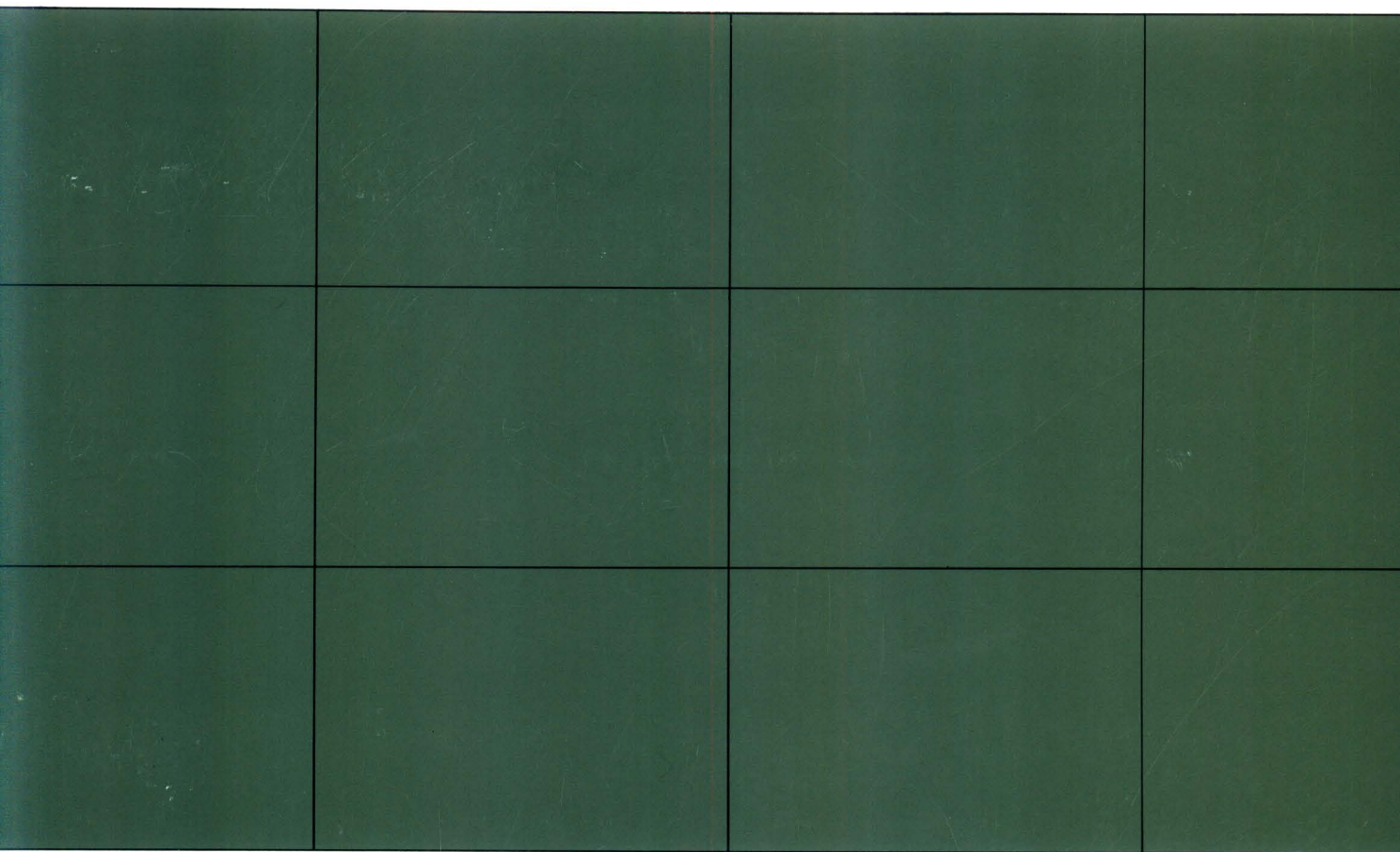


The Structure and Competitiveness of Thailand's Oil Industry



Thailand Development Research Institute Foundation

THE STRUCTURE AND COMPETITIVENESS OF THAILAND'S OIL INDUSTRY

**Submitted to
The National Economic and Social Development Board
The National Energy Policy Office**

**PREPARED BY THE
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Foreword

This report on the structure and competitiveness of the oil industry was prepared as part of the technical assistance programme provided to the National Economic and Social Development Board by the Canadian International Development Agency (CIDA). The objective of the report is to analyze the structure and competitiveness of the domestic oil market in order to formulate measures for the implementation of the oil price deregulation policy as proposed in the Sixth Five Year National Economic and Social Development Plan (1987-1991).

The research was initiated and supervised by Dr. Phisit Pakkasem, Deputy Secretary General of the National Economic and Social Development Board (NESDB) and Dr. Piyasvasti Amranand, Director of the National Energy Policy Office (NEPO).

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Abbreviations

BBL	Barrel
B/D	Barrel per day
DED	Defense Energy Department
EGAT	Electricity Generating Authority of Thailand
GSP	Government Selling Price
GMSM	Gross Marketing Sector Margin
HSD	High Speed Diesel
LSD	Low Speed Diesel
MBD	1,000 Barrel per day
MDWT	1,000 Dead-weight Ton
MBDOE	Thousand barrels per day of oil equivalent
MML	million litres
MOC	Ministry of Commerce
NEA	National Energy Administration
NEPO	National Energy Policy Office
NESDB	National Economic and Social Development Board
NGOT	Natural Gas Organization of Thailand
NEPC	National Energy Policy Committee
OFO	Oil Fuel Organization
PPSC	Petroleum Policy Sub-Committee
PTT	Petroleum Authority of Thailand
TOC	Thai Oil Company Ltd.

EXECUTIVE SUMMARY

Executive Summary

This summary provides the results of this project on the structure of Thailand's refining and downstream oil industries, provides observations on government laws and regulations pertaining to the oil business; and analyzes the competitiveness of the industry in terms of industry conduct. Further, the summary provides conclusions on whether the oil industry structure and its conduct conform to competitive behavior and offers policy recommendations as to how competition in the oil business can be improved.

1. Summary of Thailand's Refining and Downstream Oil Industry Structure

1.1 Refining

Currently, there are three major refiners in Thailand--Bangchak, Thai Oil and Esso--who run imported crude as their primary feedstock. The country also produces a relatively small amount of crude (20,000 B/D) that is sent to Bangchak and Thai Oil for processing. Furthermore, Bangchak and TOC also take a small amount of natural gasoline (4-5,000 B/D) and blend it during gasoline production. In addition to the three major refineries, there is also a small topping plant (owned by the Defense Energy Department [DED]) that runs on domestic crude produced from the Fang Oil field in the North.

Capacity

Thai Oil is presently the most complex refinery in Thailand with a total crude distillation refining capacity of 65,000 B/D; it also has 7,000 B/D of reforming capacity, and 23,000 B/D of catalytic and thermal cracking capacity. Thai Oil is the only refinery in Thailand with conversion facilities.

Bangchak was the second major refinery built in Thailand. Its current crude distillation refining capacity is 65,000 B/D; it also produces 10,500 B/D of reformate. In the past two years, however, Bangchak shut down one of its distillation units (15,000 B/D) due to inefficiency.

The third major refinery is Esso. It was first built as a bitumen producing plant and until 1985 was prohibited from producing gasoline despite the fact that its refinery was configured like Bangchak's. Until 1985 (when it was finally permitted to produce gasoline) Esso sent its reformate/naptha to the Bangchak refinery to be blended into gasoline.

Esso's present crude distillation refining capacity is 63,000 B/D; it also produces 9,000 B/D of reformate. It has no conversion facilities.

The fourth refinery, located in the North, has a capacity of only 1,000 B/D. It was built about thirty years ago to refine heavy Fang crude produced nearby. Since this crude production has been depleted, the refinery has been running at 100 B/D during the past years.

The combined production capacity of the local refineries is 194,000 B/D which, in 1987, satisfied 75% of local petroleum demand.

Ownership Structure

Bangchak is 100% owned by the government; 51% of the Thai Oil shares are owned by the government; and Esso is 100% privately owned.

Profitability and Expansion Plans

According to reported income statements, all three refinery operations were profitable in 1985. After taxes, Bangchak made 123 million baht profit compared to TOC's 44 million. Esso, an integrated company, reported a net profit of 490 million. Despite its being the most complex refinery, TOC's profit was less than the profit made by the other two more simple refineries. The high cost of the lease on the refinery, coupled with special benefits and high interest payments (due to TOC's high debt-to-equity ratio) were some of the reasons for TOC's relatively poor financial performance.

As for future expansion plans, TOC has received government permission to divide its second expansion plan into two stages. Ongoing, first-stage expansion involves TOC's increasing its refining capacity to 83,500 B/D. In addition, a 32,300 hydro-cracking facility will be installed. By the mid-1990s, when the second stage is complete, TOC will have expanded its crude distillation capacity by an additional 100,000 B/D.

Bangchak refinery is also improving its capacity. By 1990, its crude distillation capacity will be raised to 85,000 B/D; in addition, the refinery also plans to install an RCC unit by 1992.

Esso is now seeking government approval for its plan to expand and raise its crude distillation capacity to 110,000 B/D. The government is now studying both Esso's proposal and that of Shell (who has also shown strong interest in building a new greenfield refinery in the Eastern Seaboard).

1.2 Product Importation, Distribution and Marketing

There are several oil companies of various sizes engaging in all aspects of oil trading in Thailand. Their major activities are importing, distribution and marketing of oil products. The structure of the industry is as follows.

Industry Structure

Four major oil distribution/marketing companies--PTT, Esso, Shell and Caltex--accounted for 90% of the volume of liquid fuel products distributed and marketed in Thailand in 1987. There is also a multinational oil company--Mobil--that has engaged in very limited distribution and marketing and seven "independent" oil companies who mainly rely on imports for their petroleum product supply. These independents mainly engage in the wholesale trade business.

There are also a large number of jobbers (wholesalers), transporters, retail dealers and major consumers who play important roles in the oil business.

Distribution and Marketing

Each of the four major oil companies engages in a full range of distribution and marketing activities for all liquid oil products in all regions throughout Thailand. These oil companies have main distribution terminals in Bangkok and smaller depots in all parts of the country. Marine terminals in the South receive products by barge from main terminals, refineries, or Singapore. The depots in all other regions receive products transported by rail from main terminals.

The seven independents also have terminals in Bangkok. However, only two of them own depots in the South. Mobil, a multinational major, only owns one depot located in the South.

The major oil companies also owned 2080 retail service station outlets located in all regions of the country. Presently, independents do not operate service stations. However, some of them operate small automotive LPG outlets which number in the hundreds and are mostly located in the Central region.

In addition to oil companies, there are also about 20 jobbers in the country. These are independent, private Thai businesses who buy large product lots wholesale and then resell quickly at low margins to retail outlets or large consumers. Majors depend on jobbers when they want to quickly increase their sales. Independents also sell most (60-70%) of their products through jobbers; most of the products traded through jobbers are HSD and LPG. However, some regular and premium gasoline is sold to these wholesalers.

There are also a large number of transporters who own trucks and barges. Some of these transporters are contractors who identify themselves with major oil companies, but there are also those who operate independently. Several jobbers are also in the oil transport business.

There are two main groups of retail dealers. First, there

are dealers who finance the entire investment (including land and building); these retailers usually affiliate themselves with one major oil company who supplies them with oil products. However, the dealers are also free to buy from other suppliers, particularly jobbers. A retailer will occasionally switch affiliation to another oil company if offered better business terms. All but five of the 530 PTT retail stations are of this type.

Second, there are dealers who lease retail stations from major oil companies. Under these circumstances dealers must meet oil company sales targets or the lease is terminated. These types of stations are difficult for jobbers to penetrate and more than half of the retail stations in Thailand are of this type.

There are also countless numbers of "non-conventional" service outlets using hand-operated drum-pumps. These outlets (whose main customers are motorcyclists and farm machinery operators) are located mostly in rural areas, and dispense smaller lots of fuel from 208 litre drums. Selling prices are normally much higher than the government controlled prices. The main suppliers of these drum-pump outlets are nearby formal dealers or jobbers.

Importing

In 1987, oil product imports accounted for 28% of the total oil consumption in the country and the total amount imported was 3,615 MMLT. 74% of the total was HSD which is strictly controlled by a quota system restricted to qualified importers consisting of the four majors, Mobil, and five independents.

The main source of HSD imports is Singapore. Imports of other oil products, except fuel oil and jet fuel, are also controlled by the government.

LPG Trading

The demand for LPG in 1987 was 680,000 tons. Local refineries supplied 150,000 tons, GSP 400,000 tons, and 120,000 tons were imported. About 70% of this LPG went to cooking, 20% went to automotive use, and 10% was for industrial consumption.

The wholesale supply of LPG is monopolized by the PTT who owns and operates seven LPG distribution centers throughout the country. These centers supply LPG to wholesalers (majors and independents) at the same price. This unitary pricing scheme is possible because the government subsidizes the transportation costs of LPG to these centers. In addition PTT also owns a gas separation plant having an LPG production capacity of 450,000 tons per year.

At the retail level, however, there are four major companies and three independents engaging in the business; PTT has the largest market share (19%). However, LPG is the only product for

which independents have a significant trade volume; their combined market share was 37% in 1987.

2. Government Regulations and Controls

2.1 Price Regulations and Controls

Oil prices in Thailand are tightly controlled by the government at all oil transaction stages. First, ex-refinery prices are controlled and then taxes and the Oil Fund levy are added to obtain product acquisition costs. Prices of imports are also controlled in the same manner.

In order to obtain the Bangkok retail price, a controlled marketing margin is added to the product acquisition cost as derived above. The controlled retail price for all other regions is obtained by adding fixed transportation allowances to the Bangkok price.

Ex-refinery Prices

Each week, the government sets ex-refinery prices based on the preceding week's average posted prices of the six refining companies in Singapore (Shell, BP, Caltex, Mobil, Esso and Singapore Refining Corporation). The government then adds allowances for freight, insurance and losses. Finally, appropriate taxes are added to obtain the ex-refinery price.

The government has the right to change the above pricing structure without prior notification to refiners.

Import Prices

Each week the government determines the CIF Bangkok for all oil products except gasoline based on the previous week's average-spot prices in Singapore. The gasoline price is determined by using a combination of average-spot and minimum-posted prices. However, this pricing structure can be changed without prior notification to importers.

Tax and Oil Fund Levy

Presently, the government imposes about a 50% tax (excise and municipal) on the retail price of gasoline. The tax rates on HSD, kerosene and fuel oil are 47%, 33% and 22%, respectively. Note that the tax rate on HSD is now close to that of gasoline. In the past, the government set the tax rates on HSD at 10-15% (compared to 30-40% on gasoline) in order to keep the price of HSD low. This practice caused a severe distortion in the consumption levels of the two fuels.

The government began to collect an excise tax on fuel oil in 1986. Past government policy was to keep the price of fuel oil low in order to protect local manufacturing industries.

Furthermore, the government also protected the power generation sector from any high fuel oil price that would result in high electricity prices. As a result, during some months between 1981-1985, the retail price of fuel oil was lower than its border price.

However, the power sector and some major manufacturing industries have now diversified their energy consumption; they now use alternative fuels (like lignite and natural gas). Thus there is no need for the government to subsidize the price of fuel oil. In addition, the government taxes fuel oil in order to promote the consumption and development of indigenous resources like lignite and natural gas.

Through the Oil Fund reserve the government continues to subsidize users of cooking LPG. Furthermore, the government also subsidized HSD throughout 1987 in order to keep the price 2.6 Baht/litre lower than gasoline. As stated above, the government has always used the Oil Fund levy, in conjunction with taxes, to manipulate retail oil prices.

Marketing Margin

The government sets a marketing margin for each controlled product which is intended to cover an oil company's operational costs (storage, overheads and normal profit). Also, for products typically sold through retail outlets, the government provides an allowance for retail dealer margins. However, the government does not specify the margin's split between the oil company and its dealers.

The marketing margin adjustment is a politically sensitive issue and the government has rarely allowed oil companies higher margins; since 1980, margins have been raised only twice. Indeed the poor margin is one of the reasons behind unscrupulous illegal trading activities.

Distribution Allowances

The government has established a set of up-country distribution allowances to cover oil transportation costs to all districts in Thailand. Cost estimates are achieved by combining government-derived transportation system costs with cost information obtained from oil companies. However, transportation allowances do not truly represent actual transportation costs incurred by the oil companies. For example, allowances for the Southern region are based on product transportation costs from Bangkok, whereas oil companies, in fact, import their products from Singapore and get delivery at Southern depots. Thus, the government transportation allowances for the South have been too high for some products.

2.2 Non-Price Regulations and Controls

In addition to price controls, the government has also established a large number of regulations to control the non-price aspects of oil company operations which can be summarized as follows:

Refining

There are three main groups of non-price regulations concerning the refining business.

1. The construction of a new or expanded refinery must be approved by the government. The oil company must submit its expansion or construction plan to the Ministry of Industry. However, the final approval will come from the National Energy Policy Committee and the Cabinet. Currently, the government has a commitment to allow TOC to expand its refining capacity in two stages which will eventually allow TOC to have a refining capacity of 183,500 B/D by the mid 1990s. The government is also permitting its Bangchak refinery to revamp. This will result in an 85,000 B/D capacity. Thus, the private sector will be allowed to expand or build a new refinery in the country only when there is a future shortage of production capacity--after taking into consideration the above expansion programs. It is government policy to prevent an excessive refining capacity in Thailand.

2. The second group of laws concerns oil reserve requirements. Local refineries are required by law to keep a minimum of 4% crude oil in reserve (in addition to their normal working stock) for reasons of supply security. (The reserve amounts to 15 days of consumption.) In the past, refiners were also forced to keep product reserves, but this regulation was abolished in 1986.

3. The government has also imposed stringent quality controls on oil products refined in the country to conform to international standards. In addition, there are also contractual agreements requiring oil refineries to pay "special benefits" to government.

Importing

An oil company intending to import controlled oil products must receive a license from the government. To qualify for the license, the company must be able to meet government requirements concerning minimum trade volume (100,000 tons of HSD or LPG per year), minimum oil storage facilities, and minimum oil reserves (3%).

In addition, the government has also established a quota system to control the level of oil product imports (HSD). Each company is allocated a designated portion of the HSD import quota based on the trade volume of the three previous quarters. In

addition, the oil company is obliged to purchase HSD from PTT on a monthly basis in an amount proportional to the import quota. The amount of quota available for allocation is net of PTT imports under G-to-G agreements.

The government's pricing policy as well as its attempt to control imports have resulted in a number of problems. Many independents were unable to meet government requirements; licenses of five independents were revoked when they failed to construct oil storage facilities within the designated time period (11 months); five other independents were found in violation of the 3% reserve requirement (and thus were subject to license terminations); and some oil traders do not regularly import during the period. The consequence is that actual oil imports fall short of the quota and this leads to supply instability.

Oil Trading

The law stipulates that an oil trader with a combined sales volume of all fuel products exceeding 100,000 tons per year must apply for a trading license--and, the law implies that a licensed oil trader must meet all of the requirements that apply to importers as stated above. There are currently eleven licensed oil traders in the country. Mobil has no license since its annual trade volume is less than 100,000 tons.

It usually takes one to one-and-a-half years for the government to process an application for an oil trading or import license and if the license is revoked, the company must wait at least one year before it is eligible to reapply.

Retailing

A license is required for each retail outlet. In Bangkok there are as many as fourteen government agencies controlling the retail business and this includes the evaluation and approval of application forms. For this reason, it may take between 165-450 days to process each application. There are several regulations controlling the location, size and safety standards of retail outlets. Some of these rules were written decades ago and are not appropriate for modern business practices. There is also a regulation that prohibits a private retail outlet from locating within 500 meters of an existing PTT station. This regulation raises the question of unfair treatment to private oil companies.

3. Barriers to Entry, Competition and Industry Conduct

3.1 Barriers to Entry

In the refining business, the barriers to entry (other than those created by the government rules and regulations stated earlier) are related to four factors. First, the high capital investment cost of the refining sector makes it difficult to

enter the business. In Thailand, a new greenfield 85 MBD complex coastal refinery may cost \$480 million (including the jetty and the submarine pipelines) to build.* Costs may vary according to location and refinery configuration. Thus financing is probably one of the biggest barriers to entry.

Second, the economy of scale is also an important determinant of refinery economics. Generally, a large refinery tends to be in a better economic position than a small one. Furthermore, a refinery must be able to run at full capacity. In Thailand, government policy controlling imports has helped the economy of local refineries by allowing them to fully utilize their capacities. If, however, this policy changes to a free import policy, it may also be profitable to operate smaller refineries (that can maximize their capacity) in Thailand.

Third, the nature of the local product market is also important. If the market is sizeable and dynamic and growing, there is more scope for new entrants. This is also the case in Thailand where petroleum demand is expected to grow at 5% per year until 2001.

Finally, the ability to procure crude and other oil products at low prices is also important. In this regard, a MN major may have a relative advantage over an independent oil company.

Financing the investment (including distribution and marketing) is probably the main barrier to entry into the oil business. In Thailand, the estimated cost of establishing a HSD importing business (obtained from oil company interviews) was at least 160 million baht in 1986. The cost includes a HSD terminal, a small truck fleet, 15 retail outlets and working capital. The cost may vary with location since land cost is probably one of the largest items of the total investment.

It is quite evident that large, well-established oil companies usually qualify for credit and loans from both domestic and internationally organized money markets. Furthermore, compared to smaller firms, they can borrow from domestic banks at very low interest rates. Indeed, small private Thai businesses often have to rely on self-financing and unorganized money markets. They often do not qualify for loans from formal institutions due to their inability to meet necessary requirements (like collateral).

The intense level of competition may also be an important barrier to entry, particularly for retail and jobber businesses. Competition cuts the margin from its existing small level and makes investing in the retail or jobber business unattractive, particularly in areas like Bangkok where the cost of land is high. A newcomer may find it difficult to enter the retail business in many locations partly because of laws and regulations (like the minimum 25 meter road frontage) that make investment costs unnecessarily high.

* Estimated by Shell.

3.2 Industry Conduct

As stated above, the government has placed stringent controls on all aspects of oil industry operations. Prices are controlled at the refining as well as the retail levels and oil product imports are regulated. There are also many rules and regulations for controlling entry into the oil and refining business in Thailand which inevitably affect oil company operations as well as conduct.

3.2.1 Refining

Currently, there is very little competition among local refineries for business. Each refinery more or less sells its products to a "captive" market. TOC sells its products to Shell, Caltex and PTT under the lifting agreement. Esso only sells mainly to its network. Until recently, based on an unwritten agreement, Bangchak sold only to PTT. Independents had no local supply sources and had to rely mainly on imports. This may be changed, however, since Bangchak have been able to sell some of its products (not lifted by PTT) to any oil company. (Bangchak signed an off-take agreement with PTT in late 1987.)

Local refineries do not compete strongly with those in Singapore either. In order to protect local refineries, government policy ensures that products are imported from Singapore only when they cannot be produced by local refineries in sufficient quantity. However, the government bases and sets local ex-refinery prices on Singapore-posted prices. This policy is aimed at increasing the efficiency of local refinery operations.

According to the above pricing structure, the profitability of local refineries depends significantly on their ability to acquire low-price crudes. TOC procures its crude through its shareholders. Crude purchases for Bangchak are made by PTT. Esso manages its own crude procurement through its affiliates. The profitability is also determined by the efficiency of the refinery.

When the world oil price collapsed in 1986, local refineries tried to minimize their risk by diversifying the sources of crude supply. They also diversified purchasing methods by abandoning long-term contracts on GSP since the situation was inappropriate for long-term commitments. The basic purchase agreements were spot, formulae, or net back deals. For security reasons, however, the government also continued to purchase small amounts of crude (20,000 B/D) on a G-to-G basis. The crude was refined at Bangchak and TOC.

Responding to the changing domestic oil demand pattern (toward more middle distillates and less fuel oil) local refineries also tried to adjust production accordingly. Esso and Bangchak, which are simple refineries, changed their crude slate by buying less from the Middle East (which typically yields high

fuel oil) and more from the Far East (which gives high yields of middle distillates). TOC, on the other hand, continued to purchase from the Middle East in the early 1980s and later, in the mid 1980s, increased its Far East crude procurement.

TOC and Bangchak have to refine government-to-government crude (including Phet and condensate) which have affected their profitability to a certain extent. This is because the G-to-G price often stayed above the spot price after the second oil crisis. Esso, on the other hand, has rarely been asked to refine G-to-G crude.*

Esso is the only integrated oil company in Thailand and its operations have been profitable. Unlike TOC, Esso is not bound by any contract to hand over its refinery to the government after a certain period of time. Also, unlike the other two refineries, Esso can import oil products through its marketing arm. Thus Esso is the only company in a position to benefit from a fully integrated operation. This has also raised a question regarding Esso's use of benefits to gain competitive strength in its non-refining sectors, especially in marketing.

3.2.2 Distribution and Marketing

In the downstream oil sector, oil company revenues depend on the marketing margin--not on the retail price. In other words, retail prices can be adjusted upward or downward without having a direct impact on oil company profitability. Since the marketing margin is fixed by the government and is the same for everyone, it is interesting to know how oil companies compete for business.

The ability of a company to compete depends on two factors. First, since unit revenue is fixed, profitability must be determined by unit cost. The company having "competitive strength" is the company with a relatively low unit cost. Second, competitive strength is also determined by the oil company's ability to gain an "extra margin" in excess of the amount allowed by the government. This can be done by making "import gains" (importing at prices lower than the government's established level) or "transportation gains" (transporting products at prices lower than the government's set levels). Illegal practices (like adulteration) are another way some oil traders make the extra margin. An integrated oil company also has an opportunity to gain an extra marketing margin by transferring revenues from its other activities.

Oil companies use the marketing margin to "finance" oil business competition. This competition can take two major forms: price and non-price competition.

* Esso was asked to refine 150,000 BBL G-to-G Miri Crude in 1979.

Price Competition

In Thailand, price competition begins at the wholesale level. The oil company normally sells its products to three groups of customers: wholesalers (or jobbers), industrial end-users, and retail outlets. Sale to jobbers is probably the most competitive part of the business. It is also the quickest way for an oil company to increase its sales volume. However, the company must also "cut" the selling price significantly in order to provide jobbers with the incentive to buy a large volume from the company. Price competition can take on the following forms.

- o Discounts. This is direct price cutting where an oil company may reduce the wholesale price for jobbers who place high-volume orders or cash payments.
- o Rebates. This is another form of discount where credit on next purchase is given to jobbers who meet sales volume targets set by the company.
- o Credit. Some customers may receive credit terms from the oil company. Jobbers may obtain 7-30 days credit.

It has been estimated that jobbers may be able to buy a given product at 10-15 satangs lower than the normal wholesale price. They are extremely price sensitive and will buy from whomever gives them the lowest price.

The oil company does not usually give discounts or rebates to industrial customers. However, the company gives long-term credit (30-45 days) instead. Oil company direct sales to retail outlets are made on a cash basis. However, retailers may receive rebates if they can meet sales volume targets.

The second most competitive part of the oil business occurs in sales from jobbers to their customers. Here again, price cutting is prevalent. Jobbers usually want to make their sales as quickly as possible to minimize the interest cost on their short-term borrowings and to take advantage of credit terms given by the oil companies. Jobbers do not usually give credit to their customers and prefer to cut prices instead.

