined product prices. Distress product often was sold in the Gulf cargo market at prices substantially below the posted cargo price. Whenever possible, refiners avoided disclosure of such prices to prevent a further weakening of the price structure.

9. Many of the integrated refiners that acquired terminal operators (and independent refiners) were relatively small. For example Amerada Hess (Hess at the time), Continental, Tenneco, Cities Service, Signal and Kerr McGee accounted for half the acquisitions of terminal operators. Some experts would not even refer to these firms as "majors." (This is also true for most of those firms that acquired independent refiners.)

10. Edwards, "Vertical Integration," p. 179.

11. Figures cited in this paragraph were derived from: "New Quotas Hit Big Importers Hardest," Oil and Gas Journal, 57 (March 23, 1959), pp. 56-57.

The subsidy value of 2-1/2 million dollars was derived by multiplying 3,285,000 barrels (the allocation of the three refiners) by 80 cents per barrel, the value of each import ticket at that time, equal to the difference between the domestic and foreign price of crude. Much of the subsidy, however, may have been competed away in the highly competitive refined product markets.

12. OIAB, Testimony of Texas City Refining, L-13 (1964).

13. The argument presented in this paragraph is based on the testimony of Texas City before the Board in 1964. No attempt has been made to verify it.

Possibly West Coast refiners may not have benefited as much from the allocations as Texas City stated. The larger allocations on the West Coast may have been offset by a smaller differential between the domestic and foreign crude oil price. Moreover, lost Midwest business may have been negligible for most independent refiners.

14. See Kahn and De Chazeau, Integration and Competition, and Kahn's testimony, U.S., Congress, Senate, Mergers and Other Factors, p. 607.

15. The discussion on the refining process through page 73 is based largely on: Wicklam Skinner and David C. D. Rogers, Manufacturing Policy in the Oil Industry, 3rd ed. (Homewood, Illinois: Richard D. Irwin, Inc., 1970), pp. 67-79.

16. Ideas in this paragraph have been derived from: U.S., Congress, House, Impact of Oil Company Ownership, p. A166.

17. The refining cost difference amounts to less than one cent per gallon (cost of lead and finishing for gasoline). Petroleum Week, 8 (February 6, 1959), pp. 11-12.

18. Advantages of Gulf Coast over East Coast were derived from: "Companies Eye Big Product Pipeline," Oil and Gas Journal, 64 (July 18, 1966), p. 48.

Mobil Oil Company, Statement to the Cabinet Task Force Investigating Oil Import Controls, submitted on July 14, 1969, p. A-63.

19. Bureau of Mines, "Petroleum Refineries in the United States," in Petroleum Facts and Figures, pp. 141 and 143.

20. H. Winokur, "The Effect of the Jones Act on Oil Movements in an Unrestricted Market," Report to Cabinet Task Force on Oil Import Controls, n.d., ca. mid-1969.

CHAPTER V

SALES AND SUPPLIES

It was seen in the introductory chapters that the independent terminal operators blamed their shrinking profit levels after 1966 at least partially on a decline in sales. Allegedly, sales slumped because economically-priced No. 2 oil was in short supply in the cargo market. As noted earlier a congressional subcommittee staff report not only agreed with the independents, but accused the refiners of conspiring to create the shortage in an attempt to squeeze the terminal operators out of business.

One main objective of this chapter is to test the validity of the above allegations. That is, was there a shortage of economically-priced cargo distillate? And, if so, did a conspiracy of refiners purposely create the shortage? A second main objective is to illustrate how several important structural changes affected supplies during the late 1960's.

Sales

Northeast region

On the whole sales increased considerably for independents during the 1966-69 period. As shown in Table 8 on the following page, their sales increased by over 20 per cent during the 1966-69 period, a percentage gain almost quadruple that of the remainder of the industry.

TABLE 8
COMPARISON OF INDEPENDENT TERMINAL OPERATORS' SALES OF NO. 2 HEATING OIL^a
WITH INDUSTRY SHIPMENTS OF NO. 2 HEATING OIL IN THE NORTHEAST
(MILLIONS OF GALLONS)
1966-1969

	1966	66/67	1967	67/68	1968	68/69	1969	66/69
Sales of independent terminal operators ^b	1,479		1,665		1,719		1,798	
Calculated shipments for remainder of industry	6,729		6,986		6,987		7,128	
Industry shipments ^c	8,208		8,651		8,706		8,926	
Independents' percentage growth rate		12.6		3.2		4.6		21.6
Remainder's " " "		3.8		0.0		2.0		5.9
Industry's " " "		5.4		0.6		2.5		8.7
Independents' gallonage growth		186		54		79		319
Remainder's " " "		257		1		141		399
Industry's " " "		443		55		220		718
Independents' percentage share of the market	18.0		19.2		19.7		20.1	

^aThe table presents the sales data of fourteen testifying firms (out of the twenty-three independents operating in the Northeast market). These firms during the period 4/1/69-3/31/70 accounted for two-thirds (67.37 per cent) of all the terminal inputs in the Northeast reported to the OIA. (See Table 15, Appendix G, page 165.) Thus, the fourteen firm sample represents reasonably well the independent segment of the industry, which claims about 30 per cent of the Northeast wholesale distillate market (market share for the fourteen firms in 1969 was equal to 20.1 per cent, which divided by 67.37 per cent gives 29.7 per cent share of the market).

^bSee Table 16 in Appendix H, page 167, for sales figures by company.

^cSee Table 17 in Appendix I, page 168, for derivation of industry shipments.

Even in 1968, a year in which shortages of distillate were supposed to have reduced the market share of the independents, sales increased by over 3 per cent as compared with no growth for all other competitors.

Over the four-year period, these fourteen firms increased their market share from 18.0 per cent to 20.1 per cent in the Northeast. Moreover, despite their relatively small share of the market, they captured about 45 per cent of incremental sales made during this period. Obviously, the independent terminal operators as a group fared quite well in terms of sales.

Yet not all of the independents participated in the rapid growth. A few even lost sales. In general, those firms located in the New England region showed larger gains than those in the New York-New Jersey region.

New England region

Table 9 (page 86) has compiled the independent sales figures in the New England region. The table indicates that sales increased from 827 million gallons in 1966 to 1,078 million gallons in 1969, or over 30 per cent in just a four-year period. This rate far exceeded that of all other competitors in the region, only 11 per cent, and it enabled the independents to expand their market share from 24.6 per cent in 1966 to 27.7 per cent in 1969. Clearly, as a group, the independent terminal operators in New England fared quite well in terms of sales.

TABLE 9
COMPARISON OF INDEPENDENT TERMINAL OPERATORS' SALES OF NO. 2 HEATING OIL^a
WITH INDUSTRY SHIPMENTS OF NO. 2 HEATING OIL IN NEW ENGLAND
(MILLIONS OF GALLONS)
1966-1969

	1966	66/67	1967	67/68	1968	68/69	1969	66/69
Sales of independent terminal operators ^b	827		972		1,010		1,078	
Calculated shipments of remainder of industry	2,537		2,685		2,703		2,816	
Industry shipments ^c	3,364		3,657		3,713		3,894	
Independents' percentage rate growth		17.5		3.9		6.7		30.4
Remainder's " " "		5.8		0.7		4.2		11.0
Industry's " " "		8.7		1.5		4.9		15.8
Independents' gallonage growth		145		38		68		251
Remainder's " " "		148		18		113		279
Industry's " " "		293		56		181		530
Independents' share of the market	24.6		26.6		27.2		27.7	

^aThe table presents the sales data of five testifying firms out of the seven independents operating in the New England market. These firms during the period 4/1/69-3/31/70 accounted for over four-fifths (82.63 per cent) of all the terminal inputs in the New England area reported to the OIA. (See Table 15 Appendix G, page 165.) Thus, the five-firm sample represents very well the independent segment of the industry, which claims about one-third of the New England distillate market (market share for the five firms in 1969 was equal to 27.7 per cent, which divided by 82.63 per cent gives 33.5 per cent share of the market).

^bSee Table 16 in Appendix H, page 167, for sales figures by company.

^cSee Table 17 in Appendix I, page 168, for derivation of industry shipments.

New Jersey-New York region

On the whole independents in this region realized a much lower sales growth rate during the 1966-69 period than that enjoyed by independents in the New England region because to some extent, industry sales increased less sharply in the New Jersey-New York area (see Table 10 on page 87). Independents showed a 10 per cent gain in sales compared with just a 3 per cent gain for the other market participants.

Some independents, however, fared less well than the aggregate data might imply. Two firms lost sales during the entire 1966-69 period and another four lost sales after 1967 (see Table 16 in Appendix H, page 167). Nevertheless on the whole, independent sales increased at a faster rate than the rest of the industry.

Supplies

The independents' market share expanded mainly because the refiners as a group were willing to substantially increase domestic shipments to terminal operators during the 1966-69 period (see Table 11 on page 89). In the New England area shipments from refiners increased by almost 27 per cent compared with 11 per cent for the rest of the industry, although in the New Jersey-New York area shipments to independents rose by roughly the same rate as the rest. In the entire Northeast refiners increased supplies to independents by over 16 per cent compared with under 6 per cent for the remainder. Clearly, the allegation that a conspiracy of refiners purposely created a shortage to drive the independents out of business is unfounded.

TABLE 10

COMPARISON OF INDEPENDENT TERMINAL OPERATORS' SALES OF NO. 2 HEATING OIL^a WITH
INDUSTRY SHIPMENTS OF NO. 2 HEATING OIL IN THE NEW JERSEY-NEW YORK REGION
(MILLIONS OF GALLONS)
1966-1969

	1966	66/67	1967	67/68	1968	68/69	1969	66/69
Sales of independent terminal operators ^b	652		693		709		720	
Calculated shipments for remainder of industry	4,192		4,301		4,284		4,312	
Industry shipments ^c	4,844		4,994		4,993		5,032	
Independents' percentage rate growth		6.3		2.3		1.6		10.4
Remainder's " " "		2.6		(0.4)		0.7		2.9
Industry's " " "		3.1		-		0.8		3.9
Independents' gallonage growth		41		16		11		68
Remainder's " " "		109		(17)		28		120
Industry's " " "		150		(1)		39		188
Independents' percentage share of the market	13.5		13.9		14.2		14.3	

^aThe table presents the sales data of nine firms testifying out of the sixteen independents operating in the New Jersey-New York market. These firms during the period 4/1/69-3/31/70 accounted for almost one-half (49.82 per cent) of all the terminal inputs in the New Jersey-New York area reported to the OIA. (See Table 15, Appendix G, page 165.) Thus, the nine-firm sample represents reasonably well the independent segment of the industry, which claims about 29 per cent of the New Jersey-New York distillate market (market share for the nine firms in 1969 was equal to 14.3 per cent, which divided by 49.82 per cent gives 28.7 per cent share of the market.)

^bSee Table 16 in Appendix H, page 167, for sales figures by company.

^cSee Table 17 in Appendix I, page 168, for derivation of industry shipments.

TABLE 11

TOTAL NO. 2 HEATING OIL SHIPMENTS TO INDEPENDENT TERMINAL
OPERATORS COMPARED WITH INDUSTRY SHIPMENTS^a

YEAR	SHIPMENTS (Millions of Gallons)					
	NEW ENGLAND		NEW YORK-NEW JERSEY		NORTHEAST	
	Independents	Industry ^b	Independents	Industry ^b	Independents	Industry ^b
1966	817	2,537	605	4,192	1,422	6,729
1967	974	2,685	610	4,301	1,584	6,986
1968	912	2,703	543	4,284	1,455	6,987
1969	1,035	2,816	619	4,312	1,654	7,128
	GROWTH RATE (Per Cent)					
1966-67	19.2	5.8	0.8	2.6	11.4	3.8
1967-68	(6.4)	0.7	(11.0)	(0.4)	(8.1)	0.0
1968-69	13.5	4.2	14.0	0.7	13.7	2.0
1966-69	26.7	11.0	2.3	2.9	16.3	5.9
1967-69	6.3	4.9	1.5	0.3	4.4	2.0

^aShipments to independents are at (or approximately at) the cargo price and have been derived from Table 18, Appendix J, page 169.

^bIndustry shipments exclude sales of independents and are derived from Tables 8, 9 and 10, pages 86, 88 and 89, respectively.

Despite the substantial increase in shipments to independents as a group, some independents indeed suffered from a shortage of domestically-supplied distillate during the late 1960's. Altogether seven out of fourteen firms received less domestic distillate in 1969 than they received in 1966 (see Table 18 in Appendix J on page 169). For the most part these firms had been dependent on refiners that were in the process of withdrawing supplies from the cargo market for one reason or another.

Upon being cut off or rationed by their suppliers, terminal operators were forced to scramble around for additional product in a highly concentrated cargo market where few refiners were interested in new business. In fact, only four refiners increased shipments after 1966, while six reduced shipments and two supplied about the same over the four-year period (see Table 12, page 91). Two of the four refiners that increased shipments acquired no new customers. (Indeed, Phillips withdrew supplies to one firm.) Another refiner entered the market in 1969 to partially supply just one very large independent. The remaining refiner, Exxon, was the only principal supplier willing to acquire new customers (two) at the cargo level on a contractual basis. By doing so, and by increasing shipments to their regular customers, Exxon offset some of the supply problems created by the withdrawing refiners. For those terminal operators, however, who were cut off and unable to acquire additional distillate from Exxon, a true shortage situation had developed by the late 1960's. (Emergency import tickets granted by the OIAB greatly alleviated the situation for these independents. As a result only two firms actually

TABLE 12

TOTAL NO. 2 HEATING OIL SHIPMENTS TO INDEPENDENT
 TERMINAL OPERATORS BY REFINER^a
 (MILLIONS OF GALLONS)
 1966-1969

Terminal Operators	1966	1967	1968	1969
American ^b	28	23	60	85
Coastal	61	92	47	19
Exxon	392	538	473	544
Getty	25	10	5	2
Gulf	21	23	23	21
Phillips	230	258	225	242
Royal	0 ^c	8	13	9
Sinclair	0	32	33	56
Shell	85	35	17	0
Sun	56	37	33	28
Texaco	0	0	0	56
Other at Cargo Price ^d	32	47	44	61
Total Domestic at Cargo Price	930	1,103	973	1,123
Other - Premium	25	44	68	40
Total Domestic	955	1,147	1,041	1,163
Imports	0	0	98	49
Total Supply	955	1,147	1,139	1,212

Footnotes on following page.

FOOTNOTES FOR TABLE 12

^aShipments by refiner are at (or approximately at) the cargo price and have been derived from Table 18, page 169. Note the difference between total No. 2 shipments in this table and in the previous table (Table 11). Shipment data in this table are derived from ten independents, the only ones who provided shipments by refiner in all four years. Table 11 provides shipments on fourteen independents, four of which did not provide shipment data by refiner in all four years.

^bAmerican Oil's upward trend in shipments is misleading. Actually shipments to independents from American dropped sharply between 1966 and 1969.

American supplied four independents. Only one provided the OIAB with actual shipment data, and shipments to this independent increased as shown in the table. But shipments to three other independents decreased by some inexact amount.

See Appendix L, page 172, for an estimate of how much shipments declined to independents during the late 1960's.

^cRoyal in 1966 shipped twelve million gallons of No. 2 oil to independents (Central), but at a price four mills above the posted cargo price. Therefore these shipments have not been included in the table.

^dIncluded within "Other at Cargo Price" are shipments from Signal Oil--13, 5, and 3 million gallons in 1966, 1967 and 1968, respectively.

lost sales in the 1966-69 period).

To summarize, although distillate shipments to some independent terminal operators increased substantially, deliveries to others declined. Those independents cut off or rationed by their regular suppliers frequently found it impossible to replace the fuel oil lost by acquiring product elsewhere in the cargo market. This was true because most of the refiners were withdrawing from the market or unwilling to pick up new customers at the cargo level. Therefore, the independents' claim that many of them suffered from shortages of product undoubtedly was true. On the other hand, shipments to terminal operators on the whole rose significantly. Thus refiners did not conspire to force the independents out of business.

Reasons behind Withdrawal of Supplies

Refiners withdrew supplies from the cargo market for three main reasons:

1. The introduction of the Colonial Pipeline, in combination with the skyrocketing of tanker rates, induced some refiners to withdraw distillate from the cargo market, although it probably increased shipments from other refiners.
2. The installation of hydrocracking facilities induced two of the most important refiner-suppliers to convert much of their No. 2 oil (which had been available to terminal operators) into more valuable lighter, refined products.
3. In early 1968 an exceedingly tight supply situation possibly forced, or induced, some refiners to cut back shipments to independent

terminal operators.

Each of these structural changes in the cargo market will be discussed below.

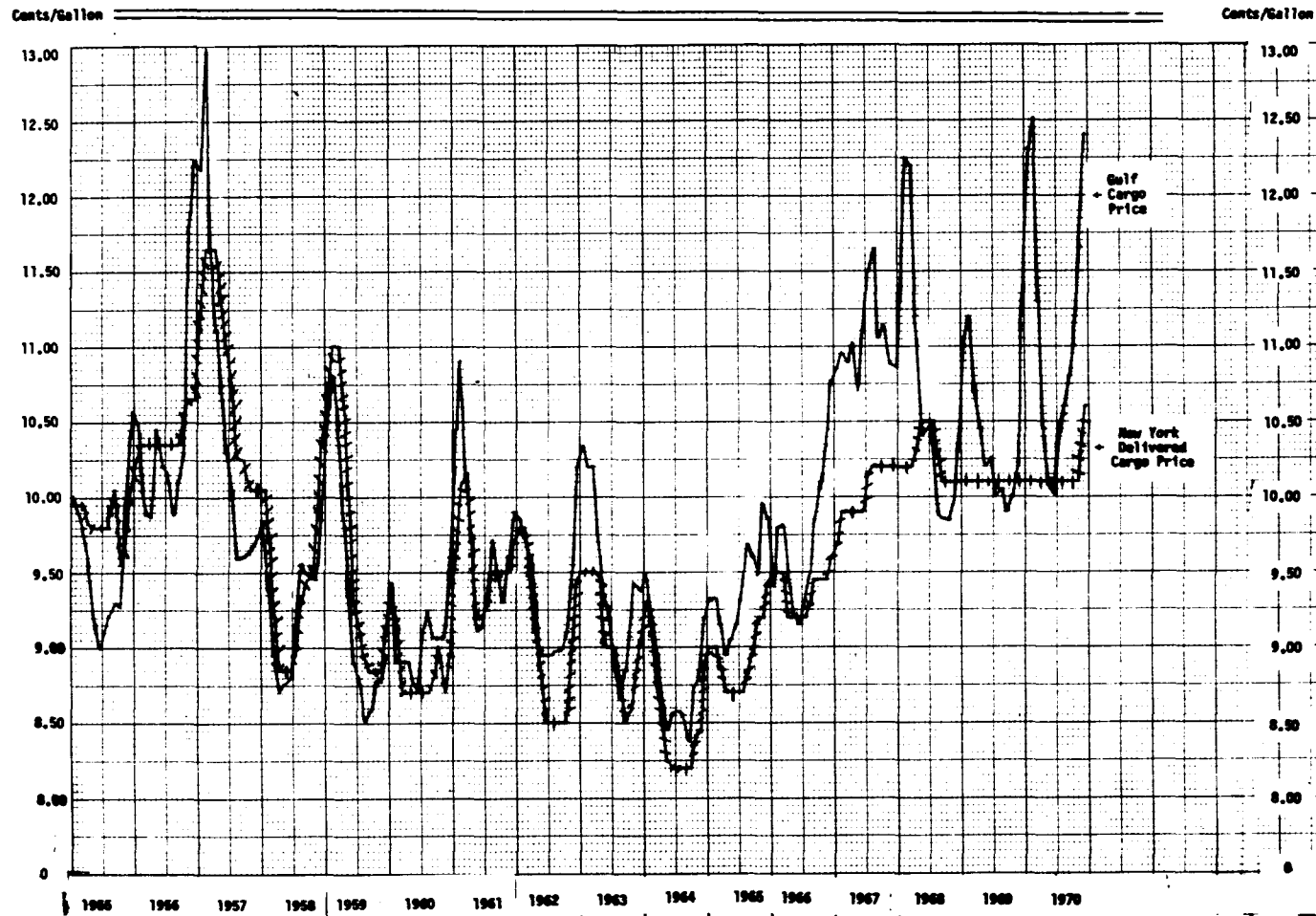
Colonial Pipeline

The influence of the Colonial Pipeline on distillate shipments to the independents may be concisely stated. When tanker rates soared in 1966, the pipeline offered shippers the lowest transportation rates between the Gulf and the Northeast. For a number of reasons, however, access to the pipeline was largely (although not exclusively) limited to its owners--nine major petroleum companies.¹ Therefore, some non-owner-refiners in the Gulf were priced out of the Northeast market. They could no longer economically ship distillate to the Northeast by tanker and compete with refiners who had access to the pipeline. Conversely, the independent terminal operators could no longer economically buy product in the Gulf, hire a tanker, and ship the product themselves to the Northeast. Consequently, shipments from some refiners declined.