As for retail sales, station owners do not cut pump prices because doing so will significantly affect their margins. They prefer to use a non-price measure like a giveaway (which has a high perceived value in the customer's eye) yet it costs the dealer much less than cutting prices. However, dealers do give credit to some fleet customers. There is also price competition from retailers (or jobbers) to unconventional outlets who dispense regular gasoline (and HSD) from hand-operated drum-pumps. Drum-pumps outlets, located mostly in rural areas, sell products to farmers and local patrons at a price often higher than the controlled level. There are countless numbers of these drum-pumps outlets in the country.

Non-Price Competition

Non-price competition among major oil companies is limited to retail and industrial sales only. In the retail business, competition can take on the form of advertising, sales promotion, giveaways and services. Non-price competition in the retail business can be very intense. Each of the major oil companies spends tens of millions of baht each year on these activities. Oil companies have also recently been competing strongly on the quality of their products (usually gasoline and lubricants) as well as their services to customers (like the cleanliness of service stations and the promptness of attendant service).

Non-price competition for industrial sale usually comes in the form of services, product quality and reliability of supply. There is also some price competition in this business as well. This is the business segment into which independents and jobbers have difficulty penetrating.

There is virtually no non-price competition among jobbers or independents.

3.2.3 Market Controls

We have found no evidence to suggest that there is a "dominant" firm in any particular oil product or region of the country. On a regional basis, Shell, Esso and Caltex (who bought Summit) compete strongly for Bangkok retail sales. Shell has the largest network share. PTT, on the other hand, has only a few retail stations in Bangkok. PTT's strength is in up-country areas; in the Central, the North and the South it has the largest network share. Esso is strong in the Northeast and Shell is highly competitive in the Easterns region. However, as stated above, there is no single company dominating any particular region.

There is also no dominant firm for any particular oil product line. Each of the four major oil companies is able to maintain between a 20-30% market share in gasoline and HSD--the two most important retail products. Furthermore, the major oil company market share is even smaller in LPG (10-20%) where independents are highly competitive.

PTT monopolizes the wholesale trade of LPG through the government-supported distribution cost subsidy. It also has a large fuel oil market share (nearly 40%); however, many PTT fuel oil sales are made to EGAT with whom PTT has a monopolistic trade relationship. The second largest fuel oil trader is Esso (over 30% of the market share) followed by Shell and Caltex (20% and 10% of the share), respectively.

4. Conclusions Regarding the Competitiveness of the Oil Industry

As noted above, with only three major refiners in the country, it may be concluded that there is a high degree of concentration in the country's domestic product supply capability. These three refineries supply about 75% of the demand (the rest is imported) which, when compared to the United States (where the top four account for about 35 to 40% of the market) seems high. Further, local refineries mainly supply their products mainly to a restricted group of customers. Thai Oil mainly supplies Shell, Caltex and PTT while Esso mainly supplies its own network (with some small sales made to Shell and Caltex). Bangchak sells most of its products to PTT and the rest to any buyer--including independents. The selling price is generally the ex-refinery price set by the government.

As indicated above, local refineries do not have to directly compete for business under the current offtake arrangement system. These refineries do not strongly compete with refineries in Singapore either, since the importing of main products is allowed only when there is a supply shortage at local refineries.

Figure 1 shows that there is low competition (price/non-price) for oil product sales from refineries (or from imports) to oil traders.

However, the intensity of competition (from oil traders to consumers) is relatively strong when compared to the above trading. The level of price competition is probably most intense for sales of HSD (and perhaps gasoline and LPG) to jobbers (see Figure 1). As discussed, jobbers who buy large quantities of fuel usually receive large price discounts from majors as well as independents. Jobbers need heavy discounts since they have to compete with other jobbers for sales to large users and retailers. There is no non-price competition for oil trader sales to jobbers, however.

Oil traders also make direct sales to large users (like fishing, bus and truck fleets). Here, price competition is usually very strong, since traders have to compete, not only among themselves, but with jobbers. There is no non-price competition in this business.

Only the majors sell to major industrial customers and there is some price competition among majors in terms of discounts and long credit terms. However, non-price competition is usually more intense. Good services, high product quality and supply reliabilities are significant factors determining sales in this business.

Retail outlets usually buy from majors or from jobbers. There is very small sale competition within a major company's own network (especially to company-owned outlets). However, major companies often give price discounts to retailers who also do

wholesale trade. There is also price competition for sales from jobbers to retail stations (mostly dealer-owned outlets).

Despite strong price competition in other segments of the business, retailers tend to sell at controlled retail prices to consumers and prefer to use non-price measures to increase their sales.

As shown in Figure 1, price competition tends to be strong in wholesale areas where there is no price control. On the other hand, in the area of retail sales (where there is price control), retailers tend to fix the price at controlled levels. It is conceivable that by deregulating retail oil prices, consumers will gain from intensified price competition in this activity--in the same way that large users and some retailers now benefit.

The same conclusion might also be reached regarding sales from majors to large industrial customers where prices are controlled. At present, price competition in this business is less intense when compared to non-price measures.

Further, at present, the business is not competitive between sales from refineries to major oil companies where prices are controlled. The deregulation of ex-refinery prices, coupled with oil import decontrol, will significantly improve the level of price competition in this part of the business and will greatly benefit major oil companies as well as independents.

5. Some Policy Recommendations

It is evident from Figure 1 that the oil industry in Thailand is less competitive at the two ends of the business--at one end, in sales from refineries (or importers) to oil companies and, at the other, in retail sales to consumers. Thus, policy measures should be adopted to promote competition in these activities. Some of these measures are as follows:

5.1 Refining

- o The government should encourage more direct competition among local refineries. One of the ways is to encourage more participation from the private sector, particularly from newcomers or from companies operating in the downstream, in investing in future refinery capacity expansion. However, this will need clear, government long-term policy and procedures for future refinery expansion. The government should make the timing and the magnitude of possible new capacity requirements clear. (that is to study market size and proper size of a refinery). It should also clearly specify the criteria and procedures for selecting investors for this new

capacity.

- o Further, the government should have a policy that promotes petroleum refining efficiency. This is one of the most important policies (other than pricing and taxation stated below) that must be considered if the industry intends to compete directly with refineries in Singapore in the future. Investment in high technology should be encouraged by providing investors with BOI privileges. The government should also allow a refinery to operate at its maximum capacity expansion through lowest debottlenecking should be encouraging.
- o A policy to allow Bangchak to make direct sales to any oil company should be encouraged as this will promote competition in the product supply business.
- o A refinery should procure its own crude. The government should also have a clear G-to-G policy (on procurement of G-to-G crude, who should refine it, and at what price). G-to-G crude, including Phet, to a certain extent, has had an impact on crude optimization and, thus, product yields of TOC and Bangchak.

5.2 Oil Imports

- o Oil imports should be deregulated, i.e. the quota system should be abolished. Licensed oil traders, as well as refiners, should be free to import oil products. This means that rules and regulations concerning entry into the oil business should be reexamined. Further, license application procedures should be revised so approval is less dependent on the "judgment" of government officials. Further, entry rules (such as required tankage construction and oil reserves) should be revised and strictly enforced in order to weed out irresponsible traders.
- o As stated above, the government should review its G-to-G product-import and barter-trade policies, especially in the light of future import deregulation.

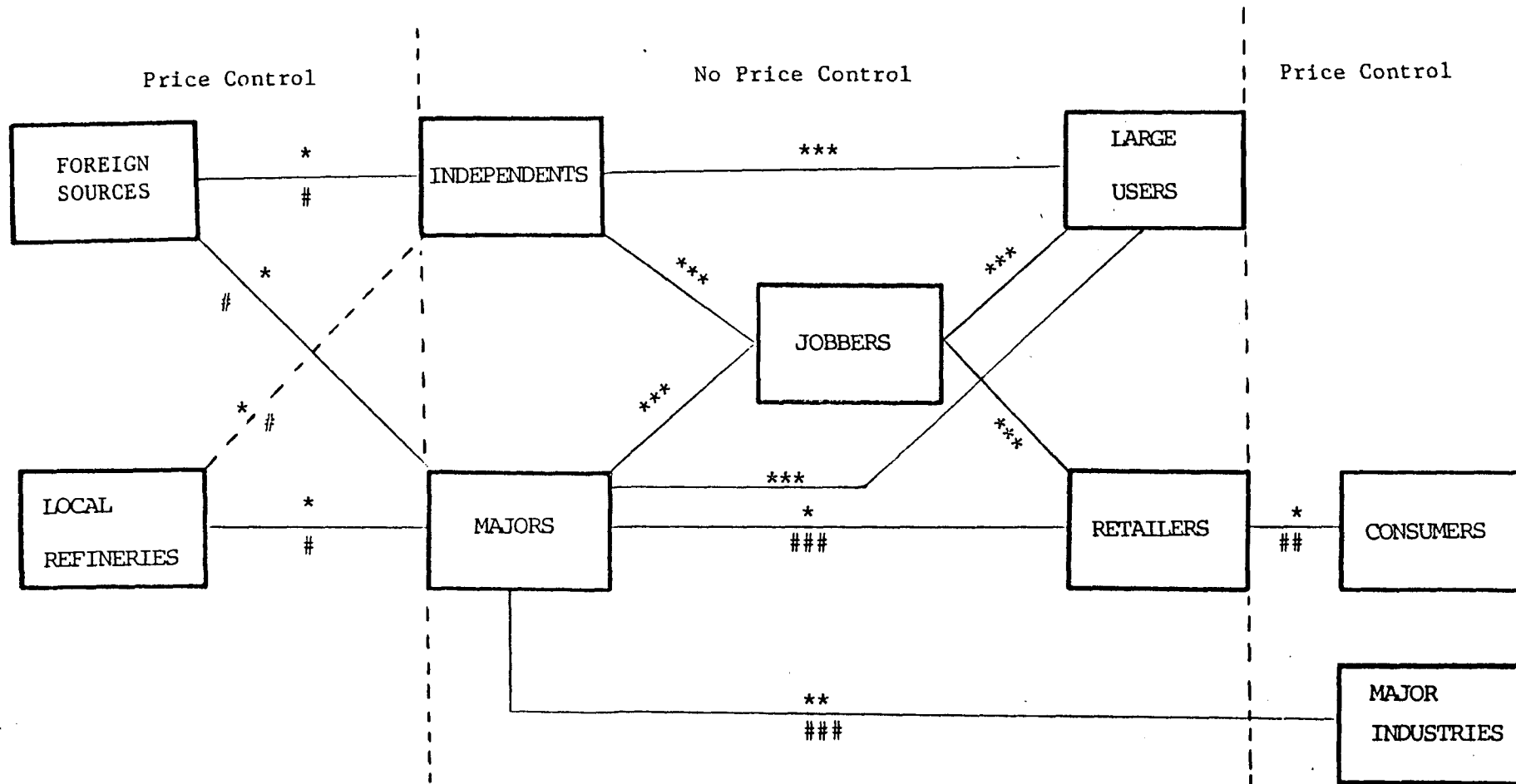
5.3 Other Rules and Regulations

In addition to the above policy recommendations, the government should also examine other oil business rules and regulations in order to promote competition--before it proceeds to deregulate oil prices. Some of these regulations are as follows.

- o The rule requiring a refinery to hold mandatory crude oil reserves should be reexamined. The reserve requirement has added an extra cost to refiners and, if the industry

Figure 1

Competition Intensity in the Thai Oil Industry



LEGEND:

Price Competition (*)

- * not competitive
- ** competitive
- *** very competitive

Non-price Competition (#)

- # not competitive
- ## competitive
- ### very competitive

is deregulated, will hamper their ability to compete.

- o The rule concerning reserved oil products should also be reexamined--in particular, the law has created an unfair advantage for an integrated oil company, like Esso, which can avoid tax payments by holding legal reserves at its refinery. In our opinion, the law should be revised such that the unfair advantage is eliminated.
- o The rules concerning retail-business entry conditions should be revised. This includes the revision of retail outlet size and location restrictions. Fire and safety standards should be revised to conform to modern business practices. Further, the procedures for obtaining licenses should be streamlined in order to speed up the licensing process.
- o The regulation prohibiting construction of a retail station within 500 metres of an existing PTT outlet should be abolished. The regulation provides unfair advantage to PTT and affects competition in retail business, particularly that in smaller cities and towns.
- o Furthermore, the regulation allowing PTT to monopolize the sales of oil products to government agencies should be reexamined. Allowing other oil companies to sell their products to the government agencies will result in improved oil distribution efficiency and lowered selling prices to government because of competition. Furthermore, the law requiring government-owned vehicles to purchase fuels from PTT outlets has sometimes resulted in unnecessary fuel and time losses in travelling since there may not be a PTT outlet nearby.
- o The government procedure controlling the licensing of retail business should be streamlined. Presently, there are as many as fourteen government agencies involved in the processing of a license application in Bangkok area. The decision process often takes as long as one to one-and-a-half year.
- o Further, the regulation controlling the size of a retail outlet should be reexamined. Presently, a retail outlet must have a minimum 25 metre road frontage width. In addition, the office building in the outlet must locate at least 14 metres from the road. Thus, a retail station must have a large land area in order to conform with the law. This makes retail investment, particularly in Bangkok, unnecessarily high.

5.4 Pricing and Taxation

- o Eventually, the oil price should be deregulated in order

to promote industry-wide price competition. As shown in Figure 1, there is very little price competition for sales from refineries (and imports) to oil companies--and from retailers to consumers. These are the areas on which the government imposes price controls. However, before proceeding to decontrol prices, various measures have to be implemented to ensure oil industry competition. Some of these measures have been discussed above (Sections 5.1-5.3). During the period of time required to implement these measures, the government should also proceed to improve the efficiency of the existing pricing structure, and try to eliminate consumption distortions. This can be done by imposing equal tax and oil fund levies on substitute oil products. In the past, the significantly different tax and oil fund levies that were imposed on these oil products caused much consumption distortion.

- o Further, the government should also equalize import and ex-refinery prices (excluding taxes and the oil fund). This would help promote efficiency in oil product procurement. That is the government should try to establish ex-refinery prices to be as close as possible to actual trading prices of refineries in Singapore. This may require an in-depth study of how refinery prices in Singapore are set, however.
- o Finally, retail prices and ex-refinery prices should be deregulated. However, this should happen only when the various measures that promote competition have been implemented. Further, there is also a need for a study that will help determine proper implementation stages and timing of price deregulation-- before it can be launched.

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PART I

INTRODUCTION

Chapter 1

Introduction

Thailand has witnessed impressive economic growth--in the range of 7 to 8% per annum--in the past two and a half decades. This growth has been accompanied by a tremendous increase in energy consumption (especially of petroleum products) because the country is being transformed from an agro-based economy to one in which the manufacturing sector plays an increasing role. The changing structure of the Thai economy and this growth of income have led to a considerable increase in the demand for energy. Petroleum consumption rose from 23 MBDOE (in 1960), to 101 MBDOE (in 1970) and to 158 MBDOE (in 1973) when the first oil shock began. Due to this continuing rapid development and transformation process (and despite skyrocketing oil prices) oil consumption maintained levels as high as 223 MBDOE in 1979--representing 88.3% of total modern energy demand. About 90% of this petroleum demand was met by imported oil, underscoring Thailand's high dependence on imported petroleum.

During the period of the two oil crises, we learned that there was an urgent need for medium- and long-term strategies for energy demand management and the development of an indigenous supply of oil. The Fifth Five-Year Economic and Social Development Plan made it clear that a most important energy target is to reduce Thailand's dependence on imported oil. And, throughout the Fifth Plan Thailand has been somewhat successful in coping with energy problems. Imported oil fell from 220.8 MBDOE in 1981 to 181 MBDOE in 1986, constituting 88.4% and 53.6% of total consumption.* Although progress in energy demand management and structural adjustment was achieved during the Fifth Plan, there is still much room for improvement since energy is a very important sector and oil imports continue to constitute a major portion of Thailand's imports. In addition, it has been projected that after 1986 the volume of oil imported may start to rise again--at first moderately--but the pace will quicken toward the end of the 1990s. Unless appropriate energy strategies are pursued to manage energy demand and sustain the development of the energy supply, the dependence on imported energy is projected to be in the range of 48% and 63% (depending on the gas scenario).** In addition, there will still be significant problems of efficiency in petroleum production and energy pricing; the retail price of various petroleum products has induced shifts in the pattern of petroleum consumption; and the subsidization of some petroleum prices through the Oil Fund continues to appear excessive.

* National Energy Administration. "Thailand Energy Situation." 1981 - 1986.

** NESDB. "Issues and Policy Directions for Energy Planning." May 1985, p.54-61.

The aim of energy policy (as stated in the Sixth Five Year Economic and Social Development Plan) is to ensure the efficiency of energy use and the effectiveness of energy resource utilization. The first objective of energy policy is to provide mechanisms to ensure low-cost energy to benefit both the Thai people and the Thai economy. A strategy of diversification in both energy supply and demand can address the problems of both security and low cost. Appropriate pricing of energy is essential for its efficient use. Further, appropriate government policies toward investment in the energy sector are very important since policies have implications for financial and fiscal stability and sustainable economic growth. Finally, there is a need to streamline government policies and controls over the energy sector.*

Any future energy strategy must be consistent with the overall economic growth and financial stability theme of the Sixth Plan. And appropriate energy pricing for various types of petroleum products as well as other sources of energy (gas, lignite, coal, and electricity) is fundamental to energy policy.

As far as energy pricing is concerned, it is aimed, in the Sixth Plan, at correcting the distorted petroleum product price structure. The Thai government, trying to cope with skyrocketing prices of imported oil and trying to stabilize economic and political circumstances, used taxes and the Oil Fund levy for many years. This resulted in a distortion of pricing structures--especially for petroleum products. Compared to deisel, the retail price of premium gasoline has been kept at a high percentage above the imported price due to different tax rates and the Oil Fund levy. In addition, the Oil Fund has historically postponed price adjustments in periods when the international oil market was strong and the Fund continues to subsidize LPG, HSD, fuel oil and kerosene. For many years, these practices have led to a huge Oil Fund deficit. More importantly, this distorted price structure has resulted in the inefficient use of fuel, a severe imbalance in the petroleum product demand structure, and problems with potential domestic refining. Examining the distorted price of gasoline and deisel, for example, shows that it caused a surplus of gasoline in the country while imported diesel continues to grow very rapidly.

Correcting this distorted price structure is one of the major objectives of the Sixth Plan. The price structure should be adjusted slowly, step by step, taking advantage of the present weak international oil market with the aim that adjustments will reflect the true opportunity cost of oil. The final objective may be a price structure that closely corresponds to the international price structure--as a result of future oil industry deregulation.

* Ibid, p. 18-19.

Objectives of the Study

The study had four main objectives as follows:

1. To provide and analyze the general background and structure of the oil industry in Thailand including:
 - o refineries;
 - o importation, distribution and marketing; and
 - o LPG trading.
2. To identify and analyze the effect of price and non-price government regulations and controls on the oil industry.
3. To analyze the nature, characteristics and behavior of economic agents engaging in various activities (from refining to retailing) and the implications on competitiveness of this industry.
4. To provide observations on competitiveness of and barriers to entry into the industry that will, in turn, provide guidelines for government oil industry deregulation policy.

Outline of the Study

The report is divided into six major sections.

The first section (Chapter 1) is the introduction which gives an overview of the situation, describes the scope of the project and summarizes the contents of the report.

The second section (Chapters 2, 3 and 4) provides an analysis of the overall structure of the oil industry. Chapter 2 presents an overview of Thailand's refinery, product supply, and distribution systems. Detailed analyses of refining and the import and distribution system, are given in Chapters 3, and 4, respectively.

The third section (Chapters 5, 6 and 7) aims at examining all relevant government rules and regulations affecting the oil industry and their implications on competitiveness. Chapter 5 presents the government's institutional structure in the oil industry. Chapter 6 deals with price regulations and controls applied to various activities and their implications for industry competitiveness. Non-price regulations and controls are discussed in Chapter 7.

The Fourth section (Chapter 8) examines the characteristics of the industry and the implications on barriers to entry. Chapter 8, included in section 4, analyzes some aspects of barriers to oil industry entry and prospects for new entrants.

The fifth part (Chapter 9) is concerned with industry conduct in various types of oil activities. The objective is to analyze the behavior of oil companies in various activities--from refining to end use--to provide observations on competitiveness

of the industry.

The last section (Chapter 10) presents conclusions and discusses whether, given the current structure and the rigidity of government price and non-price regulations, there is any evidence that the conduct of the oil industry conforms to competitive behavior.

PART II

INDUSTRY STRUCTURE

Chapter 2

Overview of Thailand's Refining, Product Supply and Distribution System

This section provides an overall picture of the downstream petroleum sub-sectors of Thailand and is intended primarily to impart an understanding of the relationships among segments of the industry, degree of vertical integration and intercompany linkages. An overall petroleum balance and profitability summary also provide additional volumetric and financial perspective on the industry as a whole. The structure of each individual segment of the industry is analyzed in more detail in the sections which follow.

2.1 Petroleum Balance 1985

Tables 2.1 (a) and (b) provide a total balance for petroleum in Thailand, 1985 in million litres and thousands barrels per day (MBD). As indicated total products consumption amounted to some 212 MBD. Indigenous production of crude, condensate and LPG accounted for some 20 per cent of primary supply. Refinery runs amounted to 162 MBD while oil product imports were 44 MBD.

2.2 Overall Structure, Linkages and Interrelationships

The present structure of the refining, product supply and distribution system is outlined in Figure 2.1. As indicated there are three major refiners, Bangchak, Thai Oil, and Esso, who run imported crude as their primary feedstock. Both Bangchak and Thai Oil also run relatively small amounts of domestic crude and condensate; Bangchak also takes in a small amount of natural gasoline (pentanes plus) from the Gas Separation Plant for blending into its gasoline pool. In addition to the three major refiners there is a small topping plant owned by the Defense Energy Department running its "Fang" domestic crude. It produces a small amount of product for DED's local use and transports a surplus unfinished product stream to Bangchak for final processing. As noted there have been a few crude and product exchanges among the refiners. While the crude exchanges appear to be quite a regular optimization measure by Bangchak, the product exchange has been limited to exceptional, emergency supply, circumstances.

Table 2.1 (a)

Thailand Petroleum Balance 1985

Unit : Million Litres

	Crude	Condensate	Natural Gasoline	LPG	Finished Oil Products	Line Total
Indigenous Primary Production	1,259	829	92	635	-	2,815
Imports	7,851	-	-	220	2,565	10,636
Total Primary	9,110	829	92	855	2,565	13,451
Refinery Production	(8,706)	(314)	(92)	247	8,865	-
Refinery Fuel and Loss	(392)	-	-	-	-	(392)
Total Secondary Supply	12	515	-	1,102	11,430	13,059
Sales/Consumption	-	-	-	1,060	11,259	12,319
Exports	-	515	-	-	46	561
Stock Build	12	-	-	42	125	179
Total Disposition	12	515	-	1,102	11,430	13,059

Sources : Oil and Thailand 1985, and Thailand Energy Situation 1985,
National Energy Administration.

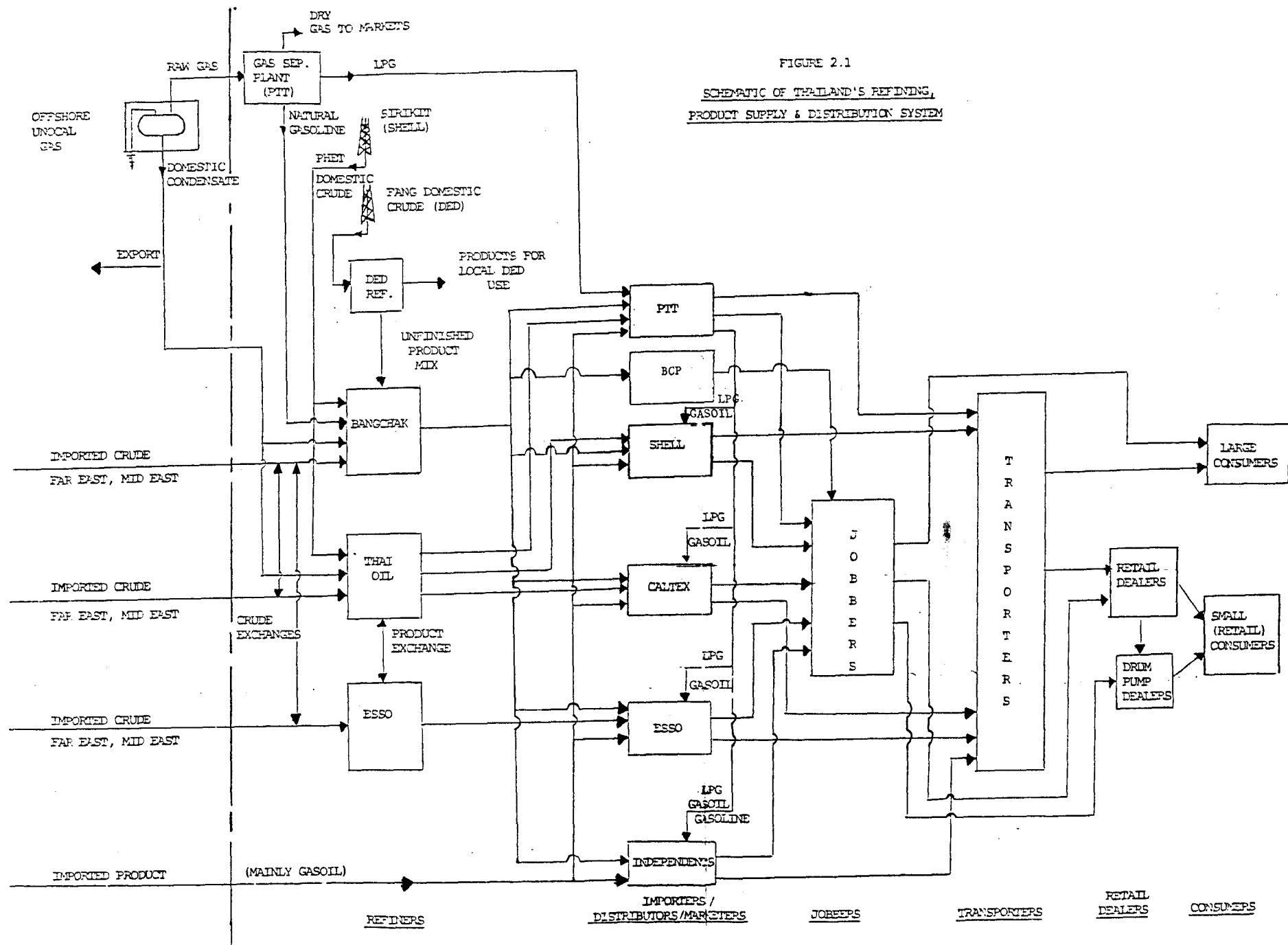
Table 2.1 (b)

Thailand Petroleum Balance 1985

Unit : Thousand Barrels per Day

	Crude	Condensate	Natural Gasoline	LPG	Finished Oil Products	Line Total
Indigenous Primary Production	21.7	14.3	1.6	10.9	-	48.5
Imports	135.3	-	-	3.8	44.2	183.3
Total Primary	157.0	14.3	1.6	14.7	44.2	231.8
Refinery Production	(150.0)	(5.4)	(1.6)	4.2	152.8	-
Refinery Fuel and Loss	(6.8)	-	-	-	-	(6.8)
Total Secondary Supply	0.2	8.9	-	18.9	197.0	225.0
Sales/Consumption	-	-	-	18.2	194.0	212.2
Exports	-	8.9	-	-	0.8	9.7
Stock Build	0.2	-	-	0.7	2.2	3.1
Total Disposition	0.2	8.9	-	18.9	197.0	225.0

Sources : Oil and Thailand 1985, and Thailand Energy Situation 1985,
National Energy Administration.