Separation of the Gulf and Northeast markets.--The Northeast manufactures only a fraction of its refined product requirements, depending largely on the Gulf Coast for the rest. Until the Colonial Pipeline was completed in 1965, virtually all refined products transported to the Northeast arrived by tanker from the Gulf, including No. 2 heating oil. Prior to 1965, the differential between the New York delivered cargo price and the Gulf cargo price usually approximated the spot tanker rate (as shown in Figure 4 on the following page).

FIGURE 4

COMPARISON OF NEW YORK DELIVERED CARGO PRICE AND GULF CARGO PRICE PLUS TANK RATE



Source: Platt's Oil Price Handbook and Platt's Oilgram Price Service.

The correlation between the price-differential and the pre-pipeline spot tanker rate is to be expected in a competitive market. If, for some reason, one variable temporarily exceeded the other, market forces would tend to equalize the two. For example, if the spot tanker rate suddenly fell considerably below the New York-Gulf Coast price-differential, some refiners and marketers would be induced to hire additional tankers to ship incremental distillate from the Gulf to New York. The increase in the supply of distillate in the North would exert a downward pressure on the price in that area, while the increase in demand in the Gulf would exert an upward pressure on the price in that region. Eventually, the differential would narrow and once again the spot tanker rate would approach the differential in price between the two locations. Similarly, if the tanker rate suddenly increased, or if the differential abruptly changed, market forces would eventually tend to equate the two.

In the summer of 1966, the correlation between the two series ended. Because of the war in Vietnam, the increase in the overseas shipments of grain, and the crisis in the Middle East (in 1967), the demand for tankers heightened abruptly after the middle of 1966. Since the supply of tankers is virtually fixed in the short term, spot tanker rates skyrocketed. The price-differential, however, failed to rise proportionately because of the Colonial Pipeline, as seen below.

After the middle of 1966, spot tanker rates usually ranged between one or two cents per gallon for trips between the Gulf and New York, while the pipeline tariff approximated 0.8 cents per gallon.² The much lower tariff induced product movements on the pipeline that

prevented the differential from rising very much above the pipeline rate. In short, the price-differential now reflected the pipeline rate, not the tanker rate.

Pipeline accessibility.--To be sure, if all potential shippers had equal access to the pipeline, then no supply problem would arise for the terminal operators. Gulf refiners would find it economical to ship distillate to the Northeast because the Northeast-Gulf price-differential would usually approximate the rate on the pipeline, to which all refiners had access. In addition, terminal operators could always buy No. 2 oil F.O.B. in the Gulf and then transport it themselves on the pipeline. In either case, equal accessibility to the pipeline for all potential shippers would prevent the foreclosure of the Northeast consuming markets to the Gulf refiners. Looked at differently, equal access would prevent the foreclosure of the Gulf cargo supply market to the independent terminal operators.

But accessibility to all potential users was not equal. Because the Colonial Pipeline Company was a joint venture operation it was subject to the provisions of the Hepburn and Elkins Act.³ Hence, in theory, the pipeline was open to all shippers. In reality, however, the independents--the terminal operators and the refiners--were deterred from using the pipeline.

They were deterred, either intentionally or unintentionally, by certain requirements imposed on users of the pipeline and by the original layout of the pipeline.⁴ The stipulation that all owners be required to guarantee a certain level of shipments over a long period

of time eliminated participation by most independents, who were unable to meet such a stipulation. Possibly, the guarantee was reasonable and necessary in the sense that, by reducing Colonial's risk, it permitted the company to finance the construction of the pipeline mostly through inexpensive long-term debt. Nevertheless, it undoubtedly prevented the independents from becoming part-owners of the pipeline.

But even without the throughput requirement, the small size and nonintegrated nature of the independent firms precluded most of them from participating in the ownership of the pipeline. Still, the majority of them were large enough to utilize the pipeline as non-owners, as they were entitled to under the law. The minimum tender of 75,000 barrels required by the pipeline for operational efficiency presented no obstacle to the independents.⁵ The stipulation, however, requiring nonowner-shippers (as well as owner-shippers) to build their own terminals prohibited many independents from using the pipeline. Each terminal cost between \$600,000 and \$2,000,000, which substantially raised entry costs.⁶

Moreover, the course of the pipeline and the location of its input and output stations certainly discouraged even those independents who could afford the required investments. For example, the pipeline failed to extend westward from Houston into the Corpus Christi area where many independent refiners are located. Thus, until coastal states, an independent refiner, completed a 200-mile pipeline connecting the two cities in 1970, it was economically inaccessible to many independent refiners. Whether Colonial purposely constructed the pipeline to discourage its use by the independents, or whether the economics of the

situation dictated that the pipeline be terminated at Houston is impossible to determine without further investigation. It is clear, however, that Colonial built the pipeline to primarily meet the needs of its owners, the majors, and not the needs of potential nonowner shippers. Obviously, its use by nonowners was discouraged.

Therefore, because of the several provisions of the Colonial Pipeline, and because of its geographical setup, entry costs were high for nonowners of the pipeline. Only the largest, most integrated firms with the sales volume to warrant sizable investments and the financial capabilities to afford them were able to utilize the pipeline. Hence, in the late 1960's just two independent terminal operators and no independent refiners shipped products on the Colonial Pipeline. Moreover, some of the integrated nonowner-refiners in the Gulf failed to utilize the pipeline, possibly because entry costs were too high for them too. Clearly, then, the combination of soaring tanker rates and restricted access to the pipeline led to a reduction in the number of refiners willing and able to supply independent terminal operators with distillate.

This need not have happened. A pipeline operated by a non-integrated and truly independent company, assuming that such a pipeline could be independently financed, would eliminate many of the access problems experienced by the independents. First of all, no throughput guarantee would be required for an independent pipeline. In addition, the construction of individual storage facilities by each user would no longer be a necessity. Instead, fungible storage and terminal facilities available to all shippers would be constructed and operated by the pipeline company, such as is now done by the William Brothers

Pipeline Company.⁷ Finally, the course of the pipeline and the location of its input and output terminals would not purposely discriminate against any particular segment of the industry.

Summary.--Until 1966 the spot tanker rate usually approximated the Gulf-New York price differential. This enabled Gulf refiners to economically ship distillate to the Northeast independent terminal operators. Beginning in the middle of 1966, however, tanker rates soared, but the low tariff on the Colonial Pipeline prevented the price differential from climbing in accordance with the spot tanker rate. This would have presented no problem to Gulf refiners if they had equal access to the Colonial Pipeline; but access was restricted largely to the major refiners who owned the pipeline. Even by 1970, nonowners accounted for only about 8 per cent of all shipments on Colonial.⁸ Therefore, as seen below, some refiners found it uneconomical to continue shipping distillate to the independent terminal operators.

Effects on distillate shipments.--In 1966 three refiners--Coastal, Signal, and Sun--sold 130 million gallons of distillate in the cargo market, equal to about 15 per cent of all shipments from refiners to ten independents (see Table 12, page 91). By 1969, their shipments had declined to 45 million gallons, equal to less than 5 per cent of the market. All three suppliers operated refineries in the Gulf Coast and none had access to the Colonial Pipeline. Presumably, the uneconomic conditions imposed by the pipeline caused this decline.

On the other hand, two refiners may have increased shipments to Northeast terminal operators because of the pipeline. These refiners--Sinclair and Phillips--operated refineries only in the Gulf Coast region. It is not known if they had marketed distillate extensively in the Northeast before the pipeline was planned. It is known, however, that Phillips signed a ten-year contract with Union of Boston in 1962 and that Sinclair also signed a long-term contract with Gibbs in 1966 because they needed the marketing connections and storage facilities of the independents.⁹ It seems possible, in fact very probable in Sinclair's case, that without the pipeline these refiners would not have shipped distillate directly to the Northeast, for they had virtually no tank ship capacity.¹⁰ By 1968, 17 per cent of all shipments to independents in the cargo market stemmed from these two refiners (see Table 1, page 19).

Summary.--Whether or not the Colonial Pipeline led to an increase or decrease in shipments to independents cannot be positively determined. It does seem clear, however, that the pipeline led to a redistribution of distillate shipments to independents. Coastal, Sun, and Signal, three firms with refineries in the Gulf and no access to the Colonial Pipeline, reduced shipments significantly during the 1966-69 period. The pipeline probably was the motivating force behind the reduction in shipments. On the other hand Phillips and Sinclair probably increased shipments because of the Colonial Pipeline.¹¹

Hydrocracking

After 1966 several refiners on the Gulf Coast installed hydrocracking units. Four of these units were geared to use No. 2 oil as a feedstock, although all four could utilize certain other related feedstocks as well. In other words, the hydrocrackers enabled these refiners to convert No. 2 oil into higher-valued refined products, such as gasoline and jet fuel.

One refiner, Gulf Oil, completed the construction of its second hydrocracker in early 1967. Its completion, however, hardly affected direct shipments to independents because by 1966 Gulf supplied only negligible quantities of distillate to terminal operators. (It is possible that Gulf, before the introduction of its first hydrocracker in 1965, was a more important supplier in the cargo market.) Another refiner, Exxon, also installed its second hydrocracker in early 1967. Almost certainly it reduced No. 2 oil output for Exxon. Shipments to independents from Exxon, however, were not adversely affected by the utilization of the hydrocracker, as was demonstrated above. In short, then, the installation of these two hydrocrackers affected direct shipments to independents very little.

The installation of hydrocracking facilities by Shell and American, however, profoundly affected the supply situation of the independent terminal operators.

Shell.--In 1966 Shell shipped roughly 185 million gallons of No. 2 oil to at least six independents. It alone supplied about 10-15 per cent of all independent requirements in that year (see Appendix

L, Table 20, page 172).¹³ Then in early 1967 it installed a 25,000 barrel-per-day hydrocracker which typically used mixed gas oils as feedstock. The hydrocracker could potentially convert 345 million gallons of No. 2 oil annually into other more valuable products, more than the sum of all shipments made to independents in 1966.¹⁴

After the hydrocracker was installed, shipments to independents declined. By 1969, Shell had entirely abandoned the cargo market except for a small amount of premium-priced distillate supplied to Union of Boston. Shell stated frankly to independents that the hydrocracker was responsible for the elimination of shipments in the cargo market. Furthermore in its 1968 annual report, the company stated that "distillate fuel oil sales declined, as newer manufacturing facilities [hydrocracking facilities] maximized the yield of more valuable gasoline and jet fuel."¹⁵ Clearly, then, the installation of Shell's hydrocracker considerably reduced shipments to independents during the late 1960's.

American.--This company introduced a 40,000 barrel-per-day hydrocracker in early 1969, a unit large enough to potentially convert 550 million gallons of No. 2 oil annually to other products.¹⁶ Up until that time, the company had been the second most important supplier of heating fuel oil to independents. One out of every four gallons purchased by terminal operators originated with American Oil.¹⁷ By 1969, American had reduced shipments to three of its four independent-customers. The reduction would have been greater were it not for the delay from December of 1968 to April of 1969 in the installation of the hydrocracker. By 1970, two independents were entirely cut off and shipments were reduced considerably to the other two independents (see Table 20 in Appendix L,

page 172). Altogether between 1968 and 1970, sales to independent terminal operators had declined roughly 220 million gallons.

Once again, without question, the hydrocracker was behind the reduction in shipments. The company stated so publically and to independent terminal operators on several occasions. When one principal independent customer asked for a continuation of shipments, American replied, "Because of the economic penalty for producing additional No. 2 oil after the planned April, 1969 start-up of our Texas City Ultra-cracker [hydrocracker]," it is possible to manufacture extra distillate only "at a considerably higher production cost."¹⁸ This cost was too high, and shipments declined to the independent.

Summary.--The installation of hydrocracking facilities by Shell and American significantly reduced distillate shipments to independent terminal operators. In 1966, these two refiners ranked second and third in shipments to independents. By 1969, Shell had virtually dropped out of the cargo market, and American was in the process of abruptly withdrawing from that market. By 1970, the two firms' market share had declined to less than 10 per cent (which was entirely American's). Undoubtedly, the installation of hydrocrackers was responsible for the sharp reduction in shipments to independents from these refiners.

1968 shortage

The winter of 1967-68 was a severely cold one. Consequently, demand for heating fuel jumped by over 15 per cent during the first three months of 1968 over 1967.¹⁹ Supply became exceedingly tight, relative to demand, as evidenced by certain industry statistics. For

example, supply days in February and March of 1968 dropped to just 23 as compared with an average of over 30 for the 1962-67 period.²⁰ Additionally, actual stocks held by refiners fell far below desired levels. During the December-March 1967-68 heating season, actual stocks averaged 10 million gallons (or about 10 per cent) below desired stock levels.²¹ In 1967, another tight year, stocks were 7 million barrels below desired levels. During the 1962-66 period "shortages" were much smaller, ranging from 1/2 million to 4-1/2 million barrels. Clearly, supply was tight in early 1968.

Some critics claim that refiners reduced shipments to terminal operators during this tight period (January through March or April) and thus increased their market share. This may well have been the case during early 1968 but, unfortunately, shipment data are only available on an annual basis. They show industry shipments remained essentially unchanged between 1967 and 1968, but that shipments to independents from refiners declined from 1,585 million gallons to 1,455 million gallons, or about 8 per cent (see Table 11, page 89).

Thus at first glance, it might seem that some refiners withdrew supplies from independents to meet their own requirements first to increase their market share. It should be noted, however, that actual shipments to independents depend not only on how much refiners are willing to supply, but also on how much independents are willing to buy. Certainly, during the early months of the year, independents wanted more distillate than they received from refiners, for the terminal operators knew they could sell all they could purchase. But many refiners wanted and needed more distillate as well. Exxon and other refiners reportedly

were so desperate that they purchased considerable quantities of distillate at premium prices in the cargo market, which they then resold to contractual terminal operator-customers at a loss. Therefore, not only independents but also refiners desired more distillate during the early months of 1968.²²

After March or thereabouts it seems that shipments declined to many independents, not because refiners cut them off, but because the independents cut back demand. They demanded less domestic distillate because they were granted emergency import allocations by the OIAB, which increased shipments to the fourteen surveyed independents by about 175 million gallons, more than offsetting the decline in domestic shipments. As a result, the independents were able to increase sales in 1968 and slightly increase their share of the market, despite the sharp decline in domestic supplies.

In short, the independents possibly experienced shortages in early 1968. As a result their combined market share may have declined. If so, the emergency import allocations granted by the OIAB later in the year relieved their supply problems considerably. In fact so much so that the independents on the whole increased their share of the market in 1968 (although some individual firms still may have experienced shortages, particularly in the New York area).

Conclusion

Although sales declined for a few independents during the 1966-69 period, on the whole their sales growth far outpaced that of the refiners. Even without emergency import allocations the independent segment would have increased its combined market share, although some New York independents badly needed the allocations to offset the reduction in domestic shipments. Clearly no conspiracy of refiners existed to create shortages for the independents and steal their customers.

Several structural changes affected shipments to terminal operators. The net effect of the Colonial Pipeline is unclear. It is clear, however, that it resulted in a redistribution of shipments and cut off some Gulf refiners from Northeast terminal operators. The hydrocracker certainly reduced deliveries to independents--mainly from American and Shell. Finally the tight supply situation of early 1968 undoubtedly created severe supply problems for many independents (as well as some refiners). No evidence indicates, however, that refiners capitalized on the situation to increase their market shares at the expense of the independents.

FOOTNOTES FOR CHAPTER V

1. The nine original owners of the Colonial Pipeline were: Texaco, Inc., Cities Service Company, Gulf Oil Corporation, Standard Oil Company (Indiana), Phillips Petroleum Company, Sinclair Refining Company, Socony Mobil Oil Company, Inc., The Pure Oil Company and Continental Oil Company. Source: U.S., Congress, House, Anticompetitive Impact of Oil Company Ownership, pp. A-147 and A-148.

The tanker rate discussed in the text is the spot rate, the rate charged tank ship users for one or two trips between the Gulf and the Northeast. Most product (over 90 per cent) moves in tankers either owned or leased by refiners. Therefore, when spot tanker rates climbed steeply in 1966 and 1967, average shipping costs to refiners rose much more gradually. Expenses, of course, on owned ships increased not at all. On leased ships costs gradually rose as long-term contracts expired and were renegotiated at higher rates.

Those firms heavily dependent on spot tankers were obviously hurt most by the sudden rise in rates. Independents--refiners and terminal operators--often chartered on a spot basis.

2. Ibid., p. 52.

3. Under the Hepburn Act of 1906 a pipeline owned by a group of integrated petroleum firms must be operated as a common carrier. That is, all potential shippers must have equal access to the pipeline.

The Elkins Act of 1903 barred the payment of illegal rebates to owners of common carriers. In the 1940's an illegal payment was interpreted by the ICC to mean any rate of return on the pipeline's valuation above 7 per cent. (Valuation is defined as the sum of equity and debt capital.)

4. The argument presented on the next few pages concerning the accessibility of Colonial to potential nonowner shippers is largely derived from: U.S., Congress, House, Anticompetitive Impact of Oil Company Ownership.

5. Ibid., p. A-241--statement by Colonial's management.

6. Ibid., p. 112. Statment by James W. Emison, Vice President of Oskey Gasoline and Oil Company, Inc.

7. Williams Pipeline Company is an independently owned company in the Midwest.

8. U.S., Congress, House, Anticompetitive Impact of Oil Company Ownership, p. A-78.

9. Although the pipeline was not completed until 1965, the Colonial Pipeline company was organized in 1962, the year that Phillips signed a ten-year contract with Union.

10. Sun Oil Company, Analysis of World Tank Ship Fleet (Phil.: Sun Oil Company, 1970), Table 10.

11. Possibly shipments from Exxon to independents increased because of the combination of soaring tanker rates and inaccessibility to the pipeline for some independent refiners.

Through most of 1967 it was uneconomical for Gulf independent refiners to hire tankers at the spot rate and ship the distillate to the Northeast. The delivered costs (Gulf cargo price plus the tanker rate) exceeded the delivered cargo price in the Northeast. Consequently the independent refiners probably preferred to sell most of their distillate in the Gulf after 1966.

Exxon possibly purchased much of this distillate. The company owns some of the largest, most efficient ships in the country. Moreover, it owns one-fifth of all the tank-ship capacity owned by oil companies. The Exxon purchases would explain Exxon's increase in shipments to independents from 390 million gallons in 1966 to 540 million gallons in 1967, or 33 per cent (see Table 12, page 91).

12. Hydrocracking statistics are derived from: "Annual Refining Survey," Oil and Gas Journal, 64-68 (March-April issues, 1966-1970) and from U.S., Congress, House, Anticompetitive Impact of Oil Company Ownership, p.

13. In 1966 shipments to fourteen independents in the Northeast amounted to 1,422 million gallons (see Table 11, page 89). Therefore Shell's shipments of 150-220 million gallons equaled 10-15 per cent of all shipments to independents.

14. This assumes the hydrocracker operates at 90 per cent of capacity and uses all No. 2 oil as a feedstock. Thus the hydrocracker could convert 22,500 barrels of No. 2 per day or 9,450,000 gallons per year into other products, equal to 345 million gallons per year.

15. p. 11.

16. Same assumptions as footnote 14.

17. In 1968 shipments to fourteen independents in the Northeast amounted to 1,455 million gallons (see Table 11, page 89). Therefore American's shipments of about 350 million gallons to independents, as derived in Appendix L, page 172, is equal to almost 25 per cent of all shipments to independents.

18. OIAB, Testimony of Northeast Petroleum, R- (f.p.) (1969). Quote in text was from a letter dated January 29, 1969 from W. R. Peirson, Vice President of Marketing, American Oil Company.

19. U.S., Department of Interior, Bureau of Mines, Mineral Industry Surveys, Crude Petroleum, Petroleum Products, and Natural-Gas-Liquids (Washington, D.C.: monthly issues of the 1960's). Monthly demand figures are derived by adding total supply to inventory changes for the month. Supply on the East Coast is equal to distillate manufactured there plus shipments from overseas and other districts (mainly the Gulf).

20. To put inventories into perspective, they are divided by average quantity demanded (daily) to get supply days. For example, with inventories at 99 million barrels and demand averaging 3 million barrels per day, supply days equal 30.

Supply days cited in text were calculated from data derived from Bureau of Mines (see footnote 19).

21. Each month all petroleum firms producing crude oil in Texas report their actual and desired levels of crude and product inventories to the Texas Railroad Commission. (The Commission in the past used this information to set allowables--i.e., to set the number of days per month that a well could produce crude oil.) These statistics were reported monthly on a nationwide basis (not by region) by Platt's Oilgram Price Service.

22. Platt's Oilgram Price Service reported numerous times that refiners (as well as independents) were short of oil. See January-March issues under "Atlantic Coast" or "Gulf Coast."

Cirillo in a letter to Humble dated February 21, 1968 stated ". . . it is my understanding that Humble has purchased hundreds of thousands of barrels on the open market at a cost far in excess of what its selling price is." Moreover, "two other majors were also buying."

CHAPTER VI

DECLINE OF NET PROFIT MARGINS

It was demonstrated in the last chapter that all but two independents increased sales between 1966 and 1969--some just slightly, others quite significantly. Yet it was shown in Chapter III that every one of these firms recorded a decline in profits during that period.

Obviously, then, the decline in profits stemmed not from a shortage of No. 2 oil, but from a decrease in net profit margins. That is, the independents' gross margins--equal to their average selling price minus their average purchase price--declined relative to their operating costs per gallon. How these net-profit-margin components varied between 1966 and 1969 will be examined in this chapter.

Why they varied will be examined in the next chapter.

The analysis begins with an investigation of gross margins posted by the majors to determine if they purposely squeezed the margins of the independents. Then posted prices are compared with actual transaction prices to uncover any trends in discounting. Finally operating costs are derived and subtracted from actual gross margins to get a rough estimate of net profit margins.

Gross Margins

Posted margins

Table 13 on the following page (column 3) lists the weighted gross margins posted by refiners during the 1966-69 period in Boston and New York, where all but one of the testifying independents operated. (Wyatt, Inc. sold distillate in New Haven.) The annual margins were derived from monthly posted tank car and cargo prices, which were weighted according to the estimated percentage of annual transactions--sales or purchases--typically occurring in each month.

The table shows that margins declined somewhat between 1966 and 1968 in both cities. In 1969, however, they increased to 7 mills, a new high for the 1966-67 period (although still far lower than the margins posted during the early 1960's--see Figure 4 on page 95).

Effective domestic gross margins

Usually the prices posted by the majors are discounted in the market place. Thus the effective (or actual) margins realized by the independents--equal to their average selling price minus their average purchase price--generally differ from the margins posted by the majors. And, as already noted, because discounting at the tank car level typically exceeds discounting at the cargo level, posted margins usually exceed effective margins.

New England area.--Table 13 (columns 4 and 5) shows that between 1966 and 1969, discounting increased at the tank car level relative to discounting at the cargo level in the Boston market. Consequently,

TABLE 13
NET-PROFIT-MARGIN COMPONENTS OF INDEPENDENT TERMINAL OPERATORS
(CENTS PER GALLON)
1966-1969

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BOSTON	Weighted Posted ^a Tank Car Price	Weighted Posted ^a Cargo Price	Weighted Posted ^a Gross Margin	Tank ^b Car Dis- count	Cargo ^c Dis- count	Effective ^d Gross Margin (Domestic)	Operating Costs ^e	Net Profit ^f Margin (Domestic)	Import ^g of Benefits	Net Profit ^h Margin (Including Imports)
1966	10.20	9.52	.68	.31	.10	.47	.42	.05	-	.05
1967	10.80	10.14	.66	.23	.06	.49	.48	.01	-	.01
1968	11.04	10.42	.62	.30	.09	.41	.50	(.09)	.18	.09
1969	11.00	10.30	.70	.49	.11	.32	.58	(.26)	.12	(.14)
NEW YORK	Weighted Posted ^a Tank Car Price	Weighted Posted ^a Cargo Price	Weighted Posted ^a Gross Margin	Tank ^b Car Dis- count	Cargo ^c Dis- count	Potential ⁱ Gross Margin (Domestic)	Operating Costs ^e	Net Potential ^j Margin (Domestic)	Import ^g of Benefits	Net ^k Potential Margin (Including Imports)
1966	10.07	9.42	.65	NA	.07	.72	.42	.30	-	.30
1967	10.65	9.99	.66	NA	.06	.72	.48	.24	-	.24
1968	10.84	10.22	.62	NA	(.07)	.55	.50	.05	.27	.32
1969	10.80	10.10	.70	NA	.05	.75	.58	.17	.22	.39

Footnotes on next page.

FOOTNOTES FOR TABLE 13

^aSee Appendix M, page 174 for calculation of weighted posted prices and margins.

^bSee Appendix N, page 181 for calculation of tank car discounts.

^cSee Appendix O, page 183 for calculation of cargo discounts.

^dThe effective gross margin (i.e., the actual margin realized by independents) is derived in the table by subtracting the tank car discount (column 4) from the posted gross margin (column 3) and adding the cargo discount (column 5). Alternatively the effective gross margin is equal to the average selling price received from dealers by terminal operators in the tank car market minus the average purchase price paid by terminal operators to refiners in the cargo market to refiners.

^eSee Appendix P, page 185 for calculation of operating costs per gallon.

^fThe net profit margin (domestic) is equal to the gross margin (column 6) minus operating costs (column 7).

^gImport benefits are derived by subtracting the average purchase price of distillate including cheap foreign oil from the average purchase price excluding foreign oil. This column simply shows how much the average purchase price declines because of imported oil. Import benefits were calculated by using data in Table 28, Appendix Q, page 187.

^hThe net profit margin including imports is equal to the domestic net profit margin (column 8) plus the import benefit (column 9). It is the average net profit margin earned on all distillate--domestic and foreign.

ⁱBecause adequate sales price data were lacking in the New York area, effective gross margins could not be calculated. Instead the posted tank car price was used (rather than the actual sales price) to calculate a potential gross margin. This is the margin that would be realized if no discounts were offered. Since competitive forces almost always induce discounting, the potential margin generally exceeds the effective gross margin.

^jThe domestic potential net margin is equal to the potential gross margin (column 6) minus operating costs (column 7).

^kThe potential net margin including imports is equal to the domestic net margin (column 8) plus the import benefits (column 9).

effective (domestic) margins declined from 4.7 mills in 1966 to 3.2 mills in 1969 (see column 6), despite a slight increase in posted margins. Margins slumped most strikingly in 1969, when tank car discounts increased by 2 mills on the average over 1968 while cargo discounts remained virtually unchanged.

New York area.--Unfortunately because usable tank car data are lacking for the New York area, the calculation of effective margins is prohibited. Nevertheless, the independents did provide some useful information on cargo prices. This permitted the calculation of a potential gross margin, which is equal to the posted tank car price--the actual price being unavailable--minus the actual average cargo price. In other words, the potential margin would be the margin realized by independents if they offered no discounts from the posted tank car price. Since, on the average, they certainly do offer discounts, the potential gross margin overestimates the actual margin realized by independents.

The table demonstrates that the potential margin slumped from 7.2 mills in 1967 to 5.5 mills in 1968, or almost 25 per cent (see column 6). Two factors were responsible for the decline: the posted margin declined by 0.4 mills in 1968; the independents paid an average 0.7 mills premium in the cargo market in 1968 whereas in 1967 they received a 0.6 mill discount. Said differently, the potential margin declined in 1968 because the posted margin narrowed, and because the actual purchase (cargo) price increased relative to the posted (cargo) price as shown in the table.

Whether actual margins declined as well depends entirely on what happened to discounting at the tank car level in 1968. If discounting increased, or even remained unchanged, then actual margins decreased.

All the evidence points to higher tank car discounts. Thus actual gross margins decreased for independents in the New York area in 1968.¹

In 1969 the potential margin rose almost 2 mills in New York. The increase in the average posted margin and the restoration of cargo discounts accounted for the rise. Yet in all likelihood, actual gross margins failed to increase proportionately above the low levels of 1968. This is true because discounting at the tank car level apparently had increased in 1969.²

Operating Costs

Operating cost data are not only fragmentary, but also unreliable. All testifying firms were required to present cost data to the OIAB. Many firms, however, combined their retailing costs with their wholesaling costs. Since retailing costs outweigh wholesaling costs by a factor of ten or so, the combined results proved meaningless for the purpose of the dissertation.

Unfortunately, even for those few firms presenting usable data, the data proved far less than ideal. Various independents included different items within their calculation of operating costs per gallon, and nearly all the firms failed to state explicitly what items were included within their operating costs (until 1970 testimony). Moreover, the assignment of overhead costs presumably varied from firm to firm. Finally, some firms revised their costs statistics in subsequent testimony but failed to revise all the previous years' cost data. In short, the information on costs per gallon presented the OIAB was largely inadequate.

Despite their many shortcomings, the operating costs figures provided some useful, if fragmentary, evidence about the trend in costs. Presumably, if wholesaling costs in fact increased (or decreased) significantly during the 1966-69 period, then in all likelihood, the recorded data of the independents would reflect the increase (or decrease) to a lesser or greater degree.

Put briefly (as shown in Table 13, column 7) operating costs per gallon increased by about 35-40 per cent for five firms located in the Boston and New York areas between 1966 and 1969.

Net Profit Margins

Net profit margins (and net potential margins) are calculated by subtracting operating costs from effective gross margins (or potential gross margins) (column 6). Since operating costs estimates are far from ideal, net margin estimates must also be far from ideal. Nevertheless the estimates prove useful for depicting a trend in net profit margins.

As can be seen in the table, net domestic margins declined in both New York and Boston (column 8).

The profit situation was improved considerably by the emergency import allocations granted independents by the OIAB. In Boston imports expanded net profit margins by 1.8 and 1.2 mills in 1968 and 1969, respectively (see column 9). In other words, imports lowered the average purchase price of No. 2 oil by 1.8-1.2 mills per gallon (or increased the average cargo discount). Still, in 1969 net profit margins in Boston, including the benefits of imported oil, were negative and lower than in any other year (see column 10). In 1969 they were 1-1/2 mills lower than they were in 1966.

In New York the domestic net potential margin declined from 3 mills to less than 2 mills (see column 8). (In 1968, the net margin had shrunk to half a mill.) Because discounting in all likelihood increased between 1966 and 1969, the actual net profit margins of independents had declined even more than the potential margin.

In New York imports increased net margins considerably, as they did in Boston, by 2.7 and 2.2 mills in 1968 and 1969, respectively. As a result net potential margins, including import benefits, increased from 3.0 mills in 1966 to 3.9 mills in 1969. Nevertheless, once again, because discounts increased greatly in the tank car market during the 1966-69 period, net profit margins declined.

Conclusion

Without question the data used in this chapter are fragmentary and often flawed. Still some definite conclusions may be reached about net-profit-margin components.

One definite conclusion is that operating costs per barrel increased during the late 1960's. Virtually every firm reported a rise in costs. Usable data suggests that such costs increased by about a third during the 1966-69 period.

It is also clear that posted gross margins failed to rise in proportion to the rise in costs, particularly through 1968 when calculated margins actually declined.

On the other hand the average cargo discount (including imports) increased by anywhere from one to three mills.

Finally discounting increased sharply at the tank car level, eating into the effective margins of the independents.

In short net profit margins declined because operating costs rose faster than posted gross margins and because discounting increased at the tank car level. (Whether the majors could have posted higher gross margins and make them stick is questionable, given the high level of discounts in the tank car market.) A large average discount at the cargo level somewhat offset these adverse trends, but not enough to prevent net profit margins from declining.

FOOTNOTES FOR CHAPTER VI

1. In the second half of 1968 Platt's Oilgram Price Service reported on several occasions that discounts in Northeast cities were larger than in previous years. This seems logical. With inventories at least 20 per cent greater and sometimes 50 per cent greater than in 1967, higher discounts would be expected. Moreover the emergency import allocations reduced the cost base of independents by one to three mills. In addition posted margins were larger, permitting higher discounts. Finally, as Table 13 shows, discounting increased in the Boston area in 1968 and 1967. Since market conditions in New York are similar, higher discounts would be expected there as well.

See footnote 2 for some other reasons why tank car discounts had to increase in the New York market during the late 1960's.

2. It is known that the net profit margins of independents declined between 1966 and 1969. Net profit margins may decline for four possible reasons (or combination of reasons): Posted margins may be squeezed; discounts off the posted tank car price may increase; discounts off the posted cargo price may decrease; and operating costs may increase.

Table 13 demonstrates that calculated margins rose slightly between 1966 and 1969 (1/2 mill), and that the average cargo discount increased by about 2 mills (because of import benefits). These benefits, however, were offset partially or wholly by an increase in operating costs. Therefore the overall effect of these three factors on profit margins was essentially neutral.

But net profit margins declined. Consequently tank car discounts had to increase between 1966 and 1969. Once again this would be expected. Inventories were burdensome throughout all of 1969 (as compared with only the second half of 1968). Moreover discounting increased sharply in Boston in 1969, where similar marketing conditions prevail. Finally, once again, Platt's reported very large discounts being offered throughout 1969--even in the heart of the peak winter season (5 or 6 mills).

CHAPTER VII

EFFECTS OF MARKET STRUCTURE ON NET PROFIT MARGINS

One conclusion reached in the last chapter was that operating costs per gallon increased sharply for the independent terminal operators during the 1966-69 period. Why these costs increased need not be precisely answered in the dissertation. It's sufficient to state that inflationary pressures raised the cost of wholesaling. Wage and interest rates--both very large cost items for terminal operators--rose sharply in the late 1960's, according to the trade literature and the OIAB testimony.

The truly important question is: Why did average effective gross margins decline or fail to rise for almost all the independents when wholesale operating costs rose steeply during the late 1960's? The superficial answers to this question were already given in the last chapter: discounting at the tank car level increased more than at the cargo level; posted margins were squeezed somewhat through 1968; an average premium of more than half a mill was demanded in the New York cargo market in 1968. In short, the pricing behavior of the industry's participants had changed by the late 1960's.

It had changed because the market structure of the industry had changed. Exactly how structural changes affected pricing behavior will be examined in this chapter.

Profit Margins Decline with Shift
in Bargaining Leverage

In Chapter III it was seen that independents fared reasonably well through the early 1960's, despite the prohibition on imports placed on the independents since 1959. Domestic supplies were ample and suppliers were numerous. Judging from the magnitude of posted margins, the growth in sales and the number of entrants, profits seemed reasonably high.

But by the middle 1960's market conditions had deteriorated for the independents. The acquisition of independent refiners and terminal operators by integrated refiners had increased concentration in the cargo market. The growth in demand for petroleum products had absorbed most of the excess refining capacity of the industry. And the construction of terminal facilities by refiners and independents had increased the terminal capacity of the industry. Consequently, given the increase in concentration, the reduction in excess refining capacity and the addition in terminal capacity, bargaining leverage in the cargo market by the middle 1960's had shifted considerably from the independents to the refiners.

Colonial Pipeline¹

With the completion of the Colonial Pipeline in 1965 the bargaining leverage of refiners was further reinforced. Before the pipeline, refiners sold and purchased product on the cargo market more frequently. Selling was often forced. Spot cargo prices on many occasions fell far below the posted delivered cargo price, to the benefit of the independent terminal operators.

By increasing their storage capacity and by providing them with the mechanism to match up one refiner's surpluses with another's shortages, the pipeline enabled the majors to reduce their reliance on the spot cargo market. This not only eliminated a low-cost source of oil for the typical independent, but it also increased his dependency on his main refiner-supplier(s) for contractual oil. Moreover the pipeline, by uniformly fixing the Gulf-New York transportation costs for pipeline users, reduced potential price competition.

Altogether the nine pipeline-owners (all majors) attached 29 million barrels of terminal capacity onto the pipeline.² Some unknown portion of this capacity was erected specifically for Colonial. That is, it was new capacity. Another 10 million barrels was constructed right on the pipeline itself.³ All users of Colonial had access to these common facilities.

From the industry's point of view, the common facilities represented roughly a 10 per cent expansion in capacity in the Gulf and East Coast regions. From each refiner's point of view, however, the potential expansion greatly exceeded 10 per cent. This is true because typically only a few refiners in any given period are burdened with excess distillate stocks. Yet these few refiners have access to all the pipeline's common storage facilities. Thus, for any one firm, the percentage expansion in storage capacity far exceeded the percentage expansion for the industry as a whole. (This would not be true, of course, where all refiners simultaneously were burdened with excess inventories.)

The extra storage capacity on, or attached to, the Colonial Pipeline reduced the refiners' dependency on the spot cargo market. Seldom,

if ever, were the major refiners forced to dump distillate at low prices on the cargo market. Naturally this reduced the terminal operators opportunity to pick up bargain-priced distillate and increased the dependency on their main contractual suppliers.

The pipeline reduced spot market transactions in another way. Each month, pipeline-users submit estimates of their product shipments for the following month to Colonial's management. This helps management coordinate its product shipments. It also helps refiners pair off surpluses of one refiner with shortages of another. Thus, the spot cargo market was again circumvented because of the pipeline.

Naturally, the circumvention of the spot cargo market reduced price competition among the majors to a large extent. Price competition was further reduced because the pipeline uniformly fixed the Gulf-New York transportation costs of the nine refiner-owners. Now price competition no longer sprouted from the different delivered costs of refiners. Furthermore, the price leader's task of determining a posted price acceptable to all refiners was facilitated. With less price competition, the bargaining power of independents was further diminished.

Summary

By the middle 1960's several structural changes--the imposition of the Import Program, the acquisition of independent terminal operators and refiners, the construction of additional storage capacity, the decline in excess refining capacity, and the introduction of the Colonial Pipeline--had shifted the bargaining power from the terminal operators to the refiners. Price behavior reflected the shift in power. From a

high of 9.9 mills in 1962, posted margins slumped to 6.5 mills by 1966, a 30 per cent drop in just four years. Presumably, effective gross margins (and profits) declined as well.⁴

Profit Margins between 1966 and 1969

After 1966 new structural changes further influenced the pricing behavior of the refiners, to the disadvantage of the independents. Profit margins (and profits) continued their descent as discussed earlier.

The principal modifications in market structure occurring after 1966 have already been discussed in Chapter V. Enormously high tanker rates virtually cut off the terminal operators from the refiner-suppliers of the Gulf. The introduction of hydrocracking facilities induced some refiners to withdraw supplies from the cargo market. The tight supply situation of early 1968 possibly prompted or forced some refiners to cut back domestic shipments to the independents. These changes, combined with some of the structural changes of earlier years, left the independent terminal operators virtually immobilized by 1968. In short, the refiners had a stranglehold on the independents in the late 1960's.

Why changes in price behavior

The additional market power enjoyed by the refiners unquestionably influenced their pricing behavior. But was the expansion of market power solely responsible for all the adverse price changes occurring in this period? Specifically, was the increase responsible for the elimination of seasonal pricing in 1967-68, the posting of smaller margins in early 1968, the asking of cargo premiums in New York in 1968, and the surge in

tank car discounts in 1969? Or were other structural factors, unrelated to market power, responsible for some of the behavioral changes in price? The remainder of the chapter will be devoted to answering these questions.

The elimination of seasonal pricing

Structural changes reduce price fluctuations.--Before the heating year of 1967-68, posted fuel oil prices fluctuated seasonally, with the winter-high price usually exceeding the summer-low price by a cent or two. Independents typically purchased some distillate at summer-low prices, stored it, and sold it at winter-high prices. Since the posted gross margins on these sales far exceeded the margins posted in any given month, seasonal pricing in effect lifted the weighted average posted margin for the year. Therefore, when the refiners dampened seasonal price changes in the middle 1960's and finally eliminated such pricing altogether in the heating year of 1967-68, they narrowed the weighted-posted margin.