In addition to the four major distribution/marketing companies there are a number of "Independents".* The distributor/marketers are also the approved importers, under quota, of HSD which is in deficit supply from the refiners. All importers, Independents included, import HSD directly as well as taking import volumes through PTT, being obliged to take a share of PTT's total Government-to-Government HSD imports in proportion to their direct imports. All the marketing companies take LPG from PTT which owns and operates the Gas Separation Plant - the major domestic supply source for this product.

The marketers' product is either transported directly to large consumers or retail dealers by trucks contracted or owned by them or is sold through wholesale resellers known as "jobbers". The jobbers may actually play a triple role of reseller, trucking contractor and owner/operator of retail outlets.

The retail service stations sell directly to final consumers and also supply small satellite dealers who use a hand-pump/sight glass apparatus on a 55 gallon (208 litre) drum to dispense small quantities to consumers such as motorcyclists at road-side kiosks. These "drum-pump" dealers may also be supplied directly from jobbers.

Esso Standard Thailand exhibits the most significant degree of vertical integration in the system. Beginning with supply of interaffiliate crude oil and product imports it extends through 100% ownership of refining and marketing including a large number of company-owned service station outlets. Shell and Caltex have a lesser degree of integration: they supply affiliate crude oil to Thai Oil refinery in accordance with their shares in the refining company but must pay the arms-length official ex-refinery price for product from this facility. Most of their imported product would be purchased under interaffiliate arrangements. Their distribution and marketing extends through mostly company-owned outlets.

PTT has a lesser degree of integration on oil products than Shell or Caltex. Although they have ownership in BCP (30%) and TOC (49%) refineries they do not have their own crude from foreign affiliate to supply as is the case with the majors. With LPG, however, PTT has a completely vertically integrated supply and marketing system. It owns and operates the Gas Separation Plant, producing LPG for its distribution and marketing network, in addition to supply to the other marketers.

* Mobil, though a "major" international is not shown on this diagram; it is involved throughout Thailand in lubricants and specialty chemicals and has a very small fuel products business in the South.

2.3 Physical System-Overview

As an additional aid to understanding the industry structure, the Oil and Gas map of Thailand, Figure 2.2 provides an overview of the spatial relationships among major physical components of the system as well as its extent and coverage. The map symbols denote the location of oil fields, gas fields, gas separation plant, refineries and the number of separate company oil product and LPG depots at each location in the country.

As indicated there are 4 refineries and a total of some 55 oil product depots serving all regions of the country. In addition there is a network of some 28 LPG storage/cylinder filling depots which provides similar full regional coverage.

The distributing companies have their primary large receiving/storage depots in the Bangkok river port area which receive product from the refineries and from import sources; the product is onward-shipped by truck to service stations and large consumers in Bangkok and environs and by rail to smaller, secondary depots to the North/Northeast of Bangkok. The depots in the southern region are fed by barge or small coastal tanker from three sources (See Figure 2.3):

1. direct from a domestic refinery
2. from a primary Bangkok terminal
3. direct import, without passing through a primary terminal

The system is discussed in a more detailed, company context under the individual industry segments in the sections which follow.

2.4 Overall Industry Finances/Profitability









Unfortunately within the time and company confidentiality constraints of this study it was not possible to obtain financial information for all companies which was complete and consistent among all of them. The desired information was:

- (1) Capital employed, defined as total assets less current liabilities
- (2) Interest on long-term debt (ILTD)
- (3) Net profits after tax (NPAT)
- (4) Total sales

The objective was to calculate as measures of profitability:

- (a) NPAT + ILTD as % of capital employed; also known as return on capital employed
- (b) NPAT as % of total assets
- (c) NPAT as % of sales

FIGURE 2.2
OIL AND GAS
MAP OF THAILAND

-  OIL FIELD ONSHORE
 -  GAS FIELD OFFSHORE
 -  UNDERSEA GAS PIPELINE
 -  OIL REFINERY
 -  GAS SEPARATION PLANT (PIT)
 -  OIL DEPOTS, MARINE
 -  OIL DEPOTS, RAIL
 -  LPG DEPOTS, FILLING PLANTS
- FIGURES REFER TO NUMBER AT LOCATION

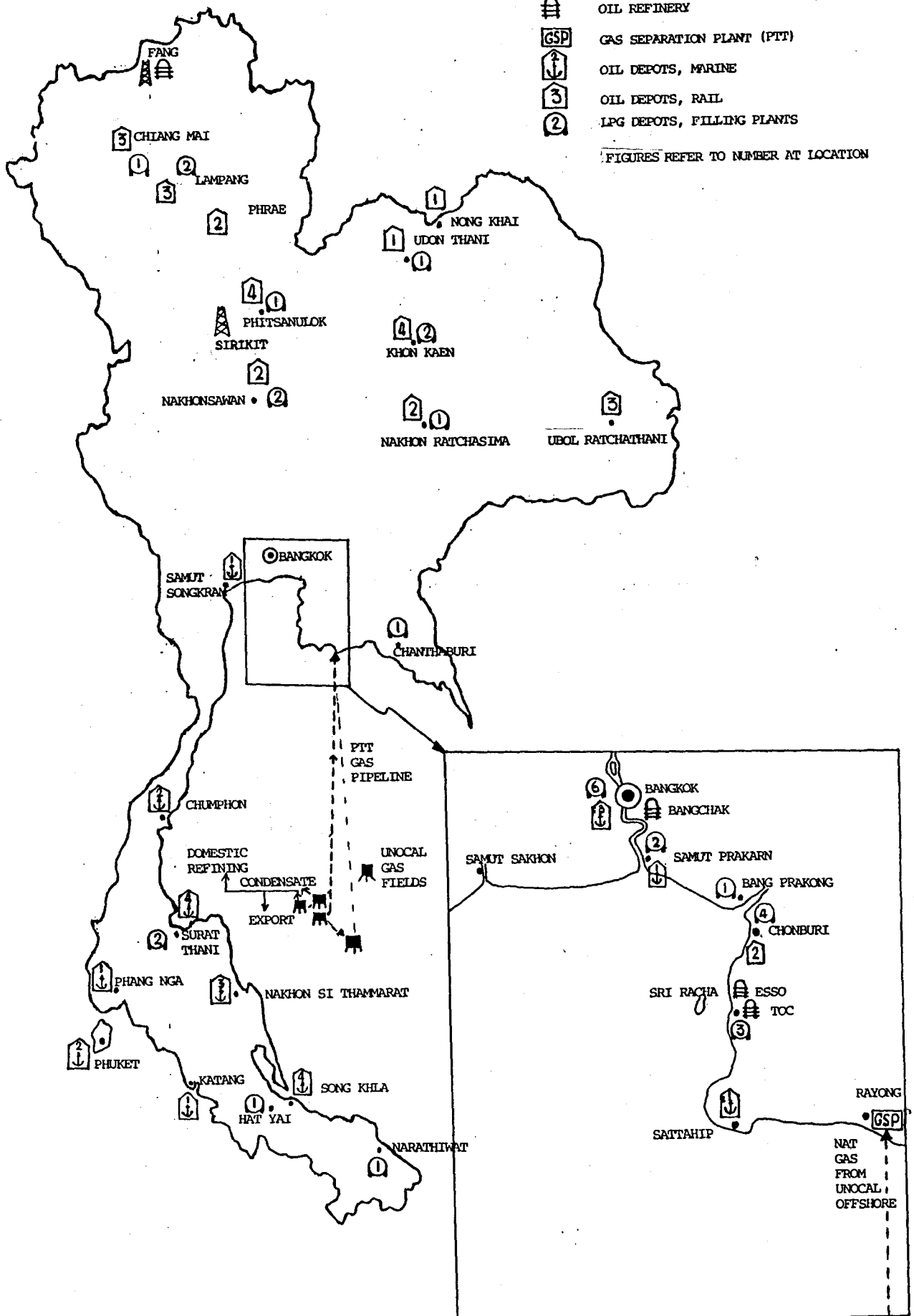
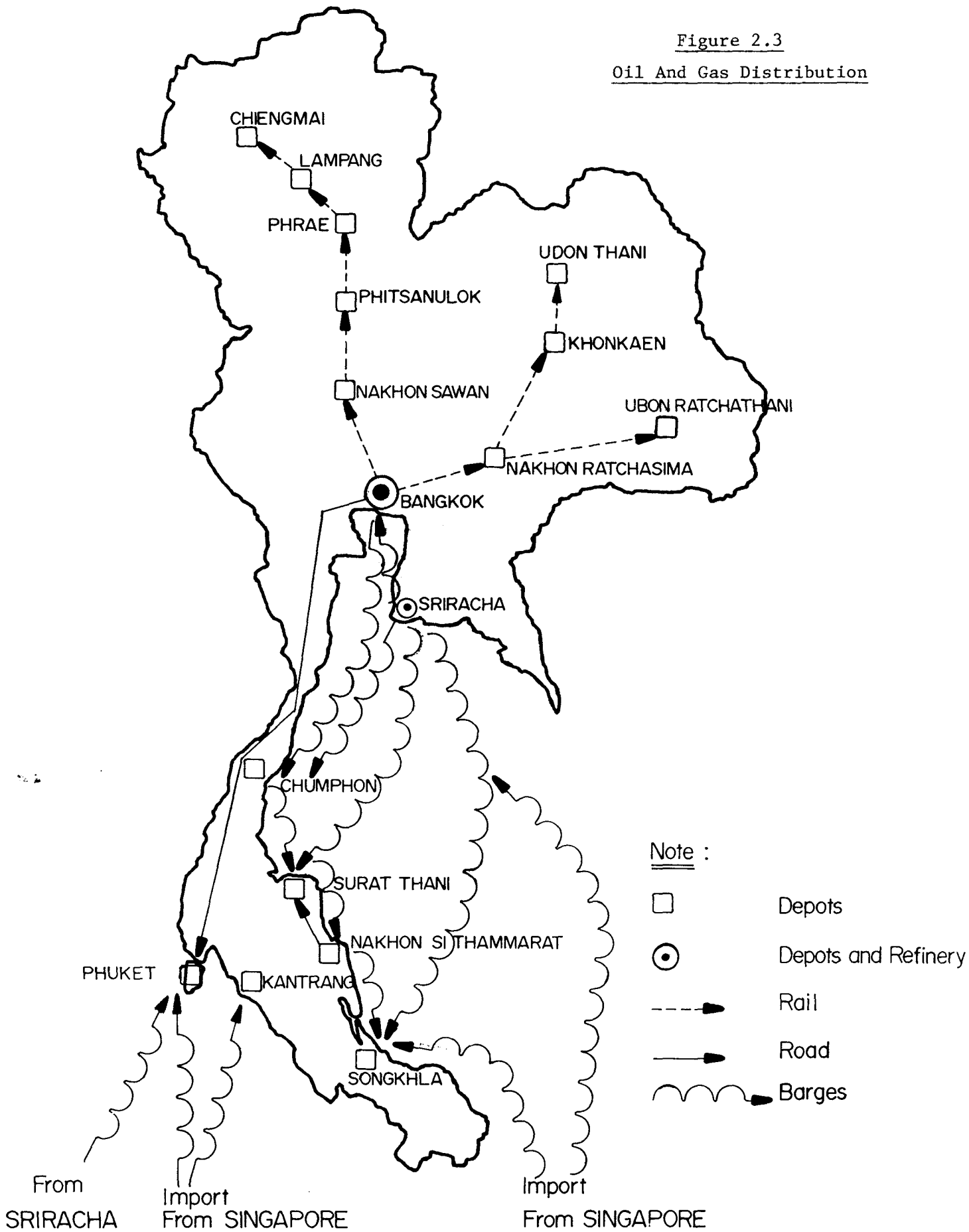


Figure 2.3
Oil And Gas Distribution



The best measure is (a) but the lack of data on current liabilities and ILTD for all companies did not permit a comprehensive summary of this indicator. While, with certain limitations and assumptions, it was possible to calculate (b) and (c) these ratios are not as meaningful as profitability measures. One of the major difficulties was in aggregating and comparing a mix of integrated and non-integrated companies.

For example PTT's major activities and asset base are in areas other than refining and product distribution, such as oil production, gas transmission and distribution and gas separation. Based on the size of PTT's total assets compared with other distributors such as Shell it is obvious that their shares in local refining plus oil product distributing/marketing activity is a minor part of PTT's total business. The consolidation of its accounts, however, makes it impossible either to integrate PTT's financial data into the total downstream oil industry or to analyze PTT's activity in relation to the other distributing companies. An additional difficulty is in consolidating financial data for a completely integrated refining and marketing company -Esso with that of individual refiners and marketers.

Table 2.2 provides a summary of financial data on the midstream and downstream oil sector for year 1985. As noted the individual companies are shown as well as an estimated total for the sector, after making a break-out of PTT's non-downstream oil activities. It does not include their share ownership in Bangchak and Thai Oil refineries since consolidation with the latter's accounts into a sector total would result in double counting as the total assets and other financial effects of BCP and TOC are shown under their headings. It is noteworthy, however, that PTT's assets for oil products activities (including LPG) are considerably higher than those of Shell and Esso even though the latter includes its refinery.

As indicated the total sector assets in 1985 amount to 43,134 million Baht excluding estimated PTT upstream assets. Total industry sales in that year of 136,111 million Baht resulted in a net profit after tax of 1,511 million Baht or 1.11% of sales. Net profit after tax as a percent of total assets was 3.50%. It should be pointed out that a notional income tax of 40% was applied to PTT's gross profits before tax to allow comparison with that of the other companies.

Table 2.2
Financial Data Oil Refining & Marketing Sector Thailand 1985

Unit : Millions Baht

Category	Shell	Esso	Caltex	PTT Total	PTT Oil Products	Mobil	North Eastern	Siam United	Siam Gas Industry	World Gas	Unique Gas	Cosmo	TORC	Bangchak	Total Industry
Assets	2,818	6,653	1,689	36,733	18,464	277	133	108	213	14	95	61	5,640	6,970	43,134
Liabilities - Current	NA	4,326	NA	13,338	10,127	122	99	64	171	4	81	53	3,808	3,067	NA
Capital Employed	NA	2,327	NA	23,395	8,437	155	33	43	42	10	14	8	1,832	3,903	NA
Sales	24,547	27,093	15,846	42,465	28,072	1,060	700	133	1,047	NA	569	389	26,273	10,381	136,111*
Net Profit after Tax (NPAT)	212	490	34	2,370	628	4	(23)	(6)	14	NA	(9)	0	44	123	1,511*
Interest Longterm Debt (ILTD)	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	NA	NA	44	0	NA
NPAT+ILTD as % Capital Employed	NA	NA	NA	NA	7.44	NA	NA	NA	NA	NA	NA	NA	4.8	3.15	NA
NPAT as % Assets	7.52	7.36	2.01	6.45	3.4	1.44	-17.05	-6.00	6.52	NA	-9.47	0.16	0.78	1.76	3.50
NPAT as % Sales	0.86	1.81	0.21	5.58	2.24	0.38	-3.23	-4.85	1.32	NA	-1.58	0.03	0.17	1.18	1.11

Note : Totals exclude World Petroleum for which no sales or profit data were available; in any case would be very small.
Shell figures include chemicals but exclude lubricants.
Esso figures include lubricants.

Source : Ministry of Commerce and PTT Annual Report.

Chapter 3

Refining

3.1 Evolution of the Industry

The refining industry commenced in Thailand in 1958 with the construction of a small 1,000 B/D topping plant by the Defence Energy Department to run its Fang crude in Northern Thailand. It was not really launched in earnest, however, until the commissioning of the Thai Oil Refinery installation in 1964 at Sri Racha with a capacity of 35,000 B/D. In the following year 1965, two additional refineries were commissioned: Bangchak at 5,000 B/D in the eastern outskirts of Bangkok, and Thai Asphalt Manufacturing Company (TAMCO) at 7,000 B/D in Sri Racha; the latter facility was sold to Esso in 1967.

The four facilities now have a combined capacity of 194,000 B/D. The evolution of capacity, configuration and ownership is discussed under each facility individually below:

3.1.1 Fang

This small DED facility has maintained its very limited operation at approximately 1,000 B/D for the past 28 years. Its continued operation is completely dependent on the availability of production from the Fang oilfield. It produces distillate products for local DED use and PTT markets some small heavy fuel oil production. A surplus unfinished product mix stream is transported south to Bangkok from time to time for final processing at Bangchak Refinery.

3.1.2 Thai Oil (Refinery) Company Limited

The company recently changed its name from the Thai Oil Refinery Company Limited to Thai Oil Company Limited. It commenced operation of its first unit in 1964 at a capacity of 35,000 B/D and a second unit of 30,000 B/D was added in 1970. The initial capacity and configuration as well as the 1970 modification/expansion is shown in Table 3.1.

TOC's combination of vacuum distillation, catalytic cracking and thermal cracking allows it to increase its production of light products above that contained naturally in the crude oil; heavy fuel oil production is reduced commensurately.

The company was originally established as a joint venture between private Thai investors and Shell International Petroleum Company. In 1981 majority ownership passed to the Thai Government under previous agreements and Caltex purchased a portion of the private Thai shares. Table 3.2 summarizes the past and present ownership structure. As indicated total Government ownership is 51%, ownership by multinational major Shell 14.7%, Caltex 4.9% and private Thai some 29.4%.

Table 3.1
TOC Refinery-Unit Capacities

Unit : Thousand Barrels per Day

	Unit I (1964)	Unit II (1970)	Total Present (1986)
Atmospheric Distillation	35.0	30.0	65.0
Vacuum Distillation	16.0	-	16.0
Reforming	2.8	4.2	7.0
Catalytic Cracking	9.0	-	9.0
Thermal Cracking	-	14.0	14.0
Hydrosulfurization/Treating	NA	NA	42.0
Bitumen Plant	0.7	0.7	1.4
Crude Oil Tankage (1000 BBL)			2,000.0

Source : Information obtained from interview.

Table 3.2
TOC Ownership Structure

Unit : Percent

	Initial, upto 1981	Post - 1981
PTT	-	49.0
Crown Properties	-	2.0
Shell Int. Pet.	30.0	14.7
Caltex	-	4.9
Private Thai	<u>70.0</u>	<u>29.4</u>
Total	100.0	100.0

Source : Information obtained from interview.

The refinery was originally designed for light (32 to 34) medium-sulphur crude such as Basrah, Oman, Kuwait Mix. The second unit was designed for Brunei and Agha Jari. Middle East crudes heavier than design are usually balanced out by extra light Far East crudes such as Brunei or Malaysian. A typical crude slate at present is as follows:

	<u>MBD</u>
Phet Domestic Crude	10
Erawan Condensate	5
Far East Light, Brunei, Malaysian	35
Mid East Light, Oman, Kuwait	<u>15</u>
Total	<u>65</u>

The crude is received through a seaberth facility offshore from Sri Racha which has a capability of handling tankers up to 100,000 DWT. The normal size of tanker received is 80,000 DWT.

Typical product yields based on recent crude slates and existing process configuration are shown in Table 3.3.

Table 3.3
Typical TOC Product Yields (1986)

	<u>MBD</u>	<u>%LV</u>
LPG	1.8	2.8
Gasoline	18.5	28.5
Jet/Kerosene	10.5	16.1
Diesel	21.0	32.3
Fuel Oil	9.3	14.3
Bitumen	<u>0.7</u>	<u>1.0</u>
Total	61.8	95.0
Plus Fuel and Loss	<u>3.2</u>	<u>5.0</u>
Crude Run	65.0	100.0

Source : Information obtained from interview.

The product lifting contracts call for the following shares by company:

	(%)
PTT	10
Shell	54
Caltex	<u>36</u>
Total	100

The lifting contract is quite rigid; these are the only lifters - There are no independents taking product from TOC.*

* ESSO and TOC had 10 KBD lifting agreement during 1964-1974 where ESSO also procured part of TOC's crude requirement.

TOC does not import product nor does it normally exchange product with other refiners; in one exceptional "emergency" case Esso took some surplus gasoline from TOC.

TOC is currently undergoing its second expansion program (stage 1). By the end of 1988 the crude distillation capacity will be increased to 83,500 B/D. TOC is also installing a 17,040 B/D hydrocracking unit and a 32,300 B/D high-vacuum unit.

3.1.3 Bangchak Petroleum Company Limited

The Bangchak Oil Refinery commenced operation of its first unit in 1965 with a capacity of 5,000 B/D. It was 100% owned by the Defense Energy Department (DED) who contracted out the original construction and subsequent operation to Summit International Corporation, a private, foreign-owned company. A second, 15,000 B/D unit was commissioned in 1968, and a third, 45,000 B/D facility in 1972. During the Summit lease period from inception to 1979 the refining output was lifted by Summit itself for its own outlets and customers as well as by the Oil Fuels Organization (OFO). The latter organization was a subsidiary of DED and the oil products distribution/marketing precursor of PTT. When PTT was established in 1979 it took over OFO's business and lifted product from Bangchak.

Summit's lease was revoked by Government in 1981, DED and PTT operated the refinery until April 1985 when Bangchak Petroleum Company Limited (BCP) was formed. BCP acquired all refinery equipment and oil stocks at about 4000 million baht from previous operators. The company's shareholders are Ministry of Finance 60%, PTT 30% and Krung Thai Bank 10%; it is thus 100% Government-owned.

The rated capacity of their principal units is as follows:

	<u>MBD</u>
Crude Distillation	65.0
Reforming	10.5
Hydrodesulfurization/Treating	30.0
Crude Oil Tankage MBBL	3,300.0*

Until recently, BCP received imported crude oil through Esso's seaberth offshore from Sri Racha in vessels up to 100,000 DWT, paying Esso a throughput fee.** The crude comprising Far East and Middle East grades is discharged into PTT-owned storage onshore at Sri Racha, paying PTT a throughput fee, and is transhipped in 5,000-10,000 DWT barges up the Chao Phya river to Bangkok. BCP also takes about 10 to 15 MBD of Phet domestic crude by rail.

* Includes PTT crude tankage at Sri Racha, which serves BCP.

** Bangchak is now using PTT's facility at Lam Chabang.

Typical product yields based on recent crude slates and process configuration are shown in Table 3.4

Table 3.4

Typical BCP Product Yields (1986)

	MBD	%LV
LPG	1.2	2.3
Gasoline	9.1	18.3
Jet/Kerosene }	19.0	38.0
Diesel }		
Fuel Oil	<u>18.7</u>	<u>37.4</u>
Total	48.0	96.0
Plus Fuel & Loss	<u>2.0</u>	<u>4.0</u>
Crude Run	50.0	100.0

Source : Information obtained from interview.

While its nameplate capacity is 65 KBD, its current most efficient operating capacity is 45-50 KBD. Its refinery revamp project which is currently underway will permit efficient operations upto around 85 KBD by 1990.

PTT lifts most of BCP's product output. Products in excess of PTT demand are sold to other marketers. There have been occasional crude oil exchanges with TOC and Esso, but no product exchanges with other refiners. Recently, BCP has also imported diesel and jet fuel for sales to independents and other traders.

3.1.4 Esso Standard Thailand (Esso)

The Esso facility at Sri Racha was originally established in 1965 by the Thai Asphalt Manufacturing Company - a joint venture between Taiwanese businessmen and the Summit Group. The original 7,000 B/D facility was purchased by Esso in 1967. Total capacity was increased to 35,000 B/D in 1971 when a new refinery of 35,000 B/D was brought onstream to replace the old one. The refinery at its inception and even after the first expansion in 1971 was a simple skimmer and was not permitted to produce finished motor gasoline - only kerosene, diesel, fuel oil and bitumen.

By 1976 the full rated capacity of the combined old and new facilities was expanded through modification to 46,000 B/D. A further expansion was begun in 1983, coming onstream in 1985 resulting in a total rated capacity of 63,000 B/D. Esso received permission to produce finished motor gasoline with the last expansion.

The rated capacity of their principal units is now as follows:

	<u>MBD</u>
Crude Distillation	63.0
Vacuum Distillation	6.2
Reforming	6.7
Hydrodesulfurization/Treating	37.6
Bitumen Plant	2.5
Crude oil Tankage MBBL	2500.0

They run a mix of Far Eastern and Middle Eastern crudes, predominantly Esso affiliate grades such as Malaysian Tapis. The crude is received through a seaberth offshore from Sri Racha which can accommodate tankers up to 120,000 DWT. The typical size of tanker received is 100,000 DWT. Their total average crude slate tends to be very light; in addition they run some "tailored" crudes, with light product added to natural crudes. The resultant production/yield pattern typical of 1986 following the expansion is shown in Table 3.5.

Table 3.5
Typical Esso Product Yields

	<u>MBD</u>	<u>%LV</u>
LPG	0.9	1.5
Gasoline	11.0	17.4
Jet/Kerosene	8.8	14.0
Diesel	25.0	39.6
Fuel Oil	13.5	21.5
Bitumen	<u>1.8</u>	<u>2.9</u>
Total	61.0	96.9
Plus Fuel & Loss	<u>2.0</u>	<u>3.1</u>
Crude Run	63.0	100.0

Source : Information obtained from interview.

As noted Esso has an extremely low yield of fuel oil for a hydroskimming refinery with no conversion facilities. The light crude slate combined with significant bitumen production helps to moderate fuel oil production in relation to crude.

Esso has engaged in some exchange or borrow/payback arrangements with other refiners on both crude and product. The product exchanges are normally "emergency" measures taken during maintenance shutdowns at different plants. Both Shell and Caltex have made outright purchases of product from Esso but these have been unusual situations and are not regular occurrences.

3.1.5 Summary of Evolution

A tabulation of the chronology of establishment and subsequent expansion of the four refineries in Thailand is provided in Table 3.6. If we re-classify the refinery ownership into Government (Thai Government), Multi National Major (Shell, Caltex, Esso) and "Other" - mostly private Thai - we arrive at Table 3.7, ownership by Classification of each facility over time. By overlaying the ownership classification information in Table 3.7 on the capacity evolution in Table 3.6 we are able to derive Table 3.8, Evolution of Refining Capacity ownership by Classification. As noted, from the mid 60's, when Thai refining began in earnest there has been a significant increase in Government ownership of capacity over time. The ownership by Multinational Majors has remained fairly steady at 30 to 40% of capacity over the period.

Figure 3.1 provides a graphical representation of this tabulation.

Table 3.6

Summary of Evolution in Refining Capacity - Thailand

		Fang/DED	Bangchak	TOC	Esso (TAMCO)	Total
1958	MBD	1.0**	-	-	-	1.0
	%	100.0	-	-	-	100.0
1964	MBD	1.0	-	35.0**	-	36.0
	%	2.8	-	97.2	-	100.0
1965	MBD	1.0	5.0**	35.0	7.0**	48.0
	%	2.1	10.4	72.9	14.6	100.0
1968	MBD	1.0	20.0*	35.0	7.0	63.0
	%	1.6	31.8	55.5	11.1	100.0
1970	MBD	1.0	20.0	65.0*	7.0	93.0
	%	1.1	21.5	69.9	7.5	100.0
1971	MBD	1.0	20.0	65.0	35.0*	121.0
	%	0.8	15.6	50.8	29.2	100.0
1972	MBD	1.0	65.0*	65.0	35.0	165.0
	%	0.6	36.7	36.7	21.2	100.0
1976	MBD	1.0	65.0	65.0	46.0*	177.0
	%	0.5	36.7	36.7	26.0	100.0
1987	MBD	1.0	65.0	68.0*	63.0*	197.0
	%	0.5	33.0	34.5	32.0	100.0

Note : * Capacity increases

** Initial start-up

Source : Information obtained from individual companies.