Did the majors eliminate (posted) seasonal pricing to purposely squeeze the gross margins of the independents? Or was there some economic justification for its elimination? Interestingly, the evidence indicates that even refiners with limited market power in a competitive cargo market would have reduced the seasonal variations. This is true because structural changes of the 1960's shifted the summer-supply curve to the left relative to the winter-supply curve. Thus, assuming all other things remained unchanged, the summer price would rise relative to the winter price, even in a competitive market. That is, seasonal variations in price would diminish.

The structural changes that affected seasonal pricing were:

1. The demand for kerosene jet fuel increased sharply during the 1960's. Since relatively high-priced jet fuel is derived from the distillate fraction of the refiner's output slate, the supply curve for No. 2 oil necessarily shifted to the left. And because jet fuel sales peak during the busy travel months of the summer, the summer-supply curve for No. 2 oil shifted more to the left than the winter-supply curve.

2. The introduction of the hydrocracker in the middle 1960's permitted refiners to convert No. 2 oil into gasoline, kerosene jet fuel or some other high-priced refined product. Therefore, the supply curve for No. 2 oil shifted to the left. Because the price of gasoline and jet fuel peaks during the summer, the opportunity cost of supplying No. 2 oil--equal to the price of gasoline or jet fuel minus the marginal cost of converting No. 2 oil to gasoline or jet fuel in the hydrocracker--peaks during the summer. Thus, the summer supply curve for No. 2 shifted further to the left than the winter supply curve after the introduction of the hydrocracker.

3. It was seen earlier that the refiners by the late 1960's had sharply expanded their storage capacity through the construction of the Colonial Pipeline, through the building of deepwater terminals, and through the acquisition of terminal operators. Refiners no longer had to dump distillate on the cargo market during the summer and fall. Thus the supply curve shifted to the left in the summer. In the winter, of course, the greater storage capacity meant a rightward shift in the supply curve.

4. Before the Colonial Pipeline was constructed, most No. 2 oil came to the Northeast via tankers from the Gulf or was derived from crude oil which had been shipped from the Gulf. Because tanker rates typically rise quite steeply during the winter, the delivered costs of distillate in New York rose during the winter months--i.e., the supply curve shifted to the left.

With the introduction of Colonial in 1965, a large proportion of No. 2 oil was shipped via the pipeline at tariff rates uniformly low throughout the entire year. In the winter the cost of transporting oil was now lower than it was before the pipeline was introduced. Consequently, the supply curve had shifted to the right. In the summer, pre-pipeline and post-pipeline transportation costs remained about the same, so that the summer-supply curve was little affected.

To summarize, in a competitive market with limited refiner market power, seasonal pricing would be expected to dampen somewhat. The increased demand for jet fuel, the introduction of hydrocracking facilities, the growth in storage capacity, and the construction of the Colonial Pipeline, all contributed to the leftward shifting of the summer-supply curve relative to the winter-supply curve. Consequently, other things remaining equal, the summer price would be expected to rise relative to the winter price. In other words, seasonal price fluctuations would decline.

Some fluctuations still expected.--It seems unlikely, however, that all seasonal fluctuations in price would be entirely suppressed in a competitive market where refiners possessed little market power. In

such a market, price would probably rise in the winter because the demand for No. 2 oil shifts sharply to the right. Therefore, the demand curve intersects the supply curve at some higher price.

This conclusion depends partially on an assumption that the supply curve is upward sloping. This assumption seems reasonable. The marginal costs curves of the refiners during the winter--which together constitute the industry's supply curve--would probably be upward sloping for a number of reasons, some of which are:

1. Demand for total refined products peak during the winter. Thus, refiners operate their plants near capacity rates during the winter. This implies an upward sloping marginal cost curve.

2. Because all winter demand for No. 2 oil cannot be met from winter production, refiners must build inventories during the summer and fall. Thus, storage costs raise the costs of supplying marginal oil in the winter.

3. The transportation of No. 2 oil from the Gulf to the Northeast requires that some refiners hire spot tankers at relatively high winter rates. The delivered cost per gallon for this marginal oil certainly exceeds No. 2 oil delivered in the summer.

Therefore in a competitive market some seasonal fluctuations in price would be expected. That posted prices failed to fluctuate must be attributed to the market power of refiners.⁵

Summary.--Posted seasonal price fluctuations disappeared entirely by the heating year of 1967-68. To a large extent structural changes unrelated directly to market power accounted for the elimination

of posted price variations. Moreover the increase in the market power contributed to the seasonal uniformity of posted prices as well. As a result the weighted annual posted margins were squeezed.

Pricing in early 1968

Between January and April of 1968--a time when the typical terminal operator sells about 45 per cent of his annual volume--refiners posted 6-mill margins compared with 7-mill margins for the same months of 1966 and 1967. Moreover in the New York area, independents on the average paid a half-mill premium above the posted cargo price (for all of 1968) whereas formerly they received discounts. Presumably effective margins narrowed in early 1968, although to what extent is impossible to determine because actual data on independent prices are only available on an annual basis.

Conspiracy.--Did refiners band together to squeeze the profit margins of independents in an effort to drive them out of business? It seems highly unlikely. Such a conspiracy would require the active participation of too many refiners--about twenty or more--to insure secrecy. Hundreds, perhaps thousands, of employees would be involved. The risk of detection would be great. And the penalty of detection might be severe--possible divestiture of the majors' marketing operations. Moreover, to get the cooperation of twenty or more refiners--all with divergent interests--seems highly improbable. Even if the conspiracy began to work, the government could be expected to intervene. For these reasons, it seems quite unlikely that refiners explicitly conspired to squeeze out the independent terminal operators.

Profit maximization.--It seems more likely that gross margins were squeezed because refiners simply wished to maximize their profits. The tight supply situation of early 1968 had unquestionably increased their monopoly power in the cargo market. Refiners now had the power to post lower margins, and they did. In so doing they discouraged discounting by independents in the tank car market. As a result the refiners were under less competitive pressure to discount themselves in the tank car market. Thus by posting narrow margins (and demanding premiums in the cargo market) the refiners maximized their revenues and profits.

In theory, it would seem that the refiners could have maximized profits without squeezing posted margins. By setting a monopoly price in the cargo market (with an eye on potential entry) and allowing competition to determine tank car prices (and thus margins), they could maximize profits without squeezing the margins of independents. In other words the refiners could "extract all the potential profits from" the cargo market alone.⁶

In reality, however, refiners were prevented from maximizing profits at the cargo level because the federal government intervened. In the late 1960's the Johnson Administration was quite concerned about the inflationary impact of rising oil prices on the economy. Through jawboning tactics and threats it persuaded refiners to limit price hikes. Consequently in early 1968 distillate prices had increased by only 2 per cent over early 1967.

Government intervention.⁷--In a competitive market without government intervention the price hike would have been larger. The Middle East War had undoubtedly shifted the industry supply curve to the left. The conflict had forced U.S. petroleum firms to divert much foreign crude normally used in East Coast refineries to Europe, where crude oil was desperately needed. The foreign crude was replaced with U.S. Gulf crude oil priced at \$1.25 more per barrel, or 3 cents more per gallon. Because foreign crude oil normally provided East Coast refineries with about per cent of all their input requirements, the replacement of much of this crude with Gulf crude substantially raised production costs in late 1967 and early 1968.⁸

Additionally, transportation costs for many refiners swelled during the 1967-1968 heating season. The Colonial Pipeline was operating at full capacity. Marginal shipments of distillate had to be shipped via tankers. But the Middle East War and an unusually severe winter had greatly increased the demand for American tankers. Tanker rates soared to over 2 cents a gallon in early 1968, up roughly 50 per cent from the previous year and 100 per cent over 1966.

Not only had the supply curve shifted to the left during early 1968, but the demand curve undoubtedly had shifted to the right, which can be inferred from the 17 per cent increase in effective demand in January-April 1968 over the same period in 1967.⁹ Given these shifts, and given the inelastic nature of the demand curve and the upward slope of the supply curve, the price of No. 2 would almost certainly have increased by more than 2 per cent in a competitive market. But the market was not competitive. There were relatively few refiners and they

reluctantly complied with the wishes of the federal government.

To defy the wishes of the federal government and raise the price by more than 2 per cent, could not only offend some federal watchdog agencies, such as the F.T.C. or the Justice Department, but also displease congressmen and homeowners from Northeastern states. Already many complaints of rising prices had been voiced by these people. Further increases in price would certainly increase their hostility. Pressures could possibly develop to break up the industry, regulate petroleum prices, eliminate tax depletion laws, disband the Oil Import Program, and so on. Therefore, refiners apparently found it less risky and more profitable in the long run to comply with the wishes of the Administration.¹⁰

The refiners complied with the wishes of the federal government by not raising the price of distillate during the winter, as they usually did. At the same time they failed to increase the posted margin as usual. This limited price competition in the tank car market. Thus, given the constraints of fixed posted prices, the refiners were able to maximize their profits by eliminating the normal increase in margins during the winter. Meanwhile the profits of independents were squeezed.

The price restraints hurt independents in still another way. Usually the price of distillate rises relative to that of other refined products during the winter. The price increase induces refiners to manufacture additional distillate. By preventing a price rise in late 1967 and early 1968, the government discouraged the production of distillate. This was particularly true for independent refiners who have few long-term commitments and whose output slate often depends "strictly on the daily

dollar."¹¹ Thus the government was partially (perhaps wholly) responsible for the tight supply situation of early 1968. This not only increased the market power of refiners, enabling them to post narrow margins, but it also increased the need for independents to purchase spot distillate (at premium prices).

Tight supply alone would have squeezed margins.--Interestingly, even without refiner market power, the gross margins of independents would probably have declined in early 1968. That is, even in a reasonably (not purely) competitive market, gross margins would have declined.

With supply tight some integrated refiners would be expected to withdraw shipments from the cargo market to meet their own integrated requirements. Others would even compete with terminal operators for the limited supplies in the cargo market. Consequently open market supplies would be reduced "and make the scramble for goods worse among the non-integrated"--i.e., the independent terminal operators. Thus the spot cargo price would soar.¹²

Yet the independents could not completely pass on the higher costs to dealer-customers and still remain competitive with the integrated refiners. Therefore margins would be sub-normal or even negative on these transactions. Of course the terminal operators could refuse to buy at spot and break their moral or contractual obligations to dealers. But this would hurt their goodwill. Customers would be lost permanently and long-run profits would decline. In short, during a period of tight supply (even in a reasonably competitive but partially

integrated industry) the profits of nonintegrated firms would be expected to slump.

Spring 1968 through 1969.--In April of 1968, the majors raised the posted margin from 6 mills to 7 mills. The new margin prevailed through all of 1969. Additionally, cargo discounts were restored in the New York cargo market.

Apparently the posted price behavior of the majors changed for three reasons: inventories increased greatly; independents were granted emergency import quotas; and government pressure was applied on refiners.

Distillate inventories on the East Coast reached unprecedented levels in 1968 and 1969. For example, by September of 1968 stocks had climbed to about 100 million barrels, 25 per cent greater than the previous year. And they remained relatively high through the remainder of 1968 and throughout all of 1969.¹³

Inventories were high largely because refiners, in an effort to meet gasoline demand, necessarily manufactured more distillate than required. Moreover, distillate demand itself declined during the last eight months of 1968, dropping by 3 per cent from the previous year.¹⁴ Finally, the shortage scare of early 1968 and the subsequent criticism of the major petroleum companies by the politicians may have prompted refiners to greatly increase output. Before the industry knew it, stocks had become excessive. Refiners became more willing to offer independents larger discounts in the cargo market.

The bargaining leverage of the independents increased for another reason beginning in March of 1968. In that month independents

first began to import foreign oil using emergency import tickets granted by the OIAB. Refiners may have conceded a mill or so per gallon to independents on their domestic sales for the privilege of selling them their own foreign distillate oil, for which the market was weak outside of the United States.

Finally, the majors may have posted higher margins to muffle the complaints of independents about their gross margins being squeezed. By 1968, these independents had already generated considerable political pressure on the refiners. By restoring a larger posted margin, the refiners may have hoped to still the complaints of the independents.

In short, the unwieldy inventories, the emergency import tickets, and possibly, the political realities accounted to some extent for the higher margins posted by the refiners in the second half of 1968 and all of 1969. Yet, surprisingly, it was seen in the last chapter that domestic effective gross margins declined or failed to rise in 1969. Consequently with operating costs rising, effective net margins continued to decline in 1969.

In essence, gross margins declined or failed to rise because competition forced sellers in the tank car market to discount heavily, while the market power of refiners in the cargo market curtailed price competition.

Despite the emergency import tickets granted independents and the burdensome inventories held by refiners, independents were still largely immobilized in the cargo market. By 1969, Shell, the third largest refiner-supplier in 1966, had completely pulled out of the

cargo market. American, the second largest in 1968, was in the process of withdrawing supplies to independents in 1969. High tanker rates, combined with the inaccessibility of the Colonial Pipeline to most independents, cut off potential suppliers in the Gulf. Therefore with just three firms supplying about three-quarters of all the requirements of independents, and virtually no refiners willing to take on new business, the terminal operators were highly immobilized. As a result even with excess distillate on the market, refiners felt little competitive pressure to lower prices to independents by offering them discounts.

Yet at the tank car level, the market power of refiners was much more limited. As seen in Chapter II, many sellers compete for the business of thousands of quite mobile independent dealers, who capture 75 per cent of the retail market. Altogether about eighty or ninety firms--refiners, deepwater terminal operators, pipeline terminal operators, and barge terminal operators--compete in the tank car market. In such a market, competitors must offer discounts to sell their product, unlike the cargo market. And in late 1968 and throughout 1969, large discounts were offered. Margins were squeezed.

FOOTNOTES FOR CHAPTER VII

1. The ideas expressed in this section have been derived from: U.S., Congress, House, Anticompetitive Impact of Oil Company Ownership.

2. Ibid., p. A203. Statment by F. F. Steingraber, President of Colonial Pipeline Company.

3. Ibid.

4. See footnote 20, Chapter III.

5. Possibly actual prices still fluctuated somewhat during the year. This would be true if refiners offered larger discounts in the summer than in the winter.

Theoretically a sharp rightward shift in the supply curve during the winter could prevent the price of No. 2 oil from rising. There seems to be no reason, however, to assume this to be true.

6. Singer, Antitrust Economics, p. 208.

7. During the late 1960's refiners were reluctant to raise prices because of possible government intervention. The price surveillance requirement of the Oil Import Program "always has been a constraint on domestic oil prices. Under this authority, President Johnson frequently had his aides in the Interior Department and Council of Economic Advisors apply pressure on oilmen either to avoid increases or to roll them back. Sometimes pressure was exerted directly in telephone calls to executives, sometimes less directly by statments issued by the administration and through leaks and plants in newspapers suggesting White House unhappiness with prices increases." ("Fiction and Fact," Oil and Gas Journal, 71 [May 14, 1973], 6.)

In 1967 the CEA threatened to flood the country with imports if refiners failed to rescind a one-cent increase in the price of gasoline. About the same time Northeast politicians were proposing that allocations be granted to terminal operators--a move that would weaken No. 2 oil prices.

Meanwhile the Congress and the Administration was giving serious consideration to Occidental Petroleum's request for a free trade zone in Maine. The company presented plans to build a 300,000 barrels-per-day refinery that would process cheap foreign crude oil. In return the company offered to sell 100,000 barrels per day of No. 2 oil to independents at a 10 per cent discount. (This amounts to more than half of all the requirements of independents in the Northeast.)

When crude prices increased in July of 1967, Secretary of the Interior "Udall also appealed to refiners to absorb the higher cost of crude, not pass it on in the form of higher product prices." He continued, the "wiser company will not act hastily." ("Crude Prices Continue to Roll," Oil and Gas Journal, 65 [July 24, 1967], 29-30.)

In late 1967, Chase Manhattan economists stated that a shortage of capital resulted partially from the "governmental restrictions of the industry's freedom to price its products realistically." ("Oil Firms Scrambling," Oil and Gas Journal, 65 [December 4, 1967], 37.)

Given the threats of unfavorable government intervention if refiners raised prices, they reluctantly complied with the wishes of the government in early 1968. For example, one industry analyst stated in March of 1968 "in years past, heating oil prices have reacted to the law of supply and demand more directly than they have this season." Prices failed to increase during the winter "in spite of a tight supply situation, particularly in the East." ("Fueloil Markets," Fuel Oil and Oil Heat, 27 [March, 1968], 23.)

When refiners finally did increase prices in April of 1968 (a counterseasonal increase) the Office of Emergency Preparedness (the federal watchdog under the Import Program) asked the Justice Department to investigate the price increases to determine if anti-trust laws had been violated. Moreover, the FTC on its own began an investigation.

8. U.S., Department of Interior, Mineral Industry Surveys, Crude Petroleum, in Petroleum Facts and Figures, p. 155.

In 1966 East Coast refiners processed about 60 per cent foreign crude oil. In the first three months of 1968, when the effects of the Mid-East War were still being felt, they processed just 40 per cent foreign crude. The 20 percentage point reduction increased costs by 25¢ per barrel (20 per cent times the \$1.25 domestic foreign price differential, or 6 mills).

In addition, domestic crude prices were increasing in 1967.

9. See footnote 19 in Chapter V for sources.

10. Despite the fact that variable costs were increasing faster than prices, the petroleum firms reported excellent profits during the first quarter of 1968. Apparently a decline in fixed costs (stemming from the better utilization of capacity associated with the rise in demand) and an increase in sales more than offset the rise in variable costs.

Nevertheless, profits would almost certainly have increased even more in a competitive market free from government intervention, given the supply-demand situation of early 1968.

11. The independent refiner "will make more or less No. 2 oil as he matches his return against gasoline, jet fuel, diesel and all such." (Bob Gray, "Demand Creates Supply," Fuel Oil and Oil Heat, 26 [September, 1967], 6.)

"The chief explanation of the tight distillate market is that refiners are turning 'the middle of the barrel' into more profitable products--gasoline, jet fuel and diesel oil--rather than No. 2 heating oil or heavier." As a result the distillate fuel market was the tightest it was in seventeen years (in terms of supply days). (W. A. Bachman and Jerry Burris, "Fuel Oil: No Longer an Orphan," Oil and Gas Journal, 65 [August 28, 1967], 25-27.) Had not the government intervened, distillate prices would have been higher relative to other prices and production would have increased.

12. Edwards, "Vertical Integrations," p. 179.

13. U.S., Department of Interior, Mineral Industry Surveys, Crude Petroleum, 1968 and 1969.

14. See footnote 19 in Chapter V for source.

15. It was noted in the last chapter that imports in 1968 decreased the cost base of the independents. Higher operating costs, however, increased it. The net effect on total costs was roughly neutral. Still discounting may have increased because marginal costs declined. Import allocations reduced product costs--marginal (or incremental) costs. On the other hand, increased operating costs were largely fixed--wages, interest on capital investments, real estate taxes and the like.

Possibly the Colonial Pipeline led to increased discounting as well. Ownership of the pipeline was predicated on company shipments between 1967 and 1969. This may have induced refiners to utilize the line more intensively, eventually resulting in unwieldy inventories in the Northeast that intensified discounting at the tank car level. However because of the Mid-East War and because of the cold winter, demand remained high and inventories failed to become burdensome until the spring of 1968. At this point, discounting at the tank car level increased.

Finally excess terminal capacity may have been somewhat responsible for the increase in discounting. Once again, however, the effects may not have been felt until after the spring of 1968.

CHAPTER VIII

CONCLUSION

The Controversy

During the late 1960's a controversy arose within the petroleum industry. Industry critics--mostly independent terminal operators and eastern politicians--contended that the Import Program was driving many independents out of the Northeast home heating fuel market. The Program allegedly provided refiners with the lower distillate costs and greater market power necessary to squeeze the profits of terminal operators and, in that way, force them out of business. As proof, the independents displayed the names of numerous operators acquired since the implementation of the Oil Import Program in 1959. As would be expected, the refiners denied these allegations.

The Objectives

A principal objective of this dissertation was to solve this controversy to the extent possible. Were independents really being squeezed out of business by the refiners? If so, was the Import Program at fault? Or were there other structural factors present that affected the competitive situation faced by independents? In attempting to answer these questions it was sometimes necessary to rely on imperfect and fragmentary data. Consequently, some of the conclusions reached in the dissertation

are necessarily tentative and, in a few cases, even conjectural. Nevertheless, it is felt that many aspects of the controversy have once and for all been settled.

The Import Program

One issue concerning the Import Program has definitely been settled. The Import Program did not force most independents to merge as alleged. Almost three-quarters of all the merged independents were acquired during the 1959-1963 period, when wholesale profits were normal or above normal. That is, during the period when most acquisitions transpired, independent terminal operators were not forced to merge to avoid bankruptcy. Instead, they sold their enterprises to integrated refiners who desperately needed the controlled marketing outlets during a time of excess refining (and producing) capacity and who paid accordingly. Therefore, the allegation that the Program forced most or all independents to merge is undeniably invalid.

Decline in Profits

On the other hand, the independents were correct in asserting that their profits had declined by the late 1960's. They declined, however, not only because of the Oil Import Program, but also because of other structural changes occurring in the 1960's. These changes increased the market power of the refiners, which the Import Program reinforced by cutting off foreign alternative sources of supply. The pricing behavior of refiners reflected the newly acquired power. Independents' earnings slumped. Therefore, the Import Program may have

played a contributory role in those few acquisitions occurring in the late 1960's.

Yet even if the structural changes had failed to increase the market power of refiners, the changes themselves still would have altered their pricing behavior. Independents' earnings would have declined as a result. In other words, even if the cargo market had remained vigorously competitive, as was true in the late 1950's and early 1960's, the pricing behavior of refiners would have changed somewhat because of the modifications in market structure. For this reason alone, profits would have declined for the independents, although probably to a lesser degree than under conditions of refiner market power.

Therefore the structural transformation of the No. 2 oil market accounted for the slump in profits experienced by the independents in the late 1960's. The Oil Import Program represented just one structural change. The other principal changes were: the acquisition of independent terminal operators; the acquisition of independent refiners; the introduction of the Colonial Pipeline; and the introduction of commercial hydrocracking facilities. Together they transferred bargaining leverage in the cargo market from the independents (in the early 1960's) to the refiners (in the late 1960's).

Excess Capacity and Government Intervention

Behind each alteration in the market structure stood the factors of excess refining capacity and government intervention. Beginning in 1957, excess capacity burdened the refiners by lowering prices through competition and raising costs per gallon because of the under-utilization of refining facilities. To improve the situation, integrated refiners strove to control their supply of distillate (and other products) more effectively and to safeguard or increase their volume of sales. In attempting to achieve these objectives, they radically altered the structure of the distillate market during the 1960's.

The government inadvertently encouraged these alterations in market structure through its intervention in the petroleum industry. This intervention often established economic incentives that eventually prompted integrated refiners to respond to the condition of excess capacity by acquiring independents, building a pipeline and constructing hydrocracking facilities.

The Basic Changes in Market Structure

Acquisition of independent terminal operators

The first principal structural change discussed in the dissertation came to pass between 1959 and 1963 when integrated refiners, hungry for controlled marketing outlets, acquired numerous independent terminal operations. The newly acquired outlets by stabilizing or increasing sales, insured the greater utilization of each acquiring firm's

refining facilities during a period of excess capacity.

In all likelihood, the Import Program encouraged the acquisition trend before 1961 not by squeezing the profits of independents, but by prompting refiners to acquire independent terminal operators. The Program granted residual allocations to those independents with a history of importing that product. Thus some residual-short refiners, receiving inadequate allocations under the Program, acquired independents at least partially for their import tickets. In addition, the foreclosure of a substantial share of the cargo market to the remaining refiner-suppliers may have panicked some of them into acquiring their own independents to prevent their sales from declining. Whatever the reason, whether for controlled marketing outlets or for residual import tickets, the acquisitions of independent terminal operators during the 1959-1963 period increased concentration in the cargo market.

Acquisition of independent refiners

Concentration was further increased when integrated petroleum firms acquired six of the largest independent refiners in the Gulf, five of them before 1964. It seems probable that refiners merging before 1964 were forced out of business by a record of poor earnings, the result of an excess of refining capacity, a decline in the relative price of foreign crude, and the intervention of state and federal governments.

The excess capacity not only reduced independent refiners' sales to independent terminal operators (many of which were acquired by integrated refiners) and to the major refiners (former customers who now

also suffered from excess refining capacity), but it also depressed refined product prices. Revenues declined for independent refiners. Meanwhile costs per gallon increased. Consequently, the excess refining capacity resulted in lower profits (perhaps losses) for some of the independent refiners.

The price decline of foreign crude oil relative to domestic oil further worsened the profit situation of refiners. As described in the text, East Coast refiners first gained an economic advantage over Gulf Coast refiners in the Northeast refined product markets in the middle 1950's. The Jones Act further strengthened that advantage by requiring Gulf refiners to ship products to the Northeast in American tank ships using American crews, approximately doubling their transportation costs.

The regulation of natural gas prices below market value further worsened the profit situation of the independents. Low natural gas prices meant low No. 2 oil prices because No. 2 oil must compete with gas in the home heating fuel market. Since No. 2 accounts for an important part of the typical refiner's output slate, about 15 or 20 per cent, profit margins and profits presumably declined for the independents.

Moreover, the state crude prorationing systems (supported by the Import Program) and the federal tax depletion laws possibly further reduced the profits of the independent refiners, although this hypothesis was not examined in the dissertation.

Introduction of the Colonial Pipeline

A third major factor affecting the market structure of the industry came with the construction of the Colonial Pipeline, which was completed in 1965. By 1966, when tanker rates soared, the pipeline had economically cut off independent terminal operators in the Northeast from buying product directly from those potential refiner-suppliers in the Gulf without access to Colonial. Thus the market power of the remaining refiner-suppliers in the cargo market had increased.

Besides cutting off potential suppliers, the pipeline significantly increased the storage capacity of refiners and facilitated the exchange of products among refiners. It was no longer necessary to dump distillate on the cargo market at bargain or distress prices. The open spot market was largely circumvented. This further increased the refiners' control over the sale of distillate.

Finally, the equalization of transportation costs for nine refiners who owned the pipeline lessened the likelihood of price competition that had formerly resulted from different transportation costs.

Without the Import Program and the Jones Act, in all likelihood the Colonial Pipeline would never have been constructed. After the Program began to restrict crude imports in 1959, petroleum firms diverted refinery construction from the Northeast region to the Gulf Coast region, where refiners enjoyed certain advantages in cost and demand. By 1962, it became clear that additional transportation facilities would soon be required to ship product from the South to the North.

Therefore the Program created a need for additional transportation facilities--either tanker or pipeline. Without the Jones Act the refiners almost certainly would have chosen additional tankships, for a pipeline could not normally compete with a tanker. The pipeline was competitive, however, because the Jones Act raised tanker transportation costs by 100 per cent.

Even given this incentive, without excess refining capacity the pipeline may never have been built. After 1957 excess capacity had intensified competition in the refined product markets. Prices had declined significantly by 1962. Possibly in an effort to limit price competition during a period of excess capacity, refiners chose the pipeline. It offered more effective control over supply than tankships. Had there been no excess capacity, such control would have been less important. Possibly additional tankships would have been constructed instead of a pipeline.

The introduction of commercial hydrocracking facilities

The introduction of commercial hydrocracking facilities represents the fourth major structural alteration transpiring in the distillate market during the 1960's. With the completion of such facilities, at least two very important refiner-suppliers greatly reduced shipments to independent terminal operators after 1966. Very likely another refiner or two had cut back shipments before 1966 as well. Once again, concentration increased.

With refining capacity excessive during the early 1960's, the return on the construction of additional conventional refining

equipment was obviously low relative to that expected from a hydrocracker. A hydrocracker could convert low-priced products, such as No. 2 oil, to high-priced products such as gasoline or turbine fuel oil. Thus refiners frequently chose to invest in hydrocrackers--a choice that in many cases would not have been made had excess capacity not existed in the industry.

Once again, the federal government inadvertently intervened to influence investment decisions of petroleum industry executives. By regulating natural gas prices at below market levels, the government widened the differential between the gasoline price and the No. 2 oil price. This increased the incentive to invest in facilities that would enlarge the output of the former product at the expense of the latter. Therefore refiners introduced hydrocrackers.

Reasons for the Decline in Profits

Given the aforementioned structural changes, refiners enjoyed a considerable degree of market power by the late 1960's. Just three refiners shipped 75 per cent of all distillate to the terminal operators; ten refiners shipped 95 per cent. Of the few refiners still remaining in the cargo market, none except Exxon seemed willing to take on new terminal operator-customers. The independents were virtually immobilized. Undoubtedly, refiners could effectively drive the independents out of business, if they so desired.

Supplies and sales

According to some observers, refiner-suppliers indeed conspired to force the independents out of business. Allegedly, the suppliers

withheld product from terminal operators and then absorbed the sales the independents could no longer handle for lack of supplies.

The conspiracy allegation is unquestionably invalid, at least in terms of shipments to independents. On the whole, domestic shipments increased at a rate triple that of the remainder of the industry. Nevertheless domestic shipments to half the independents declined between 1966 and 1969. These firms, mostly in the New York area, had unfortunately been dependent on refiners who were then in the process of withdrawing from the cargo market for one reason or another.

Despite the decline in shipments to half the independents, only two firms experienced a decline in sales during the 1966-69 period. On the whole, the independent segment increased its market share from 18 to over 20 per cent during the period. Obviously no conspiracy to cut off supplies and take away the sales of independents existed here.

Net profit margins

Despite a rising sales level for all but two independents during the 1966-69 period, domestic profits slumped for each of these firms in the same period. Including foreign oil sales, only one firm showed a gain in profits. The net profit margins of independent terminal operators had clearly deteriorated. They deteriorated because operating costs per gallon increased while actual gross margins declined or failed to increase proportionately in line with the rise in wholesaling costs.

Between 1966 and 1968, effective gross margins realized by the independents fell primarily because the majors posted smaller adjusted gross margins in each year. Moreover, in 1968 premiums were increasingly

demand in the New York cargo market where normally discounts were granted. By 1969, effective gross margins had declined for different reasons. The majors did post higher gross margins, but discounting in the tank car market increased so much relative to discounting in the cargo market that effective margins declined below the already low levels of 1968.

Why refiners altered their pricing behavior during the late 1960's cannot be precisely determined, only conjectured. If their intention was to squeeze margins to force the independents out of business, or if they simply were exercising their monopoly power in the cargo market to maximize their profits at that level, they naturally would fail to announce such objectives. Therefore, in attempting to interpret the evidence on pricing behavior of the refiners, most conclusions must necessarily be tentative.

Price behavior through 1968.--Between 1966 and 1968 annual adjusted gross margins posted by the refiners declined by 5-10 per cent. During this period operating costs had climbed substantially. Such pricing behavior is consistent with behavior expected from integrated suppliers attempting to squeeze out their nonintegrated customer-competitors. Yet it is also consistent, in large part, with non-collusive behavior expected in an industry which had experienced the radical changes in structure that had occurred within the distillate market during the 1960's.

Posted margins declined in part because seasonal pricing was eliminated. It was shown in the text, however, that even in a

competitive market seasonal price fluctuations would have dampened considerably because of certain structural modifications occurring in the industry during the 1960's. These modifications--the increase in the demand for jet fuel, the increase in refiners' storage capacity, the introduction of the hydrocracker and the introduction of the Colonial Pipeline--together shifted the summer-supply curve to the left relative to the winter-supply curve. Assuming no relative shift in the demand curve, the summer price would rise compared to the winter price; that is, seasonal variations in price would diminish.

It is likely that refiner market power permitted refiners to reduce seasonal price fluctuations even more than would have occurred in a competitive market. Why refiners would wish to suppress such fluctuations is a matter of conjecture. Perhaps they wished to squeeze the margins of independents without drawing too much attention to their pricing behavior. That is, it would be less conspicuous to federal authorities, newspapermen, and congressmen if refiners squeezed posted margins by eliminating seasonal pricing rather than by reducing the margin within each month. The latter action would be obvious and invite complaints, whereas the former would likely be unnoticed or unappreciated by many.

It is also likely that refiners may have wished to avoid the administrative costs of minor price changes. Or possibly, they wanted to side-step the destabilizing effects that price changes could potentially have in the oligopolistic distillate market. Finally, refiners perhaps wished to shun the charges of price fixing which usually burst forth when refiners raised prices in the fall and winter.

Whatever their motives, by posting a uniform price throughout the year, refiners in effect squeezed the margins of the independent terminal operators.

Another reason the average annual posted margins for 1968 declined was that refiners posted smaller margins during the first four months of 1968 than they had for the same months in 1966 and 1967. Once again it is only possible to speculate upon the refiners' motivations in posting a thin margin. Of course, it is possible that they explicitly conspired to squeeze the independents out of business as many have alleged. But this seems unlikely for all the reasons given in the dissertation. On the other hand, it seems probable that refiners tacitly agreed to post thin margins, not to squeeze out independents, for the political repercussions might be oppressive, but simply to maximize profits.

Given the exceedingly tight supply situation that existed in the No. 2 oil market during the early months of 1968, refiners could post thin margins and make them stick. In so doing, refiners limited the ability of independents to discount in the tank car market. These independents capture roughly 35 per cent of the market, and if larger margins permitted them to discount more heavily, refiners would have to meet that competition to some extent. Thus higher margins to independents would mean lower revenues to refiners. Consequently, to maximize profits, refiners posted thin margins.

Refiners presumably felt justified in posting thin margins in early 1968. The Mid East War had raised their production and transportation costs considerably. A price rise would have been inevitable

in a free competitive market, given the supply-demand conditions at the time. But the federal government greatly discouraged refiners from raising prices. Therefore, being unable to increase their price in the winter as usual, refiners failed to increase the gross margin in the winter, as usual. Consequently, the smaller margin initially posted in the summer remained in effect throughout the winter. This permitted refiners to maximize revenues, although the margins of the independents were squeezed simultaneously.

Interestingly, even in a reasonably competitive market, the margins for independents probably would have declined in early 1968 because of the tight supply situation. With demand up sharply and unexpectedly, and inventories tight, some integrated refiners would reduce shipments to the spot cargo market to meet their moral and contractual obligations to dealer-customers in the tank car market. Indeed some refiners would buy distillate in the cargo market rather than sell it there.

The spot cargo price would soar increasing the average cargo price for the independent terminal operators, who must buy some percentage of their requirements in the spot cargo market. Yet they could not pass on the higher costs to dealer-customers and still remain competitive with refiners. To raise their prices above that of the refiners would mean losing customers, if not in 1968 when supply was tight and dealers perhaps immobilized somewhat, then in later years when supplies loosened. Thus, even in a reasonably competitive market where refiners possessed little market power, margins probably would have been squeezed in early 1968.

To some extent the government was responsible for the squeeze. By discouraging any price increase in the winter, the government discouraged production. The resulting tight supply situation greatly increased the market power of refiners enabling them to post thinner margins.

Margins in 1969.--By 1969 posted margins widened from 6 to 7 mills. Yet effective margins for the independents declined because discounting increased sharply at the tank car level relative to discounting at the cargo level. Unwieldy inventories provided the greatest impetus to discounting at the tank car level where perhaps 80 or 90 sellers competed vigorously for the business of thousands of mobile dealers.

In the highly concentrated cargo market, however, refiners hardly found it necessary to increase discounts to the largely immobilized terminal operators. With three refiners supplying 75 per cent of all the requirements of independents, tacit agreement to limit discounts seemed likely. This not only maximized cargo revenues, but it also maximized tank car revenues by limiting price competition from independents in that market. In other words, to offer larger discounts to independents in the cargo market would simply lead to more discounting in the tank car market. This would further undermine the entire distillate price structure--to the disadvantage of the major refiners.

The Competitive Situation Through
Early 1974

For a while after 1969 the competitive situation for independent terminal operators apparently improved. In mid-1970, the Oil Import Administration granted terminal operators a 40,000 barrel a day distillate quota--equal to 22 per cent of their daily requirements.

The quota increased gross margins in two ways: First by permitting independents to buy cheap foreign distillate oil, the quota reduced the independents' average purchase price. Second, by increasing the bargaining leverage of independents vis-à-vis the refiners in the cargo market, the quota indirectly accounted for the rise in posted margins from 7 mills to 1.2 cents. Leverage increased because refiners wanted independents to buy foreign distillate manufactured in their own refineries overseas. It also increased, presumably, because the import quota sharply shifted the demand curve to the left in the domestic cargo market.

The increase in posted margins and the availability of cheap imported distillate apparently boosted the profits of independents. Higher profits and the prospect of continued high profits prompted at least five independents to construct deepwater terminal facilities along the East Coast for the first time since the early 1960's. The short-term outlook for independent terminal operators indeed looked promising in the very early 1970's.

But the competitive situation gradually began to deteriorate as the price of foreign distillate rose relative to the domestic price, which was fixed by the federal government. In late 1973 after the Arab

nations embargoed petroleum shipments to the United States, foreign prices soared. The situation deteriorated to the point where some terminal operators paid more for their distillate requirements in cargo quantities than refiner-competitors charged homeowners. Fortunately for the independents, the tight supply situation temporarily immobilized most of their customers. Seemingly few customers were lost despite the wide differential in prices, although sales presumably declined because of the 85 per cent limit on consumption imposed by the government.

Thus in early 1974 the future looked dim for many independents. They now were heavily dependent on foreign oil, which greatly exceeded domestic oil in price. Their competitive ability was impaired and their fate was uncertain.

APPENDIX A

DEFINITION OF DEEPWATER TERMINAL

The term "deepwater terminal" has been defined by the Oil Import Administration as:

a permanent land installation which:

(i) Consists of bulk storage tanks having not less than 100,000 barrels of operational capacity, pumps and pipelines used for storage, transfer and handling of No. 2 fuel oil;

(ii) Is on waterways that permit the safe passage to the installation of a tanker rated 15,000 cargo deadweight tons, drawing not less than 25 feet of water; and

(iii) Has a berth that will permit the delivery of No. 2 fuel oil to the installation by direct connection from a tanker rated at 15,000 cargo deadweight tons, drawing not less than 25 feet of water, and moored in the berth. Cargo deadweight tons represent the carrying capacity of a tanker, in tons of 2,240 pounds, less the weight of food, water, stores and other items necessary for use on a voyage.

APPENDIX B

DISTILLATE DEFINITIONS¹

The Office of Oil and Gas has defined distillate fuel oil as encompassing:

the range of petroleum products heavier than kerosene and lighter than residual fuel. The principal products in this range are diesel fuels and heating oils, with the latter category including three separate gradations:

(a) No. 1 distillate--A relatively light, kerosene-type fuel commonly used in some space heating applications.

(b) No. 2 distillate--The material which is commonly called home heating oil, and which is only slightly heavier and lower in quality than truck diesel fuel.²

(c) No. 4 distillate--A light residual fuel used principally in industrial or commercial heating installation and by some utilities and industries as boiler fuel. No. 4 is commonly produced by blending a light distillate (perhaps No. 2) with residual fuel oil.

Because of the flexibility in refineries to interchange the production of these fuels, and because of the basic similarity in their principal end-uses, recognized data sources [usually] report only "distillate" supply and demand statistics. No [few] current statistics are available which differentiate among the subcategories of diesel, No. 1, No. 2, or No. 4 distillate fuels with respect to refinery output or demand.³

¹Source: U.S., Department of Interior, Office of Oil and Gas, Overview of the Domestic Petroleum Supply Situation (Washington, D.C.: Government Printing Office, 1973), p. 1.

²No. 2 oil, the subject-product of the dissertation, accounts for 75 per cent of all distillate fuel oil sales in the Northeast (New England, New York and New Jersey). U.S., Department of Interior, Bureau of Mines, Sales of Fuel Oil and Kerosene (Washington, D.C.: Government Printing Office, 1969), pp. 4 and 14.

³For this reason many statistics used in the dissertation refer to distillate fuel oil instead of No. 2 oil. Sales data, however, for No. 2 (on an annual basis) are available from the Bureau of Mines. See footnote 2.