Table 3.7
Refinery Ownership by Classification

Facility	Period	Per Cent Ownership		
		Government	MN Major	Other
Fang	1958 to present	100.0	-	-
Bangchak	1965 to present	100.0	-	-
Thai Oil	1964 to 1981	-	30.0	70.0
	1981 to present	51.0	19.6	29.4
TAMCO/Esso	1965 to 1967	-	-	100.0
	1967 to present	-	100.0	-

Source : Information obtained from individual companies.

Table 3.8
Evolution of Total Refining Capacity by Ownership Classification

	MBD				% Ownership					
	Govt.	MN	Major	Other	Total	Govt.	MN	Major	Other	Total
1958	1	-	-	-	1	100	-	-	-	100
1964	1	10	25	36	3	29	68			100
1965	6	11	31	48	13	22	66			100
1968	21	18	24	63	33	28	39			100
1970	21	27	45	93	23	29	49			100
1971	21	61	46	128	16	48	36			100
1972	66	61	45	173	38	36	26			100
1976	66	65	45	177	37	37	26			100
1981	99	59	19	177	56	33	11			100
1985 & PRESENT	99	76	19	194	51	39	10			100

Source : Information obtained from interviews.

REFINING CAPACITY THAILAND

Ownership by Classification

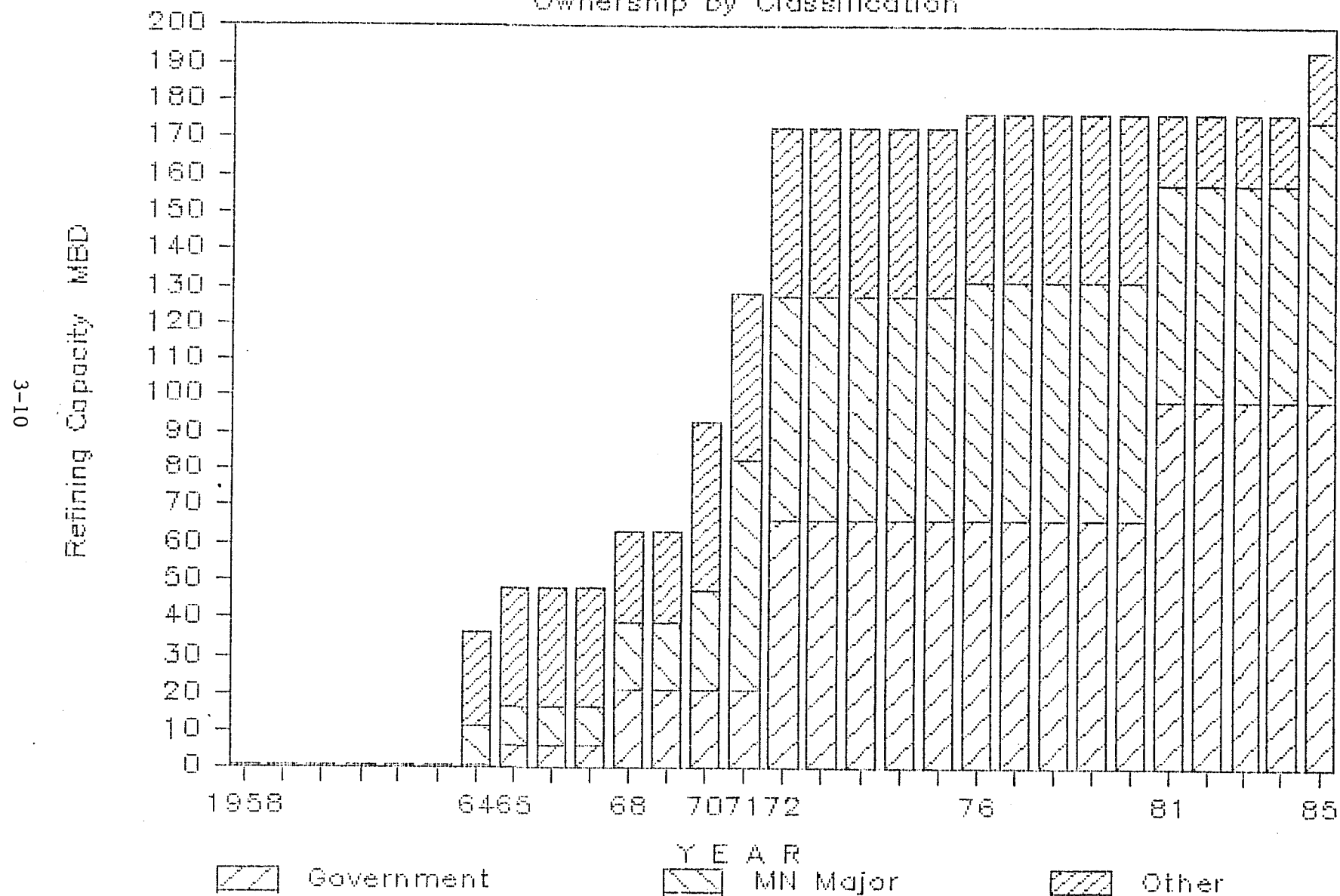


Figure 3.1

3.2 Details of Present Structure

3.2.1 Capacity, Configuration and Yields

Table 3.9 provides a summary of the capacities of major process units by refining company and for total Thailand*. As noted, whereas the basic crude distillation capacity is evenly distributed among the three refiners, TOC is the only facility with cracking/conversion capability. This permits TOC to produce light products, particularly gasoline, considerably in excess of the quantity contained naturally in the crude oil feedstock. In Table 3.10 we compare the yields of each facility based on present configuration and recent, typical crude slates. In accordance with its higher complexity, TOC has the highest yield of light products and lowest yield of fuel oil. It should be noted, however, that Esso has an exceptionally good yield pattern for a simple, hydroskimming refinery. Its yield of HSD, for example, is even higher than that of TOC. The principal reason for this favourable yield pattern is Esso's selection of an exceptionally light crude slate; one of their major grades, as well as being fairly light, has an unusually high yield of HSD for its gravity. This shows up on the total yield pattern as the Esso HSD yield is higher than TOC's even though the latter is a more complex conversion refinery.

Additional reasons for Esso's good yield pattern are:

- o good fractionation between heavy diesel and bottoms on the crude tower; "deep-cutting".
- o some input of "tailored" or "spiked" crudes as feedstock.
- o relatively high bitumen production reduces fuel oil net production.
- o maximization of fuel oil viscosity as much as possible with its fuel oil customers.
- o good energy conservation, efficiency practices minimizing fuel and loss.

With only three refiners in the country it could be concluded that there is a high degree of concentration of domestic product supply capability in Thailand even if they all produced each product with the same yield pattern. Since each refiner is of roughly the same total capacity this would imply a concentration ratio** for product supply as follows:

<u>TOP</u>	<u>% of Product Supply</u>
1	33.3
2	66.6
3	100.0

* Fang refinery has been excluded since it is an extremely small facility with a dedicated, "enclave"-type market.

** See Appendix - for a discussion of Criteria for Assessment of Degree of Concentration and Monopoly Power.

Table 3.9
Refining - Thailand
Capacity of Major Units, 1987

		Bangchak	TOC	Esso	Total
Crude Distillation	MBD	65.0	68.0	63.0	196.0
	%	33.2	34.7	32.1	100.0
Vacuum Distillation	MBD	-	16.0	6.2	22.2
	%	-	72.1	27.9	100.0
Thermal Units	MBD	-	14.0	-	14.0
	%	-	100.0	-	100.0
Catalytic Cracking	MBD	-	9.0	-	9.0
	%	-	100.0	-	100.0
Reforming	MBD	10.5	7.0	6.7	24.2
	%	43.4	28.9	27.7	100.0
Hydrodesulfurization & Hydrotreating	MBD	30.0	42.0	37.2	109.2
	%	27.5	38.5	34.1	100.0
Bitumen		-	1.4	2.5	3.9
		-	35.9	64.1	100.0

Source : Information obtained from interviews.

By industrialized country standards any industry where 100% of sales are provided by only three firms would be considered to have a high degree of concentration; i.e. the firms would possess potentially strong monopoly power. For example, in Canada there are about six to eight refining firms in each major region and the top four generally control about 75 to 80 percent of the market.

In the United States the degree of concentration is even lower, where each major region has about 40 to 50 firms supplying the market and the top four account for only 35 to 40 percent of the market.

The degree of concentration and potential monopoly power is even greater in Thailand, however, if we consider the supply capability by individual major product*. In Table 3.11 we have summarized the production capability. For all products except bitumen the MBD capability was calculated by taking typical product yields per Table 3.10 and multiplying by rated capacity. In the case of bitumen the rated bitumen plant capacity per Table 3.9 was used as production capability.

As indicated there is a higher degree of concentration for each product than that of total refining capacity. TOC with its high conversion and hydrotreating capability is the major producer of light products such as gasoline and jet/kerosene. Esso, on the other hand, with good crude selection and other reasons, as discussed above has a commanding position in HSD supply**. The Bangchak refinery, has the highest production of heavy fuel oil. Only Esso and TOC have bitumen production capability, with Esso controlling 2/3 of supply.

The degree of concentration for individual products versus that of total refining is further illustrated in Figure 3.2. The diagonal line represents the plot of cumulative market share for a theoretical equal distribution of market shares i.e. 33.33% for each firm which approximates the prevailing situation for share of total refinery capacity. The degree of deviation of the other graph plots for each product above the diagonal line is proportional to the degree to which the market shares distribution deviates from equal shares. Gasoline and HSD are the most evenly distributed while kerosene and fuel oil are fairly concentrated - Kerosene in the top 2, fuel oil in both the top 1 and top 2. The bitumen market is highly concentrated - shared about 1/3 - 2/3 by TOC and ESSO only.

* Market size should also be considered. That is a refinery should have a reasonable level of scale economy.

** Total HSD supply would include imports which are significant compared with domestic refinery supply; since the "Independents" are involved here this reduces the degree of concentration - discussed further in section 4.

Table 3.10

Refining - Thailand

Typical Product Yields with Recent 1986 Crude Slates

Unit : Percent

	Bangchak	Esso	TOC
LPG	2.3	1.5	2.8
Gasoline	18.3	17.4	28.5
Jet/Kerosene		14.0	16.1
Diesel	38.0	39.6	32.3
Fuel Oil	37.4	21.5	14.3
Bitumen	<u>-</u>	<u>2.9</u>	<u>1.0</u>
Total	96.0	96.9	95.0
Plus Fuel and Loss	<u>4.0</u>	<u>3.1</u>	<u>5.0</u>
Crude Run	100.0	100.0	100.0

Source : Information obtained from interviews.

Table 3.11
Refining - Thailand
Planned Production Capability By Major Product (1987)

		Bangchak	TOC	Esso	Total	Share of Top	
						1	2
Gasoline	MBD	9.2	19.9	12.4	41.4	48.0	77.9
	%	22.1	48.0	29.9	100.0		
Jet/Kerosene	MBD	1.4	11.4	8.9	21.7	52.5	93.5
	%	6.5	52.5	41.0	100.0		
Diesel	MBD	18.9	21.6	24.0	64.5	37.2	70.7
	%	29.3	33.5	37.2	100.0		
Fuel Oil	MBD	15.1	9.0	14.0	38.0	39.6	76.4
	%	39.6	23.6	36.8	100.0		
Bitumen	MBD	0.0	0.9	2.0	2.9	67.8	100.0
	%	0.0	32.2	67.8	100.0		

Note : LPG excluded from this table; refinery LPG supply combined with GSP supply is discussed in section 4.2.

Source : Ministry of Commerce.

REFINING THAILAND

Share of Production Capability

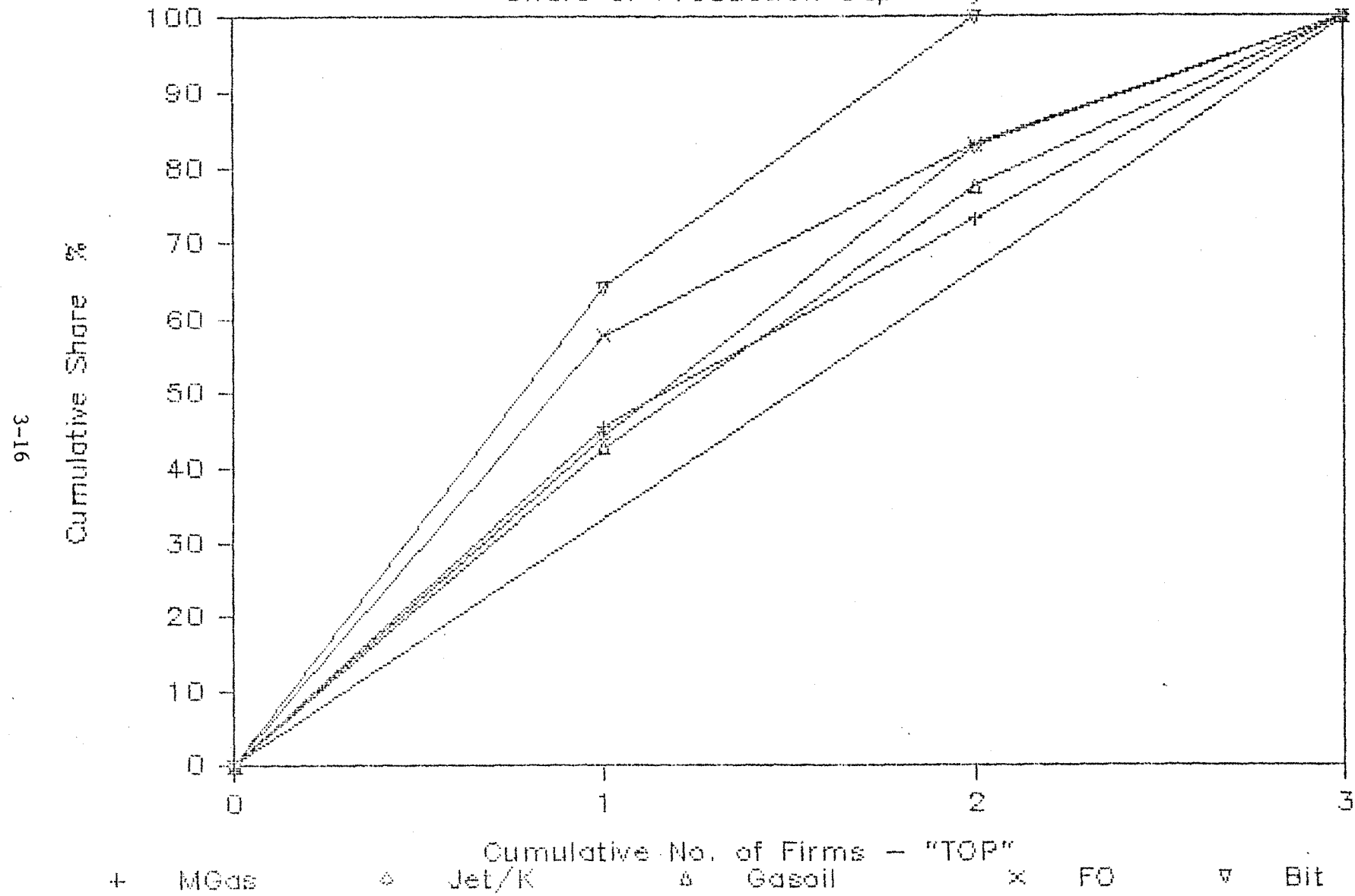


Figure 3.2

3.2.2 Financial Structure

Because of the vertically integrated structure of Esso and lack of financial data by refining only, as distinct from oil product distribution and marketing for this company it is difficult to do a rigorous analysis of financial structure of the total refining industry. If, however, we assume that 60% of Esso's total assets, and 70% of capital employed are attributable to refining we would derive a structure for the industry for 1985 as shown in Table 3.12.

As indicated Bangchak is the largest firm in terms of assets and capital employed in spite of the fact that it has the same capacity as the others and a much lower complexity than TOC. The comparison between Esso and TOC is reasonable: even though TOC has a higher ratio of assets and capital employed to capacity it is a more complex refinery with a better yield structure. Bangchak again is the anomaly since its assets and capital employed ratios are much higher than that of Esso and TOC in spite of its simple configuration.

Table 3.12
Refinery Sector Thailand 1986
Financial Structure

		Esso	TOC	Bangchak	Total
Assets	MM Baht	3,041	4,232	5,314	12,587
	%	24.2	33.6	42.2	100.0
Capital Employed	MM Baht	1,847	2,241	4,520	8,608
	%	21.5	26.0	52.5	100.0
Capacity	MM Baht	63	65	65	193
	%	32.6	33.7	33.7	100.0
Ratios :	*				
Assets/Capacity		48	65	82	65
Capital Employment/ Capacity *		29	34	70	45

Note : * Thousands baht per barrel per day.

Source : Ministry of Commerce.

Chapter 4

Product Importation, Distribution and Marketing

4.1 Liquid Oil Products

4.1.1 Overview of Industry Structure

As indicated in Figure 2.1, there are four major distribution/marketing companies - PTT, Esso, Shell and Caltex who account for the majority of volume of liquid fuel products distributed and marketed in Thailand. There is also a regional major - Mobil - and seven "independents" who engage in very limited distribution and marketing. Most of the product supply comes from local refining but all these companies - major and independents - are also the approved importers, under quota, of HSD which is in deficit supply from the refiners.

Other "players" in the distribution and marketing of products are jobbers, transporters, retail dealers and major consumers all of which are discussed below.

4.1.2 Importing

Prior to the development of the refining industry in Thailand all of the country's product needs were provided through direct product imports. Even after the development of the indigenous refining industry beginning in 1964 the output of local refining has never been sufficient to meet total country requirements. Finished products have continued to be imported up to the present.

A summary of the evolution of product imports over time is provided by Table 4.1

Table 4.1

Oil Product Imports for Domestic Consumption (Millions Litres)

	1960	1970	1980	1987
Gasoline	554.6	216.6	461.6	233.0
Kerosene	165.9	53.6	7.6	-
Gasoil (HSD)	523.5	1,046.1	1,580.2	2,665.9
Fuel Oil	<u>125.3</u>	<u>140.2</u>	<u>1,491.5</u>	<u>336.2</u>
Total	1,369.3	1,456.5	3,540.9	3,225.1

Source : Oil and Thailand, and NEA News, National Energy Administration.

As indicated from the 1987 figures the main liquid product (LPG-discussed below) now in deficit supply from local refining is HSD. The import of HSD is strictly controlled by a quota system as outlined in detail in Chapter 7. This system effectively limits total imports of HSD to the country's demand which is in excess of refinery production capacity. Quotas are restricted to qualified importers consisting of the four major trading companies plus some five independents. The quota amounts are allocated to each qualified importer based on historical considerations, in the case of established companies, while newer independents could qualify for initial quotas based on satisfying certain product reserve and installation size requirements. Over the past few years the Government has awarded import quotas to several independents and there has been a significant growth in the activity of independent importers. The recent evolution in HSD imports by company is shown in Table 4.2.

As indicated the independents did not receive their quotas and begin importing until 1984 but have increased their total share of HSD imports from 0.82% in 1984 to 19.3% in 1987.

Most of the imported HSD is sourced in Singapore but there has been supply from China and elsewhere. The principal receiving terminals of all importers are in the Bangkok river port area or on the river between Bangkok and the river mouth. The optimum product import affreightment mode is to use vessels of 20 to 30 MDWT and lighten them to about 11 to 12 MDWT in the Gulf (usually in the lee of islands off the Eastern Seaboard) so that they can cross the river bar which is limited to about 26 feet draft. They can then proceed to the major receiving installations upriver in or near Bangkok. Some of the importers ship directly from Singapore into their southern marine terminals rather than passing through their main Bangkok installations to replenish their southern installations*.

Some of the independents ship in small tankers of less than 10 MDWT. While these can come directly into the Chao Phya without lightering, there are less than optimum size for lowest overall freight cost.

* Shell has a special "MRX" shallow draft vessel of 30 MDWT which is especially adapted to the Chao Phya river bar crossing; it only has to be lightened to 17 MDWT to get into the Bangkok port and improves on the abovementioned "optimum" freight mode.

Table 4.2
HSD Imports - Thailand

	1985		1986		1987	
	MM Litre	% share	MM Litre	% share	MM Litre	% share
Shell	309.5	14.55	409.1	19.03	862.0	32.15
Esso	100.4	4.72	58.5	2.72	125.5	4.68
PTT	1,325.7	62.32	1,076.7	50.07	595.6	22.22
Caltex	328.3	15.43	286.7	13.33	580.3	21.65
Sub-Total Majors	2,063.9	97.02	1,831.0	85.15	2,163.5	80.70
North Eastern	50.2	2.36	91.7	4.26	-	-
Siam Gas Industries	-	-	76.8	3.57	122.1	4.55
Cosmo Oil	-	-	14.7	0.68	71.0	2.65
World Petroleum	-	-	34.5	1.60	99.7	3.72
Siam United Services	13.3	0.63	101.6	4.72	182.1	6.79
Others	-	-	-	-	42.5	1.59
Sub-Total Independents	63.5	2.98	319.3	14.85	517.4	19.30
Grand Total	2,127.4	100.00	2,150.3	100.00	2,680.9	100.00

Source : Fuel Oil Division, Ministry of Commerce.

4.1.3 Distribution and Marketing

4.1.3.1 Majors The four majors - PTT, Shell Esso and Caltex each have a complete, comprehensive range of activities in the distribution and marketing of all liquid oil products in all regions of Thailand. In addition to their main Bangkok receiving terminals they have relay depots in all parts of the country. Table 4.3 indicates the number of oil depots owned by the majors summarized by region.

Table 4.3
Oil Depots, Owned by Majors in 1987

	Shell	Esso	Caltex	PTT	Total
Central	3	1	1	3	8
North	2	2	2	5	11
North East	3	3	2	4	11
East	-	4	1	4	9
South	3	4	4	5	17
Total	11	14	10	21	56

Source : Ministry of Commerce.

The southern depots are marine terminals which are replenished by the major's owned or chartered fleet of small tankers directly from the local refineries, as an import direct from Singapore, or from its main Bangkok installation. The up-country depots in the North and North East are replenished by rail from the major's main Bangkok installation.

Transport from the depots to large, bulk consumers or service stations is by road tanker*. Almost all of the trucking is by either contracted out to independent trucking contractors or is handled by the purchaser of the oil product in the case of some large consumers. Only Esso (about 5%) and PTT (about 30%) own their own tank trucks to serve a portion of their transport needs.

The majors have a total of 2080 service station outlets located in all regions of the country. The total number by each company is shown in Table 4.4.

* There is some barge shipment of fuel oil to large consumers in the Bangkok area.

Table 4.4
1985 Service Stations by Major Oil Company

PTT	530
Shell	550
Esso	530
Caltex	470
	<u>2080</u>

Source : Ministry of Commerce.

More detail on the distribution of service stations by each region and analysis of share of outlets compared with product market share is provided in Section 9.5.

4.1.3.2 Independents There are at present five independents engaged in the trading of liquid oil products in Thailand. These are Chareon Mankong, Cosmo Oil, Siam Gas Industries, World Petroleum and Siam United Services. These are private Thai-owned companies. In addition there is a multinational major-Mobil which has oil product trading activity only in the South.

At present the five independents are only involved in the importation and trading of HSD (besides LPG discussed below). They all have small terminals in the Chao Phya-Bangkok port area for receiving, storing and onward shipping of HSD. Only two of the independents have HSD depots outside of Bangkok-Siam Gas Industries at Surat Thani and Siam United Services at Surat Thani and Trang.

The independents at present have no retail outlets. They sell their product to jobbers or directly to large, bulk consumers. They all have plans, however, to both expand their HSD trading and diversify into control and/or ownership of retail outlets. The latter move would include the acquisition and distribution of gasoline in addition to HSD.

4.1.3.3. Jobbers Jobbers are independent, private Thai business men who buy large lots of product at the wholesale level and then resell quickly at low margins to retail outlets or large consumers. They survive and (at times) thrive because of the function they serve in combining their intimate knowledge of the day-to-day market for products with the need of refiners and importers to "dump" short-term product surpluses.

There are about 5 or 6 major jobbers in the business around Bangkok. They often combine this activity with transporting and/or retail dealerships. The largest would be doing about 6 to 8 million litres per month of business.

HSD is the major product which is traded through jobber transactions. About 60 to 70% of the trading volume of independents moves through jobbers and about 10 to 20% of the total HSD volume of the majors. The amount traded by the majors varies considerably among companies, however; less than 10% of Shell's sales of HSD move through jobbers whereas 35 to 40% of Esso's HSD sales are to jobbers. Because of Esso's recent refinery expansion it normally has greater supplies of HSD to unload.

In addition to the 5 or 6 major jobbers there are 10 or 15 small sub-jobbers who mainly trade in HSD coupons and rarely have their own trucks or storage. This is further discussed in Section 9.3 under industry conduct.

4.1.3.4 Transporters Apart from customer-owned trucks, most of the road transport of petroleum product in Thailand is in the hands of small private truckers. Most trucking firms are quite small, the biggest having fleets in the range of 5 to 10 vehicles. The truckers are generally identified with one of the major trading companies with whom they are contracted, having company Logo and colours. In spite of this identification they appear to be in fairly arms-length arrangements with the majors since they are only tied by contract based on annual bidding for business and are not further tied through any assistance for financing of trucks etc. from the majors*.

4.1.3.5 Retail Dealers The operators of all retail gasoline and HSD outlets in Thailand are independent businessmen. There are three types of retailing arrangements:

(i) Dealer-Owned

The owner/operator puts up all the investment-land, building etc**. The operator ties himself to a certain major oil company supplier who provides requested volumes at dealer tankwagon prices lower than pump price such that the dealer may earn sufficient gross margin to cover costs, amortize investment and earn a profit. This type of dealer is free to purchase from others, such as jobbers, even though he has the major company logo and colours. About 1/3 of total stations are dealer-owned; it is the predominant arrangement with PTT where all but about 5 outlets are dealer-owned.

(ii) Company-Owned

The oil company provides the total investment in land, building, pumps, tanks and is returned a rent by the operator (or "lessee") which becomes part of the operator's costs which he must deduct from his gross margin along with wages, utilities etc.

* None of the majors provide direct financing but Shell does provide loan guarantees.

** The operator normally leases pumps and tanks from the major oil company.

(iii) Joint Venture

There are a variety of arrangements intermediate between (i) and (ii) where the owner/operator pays part of the investment and the oil company the remainder.

In terms of scope of business conducted and attendant facilities and staff there are two basic types of outlets in Thailand:

(i) Full-Service

These would, in addition to fuel dispensing, have lubricants, tires, batteries and accessories, repair bays and car wash.

(ii) Gas-Bar

These would have fuel dispensing only with a few lubricants for sale - no repair service or car wash.

4.1.3.6 Drum Pump Dealers In addition to the conventional service station outlets which dispense precisely measured amounts of fuel at official pump prices there are small, informal dealers who dispense smaller lots of fuel from 208 litre drums at curbside locations. The drums are generally purchased from a nearby formal dealer at slightly lower than official pump price. The major business is regular gasoline sold to motorcyclists. The drum pump dealer has a pump and sight glass apparatus on top of the drum and dispenses by gravity to the motorcycle fuel tank. The sight glass is calibrated such that he sells by even baht amounts, say 10 baht, and makes 1 or 2 baht per litre profit. Some of these dealers sell 2 to 3 drums per day.

Without a proper country-wide survey it is difficult to estimate the total volumetric significant of this drum-pump business. Shell recently estimated, however, that a total of 900 million litres per year or some 70% of regular gasoline demand was dispensed in this fashion.

4.1.3.7 Major Consumers It was not within the scope of this study to conduct a comprehensive survey of large industrial/commercial consumers of petroleum products. Visits were made to four industrial firms, however, primarily to get a "flavour" of the extent to which oil traders compete for their business and the nature and scope of this business. The firms visited were Siam Cement Company Limited, Thai-Asahi Glass Limited, Union Textile Industries and Ajinomoto Company (Thailand Limited).