APPENDIX C

FOOTNOTES FOR FIGURE I

^aThe diagram portrays a simplified view of the Northeast No. 2 oil market. For clarity, barge terminal operators and pipeline terminal operators have been included within "independent dealer-retailers" in the diagram. In reality these operators wholesale some product in the tank car market like terminal operators. However, they retail most of their product like dealers.

^bThrough 1966 virtually all No. 2 oil originated from the refiners, who either domestically manufactured or imported the No. 2 oil. By the late 1960's the independent terminal operators imported some No. 2 oil under emergency import allocations granted by the OIAB.

^cAlthough there were twenty to twenty-five potential refiner-suppliers in the cargo market, ten supplied about 95 per cent of all the requirements of the independent terminal operators. See Table 1, page 19 for actual shipments to independents from each refiner. See Table 2, page 21 for a list of potential refiner-suppliers.

^dThe 30 per cent figure was derived from Bureau of Mines' data on industry shipments and from OIAB data on independents' sales. See Table 8, page 84, footnote a.

Terminal operators in PAD District I (East Coast states) wholesaled about 90 per cent of their product and retailed the remainder, according to the testimony of Exxon before a congressional committee (U.S., Congress, Senate, Committee on Banking, Housing and Urban Affairs, Cost and Adequacy of Fuel Oil, Hearings before the Subcommittee on Small Business, 92d Cong., 1st sess., 1971, p. 120). Presumably the 90/10 wholesale-retail ratio holds true in the Northeast as well, because the Northeast accounts for 90 per cent of all independent sales in PAD District I. Thus Figure 1 assumed a breakdown of 3 and 27 per cent for retailing and wholesaling, respectively.

^eNot available.

^fOf the eighty or ninety sellers in the tank car market, twenty-three are independent terminal operators, about twenty or twenty-five are refiners and the remainder are barge and pipeline terminal operators. Although the barge pipeline operators do wholesale product, verbal evidence indicates that they retail most of their product.

^gThe 22 per cent figure has been derived from the September issues of Fuel Oil and Oil Heat, 1967-1970, Volumes 26 through 28. Each year the journal conducted a survey on the percentage of retail sales captured by refiners in various regions. The sample results varied somewhat each year because the sample's participants varied each year.

In New England the refiners claimed between 16-22 per cent of the market in the late 1960's. The arithmetic mean was 18 per cent. In the New York metropolitan area the percentage ranged from 23 to 27 per cent. The arithmetic mean here was 25 per cent. Based on this evidence the diagram assumed a 22 per cent retail market share for refiners in the entire Northeast.

Having estimated the refiner's and terminal operators' share of the retail market, it was possible to estimate the dealers' share by subtracting 3 and 22 per cent from 100 per cent. Obviously, independent dealers claimed 75 per cent of the retail market.

Of this 75 per cent, 27 was supplied by independent terminal operators in the tank car market, as noted in footnote D. Consequently, the majors supplied the dealers with 48 per cent (75 minus 27).

In the tank car market, dealers are supplied by terminal operators and refiners. The operators share of the tank car market is 36 per cent (27/75) and the refiners share is 64 per cent (48/75).

APPENDIX D

TABLE 14

PRINCIPAL DOMESTIC REFINER-SUPPLIERS OF EACH NORTHEAST INDEPENDENT TERMINAL OPERATOR, 1968
(THOUSANDS OF GALLONS OF NO. 2 HEATING OIL)^a

Independent Terminal Operators ^b	American	Coastal	Exxon	Getty	Gulf	Phillips	Royal	Sinclair	Shell	Sun	Other	Total
Burns Brothers									5,016		8,370	13,386
Central Petroleum			17,700				12,600					30,300
Cirillo Brothers	70,738		23,503	1,719					2,518		11,189	109,667
Deepwater Oil			59,424								3,142	62,566
George Hall			12,000								14,000	26,000
Gibbs Oil				4,600				32,999				37,599
Howard Coal			19,596						12,049		22,372	54,017
Northville Industries	59,976	47,334	102,144							32,592		242,046
Patchogue Oil			23,412			14,493					10,523	48,428
Patterson Fuel			6,746		933						420	8,099
Tappen Tanker			1,693								630	2,313
Seers Oil (1967) ^c			4,211									4,211
Union Oil						210,368						210,368
Wellen Oil			12,026		22,714							34,740
Whele Terminals	75,600											75,600
Wyatt Inc.			239,135									239,135
Total (Excluding Northeast Oil)	206,314	47,334	521,580	6,319	23,647	224,861	12,600	32,999	19,583	32,592	70,646	1,198,475
Northeast Oil Estimate ^d	145,018	13,595	109,763	13,595						54,382	27,191	362,544
Total (Including Northeast Oil)	351,332	60,929	630,343	19,914	23,647	224,861	12,600	32,999	19,583	86,974	97,837	1,561,019
Share of Market (Per cent)	22.5	3.9	40.4	1.3	1.5	14.4	0.8	2.1	1.3	5.6	6.2	100.0

^aSource: Independent terminal operators testimony before the Oil Import Appeals Board, 1968-1970.

^bThe seventeen firms listed in this column out the twenty-three operating in the Northeast (New England, New Jersey and New York) account for 72.4 per cent of all terminal inputs reported to the Oil Import Administration for the 4/1/69-3/31/70 period. Terminal inputs represent the number of gallons actually put through each independent's terminal facilities. Although terminal inputs normally approximate sales, the two usually differ somewhat. Some sales never pass through the terminal of a given operator, and therefore are not considered terminal inputs. Moreover, some inputs are not sales. Other marketers may use the facilities of the terminal operator to store distillate to be sold to their own dealer-customers.

^cShipments for 1968 are not available.

^dNortheast Oil provided the Board with the exact total number of gallons purchased from all refiners, but failed to provide the number of gallons purchased from each refiner. Therefore it was necessary to estimate shipments by refiner as described below.

In 1967 Northeast stated that its requirements for the year totaled nine million barrels. Four million barrels, or 45 per cent, were to be purchased from Exxon (then Humble) (OIA, P23 [f.p.], 1967). The company's 1968 testimony indicated that American had reduced shipments to it in that year. With this information as a guide, it was assumed American supplied Northeast with 40 per cent of its requirements in 1968.

The remaining 60 per cent was divided among the remaining refiner-suppliers. Because Northeast had repeatedly asserted before the Board that Exxon and American were by far its biggest suppliers, it was clear that Exxon supplied Northeast with an important proportion of its requirements. The table arbitrarily assumed 30 per cent.

Half of the remaining 30 per cent was assumed supplied by Sun Oil. Although this assumption too is somewhat arbitrary, there is some evidence on which it is based. Northeast seems to have listed its suppliers by the size of its purchases from each supplier. Exxon and American were always listed first, and it is known that these two firms were the two main suppliers. Furthermore the smaller refiners, or the refiners who deal very little in the cargo market, were usually at the bottom of the list. Thus it does seem likely that Northeast listed its suppliers according to size of shipments received from each company. Since Sun Oil was listed third, it probably was the third biggest supplier.

The remainder, 15 per cent, was divided equally among the four other refiner-suppliers.

Admittedly, the above assumptions are highly arbitrary, but they do permit the utilization of some of the verbal evidence presented by Northeast before the OIA. Without the quantification of this evidence, the importance of American and Exxon in the cargo market would be significantly underestimated.

APPENDIX E

NOTES TO TABLE 3 ON ACQUISITIONS

The following notes were derived from several sources: OIAB testimony, trade literature, annual reports and Moody's. No attempt has been made to verify the statements.

¹Sprague, an independent marketer, acquired Atlantic in 1959. Shell did not acquire Sprague until ten years later.

Shell sold Sprague (and Atlantic) in 1972 under a consent arrangement with the Department of Justice.

²See discussion on residual allocations and acquisitions on page 40.

³When Blue Ridge's deepwater terminal was acquired in 1959, it sold little or no No. 2 oil in the Northeast.

⁴See footnote 2 above.

⁶Delhi Taylor was a refiner as well as a marketer.

⁷Texaco sold Ford Brothers in 1969.

⁸Tenneco testified to the Board that Hartol was acquired in 1958, a year before the implementation of the Import Program.

¹¹See footnote 2 above.

¹²Southland possibly sold little No. 2 oil.

¹⁵See footnote 1 above.

¹⁶American acquired only Deepwater's retail division in 1969, not its terminal facilities which were acquired later by Con Edison.

APPENDIX F

CALCULATION OF FOREIGN NO. 2 EARNINGS

Foreign earnings, FE, may be estimated by multiplying the number of imported gallons sold, Q, by the net profit margin realized in each gallon of imported distillate, which is equal to the company's selling price, SP, minus its purchase price, PP, minus its wholesale operating cost per gallon, OC. In symbols, $FE = Q (SP - PP - OC)$.

Northeast

$$1968 \quad FE = 37,786,000^a \quad (\$.1083^b - \$.0805^c - \$.0050^d)$$

$$FE = \$861,521$$

$$1969 \quad FE = 18,451,000^a \quad (\$.1062^b - \$.0725^c - \$.0065^d)$$

$$FE = \$501,867$$

Wyatt

$$FE = 3,990,000^a \quad (\$.1036^b - \$.0769^c - \$.048^d)$$

$$FE = \$87,381$$

^aSee Table 28, page 188.

^bSee Table 25, page 181.

^cSee Table 30, page 195.

^dSee Table 27, page 185.

APPENDIX G

TABLE 15

TERMINAL INPUTS OF INDEPENDENT TERMINAL
OPERATORS BY REGION^a
4/1/69--3/31/70
(THOUSANDS OF GALLONS)

Independent Terminal OperatorsNEW ENGLAND REGIONTestifying Firms

Deepwater Oil	81,694
Gibbs Oil	66,471
Northeast Petroleum	485,072
Union Oil	196,209
Wyatt, Incorporated	298,506
Total - Testifying Firms	<u>1,127,952</u>

Non-Testifying Firms

Metropolitan (Pittston) ^b	179,228
Webber Tanks	57,917
Total - Non-testifying Firms	<u>237,145</u>
Total - All New England Firms	<u>1,365,097</u>

NEW JERSEY-NEW YORK REGIONTestifying Firms

Burns Brothers	12,877
Central Petroleum	25,724
Cirillo Brothers	121,490
Howard Coal	51,034
Northville, Industries	277,718
Patchogue Oil	56,905
Patterson Fuel	1,901
Tappan Tanker	537
Wellen Oil	40,793
Total - Testifying Firms	<u>588,979</u>

TABLE 15 - Continued

<u>NEW JERSEY-NEW YORK REGION</u>	
<u>Non-Testifying Firms</u>	
Blue Ridge Fuel	4,783
Burke Fuel	5,228
Hall, George	27,916
McConnel Fuel	18,933
Meenan Oil	32,285
Metropolitan (Pittston) ^b	403,818
Sears Oil ^c	11,865
Whale Oil	88,392
Total - Non-testifying Firms	593,220
Total - All New Jersey-New York Firms	1,182,199
<u>SOUTHEAST REGION</u>	
<u>Non-Testifying Firms</u>	
Belcher	51,447
Colonial Oil Company	3,235
Colonial Oil Industries	7,082
Eastern Seaboard	20,558
Southern States	5,013
Total - Non-Testifying Firms	87,335
Total - All Southeast Firms	87,335
Grand Total - All East Coast Firms	2,634,631

^aSource: U.S., Department of Interior, Oil Import Administration, "Allocations for No. 2 Fuel Oil for the period of July 1, 1970 through December 31, 1970." See Table 14, page 162, footnote b for definition of terminal inputs.

^bTerminal inputs for 4/1/69-3/31/70 are not shown by region, but 10/1/70-9/30/71 inputs are. In the latter period about 69 per cent of Metropolitan's inputs were in the New Jersey-New York region and 31 per cent were in the New England Region. These percentages were applied to Metropolitan's 4/1/69-3/31/70 inputs to derive the terminal inputs shown in this table.

^cInputs for 10/1/70-9/30/70.

APPENDIX H

TABLE 16

INDEPENDENT TERMINAL OPERATORS NO. 2
HEATING OIL SALES BY REGION^a
(THOUSANDS OF GALLONS)
1966-1969

Independent Terminal Operators	1966	1967	1968	1969
<u>New England</u>				
Deepwater Oil	74,676	92,566	72,888	76,856
Gibbs Oil	21,892	34,310	45,746	72,191
Northeast Petroleum	327,992	363,526	400,330	422,668
Union Oil	202,665	256,841	254,555	261,503
Wyatt, Incorporated	199,828 ^b	255,037	236,556	244,303
Total - New England	827,053	972,280	1,010,075	1,077,521
<u>New York-New Jersey</u>				
Burns Brothers	17,966	21,035	19,053	18,324
Central Petroleum	29,062	37,683	40,897	36,041
Cirillo Brothers	158,900	140,000	144,000	137,000
Howard Coal	42,786	47,091	46,702	46,611
Northville Industries	304,143	334,366	358,134	366,828
Patchogue Oil	63,584	66,858	60,915	63,675
Patterson Fuel	8,504	8,864	9,004	9,262
Tappan Tanker	1,433 ^c	2,788	2,438	1,002
Wellen Oil	25,271	34,284	27,771	41,389
Total - N.Y. - N.J.	651,649	692,969	708,914	720,132
Total - Northeast	1,478,702	1,665,249	1,718,989	1,797,653

^aSource: Testimony of independent terminal operators before the OIAB, 1968-1970.

^bSales for 1966 have been estimated by assuming Wyatt's growth rate between 1966 and 1967 equaled the average rate for the industry (12.62 per cent).

^cYear ending May 31, 1967.

APPENDIX I

TABLE 17

INDUSTRY SHIPMENTS OF NO. 2 HEATING OIL BY REGION^a
 (THOUSANDS OF BARRELS)
 1966-1969

	1966	1967	1968	1969
<u>New England</u>				
Connecticut	15,781	15,967	16,156	16,896
Maine	6,327	7,362	7,354	8,009
Massachusetts	43,109	47,690	47,953	49,461
New Hampshire	5,251	5,831	6,220	6,637
Rhode Island	5,671	6,079	6,412	7,068
Vermont	3,960	4,135	4,310	4,644
New England Total (thousands of barrels)	80,099	87,064	88,405	92,715
New England Total (thousands of gallons)	3,364,158	3,656,688	3,713,010	3,894,030
<u>New York-New Jersey</u>				
New York	77,272	78,983	78,943	79,449
New Jersey	38,056	39,926	39,934	40,361
New York-New Jersey Total (thousands of barrels)	115,328	118,909	118,877	119,810
New York-New Jersey Total (thousands of gallons)	4,843,776	4,994,178	4,992,834	5,032,020
Northeast Grand Total (thousands of barrels)	195,427	205,973	207,282	212,525
Northeast Grand Total (thousands of gallons)	8,207,934	8,650,866	8,705,844	8,926,050

^aU.S., Department of Interior, Bureau of Mines, Mineral Industry Surveys, Shipments of Fuel Oil and Kerosine (Washington, D.C.: 1966-1969).

APPENDIX J

TABLE 18

NO. 2 HEATING FUEL SHIPMENTS TO NORTH-
EAST INDEPENDENT TERMINAL
OPERATORS BY REGION^a
(THOUSANDS OF GALLONS)
1966-1969

Independent Terminal Operators	1966	1967	1968	1969
<u>New England</u>				
Deepwater Oil	74,676	92,566	62,566	70,994
Gibbs Oil	8,277	31,624	37,599	62,480
Northeast Petroleum	327,992	359,464	362,544	404,217
Union Oil	205,800	256,200	210,368	241,310
Wyatt, Incorporated	199,828 ^b	233,974	239,135	256,549
Total - New England	816,573	973,828	912,212	1,035,550
<u>New York-New Jersey</u>				
Burns Brothers	20,306	19,357	13,386	9,466
Central Petroleum	17,500	29,500	30,300	35,001
Cirillo Brothers	154,450 ^c	111,253 ^c	109,667	117,671
Howard Coal	43,553	23,741	54,017	39,304
Northville Industries	269,262	319,907	242,046	318,654
Patchogue Oil	64,428	62,924	48,428	50,243
Patterson Fuel	8,504 ^d	7,702	8,099	8,269
Tappan Tanker	1,433 ^d	2,730	2,313	934
Wellen Oil	25,957	33,076	34,740	39,210
Total - N.Y. - N.J.	605,393	610,190	542,996	618,752
Total - Northeast	1,421,966	1,584,018	1,455,208	1,654,302

Footnotes on following page.

FOOTNOTES FOR TABLE 18

^aSource: Independent terminal operators before the OIAB, 1968-1970.

^bBecause Wyatt did not testify until 1969, no supply data are available for 1966. Therefore assumed domestic shipments to Wyatt equaled sales in 1966. Sales were estimated in Table 16, page 167, footnote b.

^cCirillo failed to supply the Board with complete supply data for 1966 and 1967. Shipments to Cirillo were estimated by subtracting premium purchases and imports (in 1967) from actual sales.

<u>Year</u>	<u>Sales</u>	<u>Imports</u>	<u>Premium Purchases</u>	<u>Domestic Supply (at Cargo Prices)</u>
1966	158,900		4,450	154,450
1967	140,000	23,427	5,320	111,253

^dBecause Tappan and Patterson did not testify until 1969, no supply data are available for 1966. The companies, however, stated their sales figures for that year. It was assumed that domestic supplies equaled sales.

APPENDIX K

TABLE 19

PRINCIPAL DOMESTIC REFINER-SUPPLIERS OF EACH NORTHEAST INDEPENDENT TERMINAL OPERATOR, 1966-1968
(THOUSANDS OF GALLONS OF NO. 2 HEATING OIL)^a

Independent Terminal Operators	1966											Other at Cargo Price	Total Domestic at Cargo Price	Other at Premium Price ^b	Total Domestic	Imports	Total Supply
	American	Coastal	Exxon	Getty	Gulf	Phillips	Royal	Sinclair	Shell	Sun	Tamaco						
Burns Central			59,319	15,250					20,306			2,250	20,306	14,275	20,306		20,306
Deemster				1,956								13,401	17,500		31,775		31,775
Globe				8,277									74,676		74,676		74,676
Howard													8,277		8,277		8,277
Northville	28,098	60,942	115,232			32,361			31,422	12,131			42,553	618	44,171		44,171
Patchogue			12,638			197,400			25,628	38,262			269,262	10,374	279,636		279,636
Union									6,434	5,317		7,678	64,428		64,428		64,428
Wells			5,190									8,400	205,800		205,800		205,800
Wright			199,828		20,767								25,957		25,957		25,957
Total	28,098	60,942	382,307	25,483	20,767	229,761			64,790	55,710		31,729	929,587	25,267	954,854		954,854
Independent Terminal Operators	1967											Other at Cargo Price	Total Domestic at Cargo Price	Other at Premium Price ^b	Total Domestic	Imports	Total Supply
	American	Coastal	Exxon	Getty	Gulf	Phillips	Royal	Sinclair	Shell	Sun	Tamaco						
Burns Central			10,000	10,250			7,750		11,730			7,427	19,357	3,448	22,805		22,805
Deemster			84,376									1,500	29,500	558	30,958		30,958
Globe								31,624				8,190	92,544		92,544		92,544
Howard									23,741				31,624	3	31,627		31,627
Northville	23,100	91,770	175,034			31,492			32,130			(2,107) ^d	319,807	21,091	340,998		340,998
Patchogue			24,402			228,800			2,514	4,458		2,514	62,924		62,924		62,924
Union					23,356				29,400				256,200		256,200		256,200
Wells			9,720						33,076				33,076		33,076		33,076
Wright			233,974						233,974				233,974		233,974		233,974
Total	23,100	91,770	537,486	10,250	23,356	228,292	7,750	31,624	35,471	34,586		47,184	1,102,865	43,776	1,146,645		1,146,645
Independent Terminal Operators	1968											Other at Cargo Price	Total Domestic at Cargo Price	Other at Premium Price ^b	Total Domestic	Imports	Total Supply
	American	Coastal	Exxon	Getty	Gulf	Phillips	Royal	Sinclair	Shell	Sun	Tamaco						
Burns Central			17,700				12,600		5,016			8,370	13,386	3,442	16,848	2,008	18,856
Deemster			59,424									3,142	62,566	2,144	64,712		64,712
Globe				4,600				32,999					37,599	874	38,473		38,473
Howard			19,586						12,049				54,017		54,017		54,017
Northville	58,976	47,334	102,144			14,493				32,592		22,372	261,044	24,234	285,278		285,278
Patchogue			23,412			210,368						10,523	48,428		48,428		48,428
Union					22,714								210,368	35,326	245,694	9,251	254,945
Wells			12,026										34,740		34,740		34,740
Wright			239,135										239,135		239,135		239,135
Total	58,976	47,334	473,437	4,600	22,714	224,861	12,600	32,999	17,065	32,592		44,407	972,585	67,542	1,040,127	98,418	1,138,545
Independent Terminal Operators	1969											Other at Cargo Price	Total Domestic at Cargo Price	Other at Premium Price ^b	Total Domestic	Imports	Total Supply
	American	Coastal	Exxon	Getty	Gulf	Phillips	Royal	Sinclair	Shell	Sun	Tamaco						
Burns Central		1,866	25,802				8,271					7,400	9,444	2,047	11,491	1,844	13,335
Deemster			70,994									828	35,001		35,829		35,829
Globe				2,426				55,415				4,638	70,994	47	71,641		71,641
Howard			19,586										62,480	17	62,497		62,497
Northville	84,840	16,170	121,884			805				27,930	54,070	17,882	39,304		39,304		39,304
Patchogue			30,802			241,310						11,760	318,654	25,200	343,854	14,448	358,302
Union												50,843	50,843		50,843		50,843
Wells			18,267		20,943							18,636	261,310	12,545	253,865	7,668	261,533
Wright			256,549										256,549		256,549		256,549
Total	84,840	18,007	543,994	2,426	20,943	242,115	9,246	55,415		27,930	54,070	61,325	1,123,211	39,866	1,163,077	49,831	1,212,908

^aSource: Testimony of independent terminal operators before the OIA, 1968-1970.^bA purchase price 3 or more mills above the posted cargo price was considered a premium purchase.^cWright's shipments for 1968 are estimated. See footnote d for Table 18, page 170.^dNorthville purchased an additional 2,307 thousand gallons at premium from one of its main suppliers listed in the table. This amount should be deducted from that refiner's shipments. Because it is not clear which refiner shipped the premium distillate, the amount has been deducted in the "Other at Cargo Price" column.

APPENDIX L

TABLE 20

ESTIMATION OF NO. 2 SHIPMENTS TO INDEPENDENTS
FROM SHELL AND AMERICAN^a
(MILLIONS OF GALLONS)

	1966		1969	
	LOW	HIGH	LOW	HIGH
<u>SHELL</u>				
To Four Independents ^b	85	85	0	0
To Cirillo ^c	51	103	0	0
To Northeast ^d	16	33	0	0
	152	221	0	0
	1968		1970 ^e	
	LOW	HIGH	LOW	HIGH
<u>AMERICAN</u>				
To Three Independents ^f	206	206	55	55
To Northeast ^g	130	160	50	100
	336	366	105	155
Total ^h	488	587	105	155

^aShell and American shipped product to some independents that failed to provide complete supply data to the OIAB. Consequently, shipments to these independents had to be estimated--sometimes arbitrarily.

^bThese are actual shipments to Burns, Howard, Northville and Patchogue--based on testimony of these independents to the OIAB (see Table 19 in Appendix K, page 171).

^cShell discontinued shipments to Cirillo by 1969, according to the testimony of Cirillo. Actual data are unavailable for 1966. Cirillo, however, did state to the OIAB that Shell was one of its two main suppliers in that year. From this it has been arbitrarily assumed that Shell provided Cirillo with one-third to two-thirds of its distillate requirements of 154 million gallons (see Table 18 in Appendix J, page 169). This implies a range of shipments of 51 to 103 million gallons.

^dShell discontinued shipments to Northeast by 1969, according to the testimony of Northeast. For 1966 no exact data are available. Northeast indicated only that Shell was one of six suppliers and that Exxon and American were by far the largest suppliers. Thus Shell supplied relatively little to Northeast in 1966. The table assumed a range of 5 to 10 per cent, equal to a range of 16 to 33 million gallons.

^eBecause more information on shipments from American was available in 1970 than in 1969 (the final year under investigation in the thesis), the table listed 1970 estimated shipments rather than 1969.

^fThese are actual shipments to Cirillo, Northville and Whale Oil, based on testimony of these independents to the OIAB (see Table 19 in Appendix K, page 171).

^gShipments from American to Northeast in 1968 are based on an estimate (145 million gallons) derived from Table 14 in Appendix D, page 162 (see footnote d in that table for method of estimation). This table assumed a low and high range of 10 per cent about the 145 million gallons. This implies a range between 130 to 160 million gallons.

In 1970, Northeast testified and provided proof that American would be supplying much less in that year than it had in earlier years. How much less was not specified. This table arbitrarily assumed shipments delivered were between 50 and 100 million gallons.

^hBy 1970 Shell and American had withdrawn many millions of gallons of heating fuel from independents in the cargo market. This table estimates between 333 (488 minus 155) and 482 million gallons (587 minus 105) were withdrawn.

In the 1966-69 period, total shipments to fourteen testifying independents (with about two-thirds of all independent sales) from all refiners averaged about 1,550 million gallons. Thus the withdrawal of 333 to 482 million gallons from the cargo market by Shell and American would have reduced total shipments by 20 (333/1550) or 30 (482/1550) per cent, had not other refiners increased their shipments to independents--mainly Exxon.

APPENDIX M

CALCULATION OF WEIGHTED ANNUAL

POSTED GROSS MARGINS

Gross margins that are derived directly from annual prices published in Platt's Oil Price Handbook are highly biased. This is true because annual prices are calculated simply by adding up monthly prices and dividing by twelve. Thus unweighted margins derived from Platt's prices ignores the fact that independents buy and sell much more distillate in the winter than in the summer and that they usually buy and sell different quantities in each month (i.e., they build up or tear down inventories).

To derive unbiased margins requires the weighting of Platt's monthly prices by the estimated percentages of annual transactions typically occurring in each month. The objective of this appendix is to develop such percentages.

To compute monthly percentages, many assumptions about the independents' seasonal pattern of sales and purchases were required. Some were arbitrary. Consequently the results must be viewed as rough approximations of true annual margins.

Nevertheless they undoubtedly reflect more accurately posted margins than those derived from unweighted annual prices, which implicitly attach far too much importance to summer monthly prices and too little to winter monthly prices.

An observation of weighted and unweighted margins in New York between 1966 and 1969 demonstrates clearly why it is necessary to compute weighted margins. Unweighted margins show a 25 per cent increase between 1966 and 1968, when in reality margins probably declined slightly during this period.

NEW YORK POSTED MARGINS
(POINTS PER GALLON)

<u>Year</u>	<u>Unweighted</u>	<u>Weighted</u>
1966	53	65
1967	64	66
1968	67	62
1969	70	70

Monthly percentages are calculated in Table 21, page 176. The procedure used is explained in the footnotes of that table. The percentages derived in the table were the ones applied to monthly Platt's prices to obtain the weighted annual prices and margins shown in Table 13 (page 113) and Figure 3 (page 52).

TABLE 21

ESTIMATION OF PERCENTAGES USED TO WEIGHT MONTHLY POSTED PRICES^a

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR
1 Sales--Tank Car (Per Cent of Annual Sales in Each Month) ^b	18.0	15.0	11.0	6.0	4.0	2.0	1.0	3.0	5.0	7.0	13.0	15.0	100.0
2 Utilization of Storage Capacity-- End of Month (Per Cent) ^c	25.0	15.0	10.0	10.0	10.0	22.5	40.0	60.0	70.0	80.0	65.0	45.0	-
3 Inventory--End of Month (Millions of Gallons) ^d	80	48	32	32	32	72	128	192	224	256	208	144	-
4 Change in Inven- tory (Millions of Gallons) ^e	(64)	(32)	(16)	-	-	40	56	64	32	32	(48)	(64)	-
5 Sales (Millions of Gallons) ^f	259	216	159	87	58	29	14	43	72	101	187	216	1,441
6 Purchases--Cargo (Millions of Gallons) ^g	195	184	143	87	58	69	70	107	104	133	139	152	1,441
7 Purchases--Cargo (Per Cent of Annual Purchases in Each Month)	14.0	13.0	10.0	6.0	4.0	5.0	5.0	7.0	7.0	9.0	9.0	11.0	100.0

Footnotes on following page.

FOOTNOTES FOR TABLE 21

^aThe objective of this table is to estimate the percentage of annual sales and purchases typically occurring within each month.

The process begins by estimating monthly sales percentages which are converted into gallons per month. By adding inventory changes to sales in each month it was possible to estimate purchases which were then converted to percentages.

^bEstimation of monthly sales percentages in row 1 was based mainly on data presented the OIAB by the independents (see Table 22, page 178).

^cTo estimate inventory changes required a three-step procedure. The first step was to estimate the percentage utilization of storage capacity in each month (row 2). The second step was to convert these percentages into gallons for the nine independents on which storage capacity (and sales) is available (row 3). The third step (row 4) was to derive the monthly changes from row 3.

In row 2, the December utilization estimate of 45 per cent has been derived from the testimony of independents (see Table 23, page 179). The September figure is drawn from a statement made by the Independent Fuel Terminal Operators Association (Wall Street Journal, October 17, 1973). The Association stated that deepwater terminals on the East Coast needed to be 70 per cent full by September (end of month), although 80 per cent was preferred. The table uses 70 per cent for September and 80 per cent for October, when storage tanks are highly utilized according to the trade press.

Finally, it is known from a reading of the literature and OIAB testimony that inventories drop sharply during the winter reaching their lows sometime in the spring. The table assumes 10 per cent utilization by the end of March.

^dMonthly inventory figures were derived by multiplying 320 million gallons, the storage capacity of nine independents, by the percentage utilization figure in each month. (See Table 24, page 180, for nine independents who provided data on both storage capacity and sales between 1966 and 1969).

^eInventory changes in each month were derived by subtracting inventories in one month from the inventories of the preceding month.

^fIn row 6 the sales percentages in each month (from row 1) were converted to gallons by multiplying average annual sales (1,441 million gallons) by the monthly percentages. (See Table 24 for the nine independents who provided data on both storage capacity and sales between 1966 and 1969).

^gMonthly purchases were derived by adding inventory changes (negative or positive) to monthly sales, which were then converted into percentages in the seventh row.

TABLE 22
SEASONAL SALES COMPARED WITH ANNUAL SALES OF
SOME INDEPENDENT TERMINAL OPERATORS
(MILLIONS OF GALLONS)
1967-1969

Company ^b	(Year)	Sales		Percent of Annual Sales Sold During Period
		Period	Year	
		JAN.-MAR.		JAN.-MAR.
Union Oil	(1968)	122	255	
Gibbs Oil	(1968)	20	46	
Total		142	301	47
		JAN.-APR.		
Burns Brothers	(1967)	10	21	
" "	(1968)	11	19	
Cirillo Brothers	(1967)	74	140	
Deepwater Oil	(1967)	29	93	
" "	(1968)	35	73	
Howard Coal	(1967)	20	47	
Northville Ind.	(1967)	170	334	
" "	(1968)	181	358	
Total		530	1,085	49
		JAN.-MAY		JAN.-MAY
Central Petroleum	(1968)	24	41	
Patchogue Oil	(1968)	33	61	
Union Oil	(1969)	145	261	
Wellen Oil	(1968)	22	28	
Total		224	391	57
		JAN.-SEPT.		JAN.-SEPT.
Patchogue Oil	(1971)	51	79	65

^aOIAB testimony. Information on seasonal sales was available only in the testimony covering the years 1967 and 1968, with some exceptions. Because the testimony of the independents covered thousands of pages, undoubtedly some seasonal information was overlooked and not included in this table.

^bOne company, Meenan Oil, in a 1973 prospectus indicated that it sold 83 per cent of its distillate during the October-April period.

TABLE 23
AVERAGE UTILIZATION OF DISTILLATE STORAGE CAPACITY OF SOME
INDEPENDENT TERMINAL OPERATORS ON DECEMBER 31^a
(MILLIONS OF GALLONS)
1966-1968

Independent Terminal Operators	Storage Capacity	Inventories			Average Inventory on Dec 31 (1966-68)	Average Utilization of Storage Capacity (Percent)
		Dec. 31 1966	Dec. 31 1967	Dec. 31 1968		
Burns Brothers	14	6	5	6	6	43
Howard Coal	9	7	1	5	4	44
Northeast Petroleum	84	23	30	59	37	44
Northville Industries	85	38	45	8	30	35
Patchogue Oil	9	8	7	9	8	89
Union Oil	44	7	15	12	11	25
Wyatt, Inc.	35	16	20	20	19	54
Total	280	105	123	119	115	334
		Unweighted Average ^b - 48		Weighted Average ^c - 41		

^aOIAB Testimony. This table includes the tank storage capacity of only those firms that provided information on their December 31 inventories for at least three years, and who provided data on their storage capacities. Information on inventory levels for other dates were seldom indicated.

^bUnweighted average equal to total of average utilization column, 334 divided by seven.

^cWeighted average equal to total of average inventory column, 115 million gallons, divided by total of storage capacity column, 280 million gallons.

TABLE 24
AVERAGE SALES AND TANK STORAGE CAPACITY^a
OF SOME INDEPENDENTS
(MILLIONS OF GALLONS)
1966-1969

Independent Terminal Operators	Sales					Tank Storage Capacity
	1966	1967	1968	1969	Average 1966-69	
Burns Brothers	18	21	19	18	19	14
Deepwater Oil	75	93	73	77	80	32
Gibbs Oil	22	34	46	72	43	8
Howard Coal	43	47	47	47	44	9
Northeast Pet.	328	363	400	423	379	84
Northville Ind.	304	334	358	367	341	85
Patchogue Oil	63	67	61	64	64	9
Union Oil	203	257	255	261	244	44
Wyatt, Inc.	200 ^b	225	237	244	227	35
Total	1,256	1,441	1,496	1,573	1,441 ^c	320 ^c

^aOIAB testimony. This table includes the sales of only those firms that provided information on their storage capacity.

^bEstimate. See Table 16, page 167, footnote b.

^cThese two figures are the crucial one derived in this table. See Table 21 for their utilization.

APPENDIX N

TABLE 25

COMPUTATION OF TANK CAR DISCOUNTS IN BOSTON^a
 (CENTS PER GALLON)
 1966-1969

Year	Independent Terminal Operators	Average Selling Price	Posted ^b Tank Car Price	Discount (Premium)
1966	Deepwater	10.10	10.20	.10
	Gibbs	10.20	10.20	-
	Northeast	9.86	10.20	.34
	Union	9.83	10.20	.37
	Simple Average Discount	10.00	10.20	.20
	Weighted Average Discount ^c	9.89	10.20	.31
1967	Deepwater	10.82	10.80	(.02)
	Gibbs	10.50	10.80	.30
	Northeast	10.54	10.80	.26
	Union	10.48	10.80	.32
	Simple Average Discount	10.59	10.80	.21
	Weighted Average Discount ^c	10.57	10.80	.23
1968	Deepwater	11.00	11.04	.04
	Gibbs	10.75	11.04	.29
	Northeast	10.83	11.04	.21
	Union	10.53	11.04	.51
	Simple Average Discount	10.78	11.04	.26
	Weighted Average Discount ^c	10.74	11.04	.30
1969	Deepater	10.50	11.00	.50
	Gibbs	10.51	11.00	.49
	Northeast	10.62	11.00	.38
	Union	10.34	11.00	.66
	Simple Average Discount	10.49	11.00	.51
	Weighted Average Discount ^c	10.51	11.00	.49

Footnotes on following page.

FOOTNOTES FOR TABLE 25

^aSource: Independent terminal operators' testimony before the OIAB, 1968-1970.

The four independents--Deepwater, Gibbs, Northeast and Union--out of the seven that presented usable tank car price data in New England account for about 60 per cent of independent terminal inputs in that region. (See Table 15, page 165 for terminal inputs by company and region.)

^bPosted tank car prices were derived from Table 13, page 113.

^cThe weighted discount (used in Table 13) was derived by weighting each terminal operator's discount by its annual volume of sales. (Sales are shown in Table 16, page 167.) Except for 1966 the simple and weighted average differed very little.

APPENDIX O

TABLE 26

COMPUTATION OF CARGO DISCOUNTS IN BOSTON AND NEW YORK^a
(CENTS PER GALLON)
1966-1969

		B O S T O N			N E W Y O R K		
		Average Purchase Price	Posted ^b Cargo Price	Discount (Premium)	Average Purchase Price	Posted ^b Cargo Price	Discount (Premium)
1966	Simple Average	9.35	9.52	.17	9.36	9.42	.06
	Weighted Average ^c	9.42	9.52	.10	9.35	9.42	.07
1967	Simple Average	10.16	10.14	(.02)	9.96	9.99	.03
	Weighted Average ^c	10.08	10.14	.06	9.93	9.99	.06
1968	Simple Average	10.36	10.42	.06	10.28	10.22	(.06)
	Weighted Average ^c	10.33	10.42	.09	10.29	10.22	(.07)
1969	Simple Average	10.20	10.30	.10	10.04	10.10	.06
	Weighted Average ^c	10.19	10.30	.11	10.05	10.10	.05

Footnotes on following page.

FOOTNOTES FOR TABLE 26

^aSource: Independent terminal operators' testimony before the OIAB, 1968-1970.

The four independents--Deepwater, Gibbs, Northeast and Union--out of the seven that presented usable purchase price data in New England account for about 60 per cent of independent terminal inputs in that region.

The five independents--Burns, Central, Howard, Patchogue and Wellen--out of seventeen that presented usable purchase price data in New York-New Jersey account for about 15 per cent of independent terminal inputs in that region.

All data used to calculate the simple and weighted average discounts were derived from Table 28 in Appendix Q, page 187.

^bPosted cargo prices were derived from Table 13, page 113.

^cThe weighted discounts (weighted by sales) are the ones demonstrated in Table 13. It was felt that they reflected the competitive situation in the cargo market much more realistically than did simple average discounts. For example it seems reasonable to weight Northeast's purchase price more heavily than Gibbs because it purchased distillate from six or seven refiners, whereas Gibbs bought most of its No. 2 from one refiner. Moreover Northeast purchased about ten times as much distillate in the cargo market as did Gibbs.

APPENDIX P

TABLE 27

COMPUTATION OF AVERAGE OPERATING COSTS^a
1966-1969

Independent Terminal Operators	Percent of 1968 Sales	Operating Costs Per Gallon (Points)	Product of First Two Columns
<u>1966</u>			
Deepwater	8	60.00 ^b	4.80
Northeast	47	40.00	18.80
Patchogue	7	61.00 ^b	4.27
Union	29	39.00	11.31
Whale	9	29.00 ^c	2.61
Straight Average		45.80	
Weighted Average			41.79
<u>1967</u>			
Deepwater	8	62.00	4.96
Northeast	47	50.00	23.50
Patchogue	7	66.00	4.62
Union	29	42.00	12.18
Whale	9	33.00	2.97
Straight Average		50.60	
Weighted Average			48.23
<u>1968</u>			
Deepwater	8	69.00	5.52
Northeast	47	50.00	23.50
Patchogue	7	70.00	4.90
Union	29	43.00	12.47
Whale	9	38.00	3.42
Straight Average		54.00	
Weighted Average			49.81
<u>1969</u>			
Deepwater	8	71.00	5.68
Northeast	47	65.00	30.55
Patchogue	7	85.00	5.95
Union	29	42.00	12.18
Whale	9	43.00	3.87
Straight Average		61.20	
Weighted Average			58.23

Footnotes on following page.

FOOTNOTES FOR TABLE 27

^aSource: Independent terminal operators' testimony before the OIAB, 1968-1970.

^bDeepwater gave two slightly different sets of operating costs: a series for 1966-68 and a series for 1967-69. The table used the later estimate. Costs for 1966 were estimated by multiplying the ratio of its 1966/67 costs in the first series (1966-68) by its 1967 costs in the second series (1967-69).

Patchogue also gave two slightly different sets of operating costs data. The same procedure as above was used to estimate 1966 costs.