(i) Siam Cement

The cement industry is characterized by very high energy use per unit of output. More than 50% of the product value is accounted for by energy costs. Most of this energy use is in the form of fuel for direct firing of the kilns. This can be natural gas, fuel oil or solid fuels such as coal or lignite. Because of lower burning intensity there is a limit to the

proportion of lignite which can be used. With energy costs such a major proportion of total costs and with such a strong dependency on energy it is natural that Siam Cement, like most cement companies, would diversify supply through development of multi-fuel firing capabilities. This ensures that the company has security of supply, ability to switch to the cheapest supply and strong negotiating power to hold down the price from any one supplier. Siam cement can obtain and fire fuel oil, natural gas, coal or lignite. This fuel switching ability appears to give Siam Cement some buying power such that there is some (albeit limited) price competition from the oil traders for its fuel oil business. Esso is the main supplier of fuel oil at present but they also buy from Shell to have some diversification. Other important considerations in awarding their fuel oil business are reliability of supply, technical support and service and maintenance of quality. As indicated the companies compete through making formal quotations. They have not dealt with any independents for supplies.

(ii) Thai-Asahi Glass

The glass manufacturing process is not as energy-intensive as cement but more so than secondary manufacturing. Energy is an important cost element in the total cost structure but not as overwhelming as cement. The maintenance of a continuous supply of appropriate quality is, however, critical to the continuity of the manufacturing operation. Since this latter factor is more important than having the absolute lowest price, a company like Thai-Asahi Glass is more concerned about having a dependable supplier than soliciting and reviewing several quotations from majors and independents. They began with Shell as their supplier 23 years ago and, finding them dependable, have dealt with them up to the present. Although they might consider some supply diversification by buying from Esso or Caltex in the future, Shell would probably remain their principal supplier. It is unlikely they would deal with independents.

They have been approached by PTT to take natural gas through Thai-Asahi's own investment in a connection. This appears prohibitive at the moment since there was no major consumer on that side of the river to assist in defraying the cost of the river-crossing lateral.

(iii) Union Textile

Textile manufacturing is typical of a secondary manufacturing process where intensity of energy use is very low but nonetheless critical to the continuity of operation. In this sort of environment where oil product costs (fuel oil for boilers) are a small fraction of total costs but are critical to the operation, the absolute cheapest supply is not of major concern. Union Textile is more concerned about security, reliability of supply, dependable quality and back-up support services. Their present supplier, Shell, meets these criteria. There has been no effective price competition among the majors for their business and Union Textile would not consider supply from the independents.

(iv) Ajinomoto Company (Thailand) Ltd.

This firm is also engaged in a typical secondary manufacturing process-manufacture of monosodium glutamate - which is not highly energy intensive compared with extractive, primary materials industries. Ajinomoto has found that they have a reliable supply of their primary fuel, HFO (Bunker "D"), from Esso and Shell. There is no price competition between these two companies, however, and they have contracted for supply from both mainly to diversify supply and "comparison shop" on quality of technical support and reliability. They have never solicited offers from other suppliers and have not voluntarily received any alternative quotations.

4.1.4 Analysis of Market Structure by Major Product by Region

Appendix 1 contains an analysis of the sales and market shares for kerosene, gasoline, HSD, fuel oil and LPG by quarter, by major region from 1984 through mid-1986. In addition to the market shares for each company, the shares for the top 1, 2, 4, and 8 companies and the Hirfindahl - Hirschman index is calculated. These measures of concentration are discussed in Appendix 1.

As indicated in the case of premium and regular gasoline the pattern of concentration is much the same for Thailand as a whole and regionally over the entire period. The top four firms generally control 99 to 100% of the Thailand market (Mobil appears with a few sales in the South) while the top two control 55 to 65% of the market depending on the quarter of the year. The H index is generally in the range of 2500-2800 for the country as a whole*. There is no conclusive trend in the data although further analysis might indicate a slight decrease in concentration over the period. The South region has slightly less market concentration than the others, mainly due to the presence of Mobil as a very small fifth company. The East region is consistently the most concentrated although the difference is not highly significant when all the indices are at that general level.

The market data for kerosene indicates a more concentrated market than that of gasoline but a significant trend to lower concentration over the period - primarily due to a strong trend in the central region. In early 1984 the top two had 68-69% market share and the H index was in the 3100 range. This declined to top two 64% and H index 2675 by second quarter 1986. It appears that the degree of concentration for kerosene for the country as a whole is now more in line with that of gasoline. Regionally, the North and the Northeast have consistently the highest degree of concentration in this product; in the South the strong presence of Mobil in this product market makes it consistently the least concentrated region for kerosene.

* See appendix 1 for definition.

At the beginning of the period under analysis the market concentration pattern for HSD is much the same as for gasoline (and for kerosene more recently). The top two firms had 55-56% market share, top four, 99-100% (Mobil in the South) and the H index was about 2500. This has changed quite markedly over the period, however, mainly due to the effect of the independent importer/traders which shows up in Central region sales. By second quarter 1986 the top two market shares for the country as a whole had declined to 51%, top four to 91% and the H index to 2133. Examination of the evolution in the Central region provides even more striking indicators: the top two shares declined from 54 to 48%, top four from 100 to 85% and H index from 2534 to 1911. The market concentration situation now prevailing in the Central region (and still trending towards less concentration) approaches the degree of diversification which prevails in most industrialized countries. Moreover, it should not be concluded that because the statistics indicate the trend is only present in the Central region that it is confined solely to this area. In spite of official statistics it is probable that there is increased competition in up-country areas since Bangkok area sales may actually be reaching final consumers there. In addition, with independents' plans for terminalling and marketing actively in the South and up-country, decreased market concentration will soon show up in the official statistics.

4.2 LPG

4.2.1 Historical Background of LPG Trading

It is difficult to say exactly when consumption of LPG began in Thailand. The available statistical records indicate that a small amount of LPG was imported (probably from Singapore) in the mid-1950s and by in 1960 consumption of LPG had grown slightly--to 72 tons. In 1965, when the three major refineries came on stream, consumption of LPG rose significantly to 2780 ton (see Table 4.5). Since then, consumption of LPG in Thailand has been growing at the astonishing rates of 15% per year (during the 1970s) and 21% per year (during the 1980s) and consumption in 1987 reached 680,000 tons--compared to 150,000 tons a decade ago.

Supply and Demand of LPG

As stated above, Thailand needed to import LPG before refineries came on stream in the mid-1960s. However, the rapidly rising demand soon outgrew the local supply in 1970; this resulted in the need to import LPG and during 1970s, the need to import LPG continued to grow. By 1980, LPG imports reached 70,000 tons which accounted for 40% of the LPG consumption for that year. The supply situation improved significantly in 1985 when the gas separation plant came on stream. The plant produced 360,000 tons of LPG which satisfied 60% of the local demand. However, the rapidly rising demand soon outgrew the supply. Once again, in 1987, Thailand needed more LPG and imported 123000 tons.

Table 4.5
LPG Demand and Supply

Unit : Ton

Year	Demand	Supply		
		Refineries	GSP	Import
1955	9	0	0	9
1960	72	0	0	72
1965	2,779	2,853	0	(63)
1970	48,124	49,641	0	168
1975	110,874	112,072	0	569
1980	181,304	132,436	0	70,466
1985	607,160	135,736	363,052	125,638
1987	679,691	149,675	404,583	122,808

Sources : 1955-1975; National Energy Administration,
1980-1987; Ministry of Commerce.

Most LPG consumption is for cooking; LPG sold in cylinders accounted for 53% of total LPG consumption in 1987. Indeed, the LPG sales volume for cooking was 320,000 tons in 1985 and rose rapidly to 460,000 tons in 1987, with an average annual growth rate of nearly 20% per year. (See Table 4.6).

The second major use of LPG is now for automotive consumption, although the consumption of LPG for this purpose was quite small during the 1970s. However, as a result of the second oil crisis (which raised the price of oil compared to LPG) the price gap between LPG and gasoline began to widen. Further, government policy (to keep LPG price low to protect household consumers) also benefited car owners who used LPG and converting engines from gasoline to LPG use became widespread, particularly among taxies and commercial vehicles. Consumption of LPG for automotive purposes thus grew very rapidly and peaked in 1985.

In 1986, the price of oil collapsed and gasoline prices dropped. As a result, LPG engine conversions dropped significantly, demand for gasoline began to grow and automotive LPG consumption fell continuously in 1986 and 1987.

The third kind of LPG consumption is industrial. Textile, ceramic and glass producers are among the main users of LPG; however, consumption of industrial LPG has not changed during the past few years.

Role of Independent Oil Companies and LPG

The first "independent" oil company to start an oil business in Thailand was the Petrolane Oil Co. In 1981, the Petrolane Oil Co. was the first independent company to import LPG; it was followed by Siamraj Industrial and by 1981 the sales of LPG by the two independents accounted for 15.7% of total country consumption. In 1982, four other independent companies entered the business and began to import LPG and their combined market share rose to 37% (see Table 4.7).

The market share of independents continued to grow to 42% in 1984. Since then the sales volume of independent companies has begun to stabilize. The reasons for this slow down were (1) the trading licenses for three of the independent companies were revoked in 1984 due to their failure to meet the government reserve requirement and (2) LPG imports were banned when the gas separation plant came on stream. The ban significantly affected the profitability of the independents by eliminating their "trading gains" from imports (see Section 9.3.1.2 for further details). The ban is now lifted, however, because there is shortage of LPG from the gas plant and the refineries.

Development of the Gas Separation Plant

The idea of building a gas separation plant (GSP) was conceived during the first stage of natural gas development in

Table 4.6
Demand for LPG

Unit : Ton

Year	Cooking (Cylinders)	Automotive Uses	Industrial Users	Total
1985	321,449	219,503	66,207	607,159
1986	387,648	186,668	62,421	636,737
1987	458,818	149,553	71,321	679,692

Source : Ministry of Commerce.

Table 4.7
LPG Market Share of Independents

Unit : Ton

Year	Independents	Majors	Total	(%) Share of Independents
*				
1981	40,849	219,404	260,253	15.70
1982	139,101	237,234	376,335	36.96
1983	187,590	285,830	473,420	39.62
1984	228,334	320,438	548,772	41.61
1985	224,829	383,337	608,166	36.97
1986	239,399	397,339	636,738	37.60
1987	249,192	430,500	679,692	36.66

Note : * 1981 = Petrolane & Siamraj Vol.

Source : Ministry of Commerce.

Thailand. The first natural gas field to be commercially exploited in the country was the Union Oil field located some 425 km offshore the Eastern Seaboard. As part of Eastern Seaboard development, a 425 km submarine pipeline was laid to bring the gas onshore. The gas was then transported further inland via a 169 km pipeline to a power plant where it was used to generate electricity.

Further, in order to increase the value of this indigenous resource, the government had evolved a plan to build a plant to separate the high-value parts of the gas (ethane, propane, butane and heavier hydrocarbons) before transporting the remainder (methane) to the power plant because, when separated, these high-value hydrocarbons can be used to produce LPG and petrochemical products.

On February 24, 1981, the Cabinet approved the plan to build a GSP on the Eastern Seaboard. Construction began in 1983 and in 1985 the plant became operational. The initial production capacity of the Plant was 450,000 tons per annum of LPG, 350,000 tons per annum of ethane, and 66,000 tons per annum of natural gasoline. At present, the plant consumes up to 350 MMCFD of natural gas.

The government is now planning to expand the production capacity of the GSP and, when expanded, the facility will consume an additional 200 MMCFD of natural gas.

4.2.2 LPG Facilities

LPG facilities mostly consist of storage depots. Currently, the three major refineries have combined LPG storage facilities for 6,085 tons, while the storage capacity at the GSP is 4,239 tons; however, the largest LPG storage facility (24,416 tons) is owned by the PTT. PTT is responsible for the distribution of LPG up country and has built one large LPG distribution centre at Khao Bor Ya, five major LPG depots up country, and one in Bangkok.

The major oil companies' combined LPG storage capacity is relatively small--3,421 tons. In fact, their capacity is smaller than that of the independents whose combined capacity is 3,607 tons (see Table 4.8).

In addition, PTT has also invested in LPG cylinder filling plants at all of its depots. The combined capacity of these plants is 256,000 tons per annum. Major oil companies and independents also own filling plants which are mostly located in Bangkok. However, their combined capacity is unknown.

Table 4.8
1988 LPG Storage Capacity

Unit : Ton

Storage Company	Storage Capacity
Refineries	6,085
GSP	4,239
PTT *	24,416
Other Major Oil Companies	3,421
Independents	3,607
 Total	 41,768

Note : * Exclude PTT

Source : Ministry of Commerce.

PART III

GOVERNMENT REGULATIONS AND CONTROLS

Chapter 5

Institutional Structure of the Government

The main concerns of the Thai government with respect to the oil business are (1) to secure an adequate oil supply at low cost in order to foster stable economic growth; and (2) to efficiently control the demand for energy with appropriate taxation and price controls. To achieve these objectives, there are several government agencies involved in administering the petroleum business--at both the policy making and operational levels.

Historically, energy policy management has been the responsibility of the line agencies. They took the broad policy objectives outlined in the national Plan and implemented them more or less at their own discretion. Consequently, energy management was fragmented and was characterized by a lack of coherent coordination and clear objectives. Furthermore, there was no agency monitoring the changing environment, making it impossible to change policy direction to cope with unanticipated conditions.

The monitoring/coordinating of energy policy management is a sensitive and difficult task, requiring continuous effort of those who are responsible for it.

In view of these problems, the government established the National Energy Policy Committee in October 1986. The Committee, chaired by the Prime Minister, has two important functions.

1. To "unify" all the energy planning and management functions of the various government agencies.
2. To ensure that the Sixth Plan and other planning objectives are carried out by the government agencies responsible.

Furthermore, the government established two Sub-Committees to serve the National Energy Policy Committee by taking on specific energy policy planning in petroleum (Petroleum Policy Sub-Committee) and nonpetroleum (Energy Policy Formulation Sub-Committee) matters.

The government also established the National Energy Policy Office (NEPO) whose major function is to serve as the secretariat to the National Energy Policy Committee. This Office plays a very important role in coordinating the work of the National Energy Policy Committee, its two sub-committees, and other energy working groups appointed by these Committees. Other important responsibilities of the Office include the formulation of national energy policy, making appropriate recommendations to the Committees, and monitoring the changing domestic and world

environment related to energy. The Office will soon become the center--providing important energy information to support Committee decision making. The NEPO is attached to the Office of the Prime Minister.

The other government agency under the Office of the Prime Minister involved in the petroleum business is the NESDB. The NESDB is responsible for evaluating and analyzing energy development projects-- proposed by other government agencies and state enterprises--to ensure that decision making on investment in the energy sector is consistent with national objectives.

The Ministry of Industry

The agency under the Ministry of Industry involved in the oil business is the Petroleum Industry Division which comes under the jurisdiction of the Office of the Permanent Secretary. This division deals with future production plans, expansion, investment, distribution and the acquisition of domestic refineries. It also handles contracts signed by private refineries and the Ministry (such as the one signed by TOC and the Ministry of Industry).

The Division also controls and examines whether a refinery is in compliance with the contract it signed with the government.

Ministry of Science Technology and Energy

The National Energy Administration (NEA) is involved, among other things, in the research and development of various energy forms with the main objective of improving energy utilization efficiency. Some of the energy forms being studied are lignite, woodfuels and solar. Further, the agency is also responsible for the promotion of energy conservation particularly in the industrial and commercial sectors.

Ministry of Commerce

The Ministry has the authority, under the terms of the 1978 Fuel Oil Act, to control and ensure that a firm engaged in the oil business (such as a refinery, a trading company or a retail station) is complying with the Act. The Minister is also empowered to grant permission to a firm applying for entry into the oil trading business (at a capacity of more than 100,000 tons/year). The Ministry of Commerce also has the right to determine the quantity and type of oil to be held in reserve.

Further, the Commercial Registration Department of the Ministry is responsible for establishing and enforcing oil product specification standards. The Department is also responsible for controlling oil product imports by allocating import quotas to licensed oil companies. Currently, the Department is controlling the imports of diesel, kerosene, and LPG.

Ministry of Finance

The Ministry of Finance has been authorized to issue laws and regulations concerning rates, method of collection and administration of taxes on petroleum products domestically produced or imported. In addition, administration of the Oil Fund has also come under the Fiscal Policy Office, the Ministry of Finance's responsibility.

The Excise Tax Department and the Provincial Excise Offices are the agencies that collect taxes. The taxes are governed by the Oil and Oil Product's Tax Acts of BE 2507 and 2508 while frequent tax rate changes are specified by Ministerial Regulations.

The Customs Department collects all duties on imported and exported petroleum products.

The Comptroller-General's Department has the authority to administer and manage the Oil Fund established under Prime Ministerial Order Nos. 5/2524, 13/2524 and 4/2525 by enforcing frequent changes in the Oil Fund tax rate and subsidy--in accordance with proclamations issued by the Petroleum Policy/Subcommittee.

Ministry of Defense

Petroleum related issues that concern national security are taken care of by the Energy Department of the Ministry of Defense. In the past, especially before the Second World War, this department played a prominent role in energy matters; however, at present, the Department is mainly involved in overseeing that the production and development of the first military refinery (FANG) is in line with Ministry of Defense policy.

Ministry of the Interior

The Ministry of the Interior has the authority to operate in accordance with the Oil Storage Act of BE 2474 (1931). Under this Act, the Public Works Department is empowered to issue licenses for oil storage and sale of petroleum products and to examine oil storage areas to determine whether or not they conform to safety regulations. If an oil storage area is deemed dangerous, the Department has the authority to force the firm involved to make certain improvements or remedy the situation; otherwise, it is empowered to terminate the firm's license. In addition, the Department also determines the types of petroleum products for which a license needs to be granted, as well as matters related to storage methods and transportation.

The Police Department, particularly that of the Fire and Traffic Divisions, also plays an important role in determining safety measures in the storage, distribution and selling of petroleum products.

Petroleum Authority of Thailand

The Petroleum Authority of Thailand is state-owned enterprise under the control of the Ministry of Industry. It was established by the Petroleum Act of BE 2521 (1978) and has the following responsibilities:

- o the exploration, development and production of petroleum;
- o surveying, planning and designing a petroleum transportation system;
- o transporting petroleum to domestic and foreign markets;
- o building oil depots and storage tanks in which to store petroleum; and
- o establishing of a public company engaged in the petroleum business which joint ventures with other private oil companies.

Bangchak Petroleum Company Ltd.

The Bangchak Petroleum Company (BPC) is also state-owned enterprise in which the Ministry of Finance is the major shareholder. The company was established by Cabinet decision (June 1984) and has been exempted from certain government rules and regulations controlling its operations. The main responsibility of the company is to produce oil products to meet the growing oil demand from the public as well as the private sectors.

In addition to these agencies, there are also many other committees, sub-committees and working groups appointed to analyze and to make policy recommendations on various energy issues.

Chapter 6

Price Regulations and Controls

6.1 Existing Control and Adjustment Mechanism

The Government controls product prices at two levels : at the ex-refinery level and at the retail level through the Petroleum Policy Sub-committee (PPSC). The main working secretariat which performs technical/economic calculations in support of the PPSC is the National Energy Policy Office (NEPO) and the Petroleum Price Working Group.

The ex-refinery price is established by calculating C.I.F. Bangkok based on an average of the posted prices of six refining companies in Singapore - Shell, Mobil, Esso, British Petroleum, Caltex and Singapore Refining Corporation. In the case of LPG the ex-refinery or ex-GSP price is based on the highest Singapore posting. The official refinery gate price is adjusted weekly based on changes in dollar postings and/or exchange rate.

The official retail price is comprised of several elements as shown in Table 6.1(a) for each product according to the latest official structure:

- (a) Ex-refinery price - as discussed above.
- (b) Taxes - excise, and municipal taxes as established and collected by the Ministry of Finance.
- (c) Marketing Margin - allowance for companies' supply, distribution, marketing costs and profit margin.
- (d) Oil Fund - contribution (effective tax) or withdrawal (effective subsidy); was intended originally as strictly a price stabilization fund but evolved into a product cross-subsidization mechanism as well.
- (e) Retail Price in Bangkok - sum of a,b,c,d

As illustrated in Table 6.2 there is a slightly different structure for imported product versus refinery-sourced. Item (a) in this case is the official import price for the particular finished product. This is now calculated using average spot prices in Singapore plus approximately \$0.80 per barrel for freight and related charges. The basis for calculating this official price has varied in the past. Until recently the government used minimum postings in Singapore. LPG is also a special case; notional import price is based on Arab Gulf/PETROMIN posting plus freight and insurance.

As noted above the resultant official retail price is based on a Bangkok location. There is an official schedule of transport differentials which is used to establish the official retail price for each of the 708 districts in the country. In

Table 6.1 (a)

Price Structure of Petroleum Products
from Local Refineries

Effective : July 7, 1982

	Premium Gasoline	Regular Gasoline	Kerosene (Baht/Litre).....	High Speed Diesel	Low Speed Diesel	Fuel Oil 1500	LPG Large	LPG Small (Baht/Kilogram).....	LPG Car
Ex-Refinery Price	6.1134	5.6010	6.4711	6.1691	6.0951	4.2008	8.2010	8.2010	No control
Taxes	4.5316	3.8917	0.3956	0.9927	0.9564	0.0010	0.0001	0.0001	No control
Marketing Margin	0.5097	0.4719	0.3964	0.4014	0.2664	0.1003	1.8266	2.3566	No control
Oil Fund	2.2353	1.4354	(1.1431)	(0.1732)	(0.1979)	0.1679	(0.5677)	(0.5677)	No control
Retail Price (Bangkok)	13.45	11.40	6.12	7.39	7.12	4.47	9.46	9.99	No control

Sources : NPPC Announcements, Ministry of Finance and Ministry of Commerce.

Table 6.1 (b)
Price Structure of Petroleum Products
from Local Refineries

Effective : January 11, 1988

	Premium Gasoline	Regular Gasoline	Kerosene (Baht/Litre).....	High Speed Diesel	Low Speed Diesel	Fuel Oil 1500	LPG Large	LPG Small (Baht/Kilogram).....	LPG Car
Ex-Refinery Price	2.6984	3.1200	3.8003	3.4562	3.3199	2.3916	5.5690	5.5690	5.5690
Taxes	4.1440	4.4440	2.5250	2.5250	2.5250	0.2020	2.5000	2.5000	2.5000
Marketing Margin	0.6220	0.5809	0.3904	0.4858	0.2840	0.1756	2.3566	2.3566	1.0628
Oil Fund	0.1356	0.0545	0.6017	0.1670	(0.0289)	0.2308	(0.5756)	(0.5756)	1.3682
Retail Price (Bangkok)	3.90	8.20	6.12	6.30	6.10	3.00	9.85	9.85	10.50

Sources : PPSC Announcements, Ministry of Finance and Ministry of Commerce.

Table 6.2

Price Structure of Petroleum Products

Imported

Effective : January 11, 1988

	Premium Gasoline	Regular Gasoline	Kerosene (Baht/Litre).....	High Speed Diesel	Low Speed Diesel	Fuel Oil 1500	LPG Large	LPG Small (Baht/Kilogram).....	LPG Car
Import Price	3.1131	2.5655	3.7987	3.1483	3.0726	1.9940	4.5875	4.5875	4.5875
Taxes	4.4540	4.4540	2.5350	2.5350	2.5350	0.2030	2.5010	2.5010	2.5010
Marketing Margin	0.6220	0.5809	0.3964	0.4858	0.2840	0.1756	2.3566	2.3566	1.0628
Oil Fund	0.6809	0.5996	(0.6101)	0.1309	0.2084	0.6274	0.4049	2.3205	2.3487
Retail Price (Bangkok)	8.90	8.20	6.12	6.30	6.10	3.00	9.85	9.85	10.50

Sources : PPSC Announcements, Ministry of Finance and Ministry of Commerce.

Table 6.3 the official prices for retail regular gasoline is provided for several districts which are also the government seat for the listed province. The price differential versus Bangkok is shown, as well as road kilometers from Bangkok and the corresponding imputed transport cost per 100 km. for each location. The apparent anomalies in the imputed transport cost for different locations are accounted for largely by the different transport modes assumed to apply for each delivery point. Most of the northern and northeastern locations are served by rail through a local depot with relatively short-distance local road transport. The locations closer to Bangkok will have transport differentials based on wholly road transport with a relatively high cost effect from loading and unloading time on short-hauls. All the provinces in the far South are served by marine terminals, hence, have very low transport costs based on road kilometers from Bangkok.

6.2 Evolution of Policy

6.2.1 Refining

Events after World War II

The shortages of petroleum products in the country during World War II had, for the first time, provided an indication for the government of how important these products were to the economy, and how bad it was to be totally dependent on imported oil. Soon after the war ended, the government began to put some control on an oil product by setting the maximum retail price of gasoline at 1.35 baht/litre in 1948.

However, the idea of building the country's own refinery did not materialize until 1959 when Fang Refinery was built. The country's first refinery was a very small plant with designed capacity of only 1,000 B/D.

However, the objective of building Fang Refinery has never been fully understood. The refinery has been owned and operated by the Ministry of Defense since the first day it was brought on stream. It has a simple distillery process and was designed to refine heavy crude produced indigenously at Fang District, where the refinery itself was located. As a result, the yields of the refinery which were as much as 75% fuel oil, at that time had little value to the military or the country's economy (see Table 6.4). Between 1955-1960, the basic oil demand of the country was gasoline which accounted for 40% of the country's total oil consumption (see Table 6.5).

Moreover, Fang refinery itself had been underutilized. Statistics in Table 6.4 show that the refinery output had been consistently under 100 B/D as against the designed capacity of 1,000 B/D. In summary, the building of Fang refinery had no significant impact on the reduction of the country's dependency on imported oil.

Table 6.3

Official Transport Differentials

Province	Retail Price Regular Gasoline (Baht/Litre)	* Satang Differential VS. Bangkok	Road Kilometers from Bangkok	Imputed Cost Satang/Litre/100Kms.
Bangkok	8.20	-	-	-
Nonthaburi	8.20	-	20	-
Ayutthaya	8.25	7	77	6.5
Chai Nat	8.35	15	196	7.1
Samut Prakarn	8.21	1	25	4.0
Chachoengsao	8.27	7	78	10.3
Trat	8.39	19	387	4.9
Uthai Thani	8.41	21	222	9.0
Chiang Mai	8.61	41	697	5.9
Mae Hong Sorn	9.00	80	936	6.4
Nakhon Ratchasima	8.40	20	256	7.8
Ihon Kaen	8.49	29	445	6.5
Ubon Ratchthani	8.54	34	647	5.3
Samut Sakhon	8.28	8	38	18.4
Prachuap Khirikhan	8.10	20	278	7.2
Surat Thani	8.43	23	885	2.6
Song Khla	8.47	27	1274	2.1

Note : * Effective July 1, 1986

Source : Department of Internal Trade, Ministry of Commerce.

Table 6.4
Fang Refinery Production

Unit : Million Litres per Year

Year	Gasoline	Kerosene	Diesel	Fuel Oil	Total
1959	0.50	-	0.43	3.40	4.33
1961	0.11	-	0.19	2.70	3.00
1963	-	-	0.23	1.50	1.73
1965	0.26	-	0.03	1.70	2.00
1967	0.57	0.06	0.64	4.10	5.37
1969	0.29	0.54	0.61	3.30	4.74

Source : Oil and Thailand, National Energy Administration.

Table 6.5
Thailand Oil Consumption

Unit : Million Litres per Year

Year	Gasoline	Kerosene	Diesel	Jet Fuel	Fuel Oil	LPG	Total
1955	215	101	204	-	-	-	520
1960	517	138	531	4	128	-	1318
1963	554	154	694	6	432	1	1841
1965	402	66	1046	593	397	5	2509
1969	652	188	2207	312	1197	56	4612

Source : Oil and Thailand, National Energy Administration.

Pricing Structure of Oil Products before 1963

Since the first major oil refinery did not come on stream until 1964, Thailand had to import all of its oil products from foreign sources. In 1955, the country imported 551 mmmt of fuels consisting mainly of gasoline and middle distillate (see Table 6.6). In 1960, imports grew to 1,394 mmmt, with an average annual growth rate of about 20%. The corresponding values of all oil products imports in 1955 and 1960 were 680 mmbaht and 1,019 mmbaht, respectively (see Table 6.8).

During that time, the government placed no control on oil products imports, either in terms of pricing or quantity. Anyone was free to import, and the government would simply impose import duties on oil products brought into the country.

Ex-Refinery Pricing Structure During 1964-1973

Thai Oil refinery came into operation in 1964 with initial capacity of 36,000 B/D, and in 1965 Bang Chak and Thai Asphalt Manufacturing Refineries came on stream with initial capacities of 5,000 and 7,000 B/D, respectively (see Table 6.10). For the first time also, the government began to set the supply prices of oil products from refineries as well as imports that eventually led to the full control of oil prices that we are experiencing today.

During the early days of the operations, all three of the major refineries were run by private companies. The shareholders of Thai Oil refinery consisted mainly of businessmen and private companies including Shell Petroleum N.O., who also provided technical services for the refinery. Bangchak was immediately leased to Summit Oil after it was built. Thai Asphalt Manufacturing operated its plant for a few years, then sold the plant to Esso Standard Thailand in 1969. The combined production of the three refineries was only 381 mmmt in 1965, and grew to 3,052 mmmt four years later. The 1969 production could satisfy about 65% of the country's total oil consumption (see Table 6.11)

On the pricing side, the government at that time had little experience in dealing with ex-refinery pricing which was evidence by the lack of any clear national policy on the matter. Furthermore, world oil prices during that period were relatively stable. Thus, the setting of ex-refinery prices was not really a "critical" task as long as the controlled retail prices in the country were not affected.

The government's lack of a clear objective on refinery pricing can be further highlighted by looking at how the prices were actually set. Firstly, the government included certain conditions for the setting of ex-refinery prices in the construction and operating contracts between the Ministry of Industry (MOI) and Thai Oil, and between the Defense Energy Department (DED) and Summit refineries. However, it is still

Table 6.6
Oil Products Imports before 1963

Unit : Million Litres

Year	Gasoline	Kerosene	Diesel	Fuel Oil	Total
1955	247	100	204	-	551
1960	569	166	533	126	1394
1963	587	154	695	430	1866

Note : Net Imports

Source : Oil and Thailand, National Energy Administration.

Table 6.7
Import Prices of Oil Products before 1963

Unit : Baht per Litre

Year	Gasoline	Kerosene	Diesel	Jet Fuel	Fuel Oil
1956	0.77	0.71	0.65	-	0.42
1958	0.75	0.68	0.64	-	0.47
1960	0.65	0.63	0.60	0.60	0.41
1963	0.55	0.56	0.53	0.60	0.28

Source : Oil and Thailand, National Energy Administration.

Table 6.8

Values of Petroleum Imports before 1968

Unit : Million Baht

1955	680.1
1956	769.9
1958	888.6
1960	1018.8
1963	1198.6

Source : Oil and Thailand,
National Energy
Administration.

Table 6.9

Import Duties (1964)

Unit : Baht per Litre

Gasoline	0.80
Diesel	0.12
Kerosene	0.33
Fuel Oil	0.12
Lubricants	0.66
Bitumen	1.00

Source : Oil and Thailand, National
Energy Administration.

Table 6.10
Refinery Capacity

Unit : Barrel per Day

Company	1965	1970	1975	1980	1986
Thai Oil	36,000	36,000	65,000	65,000	65,000
Bangchak	5,000	25,000	30,000	65,000	65,000
ESSO	7,000	7,000	35,000	45,000	63,000
Fang	1,000	1,000	1,000	1,000	1,000
Total	49,000	69,000	131,000	176,000	194,000

Source : Oil and Thailand, National Energy Administration.

Table 6.11
Total Refineries Production 1964-1969

Unit : Million Litres

Year	Gasoline	Kerosene	Diesel	Jet Fuel	Fuel Oil	LPG	Total
1964	18.5	19.4	138	81	122	2	381
1965	208	22	534	217	311	5	1297
1967	480	91	796	202	618	17	2204
1969	561	159	1027	250	1005	50	3052

Source : Oil and Thailand, National Energy Administration.

unclear why the conditions and procedures of price setting for Thai Oil were different from those for Summit. Moreover, there were no price setting conditions on Esso which was operating under license with MOI, so there were no ex-refinery prices for Esso. Nonetheless, Esso, as a fully integrated company, had to sell their products under the controlled retail price conditions.

Secondly, in the actual price setting, MOI allowed Thai Oil to propose to the government a pricing formula for the initial setting of refinery prices. Thai Oil set its initial ex-refinery prices using six months average F.O.B. of Shell at Pulau Bukom, Singapore as a basis. Then the standard rates of freight, insurances, and losses were added to the F.O.B. prices to obtain C.I.F. Bangkok where Thai Oil used as their first ex-refinery prices. The government later approved the Thai Oil proposed formula, and the F.O.B. of Shell at Pulau Bukom had been used as the basis for Thai Oil price setting throughout the period between 1964 and 1971. Thai Oil was also allowed to adjust its own ex-refinery prices, given that the government was notified at least seven days in advance.

The selling prices of Summit refinery production to DED were somewhat more rigid. According to the conditions stated in the contract, ex-refinery prices of Summit would be based on F.O.B of British Petroleum in Arbadan, Iran in May 1964. The Summit refinery prices were not allowed to change upward unless F.O.B. Arbadan rose by more than 10% of the May 1964 prices, and only the amount exceeding the 10% level could be added to Summit prices. However, if the F.O.B. Arbadan fell, Summit had to immediately adjust its price downward.

Summit ex-refinery pricing structure was used from 1965 to 1975 when the government adopted unitary pricing of refineries using Thai Oil prices as the basis.

Ex-Refinery Pricing Structure between 1973 and 1987

Beginning in the early 1970's, world crude oil prices began to increase gradually, and then rapidly as a result of price manipulation by Arab oil producing countries. Since a significant amount of crude oil imported to Thailand came from the Middle East, the impact of a crude oil price rise could be felt almost immediately.

According to Table 6.12, C.I.F. prices of crude import during 1969-1972 were around 27-30 satang per litre. The price rose to 40 satang in 1973 when the first Arab Light posting was announced. During the period from July 1973 to January 1974, the posted price of Arab Light quadrupled to 1.40 baht/litre, and the C.I.F. price of imported crude to Thailand followed suit when it went from 0.4 baht in 1973 to 1.83 baht/litre in 1974. C.I.F. values of all imported products also reacted in the same fashion.

The government at that time was caught in the difficult economic as well as political situations of having to increase

Table 6.12
Average C.I.F. Value of Oil Imports

Unit : Baht per Litre

Year	Crude		Products (C.I.F.)		
	C.I.F.	Arab Light F.O.B.	Diesel	Gasoline	Fuel Oil
1969	0.260	N.A.	0.404	0.580	0.238
1970	0.270	N.A.	0.467	0.620	0.245
1971	0.308	N.A.	0.459	0.430	0.370
1972	0.325	N.A.	0.492	0.676	-
1973	0.404	0.360	0.680	0.676	-
1974	1.827	1.400	1.589	2.130	-
1975	1.347	1.340	1.778	2.540	1.320
1976	1.574	1.480	1.890	2.410	1.440
1977	1.693	1.590	2.049	2.550	1.630
1978	1.700	1.620	2.146	2.310	1.550
1979	2.300	2.060	3.146	3.360	2.900
1980	4.020	3.630	5.400	5.620	3.720
1981	4.960	4.710	6.140	6.230	4.720
1982	5.270	4.930	6.450	6.020	4.290
1983	4.610	4.390	5.330	-	4.100
1984	4.410	4.310	5.080	5.350	4.070
1985	4.820	4.820	5.480	5.680	4.280
1986	2.585	2.585	3.252	3.436	2.227
1987	2.878	2.856	3.330	3.646	2.643

Sources : Oil and Thailand, and NEA News, National Energy Administration.

retail prices of oil products while running the risk of facing severe economic repercussion of high oil prices. The government was also faced with the dilemma of having to maintain several policies concerning energy, most of which were conflicting. These policies were as follows:

1. To try to stabilize retail oil prices, particularly the ones that have direct impact to the economy. This policy led to the establishment of various types of oil fuel funds as well as subsidy schemes. The details of the oil fund and subsidy development will be discussed in Chapter 7.

2. To try to protect the interest of the country. This policy was to maximize government revenues from oil through the use of taxation and levies. Taxes have also been used as an effective tool for oil price stabilization as will be indicated in Chapter 7.

3. To ensure a continuous supply of oil. This policy was to provide oil traders enough incentives in terms of marketing margins so they would continue to operate.

4. To protect as well as to maintain maximum efficiency of local refineries. This policy was to set ex-refinery prices at a level such that local refineries would obtain sufficient margins under the condition that they would compete with other refineries in the area. This policy is the main interest of this section.

In 1971, the government changed ex-refinery prices setting based on C.I.F. to F.O.B. at Pulau Bukom, since the F.O.B. prices at that time tended to move strongly upward. The trend continued for several years, and the government used the F.O.B. prices (with some minor adjustments) from 1971 to 1978.

During 1973, the government increased ex-refinery prices twice, and the retail prices three times (see Table 6.13). The last retail price increase in 1973 was in December when ex-refinery prices were held constant - thus creating an opportunity for oil traders to earn "windfall profits" resulting from oil stock of oil which was bought before the change. The government later collected such profits from the companies and put them into an "oil fund" that was established for the first time. It is still unclear as to how the government used that oil fund, and for what purpose.

However, it is quite obvious that the money had not been used to stabilize oil prices by providing subsidies to oil companies at that time. During the 3 year period between February 1974 and March 1977, the government held retail oil prices constant despite the continuously rising world crude oil prices. However, the government still allowed the ex-refinery price to rise periodically (see Table 6.13). Therefore, there was a need for the government to either cut the tax or provide subsidies to oil companies. The government chose to cut the tax twice in 1974. So the policy at that time was to spread the

Table 6.13

Comparison between Ex-Refinery, Imports and Retail Prices

Unit : Baht per Litre

Date	Premium Gasoline			High Speed Diesel		
	Ex-Refinery	Import	Retail	Ex-Refinery	Import	Retail
01/04/1971	0.6709	0.4300	2.10	0.5296	0.4590	0.98
04/07/1973	0.8639	-	2.30	0.6276	-	1.05
14/11/1973	1.0259	-	2.69	0.9352	-	1.41
12/12/1973	1.0259	0.6600	3.01	0.9352	0.6800	1.60
27/02/1974	1.6076	2.1300	3.62	1.6259	1.5890	2.33
10/12/1975	2.2802	2.5400	3.62	1.9495	1.7780	2.33
15/03/1977	2.3833	2.5500	4.22	2.0322	2.0490	2.64
09/03/1978	2.4275	2.3100	4.98	2.1085	2.1460	2.64
31/01/1979	2.6407	-	5.60	2.2264	-	3.03
14/07/1979	3.7286	3.3600	7.84	3.4280	3.1460	4.88
10/02/1980	4.8475	5.2926	9.80	4.7037	5.2242	7.39
19/03/1980	4.8475	5.2926	9.80	4.7037	5.2242	6.54
21/01/1981	5.5606	5.6806	11.90	5.4616	5.5957	7.39
02/12/1981	6.4738	6.4738	13.45	6.4073	6.5536	7.39
29/03/1983	6.0581	5.3320	12.60	6.1660	5.3601	6.99
01/12/1983	5.4905	5.4905	11.70	4.9595	5.0557	6.70
21/02/1986	5.0621	4.5996	10.20	4.8105	4.1383	6.70
29/04/1986	3.6546	3.4715	9.50	3.1614	3.0902	6.50
01/07/1986	3.5660	3.4643	8.90	2.6887	2.4601	6.30

Sources : NPPC Announcements and Ministry of Industry.

deficits between the government and the refineries.

In 1976, the government had to make a new decision and this time they chose to provide subsidies instead of cutting the tax. However, they decided to follow the policy recommended by Thai Oil which was to let the refineries pay the subsidies to oil companies. In return, the refineries would be exempted from paying the operating fees to MOI (2.5% and 2% of net domestic sales for Thai Oil and Esso respectively, and 25 mmbaht/year for Summit to DED). Any shortfall of the payments would be supplemented from the governments budget.

Moreover, the government also set the ex-refinery prices at a level slightly lower than F.O.B. Pulau Bukom. This pricing policy was used until 1979.

In 1977, the government increased the retail prices of oil. The government also established the "oil price stabilizing fund" for the first time to avoid paying subsidy directly from the government budget. This fund had the same structure that we see today, and the first product that received subsidy from this fund was fuel oil.

In 1979, the government was faced with a second oil crisis, and also possible shortages of crude and oil products. In that year ex-refinery prices were increased four times, and retail prices were adjusted twice. In addition, the government also revised the ex-refinery pricing structure by using C.I.F. Bangkok instead of F.O.B. Pulau Bukom in order to give incentive for refineries to import crude. However, the government changed back to F.O.B. Pulau Bukom again in early 1980 when world oil prices nearly doubled. In that year, the government also had separate announcement for product import pricing structures, which were different from the ex-refinery structure.

Later in mid-1980, while oil prices continued to rise, the government changed refinery pricing again. This time the government set the price at the minimum posted F.O.B. prices of the five Singapore refineries which were Shell, Esso, Mobil, British Petroleum, and SPC. It was also the first time since 1964 that the government departed from strictly observing Shell Pulau Bukom prices.

However, the local refineries protested the use of minimum posted Singapore prices, and the government later in 1980 changed the ex-refinery pricing to the average posted F.O.B. prices of the five Singapore refineries. This structure is still in use today.

It can be seen that the government's intention in setting of ex-refinery prices on nearly all occasions has been to provide the local refineries small though sufficient margins. And unlike retail prices, the ex-refinery prices have usually been allowed to adjust instantly to changes in product prices to insure the refineries against losses.

Another protection the refineries have recently received from the government is the control of oil product imports (through quota allocation system). That is the imports are allowed only when there are shortages of the products from local suppliers. This protection will ensure that the refineries can run at their full capacity without the risk of competition from importers of oil products. (However, the refineries may have difficulties importing oil products particularly HSD, under current quota system see Section 7.2.2).

Under these protections, the main tasks of the local refineries are, therefore, to acquire the "right" crude at the right prices for their refineries and to improve refining efficiency. This is also the subject of Section 9.2.2.

6.2.2 The Retail Oil Business

The retail oil business in Thailand started in 1889 when the first shipment of Russian made kerosene arrived in Bangkok.* A few years later, Shell Oil, and Standard Oil (Esso) opened businesses in Thailand and, since then, the oil business here has flourished. Later on other oil products (like diesel and fuel oil) were imported when machinery began to be used. In 1930, the first gasoline station was opened in Bangkok.

The first controls on the oil business began after World War II when there was a severe shortage of imported products including oil. In 1948, the government announced its first retail price control--on gasoline--setting the price at 1.35 baht/litre (see Table 6.14). There were no price controls imposed on other oil products.

The government collected a 5% business tax on oil product sales and, in 1935, the government began to impose a custom duty of 0.1 baht per litre on gasoline and kerosene import. In 1954, the government also imposed Municipal tax on oil that was 10% of the amount of the business tax paid to the government. In addition, local governments were also allowed to collect 0.05 baht/litre from gasoline sold by business proprietors.**

In 1964, when the first oil refinery came on stream, the government also established the ex-refinery price (see Section 6.2.1). However, at that time, there were no retail price controls on oil products other than premium gasoline. It was also the first time that the government imposed an excise tax on oil in order to compensate for declining revenue resulting from falling oil imports. In 1971, the government announced retail

* Esso Standard Thailand "Ninety Years of Progress". January 1984.

** Somboon Siriprachai. "Government Policies on Natural Resources and Retail Oil Prices since World War II." July, 1986.

price controls on regular gasoline, HSD, LSD and kerosene (see Table 6.14), and, in 1974, retail prices of cooking LPG and light fuel oil were controlled.

After the first oil crisis in 1973, the government began to consider establishing an oil price stabilization fund whose objective was to soften the impact of fluctuating world oil prices. In 1974, the government attempted to establish the first "Oil Fund" by collecting stock gains (that were the result of rising world oil prices) from the oil companies. However, due to administrative problems,* the first oil fund failed to serve its purpose and stabilized domestic oil prices.

The government made several other attempts to establish oil funds in the ensuing years (see Chapter 7). In 1983, government efforts were successful and the "Oil Price Stabilizing Fund" was launched by Prime Ministerial Order 4/2526. This "Oil Fund" has become an important part of the current retail oil price structure which is as follows (see Tables 6.1, 6.2).

Retail Price ex-Bangkok = Ex-refinery (or Import) price
+ Taxes
+ Oil Fund levy
+ Marketing margin

The government has used the Oil Fund for three main purposes.

1. To stabilize retail oil prices during the time of rising world oil prices. This is done by giving subsidies to oil companies from the Oil Fund.

2. To keep the prices of certain oil products artificially low for political reasons. For example, the price of HSD has been set significantly lower than that of gasoline which is its substitute. This is accomplished by placing a higher excise tax on gasoline than on HSD. Further, there have been many occasions when HSD has been subsidized by Oil Fund. Other products for which prices have been kept low and which have been subsidized by the Oil Fund are cooking LPG and fuel oil. Thus the excise tax and the Oil Fund can be viewed as vehicles through which cross-subsidizations between different groups of customers take place.

3. To account for the difference between the fluctuating ex-refinery and import prices. If the product import price is lower than the ex-refinery price during a particular time period, the oil-fund levy on the imported product will be raised. Thus the Oil Fund is used to equalize the product acquisition cost (supply price + taxes + oil fund) with various sources of supply.

* Ministry of Finance. "Oil Funds." Department of Comptroller-General, 1986.

Table 6.14

Historical Development of Bangkok Controlled Retail Prices

Unit : Baht per Litre

Date	LPG (Baht/Kg.)			Premium Gasoline	Regular Gasoline	HSD	LSD	Kerosene	Fuel Oil (Redwood 2)				
	15 Kg.	50 Kg.	Automobile						600	1200	1500	2000	2500
16/12/1948				1.35									
22/06/1949				1.30									
1/04/1971				2.10	1.91	0.98	0.96	1.34					
4/07/1973				2.30	2.09	1.05	1.03	1.45					
13/11/1973				2.69	2.50	1.41	1.34	1.78					
16/12/1973				3.01	2.82	1.60	1.53	1.78					
17/02/1974	4.53	4.00											
26/02/1974				3.62	3.43	2.33	2.26	2.41					
25/10/1974									1.49	1.46	1.44		
15/03/1977				4.22	3.93	2.64	2.50	2.68					
19/09/1977									1.66	1.62	1.61		
9/03/1978				4.98	4.69								
30/01/1979				5.60	5.12	3.03	2.93	3.06	1.86	1.79	1.77		
21/03/1979	5.44	4.91							1.90	1.83	1.81		
13/07/1979	8.35	7.73		7.84	7.45	4.88	4.71	5.12	3.04	2.93	2.90		
20/07/1979	7.50	6.95						4.20					
10/02/1980	11.03	10.47		9.80	9.26	7.39	7.12	6.71	3.78	3.64	3.61		
19/03/1980	9.53	9.00				6.54	6.27	5.70					
21/01/1981	9.99	9.46		11.90	11.40	7.39	7.12	6.12	4.70	4.55	4.47	4.43	4.39
2/12/1981				13.45									
29/03/1983				12.60	11.10	6.99	6.72		4.32	4.17	4.09	4.04	3.99
1/12/1983				11.70	10.80	6.70	6.50						
5/11/1984			10.74										
21/02/1986				10.20	9.50				4.15	3.89	3.80	3.71	3.62
29/04/1986				9.50	8.80	6.50	6.30		3.69	3.40	3.30	3.20	3.10
1/07/1986				8.90	8.20	6.30	6.10		3.23	2.91	2.80	2.69	2.58
25/02/1987	9.85	9.85	10.50										
12/08/1987									3.12	3.03	3.00	2.97	2.94

Source : Announcement of the Anti-Profiteering Committee.

Excise and municipal taxes (other items in the retail price structure) have not been frequently adjusted. Further, taxes were used in conjunction with the oil fund to keep some oil product prices low. For example, the government imposed virtually no tax on LPG from 1980-1983, and also virtually none on fuel oil until 1986. The tax rate of HSD was also relatively low compared to that of gasoline.

Another item in the retail price structure is the marketing margin. The margin for each oil product sold domestically has been set by the government; these margins are intended to cover all oil company expenses, including dealers expenses, and allow for a "reasonable" amount of profit. Adjusting marketing margins for oil companies is a politically sensitive issue here in Thailand since higher margins usually means higher retail oil prices. Despite the requests of several oil companies, the margins have been raised only twice since 1980.

The government's past politically oriented oil pricing practices have led to distortions in oil consumption. Consumers responded to the above-mentioned price structure by switching their consumption toward products whose price was kept low. Indeed, the demand for HSD increased at 10% per year from 1981-1984 while the demand for automotive LPG also rose significantly. Meanwhile, during that period, the demand for high-priced gasoline was stagnant. Many illegal practices by unscrupulous oil traders also occurred; they adulterated higher-priced fuels with lower-priced ones or decanted cylinder LPG for automotive sale. This fuel switching and other illegal practices resulted in the loss of government revenue and loss due to accidents and fires resulting from illegal activities.

When the world oil price collapsed in 1986, the government took this opportunity to correct the distorted oil price structure by letting the price of gasoline fall at a faster rate than that of HSD. This was accomplished by adjusting taxes and oil fund levies for the two fuels. As a result, the price gap between gasoline and HSD, which was once as high as 6 baht/litre in 1982, was reduced to 2.6 baht/litre (see Tables 6.1 (a) and 6.1 (b)). The government also imposed taxes on fuel oil and, later on, also equalized taxes and the marketing margin among various grades of fuel oil in an effort to eliminate consumption distortion. Retail prices of fuel oil now closely represent their true economic value. In 1987, the government equalized retail prices for cylinder LPG (the two main sizes of 15 kg. and 50 kg.) and thus narrowed the price gap between it and automotive LPG.

Despite all of the above efforts, however, the rigidity of the current price structure continues to prevent retail oil prices from reflecting true world oil prices. Furthermore, whether the government can maintain the current oil price gaps among substitute fuels--especially if world oil prices significantly increase in the future--is still unclear. The rigidity of the oil price structure also has an impact on oil

company profitability (through marketing margin control) and business conduct, the subject of the discussion in the sections that follow.

6.3 LPG Pricing Structure

Among the petroleum products sold in Thailand, LPG probably has the most complex pricing structure. The reason is simply because LPG product has multiple uses in the country, and the government policies for each of these uses have been quite different. Currently, LPG is being consumed for three different purposes as follows.

1. Cooking This is probably the most basic use of LPG in the country, which the government has long been promoting. According to statistics in Table 6.15, consumption of LPG for cooking purposes have steadily increased at an average rate of 21% per year during the period of 1980 to 1986. The basic argument of the government for promoting the use of LPG for cooking is as a substitute for fuel wood and charcoal, the traditional sources of cooking fuels, whose supplies have been quickly depleting. The consumption of LPG to replace traditional fuel would hopefully slow down deforestation which has now reached the "critical" stage.

Since cooking LPG will be used basically by householders many of whom are poor, the government has a policy of providing subsidies to oil traders to keep the price of cooking LPG relatively low compared to prices for its other uses. According to the LPG pricing structure in Table 6.16, the ex-refinery price was 6.5664 baht/kg. (structure just before the unitary pricing scheme took effect). The government then added taxes and an oil fund levy of 1.4706 and 1.6382 baht/kg., respectively. At this point, there were no differences in the "acquisition costs" for cooking, automotive, or industrial uses.

The government then forces oil traders to sell LPG (in cylinders) at retail prices lower than the automotive uses by means of using price control. However, since these prices were lower than the "gross selling prices" i.e. the price that would cover all the costs and marketing margins, the government then provided the subsidies to oil traders to make up for the differences (see Table 6.16). For example, the retail price of LPG filled in 50 kg. cylinders was set at 9.46 baht per kg. Since the "gross selling price" was 11.5018, the subsidy of 2.0418 baht per kg. had to be given to oil traders. Note that the government usually holds the rates of subsidies and tax constant; therefore, oil fund levies must be used as adjusting figures, in the cases where there are changes in ex-refinery prices, in order to maintain the same retail prices.

Section 6.2.3. will describe the difference in pricing structures of LPG sold in cylinders, automotive and industrial sectors in detail.

Table 6.15
LPG Consumption by Enduses

Unit : Thousand Tons per Year

Year	Cooking (Cylinder)		Automotive		Industrial		Total
	Vol	% Share	Vol	% Share	Vol	% Share	
1980	147	72	17	8	41	20	205
1983	255	54	156	33	60	13	471
1984	266	49	215	39	67	12	548
1985	321	53	220	36	66	11	607
1986	388	61	187	29	62	10	637
1987	459	68	150	22	71	10	680
<u>Growth Rate 1980-1987</u>							
(% aai)	18		36		8		19

Source : Ministry of Commerce.

Table 6.16

LPG Pricing Structure Before Uni-Pricing Scheme

Effective : August 1, 1986

Unit : Baht per Kilogram

	Cooking (Cylinders)		Automotive	Industrial
Ex-Refinery	6.5664	6.5664	6.5664	6.5664
Taxes	1.4706	1.4706	1.4706	1.4706
Oil Fund	1.6382	1.6382	1.6382	1.6382
Marketing Margin	1.8266	2.3566	1.0628	No control
"Gross" Selling Price	11.5018	12.0318	10.7380	Unknown
Subsidies	2.0418	2.0418	-	-
Controlled Retail Price	9.4600	9.9900	10.7380	No control

Sources : NPPC Announcement and Ministry of Industry.

2. Automotive Another way in which LPG is consumed in Thailand has been for automotive fuel. Consumers have uniformly used LPG to substitute for gasoline because LPG prices have been relatively lower, even with the adjustment for heat content differential. The first group of consumers to convert their engines to run on LPG was taxi drivers in Bangkok, followed by other commercial vehicle operators, also mostly in Bangkok area. These were the groups of consumers who were sensitive to the fuel price differential because of their high rate of vehicle utilization, and thereby were able to recover the conversion costs in a relatively short time.

According to Table 6.15, LPG consumption for automotive fuel was still small in 1980 with only an 8% share of total consumption. However, the consumption began to increase very rapidly in 1981 and 1982 when gasoline prices were raised several times while the prices of LPG were relatively stable (There were no price controls on automotive LPG until November 1984). By 1984, the annual automotive LPG consumption rose to nearly 40% of the total which amounted to 215,000 tons. This level was equivalent to about 310 million litres of gasoline replaced by LPG.

The growth of automotive LPG consumption began to slow down in 1985, and started to decline in 1986 when the prices of gasoline were adjusted downward three times to narrow the price differential between the two fuels.