^cWhale Oil's operating costs for 1966 are not available. It was assumed that the ratio of its 1966 and 1967 operating costs equaled that of the other four independents.

APPENDIX Q

TABLE 28

CALCULATION OF INDEPENDENT TERMINAL OPERATORS' AVERAGE PURCHASE PRICE FOR NO. 2 OIL,^a 1966-1969

(1) ^b	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Independent Terminal Operators ^c	Domestic Quantity Purchased Excluding Premium (Thous./ Gallons)	Cost of Domestic Excluding Premium (Thous./ Dollars)	Average Purchase Price of Domestic Excluding Premium (Cents/ Gallon)	Premium Quantity Purchased (Thous./ Gallons)	Average Purchase Price of Premium (Cents/ Gallon)	Cost of Premium (Thous./ Dollars)	Domestic Quantity Purchased Including Premium (Thous./ Gallons)	Cost of Domestic Including Premium (Thous./ Dollars)	Average Purchase Price of Domestic Including Premium (Cents/ Gallon)
1966									
Burns	20,306	1,827	9.00	-	-	-	20,306	1,827	9.00
Central ¹	17,500	1,675	9.57	14,275	9.78 ^T	1,396	31,775	3,071	9.66
Deepwater ²	74,676	7,220	9.67	-	-	-	74,676	7,220	9.67
Gibbs ³	8,277	739	8.93	-	-	-	8,277	739	8.93
Howard ⁴	43,553	4,119	9.46	618	9.80 ^{T&E}	61	44,171	4,180	9.46
Northeast ⁵	327,992	30,733	9.37	-	-	-	327,992	30,733	9.37
Northville ⁶	269,262	25,095	9.32	10,374	9.72 ^E	1,008	279,636	26,103	9.33
Patchogue ⁷	64,428	5,902	9.16	-	-	-	64,428	5,902	9.16
Union ⁸	205,800	19,386	9.42	-	-	-	205,800	19,386	9.42
Wellen	25,957	2,469	9.51	-	-	-	25,957	2,469	9.51
1967									
Burns	19,357	1,905	9.84	3,448	10.30 ^T	355	22,805	2,260	9.91
Central ¹	29,500	2,968	10.06	558	10.65 ^E	59	30,058	3,027	10.07
Deepwater ²	92,566	9,531	10.30	-	-	-	92,566	9,531	10.30
Gibbs ³	31,624	3,241	10.25	3	11.10 ^T	-	31,627	3,241	10.25
Howard ⁴	23,741	2,371	9.99	18,676	10.39 ^{T&E}	1,940	42,417	4,311	10.16
Northeast ⁵	359,464	36,090	10.04	-	-	-	359,464	36,090	10.04
Northville ⁶	319,907	31,639	9.89	21,091	10.65 ^E	2,246	340,998	33,885	9.94
Patchogue ⁷	62,924	6,085	9.67	-	-	-	62,924	6,085	9.67
Union ⁸	256,200	25,722	10.04	-	-	-	256,200	25,722	10.04
Wellen	33,076	3,308	10.00	-	-	-	33,076	3,308	10.00
Patterson	7,702	765	9.93	-	-	-	7,702	765	9.93
Tappan Tanker	2,730	275	10.07	-	-	-	2,730	275	10.07
Wyatt	233,974	22,462	9.60	-	-	-	233,974	22,462	9.60

Footnotes begin on page 189.

TABLE 28--Continued

(1) ^b	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Independent Terminal Operators ^c	Domestic Quantity Purchased Excluding Premium (Thous./ Gallons)	Cost of Domestic Excluding Premium (Thous./ Dollars)	Average Purchase Price of Domestic Excluding Premium (Cents/ Gallon)	Premium Quantity Purchased (Thous./ Gallons)	Average Purchase Price of Premium (Cents/ Gallon)	Cost of Premium (Thous./ Dollars)	Domestic Quantity Purchased Including Premium (Thous./ Gallons)	Cost of Domestic Including Premium (Thous./ Dollars)	Average Purchase Price of Domestic Including Premium (Cents/ Gallon)	Quantity Imported (Thous./ Gallons)	Average Purchase Price of Imports (Cents/ Gallon)	Cost of Imports (Thous./ Dollars)	Total Quantity Purchased of No. 2	Total Cost For All No. 2	Average Purchase Price For All No. 2
1968															
Burns	13,386	1,356	10.13	3,462	10.60 ^T	367	16,848	1,723	10.23	2,008 ^T	7.66 ^T	154	18,856	1,877	9.95
Central ¹	30,300	3,097	10.22	1,500	10.84 ^E	163	31,800	3,260	10.25	9,600 ^T	8.32 ^T	799	41,400	4,059	9.80
Deepwater ²	62,566	6,483	10.36	2,146	11.13 ^T	239	64,712	6,722	10.39	8,163 ^O	8.04 ^E	656	72,875	7,378	10.12
Gibbs ³	37,599	3,893	10.35	874	11.00 ^T	96	38,473	3,989	10.37	6,169 ^T	7.67 ^T	473	44,642	4,462	10.00
Howard ⁴	54,017	5,552	10.28	-	-	-	54,017	5,552	10.28	2,132 ^T	7.95 ^T	169	56,149	5,721	10.19
Northeast ⁵	362,544	37,233	10.27	-	-	-	362,544	37,233	10.27	37,786 ^O	8.05 ^E	3,042	400,330	40,275	10.06
Northville ⁶	242,046	24,495	10.12	24,234	10.84 ^E	2,627	266,280	27,122	10.19	48,090 ^T	8.10 ^T	3,895	314,370	31,017	9.87
Patchogue ⁷	48,428	5,017	10.36	-	-	-	48,428	5,017	10.36	13,005 ^T	8.04 ^T	1,045	61,433	6,063	9.87
Union ⁸	210,368	21,710	10.32	35,326	10.81 ^T	3,817	245,694	25,527	10.39	9,251 ^T	8.48 ^T	785	254,945	26,312	10.32
Wellen	34,740	3,578	10.30	-	-	-	34,740	3,578	10.30	-	-	-	34,740	3,578	10.30
Patterson	8,099	822	10.15	-	-	-	8,099	822	10.15	692 ^T	8.50 ^T	59	8,791	881	10.02
Tappen Tanker	2,313	236	10.20	-	-	-	2,313	236	10.20	-	-	-	2,313	236	10.20
Wyatt	239,135	23,674	9.90	-	-	-	239,135	23,674	9.90	-	-	-	239,135	23,674	9.90
1969															
Burns	9,466	933	9.86	2,047	10.40 ^T	213	11,513	1,146	9.95	1,844 ^T	7.45 ^T	137	13,357	1,283	9.61
Central ¹	35,001	3,535	10.10	-	-	-	35,001	3,535	10.10	3,894 ^T	7.50 ^T	292	38,895	3,827	9.84
Deepwater ²	70,994	7,314	10.30	47	10.84 ^T	5	71,041	7,319	10.30	4,815 ^O	7.25 ^E	349	78,856	7,668	10.11
Gibbs ³	62,480	6,318	10.11	17	10.75 ^T	2	62,497	6,320	10.11	2,857 ^T	6.45 ^T	184	65,354	6,504	9.95
Howard ⁴	39,304	3,896	9.91	-	-	-	39,304	3,896	9.91	3,664 ^T	7.17 ^T	263	42,968	4,159	9.68
Northeast ⁵	404,217	41,068	10.16	-	-	-	404,217	41,068	10.16	18,451 ^O	7.25 ^E	1,338	422,668	42,406	10.03
Northville ⁶	318,654	31,865	10.00	25,200	10.54 ^T	2,656	343,854	34,521	10.04	14,448 ^T	7.25 ^E	1,047	358,302	35,568	9.93
Patchogue ⁷	50,243	5,034	10.02	-	-	-	50,243	5,034	10.02	5,871 ^O	7.25 ^E	426	56,114	5,460	9.73
Union ⁸	241,310	24,614	10.20	12,545	10.70 ^T	1,342	253,855	25,956	10.22	7,648 ^O	7.25 ^E	554	261,503	26,510	10.14
Wellen	39,210	3,999	10.20	-	-	-	39,210	3,999	10.20	-	-	-	39,210	3,999	10.20
Patterson	8,269	844	10.21	-	-	-	8,269	844	10.21	843 ^T	7.70 ^T	65	9,112	909	9.98
Tappen Tanker	934	93	10.00	-	-	-	934	93	10.00	-	-	-	934	93	10.00
Wyatt	256,549	25,398	9.90	-	-	-	256,549	25,398	9.90	3,990 ^T	7.69 ^T	307	260,537	25,705	9.87

FOOTNOTES FOR TABLE

^aThe purchase price data shown in the table are derived from the OIAB testimony of independent terminal operators during the 1968-1970 period. Because some firms withheld pertinent data from the Board, it proved impossible to calculate the exact average price for all firms. Where feasible, assumptions were made to obtain estimates of the average price. These assumptions are discussed below in footnotes b and c.

^bExplanation of columns 1-16.

Column 1--lists names of those independent terminal operators who provided the OIAB with usable data on supply and prices. The first ten firms presented data from 1966 through 1969. The remaining three firms provided data only for the years 1967-1969.

Column 2--shows the number of gallons purchased by each independent at (or approximately at) the posted cargo price. Where the independent paid 3 mills or more above the posted price, the purchase was considered a premium purchase and placed in column 5. The vast majority of purchases in column 2 were made through contractual arrangement with the refiners. That is, relatively little was purchased on the spot market.

Column 3--indicates the market value of all domestic purchases of distillate, excluding premium purchases. This value was sometimes given by the independents. Sometimes it was calculated from price and quantity data furnished by the independents.

Column 4--is equal to column 3 divided by column 2. It indicates the average purchase price paid by each independent for all domestic distillate, excluding premium purchases.

Column 5--shows the number of gallons purchased at premium prices (i.e., at prices three or more mills above the posted cargo price). In testifying before the Board two firms, Northeast and Patchogue, failed to indicate the number of premium gallons purchased. Instead, they simply provided the Board with their average purchase price for distillate, within which was an average unknown number of gallons purchased at some average unknown premium price. Thus, premium purchases are not shown in the table for these firms. All other firms provided the Board with exact premium quantities, except for Union in 1969 (see footnote C-8).

Column 6--indicates the price paid by each firm for its premium purchases. Most firms provided this information. When it was not provided, estimates were used and the letter "E" was placed by the price in the table. Where it was provided the letter "T" was placed by the price.

The assumed premium price was different in each year, depending on conditions of supply and demand. In 1966 the supply of distillate was relatively abundant, based on a reading of the trade literature and the independents' testimony. Therefore a small 3-mill premium above the adjusted posted cargo price was assumed.

In 1967 and 1968 supply relative to demand was exceedingly tight at times, as discussed in the text. Undoubtedly, on the average, the premium paid in these years surpassed that paid in 1966. Arbitrarily, it was assumed that independents paid the posted tank car price for premium purchases--approximately 7 mills above the posted cargo price.

Undoubtedly, many purchases were transacted at a much lower premium especially during the summer months. On the other hand, some independents paid a far higher premium than 7 mills. A couple of independents convincingly demonstrated to the Board that they paid two-cent premiums during the winter of 1967-68, an amount triple their normal gross margins. Nevertheless, such premiums were rarely paid--probably only during winter emergencies when some terminal operators had contractual or moral obligations to honor.

For 1969, no estimates were required because all the firms provided information on their premium prices.

Column 7--is equal to column 5 multiplied by column 6.

Column 8--is equal to column 2 plus column 5.

Column 9--is equal to column 3 plus column 7.

Column 10--is equal to column 9 divided by column 8. It shows the average price paid by each firm for all of its domestic No. 2 heating fuel oil, including premium-priced No. 2.

Column 11--shows the quantity of No. 2 oil imported by each firm. No firm imported distillate in 1966 and only one firm in the table imported it in 1967. Because the imported gallonage was insignificant in 1967 it was not included in the table for that year. The omission made little difference.

In 1968 and 1969, the independents imported large quantities of No. 2 heating oil. Most firms furnished the Board with the exact amounts imported. These amounts have been placed in column 11 (1968 and 1969) with a "T" placed by the quantity imported, indicating that the figure was derived from the testimony.

In 1968, where exact imports were not given, the table used the OIAB allocation as an estimate in 1968. The assumption seems reasonable. Nearly all those firms that listed their imports in the OIAB testimony fully utilized their OIAB allocations in that year. The letter "O" was placed by these estimates, indicating that they were derived from OIAB allocations.

In 1969, virtually all independents failed to fully utilize the emergency import allocations granted by the Board because domestic distillate surpluses existed in the industry. Instead they used 72 per cent of the allocation and postponed the remainder until 1970 (see Table on page). Therefore for those firms that failed to report 1969 imports, it was assumed that 72 per cent of their allocation was imported. The letter "O" was placed by these estimates as well.

Column 12--indicates the price paid by each firm for its imported distillate. Most independents provided exact prices. Where they did not, an average import price was used (see Table 30, page 195, for derivation of that price). The letter "E" was placed by the estimates and the letter "T" was placed by the exact prices.

Column 13--is equal to column 11 multiplied by column 12. It represents the expenditure of each firm on foreign oil.

Column 14--is equal to the sum of column 8 and column 11. It shows the number of gallons purchased by each independent from all sources, including imported oil and premium oil.

Column 15--is equal to the sum of column 9 plus column 13. It indicates the expenditures of each firm for all distillate, domestic and foreign.

Column 16--is equal to column 15 divided by column 14. The results in this column show each firm's average total price paid for all distillate from all sources.

^cCompany footnotes.

¹Central Petroleum--In 1966 and 1967, Central purchased a small percentage of distillate requirements from Patchogue, stating only that it paid the cargo price. The table assumed that Central paid the New York harbor posted cargo price (adjusted).

In 1968, the company purchased products from Exxon and Royal, once again stating only that it paid the cargo price. It was assumed that the effective transaction price was equal to the posted New York harbor cargo price. All other prices were specifically stated. The average purchase price for Central stated in the table includes the estimated and the exact prices.

²Deepwater Oil--In its 1970 testimony Deepwater seemingly miscalculated the purchase price it paid Exxon, the refiner that supplied about 90 per cent of Deepwater's requirements. The company stated it paid 9.9¢ per gallon in 1969, down almost one-half cent from 1968.

Admittedly, prices declined slightly in 1969 with most firms showing a one- or two-mill decline in the effective cargo price. A 5-mill decline, however, seems erroneous, especially since Deepwater lists its average purchase price as 10.3 elsewhere in the testimony. The 10.3 figure seems much more realistic and is the one presumed correct and used in the table.

³Gibbs Oil--Gibbs purchased its deepwater terminal facilities in late 1966. Before then Gibbs essentially retailed heating fuel oil, purchasing most distillate at the rack. After the acquisition, it continued to supply inland homeowners with No.2 heating oil that it purchased at the rack from inland terminals. For this product it paid the tank car price, not a cargo price.

These purchases have been ignored in in the table, because they do not represent purchases on the cargo level. To have included these prices along with cargo prices would be misleading, giving the impression that the company was paying huge premiums when, in fact, it was paying the appropriate price for the market level at which the distillate was purchased.

⁴Howard Coal--Through 1968 Shell Oil supplied Howard with distillate oils containing some unknown quantities of cutter stock. Usually, according to Howard, cutter stock sells for 6 mills less than No. 2 oil. Because the quantity included within the overall shipments to Howard is unknown, the purchase price provided by Howard in the testimony is virtually meaningless. Therefore, this price has been ignored, and instead the posted New York harbor cargo price (adjusted) was used.

In addition, Howard reported specific prices for its barge transactions, but failed to indicate the costs per gallon of barging. The table assumed a 2-1/2 mill barge cost per gallon to determine the delivered price. The assumption was based on statements made by industry members in the trade literature. All the estimated prices are included within the average price shown in the table.

⁵Northeast Petroleum--Northeast did not provide exact import prices or quantities purchased. The company did provide enough information, however, to permit very good estimates. Because the calculations and assumptions are numerous, they have not been described here.

⁶Northville--Northville failed to disclose exact cargo prices, stating only that the posted cargo price was paid or a premium price was paid. However, it did disclose the quantity purchased from each supplier and the quantity purchased at premium prices.

The table assumes that the non-premium purchases were transacted at the New York harbor cargo price minus one mill. Northville is a large operator with facilities large enough to receive very big tankers, which accounts for the one mill discount. The company probably received other discounts such as cash discounts of one per cent, but this is impossible to prove. Therefore, the one mill discount is probably a conservative estimate. The premium purchases were priced according to the rules outlined in footnote b--column 6.

⁷Patchogue Oil--Patchogue provided only an average purchase price for all of its purchases, including imports. Therefore, to derive the average domestic price, it was necessary to estimate the import price and the number of gallons imported. The procedure used to derive these estimates are given in footnote b--columns 11 and 12.

The 1968 estimate of imported distillate required special consideration. The company, like most other independents, received a preliminary and final allocation in 1968--846 barrels per day at the beginning of the year, and 494 barrels later in the year, after the Board considered the case more thoroughly. An observation of the supply data seems to indicate that Patchogue used only the first allocation. Therefore the table assumed that Patchogue imported only the preliminary allocation.

⁸Union--Like Northville, Union states only the amount of distillate received from each supplier without specifying the exact price. Over 95 per cent of its distillate was supplied at the cargo price and the remainder was supplied at the tank car price minus 3 or 4 mills, depending on the year. To quantify this information, the posted prices (cargo and tank car) in the Boston area were used in the table. A one-mill discount was deducted from the cargo price because the company, being a very large operator, probably received "big tanker" discounts.

In its 1970 testimony, covering its 1969 supply statistics, the company was even more vague than it had been in the past. It stated merely that approximately 95 per cent of its supply originated with Phillips at the cargo price and that the remainder came from Shell at the tank car price minus 3 mills.

To utilize the data it was assumed that sales for the year equaled supply. Then imports were subtracted from the assumed total supply (see footnote b--column 11) leaving domestic supply. Of this amount 95 per cent was assumed purchased at the Boston cargo price minus one mill. The remaining 5 per cent was assumed purchased at the Boston tank car price minus 3 mills. The results of these calculations for 1969 are shown in the table.

TABLE 29

CALCULATION OF ESTIMATED IMPORTS USED IN TABLE 28--1969

Independent Terminal Operators	ACTUAL		Per Cent of Allocations Utilized
	OIAB Allocation (Thousands of Gallons)	Imports (Thousands of Gallons)	
Burns Brothers	2,540	1,844	72.6
Cirillo Brothers	20,328	14,671	72.2
Central Petroleum	5,396	3,894	72.2
Gibbs Oil	3,940	2,857	72.5
Howard Coal	5,074	3,664	72.2
Patterson Fuel	843	843	100.0
Patchogue Oil	8,140	5,871	72.1
Northville Industries	20,005	14,448	72.2
Whale Oil	6,715	4,844	72.1
Wyatt, Incorporated	5,534	3,990	72.1
	ESTIMATED		Per Cent Estimated
	OIAB Allocation	Imports ^a	
Deepwater Oil	6,669	4,815	72.2
Northeast Petroleum	25,555	18,451	72.2
Union Oil	10,593	7,648	72.2

^aThese imports were estimated by multiplying the OIAB allocations by 72.2 per cent, the per cent of allocations utilized by firms reporting their imports to the OIAB. The results were placed in Table 28, column 11 for the three non-reporting firms in 1969.

TABLE 30
CALCULATION OF AVERAGE IMPORT PRICE
USED IN TABLE 28
(1968 and 1969)

Independent Terminal Operators	Import Price ^a 1968 (Cents Per Gallon)	Import Price ^a 1969 (Cents Per Gallon)
Burns Brothers	7.66	7.45
Central Petroleum	8.32	7.50
Cirillo Brothers	8.10	-
Gibbs Oil	7.67	6.45
Howard Coal	7.95	7.17
Northville Industries	8.10	-
Union Oil	8.45	-
Wyatt, Incorporated	-	7.69
Average ^b	8.04	7.25

^aBecause Tappan Tanker and Patterson imported such small quantities of distillate, their prices were not considered typical and thus ignored. Actually, their prices were only a few mills higher than the average.

^bThese prices are used in Table 28, column 12, for those firms that failed to provide exact import prices.

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