A second group of consumers that could potentially switch to automotive LPG is private passenger car owners. However, this group has thus far not been very responsive to the LPG/gasoline price differential, and relatively few of them actually converted their cars to run on LPG.

The other reason that explain the slowdown of automotive LPG consumption in recent years is the increasing popularity of diesel engines, especially for pick-up trucks. This results from the relatively low prices for diesel fuel compared to gasoline. However, one advantage of diesel fuel over LPG is its widespread availability compared to automotive LPG, especially in up-country areas. Moreover, diesel fuel prices have also been lower than LPG when comparing them on the basis of heat content (see Table 6.22).

3. Industrial Certain industries in Thailand have used LPG in their production process. Examples are the glass, ceramic, and textile industries. However, the consumption of LPG has shown no sign of increase in recent years where annual consumption has been steady at about 60,000 tons.

The retail prices shown in Table 6.16 were for the Bangkok area only. For LPG sold in up-country regions, the prices will be somewhat higher since transportation costs must be added to Bangkok base prices. However, unlike liquid oil products, the

control of selling prices of LPG up-country appeared to be rather loose.* Our record shows that as of August 1986, only 35. up-country provinces had announced retail price controls on cylinder LPG, and those prices were for "muang" or central districts only. No other areas had controls. The transport costs allowed by these provinces ranged from one to four baht/kg. depending on distance from Bangkok and the size of the cylinders. The transport costs were quite high since most oil companies had to transport cylinders from Bangkok since the up-country volume had been too small to justify building major filling plants in those areas.** Consequently, the retail prices of cylinder LPG had been significantly higher than those sold in Bangkok.

6.3.1 Outline-Unitary Pricing Scheme

The idea of subsidizing the transport costs of LPG to up-country provinces had been proposed to the government by PTT. The plan called for PTT to build large up-country depots, one in each region, and then ship LPG via bulk modes from PTT central distribution depots at Chonburi to these regional depots, which would act like centers for LPG distribution in a particular region. These centers are Chonburi (serving the East region), Nakhonsawan (serving the upper Central Plain), Lampang (serving the North), Khonkaen (serving the North East), and Surat Thai (serving the South) (See Figure 6.1). For the lower Central region, the supply would be coming from the "usual" sources which are the refineries (Thai Oil, Esso, and Bangchak), as well as the GSP (See Tables 6.17 and 6.18).

In order to act as supply center, PTT requested the government to subsidize transport costs of LPG from its Chonburi central terminal to all up-country centers mentioned above. With these subsidies, PTT would be able to supply LPG at the same wholesale prices as in Bangkok at all of these depots.

The government granted PTT their requests, and on August 11, 1986, the unitary pricing scheme of LPG took effect. Note that unitary pricing here does not mean that LPG will be priced the same everywhere at the retail level. It only means that the wholesale prices to licensed oil traders at locations where PTT depots are located are the same (See Table 6.8) for these centers). Different transport costs have to be added for shipments to other provinces served by these depots.

* Controlled retail prices of all oil products and LPG up-country have been the responsibility of each province, not the Central Government.

** There have been several small independently owned filling plants, many of which are illegal, in up-country areas.

Table 6.17
Current Oil Traders Sources of LPG Supply

Licensed Oil Traders	Serving Areas	
	Lower Central and Bangkok	All Up-country Regions *
Shell	Thai Oil, GSP	PTT Depots
Esso	Esso Reginery, GSP	Esso Refinery (East) PTT Depots
Caltex	Thai Oil, GSP	PTT Depots
PTT	Bangchak, GSP, Import **	PTT Depots
All Others	GSP	PTT Depots

Note : * Companies can still ship LPG from their terminals in Bangkok, but that practice would be uneconomical.
** Only PTT can import LPG.

Source : Oil Company Interviews

Table 6.18
PTT Regional LPG Depot Capacities

	Storage Capacity Cubic Meter	Cylinder Filling Capacity Ton/Year
<u>Central Distribution Center</u>		
Khao Bor Ya, Chonburi	6x4,000	-
<u>Regional Depots</u>		
Chonburi	2x2,000	64,000
Nakhon Sawan	1x2,000	32,000
Lampang	2x2,000	32,000
Khon Kaen	2x2,000	32,000
Surat Thani	1x2,000	32,000
<u>Bangkok Depot</u>	2x2,000	64,000
Total	44,000	256,000

Source : Petroleum Authority of Thailand.

For example, the product acquisition costs (or wholesale prices to Article 6 licensed oil traders)* as of August 11, 1986 was 9.6752 baht/kg. in Bangkok as well as at the five up-country centers. To arrive at this cost in a depot, say Nakhon Sawan, the government took the ex-GSP/refinery price of 5.6532 baht/kg. and added tax and oil fund levies. However, the government allowed PTT to deduct 0.8619 baht/kg. from the oil fund levy to cover its transport cost of LPG to Nakhon Sawan (0.3117 baht/kg.) and the operating costs of Nakhon Sawan depot (0.5802 baht/kg.). The deduction of the oil fund levy enable PTT to supply LPG at 9.6752 baht/kg., in Nakhon Sawan which was the same price as in Bangkok. (See Table 6.19)

This plan also enables PTT to control 80% of the total country supply of LPG up to the wholesale level. The amount of LPG supplied by PTT is equivalent to GSP and Bangchak LPG output plus imports (see Table 6.20). On a regional basis, PTT now has control of the entire up-country supply of LPG at the wholesale level. The only exception is the lower Central and the East where some oil traders still have alternatives for getting their supply from other local sources (e.g. from Thai Oil and Esso refineries).

The uses of the unitary pricing scheme will certainly have impacts on consumers as well as oil traders. Up-country consumers have benefited the most from the scheme since retail prices in most areas have fallen significantly. On the other hand, some oil traders have complained about the inflexibility of their operations and other problems. These impacts will be presented in detail in Section 6.4.2.

6.3.2 Comparing LPG Unitary Pricing with Oil Product Structures

Table 6.21 shows the pricing structure of LPG, gasoline and high speed diesel fuel (HSD). It can be seen that the structures are similar; that is, oil products have also been subjected to an oil fund levy and tax. The government has also provided a subsidy to HSD traders at certain times (but not during the period covered in Table 6.21). However, the magnitude of tax, oil fund, and subsidy has varied from product to product depending on the government policy at that particular time.

6.3.3 Controlled Retail Prices of LPG

Table 6.10 also shows the multi-tier pricing of LPG for various uses. The differences in prices for these uses have been the result of the government policy to achieve multiple objectives. These are:

1. Promotion of Cylinder LPG The first objective is to encourage the residential sector to use LPG for cooking in order

* For definition of Article 6 licensed oil traders, see Section 7.1.

Table 6.19
LPG Unitary Pricing Structure

Effective : November 14, 1986

Unit : Baht per Kilogram

Price Structure	LPG (Bulk Cylinder)				
	Nakhon Sawan	Lampang	Khon Kaen	Surat Thani	Bangkok & Chonburi
Ex-GSP/Refinery Price	4.9230	4.9230	4.9230	4.9230	4.9230
Oil Fund Levy	1.3603	1.1084	1.2244	1.3720	2.2522
Up-country Subsidies-PTT					
Transport Cost	0.3117	0.5636	0.4476	0.3000	0.0000
Storage Cost	0.5802	0.5802	0.5802	0.5802	0.0000
Net Oil Fund Levy	1.3603	1.1084	1.2244	1.3720	2.2522
Tax	2.5000	2.5000	2.5000	2.5000	2.5000
Product Acquisition Cost	9.6752	9.6752	9.6752	9.6752	9.6752

Sources : PPSC Announcements and Ministry of Finance.

Table 6.20
1987 Supply of LPG

Supplier	Ton	%
GSP	556,950	62.65
Bangchak	56,589	6.37
Esso	85,869	9.66
Thai Oil	66,735	7.51
Import	122,808	13.81
Total	888,951	100.00

Source : Ministrty of Commerce.

Table 6.21
Pricing Structure for Oil and LPG

Effective : August 11, 1986 (Bangkok)

Structure	LPG (Baht /Kilogram)				High Speed Premium	
	50 kg.	15 kg.	Automotive Industry		Diesel	Gasoline
					(Baht /Litre)	
Ex-refinery Price	5.5690	5.5690	5.5690	5.5690	3.4562	3.6984
Oil Fund	1.3682	1.3682	1.3682	1.3682	-0.1670	0.1356
Tax	2.5000	2.5000	2.5000	2.5000	2.5250	4.4440
Product Acquisition Costs	9.4372	9.4372	9.4372	9.4372	5.8142	8.2780
GMSM	2.3566	2.3566	1.0628	n.a	0.4858	0.6220
Controlled Retail Prices *	9.85	9.85	10.50	n.a	6.30	8.90
Subsidy	1.9438	1.9438	-	-	-	-

Sources : NPPC Announcement and Ministry of Finance.

to slow down the consumption of fuel wood and charcoal. Thus the retail prices of cooking LPG must be kept lower than those of other uses.

There have been retail price controls for LPG sold in two sizes of cylinders. The price for LPG filled in 11.5 - 15 kg. and 48-50 kg. cylinders must be sold no higher than 9.99 baht per kg.

Futhermore, the government has allowed higher marketing margins for cylinder LPG (per litre) than those of oil products because oil traders must invest at high costs on manufacturing, filling and transporting cylinder LPG. (see Table 6.21).

Note that the 1.9438 baht per kg. subsidy will be given under the following conditions.

(a) Only Article 6 licensed oil traders can file claim for a subsidy. This means they must incur the upfront cost of selling at a loss to dealers before they can get their money back a few months after sales are made.

(b) In the past cylinder LPG sold for residential cooking can claim a subsidy. The cylinder LPG sold for commercial applications like that used in restaurants and hotels, has not been eligible. These are mainly the 50 kg. size. However, cylinder LPG sold for non-cooking purposes is also subject to retail price control regulations. Such rules have meant oil trades had to sell 50 kg. cylinders to commercial customers at a loss since product acquisition costs of cylinder LPG have always been higher than the controlled retail price.

Recently, after years of oil traders' petitions, the government allowed subsidies for all uses of cylinder LPG.

Furthermore the government has also tried to discourage the use of LPG for automotive purposes because it affects the consumption of gasoline. High growth rates of automotive LPG during 1981-1986 have severely curtailed the growth of gasoline consumption resulting in a surplus of gasoline supply at local refineries and constraints on their operations. Therefore, the price of automotive LPG has been set higher than all other uses. According to Table 6.10 the controlled retail price of automotive LPG was 10.5 baht per kg. which was 0.65 baht per kg. higher than LPG sold in 15 kg. and 50 kg. cylinder sizes.

However, since automotive LPG is sold in bulk, the handling costs are much lower than those of cylinder LPG margin of only 1.0628 baht per kg. and no subsidy.

2. Other Objective The second objective is to set the prices sufficiently high to protect the taxes and oil fund revenues as well as to ensure the viability of the local refineries, particularly the gas separation plant. This is probable one of the reasons why the controlled retail prices of

LPG have not changed since 1981 despite the softening of world LPG prices in recent years. Moreover, this objective is also in direct conflict with the first objective which is to keep the cooking LPG prices low to encourage more residential consumption.

There are other reasons which are the consequence of the government pricing policy, to explain why the prices of LPG cannot be lowered. Firstly, the government does not want to widen the price gap between automotive LPG and gasoline by lowering the automotive LPG price for fear that more people would convert their cars to run on LPG. Currently, the gap is 0.27 baht per 1,000 KCAL (measured on same heat content basis), which has been narrowing from the high of 0.63 baht per KCAL in 1984 as a result of gasoline prices coming down significantly. The price differential at the current level does not provide incentive for conversions from gasoline (see Table 6.22).

Secondly, the government has been worried that lowering of cylinder LPG prices, while holding the automotive LPG price constant, would encourage the illegal activity of debottling cylinder LPG back into bulk storages for resale to automobiles. Such activities have long been practiced by some unscrupulous traders and have caused serious accidental fires and explosions resulting from carelessness and mishandling of highly flammable LPG.

In the past, there were at least two ways of making profit from illegal debottling of LPG resulting from the distorted pricing structure. These two ways are the products of the differential between wholesale prices of the cheaper source and the retail prices of the more expensive uses.

1. The debottling of 50 kg. to 15 kg. cylinders would earn the dealers a 1.45 baht per kg. margin which was the difference between the wholesale price of 50 kg. cylinder and the retail price of the 15 kg. cylinder (See Table 6.23). The "extra margin" earned was about 0.55 baht per kg. over normal margin received from 50 kg. cylinder. This extra margin would be even higher if the dealers underfill the 15 kg. cylinder, a practice which was very difficult for consumers to detect.

2. The debottling of cylinders into bulk storage for resale to automobiles would earn the margin of about 2.2 baht per kg. compared to only a 0.5 baht per kg. margin on regular bulk sales. This high margin was the difference between the wholesale price of 50 kg. cylinder and the retail price of automotive use. The 15 kg. cylinders had not been used for debottling mainly because they were more costly to handle.

The above margins were smaller if the debottlers were non-dealers and must buy the LPG from dealers instead of directly from oil companies. Most of the debottlers were probably of this type. The debottlers had to also incur "expenses" to keep their operations uninterrupted.

Table 6.22
Comparison between Automotive LPG, HSD,
and Gasoline Prices

Unit : Baht per Thousand KCAL

Date	Premium Automotive Gasoline	High Speed LPG Diesel	
November, 1984	1.56	0.93	0.77
1985	1.56	0.93	0.77
1986	1.25	0.93	0.74
January, 1987	1.18	0.93	0.72
March, 1987	1.18	0.91	0.72

Sources : NPPC, PPSC Announcements and
Ministry of Finance.

Table 6.23
Wholesale and Retail Price of LPG

Effective : August 11, 1986

Unit : Baht per Kilogram

Structure	50 Kg.	15 Kg.	Automotive
Product Acquisition Costs	9.6752	9.6752	9.6752
Subsidy	1.9438	1.9438	-
Net Acquisition Costs	7.7314	7.7314	9.6752
Oil Company Margins (approximate)	0.90	1.20	0.53
Wholesale Price to Dealers	8.5334	8.8334	10.2052
Retail Price	9.85	9.85	10.50

Sources : NPPC Announcement and Ministry of Finance.

There were apparently no simple ways out of this pricing "trap" since a solution to one shortcoming would in itself engender a new problem. Until recently, the government had faced up to this dilemma by doing practically nothing about it. But pressure from the public had begun to mount on the government to take action and planners had been trying to come up with solutions that would be acceptable economically, and politically.

Finally, the government decided that the proper solution would be to lower the 15 kg. price slightly and to increase the 50 kg. price to equate the 15 kg. price (see Table 6.10). The government also lowered automotive LPG prices to sufficiently narrow the retail price and wholesale price between automotive and 50 kg. cylinder. This also meant that the two-tier pricing would continue, and the government had to be prepared to sacrifice some of its oil fund revenue by lowering the automotive LPG price.

The new pricing policy stated above must also be supported by strict law enforcement on illegal activities. Such enforcement has been lacking in the past, and it remains to be seen whether it will be improved in the future.

6.4 Impact of Price Structure/Controls

6.4.1 On Competitiveness

1. General

There are indications from experience in other price-controlled environments that the presence of price controls itself tends to restrain competition. Not surprisingly such controls have the greatest restraining effect on price competition while other forms of competition may still prevail.

Although most controls do not imply that the seller must sell at the full official price, in other words the official price is a ceiling, there is a tendency for all sellers to conform to the ceiling price on quoted or listed prices. This is true even where allowable margins are reasonable - covering all costs and allowing an investment element for replacement and growth; it is especially the case, however, where allowable margins are "cut to the bone" or standard formula cost assumptions on major items like raw materials are unrealistically low. In this environment there is a tendency towards using non-price competition, brand identification, sale in package deals with complementary products, customer service and support etc., rather than through aggressive price-cutting to gain market share.

In markets for large volume-lot business such as that for heavy fuel oil which, in a deregulated market tend to be characterized by competitive bidding for business, there is a tendency for official ceiling prices to provide a focus for

individual quotations that might otherwise have differed. It is quite possible that the presence of such a controlled market may, over time, effectively eliminate the practice of bidding for business.

2. Experience in Thailand

Based on interviews with all refiners, marketers, and several large consumers there was no evidence of explicit price competition at the ex-refinery or retail level within the present oil refining and marketing industry in Thailand. Although some implicit, or hidden price competition was evident in the large volume-lot, heavy fuel oil business, even this was quite limited. One of the consumers received a grant from a marketer for half the financing of heavy fuel oil burning and utilization equipment. In another case the marketer installed and paid for the fuel oil storage tank for an industrial user. The attitude seems to be that the "authorities" have established an official price for products and this is what must be paid. Competition is largely in non-price areas such as: provision of technical support and service, reliability of supply, uniformity of quality, etc. Many suppliers seem to achieve "tenure" with an industrial firm; they began as sole supplier 10 or 15 years ago at the inception of a company's operations and have maintained their position as sole supplier ever since. Several industrial firms don't seem to want to even consider an alternate supplier if they are getting reliable supply and good service from their present supplier.

All these comments apply to the large, bulk fuel oil business. However, there is also large volume bulk trade in other products such as HSD where price competition has been intense at wholesale level. Much of the HSD and practically all gasoline is ultimately sold through retail outlets (or directly to large endusers where there is strong price competition).

As evidence that the price control system itself may extinguish price competition the only areas with a vestige of price competition are those where transaction prices are not controlled. A prime example of this is the HSD and gasoline jobber business: There is quite a brisk give-and-take in the area of suppliers, especially independent importers, selling to jobbers. The market is actively tested on a daily basis with market prices being established for truckload lots based on bargaining, largely by telephone, among suppliers and jobbers. Prices may vary among sellers even on a given day and are by no means static even in the face of static official prices. The jobbers themselves must sell quickly or "dump" to retail dealers or large consumers so the price at which they sell also may vary based on market conditions prevailing at the time.

Another area where there appears to be some price competition, albeit limited, is in bulk sales of LPG to large industrial/commercial consumers. This is another transaction price which does not come under official price controls.

6.4.2 LPG Unitary Price Impacts

As mentioned in section 6.3.3, the LPG multi-tier pricing system currently in use has been the result of the government policy to achieve multiple objectives concerning LPG consumption. However, this pricing system has also brought problems to the government by opening loop-holes for dangerous illegal practices, and reducing the government options for price adjustment.

Unitary pricing is another scheme recently introduced by the government to achieve yet another objective for LPG consumption. This is to reduce the retail prices of LPG for up-country consumers. It is carried out by establishing distribution centers at various points around the country and letting the wholesale prices to oil traders be the same at all of these centers, including Bangkok. Therefore, the retail prices of LPG at any location fall by the amount of transportation costs from Bangkok to the nearest center serving that particular location. The costs of transportation to the center are obviously subsidized by the government.

The unitary pricing scheme, therefore, has positive as well as negative impacts on those concerned. These impacts are as follows:

Oil Fund Contribution

The government has decided to subsidize the transportation costs by letting PTT deduct these costs from the oil fund levy that PTT should be paying to the government. There are two types of deductions.

1. Transport Cost According to Table 6.24 PTT deducted 0.3117 baht per kg. to cover the transportation costs of LPG by rail to the Nakhon Sawan distribution center. For other centers, PTT deducted 0.5636 baht per kg. for the Lam Pang center, 0.4476 baht per kg. for the Khon Kaen center, and 0.300 baht per kg. to the Surat Thani Center. No deduction was allowed for transportation from GSP to Bangkok or Chonburi Centers.

2. Storage Cost In addition to transportation allowances, PTT was also permitted to deduct the depot operating costs at these centers at the rate of 0.5802 baht per kg. from the oil fund levy. However, no depot cost deduction was allowed for Chonburi and Bangkok centers.

The total deduction allowed was about one baht per kg. at each center as shown in the Table 6.24. Therefore, PTT only paid 1.1 baht to 1.3 baht per kg. to the oil fund levy at these centers compared to a 2.2522 baht levy that was applied to Bangkok and all other depots not shown in the Table.

We can easily calculate the total amount of oil fund revenues that were "lost" due to subsidization to PTT. First,

Table 6.24
LPG Unitary Pricing Structure

Effective : November 14, 1986

Unit : Baht per Kilogram

PRICE STRUCTURE	LPG (LARGE-48 KG)					LPG (SMALL-15 KG)					LPG (AUTO)					LPG (INDUSTRIAL)				
	NAKHON SAWAN	LAMPANG	KHON KHAEN	SURAT THANI	BANGKOK & CHONBURI	NAKHON SAWAN	LAMPANG	KHON KHAEN	SURAT THANI	BANGKOK & CHONBURI	NAKHON SAWAN	LAMPANG	KHON KHAEN	SURAT THANI	BANGKOK & CHONBURI	NAKHON SAWAN	LAMPANG	KHON KHAEN	SURAT THANI	BANGKOK & CHONBURI
BY-GAS/REFINERY PRICE	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230	4.9230
OIL FUND LEVY	1.3603	1.1084	1.2244	1.3720	2.2522	1.3603	1.1084	1.2244	1.3720	2.2522	1.3603	1.1084	1.2244	1.3720	2.2522	1.3603	1.1084	1.2244	1.3720	2.2522
TRANSPORT COST SUBSIDY	0.3117	0.5636	0.4476	0.3000	0.0000	0.3117	0.5636	0.4476	0.3000	0.0000	0.3117	0.5636	0.4476	0.3000	0.0000	0.3117	0.5636	0.4476	0.3000	0.0000
STORAGE COST SUBSIDY	0.5802	0.5802	0.5802	0.5802	0.0000	0.5802	0.5802	0.5802	0.5802	0.0000	0.5802	0.5802	0.5802	0.5802	0.0000	0.5802	0.5802	0.5802	0.5802	0.0000
	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752	7.1752
TAX	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000
PRODUCT ACQUISITION COST	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752	9.6752
MARKETING MARGINS	1.8566	1.8266	1.8266	1.8266	1.8266	2.3566	2.3566	2.3566	2.3566	2.3566	1.0628	1.0628	1.0628	1.0628	1.0628	NA	NA	NA	NA	NA
'GROSS' SELLING PRICE	10.6099	10.3580	10.4740	10.6216	11.5018	11.1299	10.8880	11.0040	11.1516	12.0318	10.7380	10.7380	10.7380	10.7380	10.7380	NA	NA	NA	NA	NA
SUBSIDY	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	(2.0418)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CONTROLLED RETAIL PRICE	9.4600	9.4600	9.4600	9.4600	9.4600	9.9900	9.9900	9.9900	9.9900	9.9900	10.7380	10.7380	10.7380	10.7380	10.7380	NA	NA	NA	NA	NA
VOLUME (1000 TON)	1.2138	1.0647	1.3345	1.6256	21.2075	0.4046	0.3549	0.4449	0.5418	7.0693	0.1792	0.3649	0.1012	0.5838	12.3138	0.0000	0.0000	0.0000	0.0000	5.4100
NET OIL FUND (B/EG)	-0.6815	-0.9334	-0.8174	-0.6698	0.2104	-0.6815	-0.9334	-0.8174	-0.6698	0.2104	1.3603	1.1084	1.2244	1.3720	2.2522	1.3603	1.1084	1.2244	1.3720	2.2522
NET OIL FUND+TAX (B/EG)	1.8185	1.5666	1.6826	1.8302	2.7104	1.8185	1.5666	1.6826	1.8302	2.7104	3.8603	3.6084	3.7244	3.8720	4.7522	3.8603	3.6084	3.7244	3.8720	4.7522
OIL FUND REV.(MM BHT)	-0.8272	-0.9938	-1.0906	-1.0688	4.4621	-0.2757	-0.3313	-0.3637	-0.3629	1.4874	0.2438	0.4045	0.1239	0.8010	27.7331	0.0000	0.0000	0.0000	0.0000	12.1846
TAX REV.(MM BHT)	3.0345	2.6618	3.3363	4.0640	53.0188	1.0115	0.8873	1.1123	1.3545	17.6733	0.4480	0.9123	0.2530	1.4595	30.7845	0.0000	0.0000	0.0000	0.0000	13.5250
OIL FUND+TAX REV.(MMBHT)	2.2073	1.6680	2.2454	2.9752	57.4809	0.7358	0.5560	0.7486	0.9916	19.1606	0.6918	1.3167	0.3769	2.2605	58.5176	0.0000	0.0000	0.0000	0.0000	25.7096

Sources : PPSC Announcements and Ministry of Finance.

SUMMARY (MONTHLY AVERAGE)	

* TOTAL VOLUME 1000 TON	54.2145 *
* TOTAL SUBSIDY TO PTT	7.9989 *
* TOTAL OIL FUND REVENUE	42.1061 *
* TOTAL TAX REVENUE	135.5363 *
* TOTAL TAX + OIL FUND	177.6424 *

we must determine the volume that went through the up-country depots. According to the NESDB estimate, the monthly throughput of the Nakhon Sawan center was about 1,880 tons in November, 1986 (the period when the unitary pricing scheme took effect). The volume for the Lampang center was 1,780 tons, with 1,880 tons for Khon Kaen and 2,750 tons for Surat during the same period. Note that there were insignificant amount of LPG sold for industrial uses at these centers. The total volume sold through these depots was 8,300 ton per month which was about 15% of total country consumption.

Since the up-country volume was relatively small, the amount of subsidization to PTT was about 8.0 million baht per month (using the November 1986 price structure). Total oil fund contribution of LPG net of transportation subsidy to PTT - was about 42 million baht in November. Thus the transportation subsidy was about 20% of the LPG oil fund revenue at that time.

Note that the unit net oil fund contributions were negative for all of the four up-country centers, and small positive figures for Bangkok (plus Chon Buri) for cylinder LPG. As it turned out, the total oil fund contribution from cylinder LPG was about zero. Therefore, the 42 million baht oil fund revenues came mainly from bulk sales (automotive and industrial uses), since the government did not have to provide a subsidy for these two applications.

It is expected that the amount of the PTT oil fund deduction would grow as the up-country LPG consumption begins to rise. Since the prices have become lower, the consumption should grow at faster rates than in the past.

Impacts on Consumers

The main objective of unitary pricing is that up-country consumers can buy LPG at cheaper prices because the costs of transportation have now been partly subsidized by the government. According to Table 6.24, controlled retail prices in provinces where distribution centers are located are now about the same as those in Bangkok.* For provinces located farther away from the centers, the prices will include transportation charges from the nearest centers to the provinces, not the charges from Bangkok as in the past.

Soon after the new scheme took effect, controlled retail prices in the provinces were adjusted downward by the local authorities. According to Table 6.25, the prices of the 50 kg. cylinder fell by about 0.4 - 1.4 baht per kg. in the provinces all around the country. The prices of 15 kg. and automotive LPG were also adjusted downward accordingly.

* Some of the centers are built out of town.

Table 6.25
Comparison of Controlled Retail Prices
Before and After Unitary Pricing
(50 Kg. Cyclinder)

Unit : Baht per Kilogram

Province	Before 11/8/86	After 11/8/86	Deduction
Bangkok	9.46	9.46	no change
Saraburi	10.40	10.00	0.40
Rayong	10.25	9.82	0.43
Sukhothai	11.60	10.20	1.40
Chiengmai	11.80	10.40	1.40
Maehongson	13.54	12.70	0.84
Phuket	11.46	10.42	1.04
Ubol Rathathani	11.08	10.60	0.48

Source : Department of Internal Trade, Ministry of Commerce.

It is difficult to determine the total amount of savings to consumers resulting from price deduction since we do not know the distribution of LPG by uses by provinces. However, we can make a rough estimate by using the known monthly throughput of distribution centers. That amount was about 8,200 tons per month. The average deduction in prices appears to be less than 1 baht per kg. in provinces surrounding these centers, so the maximum monthly benefit to consumers could be around 7-10 million baht per month.*

Note that there were no price reductions in Bangkok and many of the provinces in lower central area where supply can be served directly from Bangkok. However, consumers in these provinces consumed 70-80% of total LPG volume. They would not receive benefit from the unitary pricing scheme.

On the demand side, we can expect consumption in provinces where the prices have been reduced to begin to grow faster than before. But the rate of growth may not be high because LPG cooking equipment is expensive. A small set can cost several hundred baht which may be too expensive for most householders in rural areas. Thus, the consumption of LPG in up-country regions would still be limited to within cities and towns at this stage. It will be quite sometime before the use of LPG is spread out to consumers in rural areas.

Effects to the Oil Companies

Based on our observation, many oil companies have expressed their concerns, not directly over the unitary pricing scheme, but on the control of the LPG business by PTT. In the past most oil companies filled their cooking gas cylinders at their Bangkok terminals and then shipped the cylinders up-country, usually by truck. On the return trips, the trucks brought back empty cylinders for inspection, reconditioning, and refilling in Bangkok. In other words, the companies had had full control of all stages of their operations.

With the use of unitary pricing, shipping of cylinders from Bangkok is economical only in the lower central area. In other regions, the companies now have two alternatives; one is, to let PTT do the filling and reconditioning of cylinders for them, but they would have no control over these costs; the other is to build their own filling plants around the country which is a costly option since such plants would also require expensive LPG storage.

Some of the companies, however, have been asking the government to subsidize their transport costs for up-country delivery, the same way that PTT now enjoys. The argument for

* Controlled retail prices as of December 9, 1986, the period when the new pricing took effect.

the subsidy is to give oil companies more freedom of operation which would also promote competition, not only in marketing, but also in the distribution of LPG as well.

A careful study of the Prime Ministerial order concerning the up-country transportation subsidy has found that the order did not specify that the subsidy be restricted only to PTT. A private oil company may be eligible for the subsidy if it can satisfy two of the order's requirements:

(a) The company must build LPG storage at the same location, and have the minimum capacity as specified by the government.

(b) The company must also supply LPG to any oil traders from its storage, not only to its own marketing arm, at the prices specified by the government.

This means that the company must build at least a 2,000 ton LPG sphere knowing that the total monthly demand for its serving region has averaged only 2,000 tons. Moreover, PTT has already had the facilities built in the same area. Such investment is certainly uneconomic even though the company may perhaps be given subsidy from the government. This is simply because the subsidy is given on per unit of throughput, which can be expected to be quite small.

The other concern that oil companies have about the unitary pricing is that PTT may be selling LPG to its dealers at about the same prices as those to other licensed oil traders. If this were true, PTT's dealers would have an unfair advantage over other oil companies' dealers by having significantly higher marketing margins due to their lower product acquisition costs. However, PTT has insisted that its dealers have not received any "special" treatment in terms of selling prices from PTT's centers.

Despite the private oil companies concerns, however, we feel that in the long run the oil companies should also benefit from unitary pricing because they will have more flexibility in arranging their supply sources, although they still have to invest in new facilities, like the filling plants, if they want to have full control of their operations in any particular up-country region.

Chapter 7

Non-Price Regulations and Controls

7.1 Overview of Laws and Regulations in the Oil Business

The following section is a summary of the important laws and regulations governing the oil business. In this particular study, each of these laws and regulations has been classified into seven groups in accordance with its objectives or main features as follows.

- o Storage
- o Rules of conduct, quality, reserves and importation
- o Government measure for the prevention of oil shortages and the promotion of energy conservation
- o Oil fund
- o Taxation and import duties
- o Price control
- o LPG

7.1.1 Laws and Regulations : Storage

Table 7.1 presents the chronology of laws and regulations concerning storage of oil fuel. The history of this type of legislation goes back to 1931 when the first Act involving the oil business was promulgated. Its aim was to provide guidelines and controls over procedures and methods for storing, filling and distributing fuel. It should be noted here that the government's attempt to exert a degree of control over the size of oil industry, was reflected in this very first Act. It stipulated that any person intending to engage in the business had to apply for permission. However, before domestic refineries entered the picture, the laws governing the oil business were mainly concerned with the procedures and methods involved in storage and distribution from the point of view of safety.

7.1.2 Laws and Regulations : Rules of Conduct, Quality, Reserves and Importation

Basically, this group of regulations applies to domestic refineries, oil trading companies and importers as well as retailers. The regulations were mainly concerned with the way oil companies conducted business, product quality specifications, reserves and imports. Table 7.2 shows the chronology of these regulations. The main body of laws and regulations which laid down guidelines for conducting oil business was the Fuel Oil Act of B.E. 2509 (1966). Although it was abolished in 1978 when the new Fuel Oil Act of B.E. 2521 was introduced, it laid the foundation for the basic rules of conduct and control within the oil business.

Table 7.1

The Chronology of Laws and Regulations: Storage

YEAR	LAWS AND REGULATIONS	
1931	OIL STORAGE ACT B.B. 2474 (1931)	THE MAIN FEATURES OF THE ACT CONCERN PROCEDURES AND METHODS OF STORING, FILLING AND DISTRIBUTING FUEL FROM THE POINT OF VIEW OF SAFETY. IN ADDITION, A FIRM ENTERING INTO THE OIL TRADING BUSINESS MUST APPLY FOR GOVERNMENT PERMISSION.
1931	MINISTERIAL REGULATION 1, B.B. 2474 (1931)	UNDER ARTICLE 56 OF THE OIL STORAGE ACT, THE MINISTRY OF INTERIOR IS EMPOWERED TO STIPULATE CONDITIONS AND CRITERIA CONCERNING THE PROCEDURES AND METHODS OF OIL STORAGE AND DISTRIBUTION.
1947	MINISTERIAL REGULATION 2, B.B. 2490 (1947)	MINOR REVISION OF APPLICATION FORM CONCERNING WITH DATE WAS CHANGED.
1949	MINISTERIAL REGULATION 3, B.B. 2492 (1949)	THE REGULATION CONCERNING GOVERNMENT OFFICIALS WITH AUTHORITY TO GRANT PERMISSION STATED IN MINISTERIAL REGULATION 1, 1931 WAS REVISED.
1953	OIL STORAGE ACT (2), B.B. 2496 (1953)	ARTICLE 10 OF THE 1931 OIL STORAGE ACT WAS ABOLISHED. UNDER THIS NEW ACT, EVERY LICENSE GRANTED IS TERMINATED BY DECEMBER 31 EACH YEAR.
1960	MINISTERIAL REGULATION 4, B.B. 2503 (1960)	ARTICLE 8 OF MINISTERIAL REGULATION 1, 1931 CONCERNING THE APPLICATION FEE FOR PERMISSION TO STORE OIL WAS REVISED.
1965	OIL STORAGE ACT (3) B.B. 2508 (1965)	ARTICLE 39 OF THE 1931 ACT CONCERNING SPECIFICATIONS FOR STORAGE TANKS WAS MODIFIED.
1977	OIL STORAGE ACT (4) B.B. 2520 (1977)	ARTICLE 16 (2) WAS ADDED TO THE 1931 ACT, STATING THAT GOVERNMENT AGENCIES AND OTHER CONSUMERS WHO NEEDED TO HOLD MORE THAN 2,500 LITRES OF FUEL FOR THEIR OWN USE IN ECONOMIC ACTIVITIES HAD TO COMPLY WITH ARTICLES 19, 20, 34, 35 AND 37, WHICHEVER WERE APPLICABLE. IN ADDITION, THE PENALTIES FOR THOSE WHO DID NOT COMPLY WITH THE LAW WERE INCREASED.
1978	MINISTERIAL REGULATION 5, B.B. 2521 (1978)	APPLICATION FEES FOR OIL STORAGE PERMITS WERE INCREASED FROM THOSE STATED IN MINISTERIAL REGULATION 4, 1960, AS FOLLOWS:

Table 7.1 (Contd.)

YEAR	LAWS AND REGULATIONS
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1) NON-DANGEROUS FUELS

- A) MORE THAN 10,000 LITRES BUT LESS THAN 100,000 LITRES = 200 BAHT/YEAR
- B) MORE THAN 100,000 LITRES BUT LESS THAN 1,000,000 LITRES = 400 BAHT/YEAR
- C) MORE THAN 1,000,000 LITRES = 400 BAHT /YEAR/1,000,000 LITRES

2) REGULAR TYPE FUELS

- A) LESS THAN 5,000 LITRES = 200 BAHT/YEAR
- B) MORE THAN 5,000 LITRES BUT LESS THAN 100,000 LITRES = 400 BAHT/YEAR
- C) MORE THAN 100,000 LITRES = 400 BAHT /YEAR/100,000 LITRE/YEAR

3) DANGEROUS FUELS

- A) LESS THAN 5,000 LITRES = 300 BAHT/YEAR
- B) MORE THAN 5,000 BUT LESS THAN 1,000,000 LITRES = 600 BAHT/YEAR
- C) MORE THAN 100,000 LITRES = 600 BAHT/100,000 LITRES/YEAR

1987 OIL STORAGE ACT
B.B. 2530 (1987)

THE OIL STORAGE ACT (B.B. 2474) WHICH PROVIDED GUIDELINES FOR RETAIL STATION LICENSING IS NOW BEING REVISED SINCE THE TECHNOLOGY IN THIS AREA IS RAPIDLY DEVELOPING. SOME REVISIONS HAVE BEEN MADE, SPECIALLY, THOSE CONCERNING THE MAXIMUM SIZE OF AN UNDERGROUND STORAGE TANKS (PREVIOUSLY THE LARGEST SIZE ALLOWED WAS 5,000 LITRES FOR A STORAGE TANK).

Table 7.2

The Chronology of Law and Regulations: Business

Conduct, Quality Specifications and Importation of Petroleum Products

YEAR LAWS AND REGULATIONS

A. Business Conduct

1966	OIL ACT B.E. 2509 (1966)	THE ACT PROVIDED GUIDELINES FOR REGULATING THE OIL BUSINESS, ESPECIALLY REFINING AND TRADING. THE MAIN FEATURES OF THE ACT INVOLVE OIL RESERVES, PREPARE DOCUMENTS TO SUBMIT TO THE GOVERNMENT, QUALITY SPECIFICATIONS AND ENTRY FEES. (APPLICATION FEE = 100 BAHT AND FEE FOR LICENSE TO ENTER INTO OIL TRADING ACTIVITIES = 20,000 BAHT)
1968	ANNOUNCEMENT OF THE MINISTRY OF ECONOMIC AFFAIRS 2, B.E. 2509 (1966)	SOME GOVERNMENT OFFICIALS WERE GRANTED AUTHORITY TO ENFORCE THE 1966 OIL ACT.
1967	MINISTERIAL REGULATION B.E. 2510	UNDER THE JURISDICTION OF ARTICLES 5, 6, 11 (2) AND 19 OF THE 1966 OIL ACT, THIS REGULATION PROVIDED; A) AN OIL TRADER APPLICATION FORM B) FORM OF DOCUMENTS TO BE SUBMITTED TO THE GOVERNMENT IN ORDER TO REPORT ON QUANTITY, TYPE AND PLACE OF OIL STORAGE.
1971	ANNOUNCEMENT OF THE MINISTRY OF ECONOMIC AFFAIRS 3, B.E. 2514 (1971)	ANNOUNCEMENT OF THE MINISTRY 2, (1966) WAS CANCELLED.
1978	OIL ACT B.E. 2521 (1978)	THE 1966 OIL ACT WAS ABOLISHED AND THIS ACT WAS PROMULGATED IN ORDER TO REGULATE THE BUSINESS CONDUCT OF A FIRM ENGAGED IN OIL ACTIVITIES. THE MAIN FEATURE OF THE ACT CONCERNES PERMISSION TO ENTER INTO THE BUSINESS; INFORMATION AND DOCUMENTS TO BE SUBMITTED REPORTING QUANTITY, TYPE OF PETROLEUM PRODUCT REFINED, IMPORTED, STORED, DISTRIBUTED AND TRADED; OIL RESERVES; AND PENALTIES FOR THOSE WHO DO NOT COMPLY WITH THE LAW. THE OBJECTIVE OF THIS ACT WAS TO PROVIDE GUIDELINES FOR THE BUSINESS CONDUCT OF OIL TRADERS ENGAGING IN ANNUAL OIL TRADING OF LESS THAN 100,000 TONNES OF PETROLEUM PRODUCTS AND TO REVISE REGULATIONS CONCERNING RESERVES AND DISTRIBUTION OF OIL TO BE CONSISTENT WITH ECONOMIC CONDITIONS AND THE PREVENTION OF OIL SHORTAGES.
1979	OIL ACT (2), B.E. 2522 (1979)	ARTICLE 6 (2) WAS ADDED TO THE 1978 OIL ACT IN ORDER TO REGULATE OIL TRADERS (EXCLUDED UNDER ARTICLE 6) AND TRANSPORTERS. IN ADDITION, THIS ACT INTENDED TO IMPOSE GOVERNMENT MEASURES FOR PREVENTING AND MIXING DIFFERENT PETROLEUM PRODUCTS.

Table 7.2 (Contd.)

YEAR	LAWS AND REGULATIONS	
1983	MINISTERIAL REGULATION NO. 1, B.E. 2526 (1983)	APPLICATION FORMS FOR A FIRM INTENDING TO ENGAGE IN THE OIL BUSINESS AS A TRADER UNDER ARTICLE 6, 6 (2) OR AS A TRANSPORTER WERE PROVIDED BY THIS REGULATION.
1983	MINISTERIAL REGULATION NO. 2, B.E. 2526 (1983)	UNDER THE JURISDICTION OF ARTICLES 7, 8, 30 OF THE 1978 ACT, THIS REGULATION ISSUED FORMS FOR REPORTING TO THE GOVERNMENT ON QUANTITY, TYPE OF PETROLEUM PRODUCT REFINED, STORED, DISTRIBUTED AND IMPORTED BY AN OIL TRADER UNDER ARTICLE 6.
1983	MINISTERIAL REGULATION NO. 4, B.E. 2526 (1983)	UNDER THE JURISDICTION OF ARTICLE 30 OF THE 1978 OIL ACT, THE MINISTER DETERMINED FEES FOR PERMISSION TO ENTER THE BUSINESS. A) APPLICATION FORM = 100 BAHT B) ENTRY FEE FOR TRADER UNDER ARTICLE 6 = 20,000 BAHT C) ENTRY FEE FOR TRADER UNDER ARTICLE 6 (2) = 1,000 BAHT
B. QUALITY SPECIFICATION		
1968	ANNOUNCEMENT OF THE MINISTRY OF ECONOMIC AFFAIRS, NO. 1 - NO. 5	UNDER THE JURISDICTION OF ARTICLE 10 OF THE 1966 OIL ACT, THE MINISTER SPECIFIED STANDARD QUALITIES FOR REGULAR GASOLINE, PREMIUM GASOLINE, KEROSENE, HIGH SPEED AND LOW SPEED DIESEL.
1970	ANNOUNCEMENT OF THE MINISTRY OF ECONOMIC AFFAIRS	QUALITY SPECIFICATIONS FOR LPG WERE ISSUED.
1971	ANNOUNCEMENT OF THE MINISTRY OF ECONOMIC AFFAIRS, NO. 1 - NO. 6	QUALITY SPECIFICATIONS FOR REGULAR LUBRICATING OILS (GRADES SAE 10W, SAE 20 W, SAE 20, SAE 30, SAE 40 AND SAE 50) FOR GASOLINE AND DIESEL ENGINES WERE SPECIFIED.
1980	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 1-6 (1980)	THE MINISTER ISSUED QUALITY SPECIFICATIONS FOR LPG, REGULAR AND PREMIUM GASOLINE, KEROSENE, HIGH SPEED AND LOW SPEED DIESEL.
1981	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 1, B.E. 2524 (1981)	QUALITY SPECIFICATIONS FOR FUEL OIL WERE ISSUED.
1984	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 1, B.E. 2527 (1984)	QUALITY SPECIFICATIONS FOR GASOLINE AND KEROSENE WERE ISSUED.
1984	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 3, B.E. 2527 (1984)	QUALITY SPECIFICATIONS FOR HSD WERE ISSUED.

Table 7.2 (Contd.)

YEAR LAWS AND REGULATIONS

C. IMPORTATION OF PETROLEUM PRODUCTS

1981	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 10, B.E. 2524 (1981)	<p>UNDER ARTICLES 5 (2) AND 6 OF THE EXPORT AND IMPORT ACT, THE MINISTER ANNOUNCED THAT</p> <p>A) IMPORTERS OF GASOLINE AND OTHER SIMILAR FUELS USED FOR ENGINES UNDER DUTY CODE 27.10 A HAD TO ASK FOR PERMISSION TO IMPORT THESE PRODUCTS.</p> <p>B) PERMISSION TO IMPORT WOULD BE GRANTED DEPENDING ON THE TYPES, QUANTITY AND THE TIME PERIOD CONSIDERED TO BE SUITABLE FOR THE ECONOMY.</p>
1982	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 24, B.E. 2525 (1982)	PERMISSION TO IMPORT HSD UNDER DUTY CODE NO. 27.10 C WOULD BE GRANTED IN ACCORDANCE WITH PLANNED QUANTITIES APPROVED BY THE DEPARTMENT OF COMMERCIAL REGISTRATION.
1984	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 34, B.E. 2527 (1984)	PERMISSION TO IMPORT FUEL UNDER DUTY CODE 27.10, ESPECIALLY KEROSENE, MUST BE GRANTED.
1984	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 42, B.E. 2527	IMPORTERS MUST ASK FOR PERMISSION TO IMPORT LPG IN ORDER TO ENSURE THAT DOMESTIC PRODUCTION OF LPG WAS CONSISTENT WITH ITS DEMAND.
1985	ANNOUNCEMENT OF THE DEPARTMENT OF COMMERCIAL REGISTRATION DATED DECEMBER 26, 1985.	THE DEPARTMENT STIPULATED CONDITIONS AND CRITERIA FOR FACILITATING TRADE OF HIGH SPEED DIESEL BY DETERMINING SALES VOLUME, IMPORT QUANTITY AND PURCHASES FROM PTT.
1988	ANNOUNCEMENT OF THE MINISTRY OF COMMERCE NO. 58, B.E. 2531 (1988)	<p>THE FOLLOWING ANNOUNCEMENTS OF THE MINISTRY OF COMMERCE DEALING WITH IMPORTATION OF PETROLEUM PRODUCTS WERE CANCELLED.</p> <ol style="list-style-type: none"> 1) NO. 10 (1981) 2) NO. 24 (1982) 3) NO. 34 (1984) 4) NO. 42 (1984) <p>UNDER THIS ANNOUNCEMENT;</p> <ol style="list-style-type: none"> 1) PERMISSION TO IMPORT HSD UNDER DUTY CODE NO. 2710.003 OR LPG UNDER DUTY CODE NO. 27.11 WOULD BE GRANTED AFTER BEING APPROVED BY THE DEPARTMENT OF COMMERCIAL REGISTRATION. 2) IMPORTATION OF GASOLINE AND OTHER SIMILAR FUEL USED FOR FOR ENGINE UNDER DUTY CODE 2710.002 IS LIMITED TO LICENSE OIL TRADERS UNDER SECTION 6 OF THE 1978 OIL ACT.

7.1.3 Laws and Regulations : Government Measures for the Prevention of Oil Shortages and the Promotion of Energy Conservation

After the first oil crises, the Thai government's reaction was similar to that of many other countries in that it attempted to exert a certain amount of control over domestic demand and supply of energy and make adjustments accordingly. Its objective in doing so was to ensure long-term economic growth and to avoid a deterioration in the balance of trade and payments due to the skyrocketing price of crude oil. In 1973, the first law to provide guidelines and measures for avoiding oil shortages was introduced. It was named "The Royal Decree Dealing with Remedial and Protective Measures to Deal with Oil Shortages." This regulation empowered the Prime Minister to issue orders and introduce measures aimed at protecting the country from oil shortages. By means of this law, the Prime Minister is granted the authority to control production, distribution, transportation, imports, reserves, retailing and consumption. As shown in Table 7.3, there were at least 45 orders and regulations issued during the period 1973-1983, coinciding with the period in which the country was attempting to adjust to the two oil crises. Most of these measures dealt with ways to prevent oil shortages and promote energy conservation. For instance, they introduced restrictions on the number of service hours retail outlets were allowed to operate, stipulated the maximum amount of fuel a dealer was permitted to stock, and appointed a committee to deal with energy related issues. These orders and regulations were frequently revised whenever they were believed to be no longer relevant to the prevailing oil situation. Although these government discretionary powers of intervention (rather than price mechanisms) were meant to control domestic market supply and demand, they unavoidably resulted in a large body of laws and regulations which required tremendous human and physical resources to administer and enforce.

7.1.4 Laws and Regulations : The Oil Fund

The concept of the oil fund (the aim of which was to stabilize domestic petroleum products retail prices) started in 1977 with the establishment of "The Oil Price Stabilization Fund" which was launched in accordance with Order No. 178/2520 (1979) of the Prime Minister. Following this Order, several laws and regulations were introduced which were designed to provide basic guidelines for making contributions to--or receiving subsidies from--the fund. After 1978 when the baht appreciated in value, the benefits that accrued to importers were to be sent thereafter to the newly established "Oil Price Stabilization Fund (Foreign Exchange)." It was in 1979 when the "Oil Fund" was established under the Prime Ministerial Order No. 0201/19 and the two previous fund were dissolved. The procedures and methods for receiving subsidies from and contributing money to the Oil Fund--together with changes in taxes and subsidy rates and ex-refinery prices--were revised several times in accordance with orders from

Table 7.3

The Chronology of Laws and Regulations Related to Government

Measures for the Prevention of Oil Shortages and the

Promotion of Energy Conservation

YEAR	LAWS AND REGULATIONS	
1973	ROYAL DECREE DEALING WITH REMEDIAL AND PREVENTIVE MEASURES FOR THE PREVENTION OF OIL SHORTAGES, B.B. 2516 (1973)	UNDER THIS LAW, THE PRIME MINISTER WAS EMPOWERED TO ISSUE ORDERS AND MEASURES TO PREVENT OIL SHORTAGES IN THE KINGDOM BY EXERTING CONTROL OVER PRODUCTION, DISTRIBUTION, TRANSPORTATION, IMPORTS, RESERVES, RETAILING AND CONSUMPTION. THE PRIME MINISTER COULD AUTHORIZE ANY INDIVIDUAL OR GROUP OF INDIVIDUALS TO FORM A COMMITTEE TO DEAL WITH OIL-RELATED ISSUES.
1973	PRIME MINISTER'S ORDER NO. 47/2516 (1973)	A COMMITTEE WAS APPOINTED BY THE PRIME MINISTER TO DEAL WITH THE ISSUE OF REMEDIAL AND PROTECTIVE MEASURES FOR THE PREVENTION OF OIL SHORTAGES.
1973	PRIME MINISTER'S ORDER NO. 48/2516 (1973)	A GROUP OF INDIVIDUALS WAS APPOINTED BY THE PRIME MINISTER TO OPERATE WITHIN THE JURISDICTION GRANTED BY THE ROYAL DECREE (1973).
1974	PRIME MINISTER'S ORDER NO. 2/2517 (1974)	RESTRICTIONS WITH REGARD TO OPEN SERVICE HOURS WERE MADE ON THE ENTERTAINMENT SECTOR FOR THE SAKE OF ENERGY CONSERVATION.
1974	PRIME MINISTER'S ORDER NO. 4/2517	NO ONE EXCEPT OIL TRADERS WAS ALLOWED TO HOLD MORE THAN 200 LITRES OF FUEL OIL WITHOUT PERMISSION FROM THE GOVERNMENT. OIL TRADERS WERE TO REPORT TO THE GOVERNMENT AND SUBMIT PREPARED DOCUMENTS CONTAINING INFORMATION WITH REGARD TO THE DATE OF SALE, CUSTOMER, TYPE AND QUANTITY OF FUEL SOLD AND THE TYPE OF VEHICLE USED TO TRANSPORT THE FUEL. IN ADDITION, INVOICES MORE THAN 3 DAYS OLD WERE TO BE CANCELLED.
1974	PRIME MINISTER'S ORDER NO. 5/2517 (1974)	IN ADDITION TO THOSE ALREADY APPOINTED, MORE INDIVIDUALS WERE ASSIGNED TO THE COMMITTEE UNDER THE ROYAL DECREE.
1974	PRIME MINISTER'S ORDER NO. 24/2517 (1974)	UNDER THE TERMS OF ARTICLE 3 OF THE 1973 ROYAL DECREE, THE PRIME MINISTER GRANTED MOBIL OIL (THAILAND) THE RIGHT TO OPERATE AS AN OIL TRADING COMPANY.
1974	PRIME MINISTER'S ORDER NO. 49/2517 (1974)	THE USE OF ELECTRICITY TO ADVERTISE COMMODITIES WAS PROHIBITED BEFORE 7:00 P.M. AND AFTER 10:00 P.M.

Table.7.3 (Contd.)

YEAR	LAWS AND REGULATIONS	
1974	THE REVISION AND AMENDMENT OF THE 1973 ROYAL DECREE B.E. 2517 (1974)	THE 1973 ROYAL DECREE WAS REVISED TO EXTENDING THE PERIOD THE DECREE WOULD REMAIN IN FORCE FROM 1 (AS STATED IN ARTICLE 10) TO 2 YEARS DUE TO THE CONTINUATION OF THE OIL CRISIS.
1975	ROYAL DECREE NO. 2, B.E. 2518 (1975)	THE 1973 ROYAL DECREE WAS REVISED TO EXTENDING THE PERIOD THE DECREE WOULD REMAIN IN FORCE FROM 2 TO 3 YEARS DUE TO THE CONTINUATION OF THE OIL CRISIS.
1976	THE REVISION AND AMENDMENT OF 1973 ROYAL DECREE, NO. 2, B.E. 2519 (1976)	THE ROYAL DECREE WAS REVISED TO EXTEND THE PERIOD THE DECREE WOULD REMAIN IN FORCE FROM 3 TO 4 YEARS DUE TO THE CONTINUATION OF THE OIL CRISIS.
1976	PRIME MINISTER'S ORDER NO. 0201/68 (1976)	RESTRICTIONS WITH REGARD TO OPEN SERVICE HOURS OF WERE MADE ON THE RETAIL STATIONS WERE CHANGED TO BE: 6:00 A.M. TO 6:00 P.M.
1976	PRIME MINISTER'S ORDER NO. 0201/75 (1976)	OPEN SERVICE HOURS OF RETAIL STATIONS IN ORDER NO 0201/68 WERE CHANGED TO BE: 5:00 A.M. TO 9:00 A.M.
1977	THE REVISION AND AMENDMENT OF 1973 ROYAL DECREE, NO. 3, B.E. 2520 (1977)	ARTICLE 10 OF THE DECREE WAS ABOLISHED. IT IMPLIED THAT THE DECREE WOULD REMAIN IN FORCE WITHOUT A TIME LIMIT.
1977	PRIME MINISTER'S ORDER NO. 198/2520 (1977)	THE DEFINITION OF "OIL" STATED IN ORDER NO. 4/2517 (1974) WAS REPLACED BY NEW DEFINITION "OIL" MEANS PETROLEUM CRUDE, GASOLINE, JET FUEL, KEROSENE, DIESEL, FUEL OIL, LUBRICATING OIL AND GREASE.
1977	PRIME MINISTER'S ORDER NO. 221/2520	THE PRIME MINISTER'S ORDER NO. 2/2517 CONCERNING RESTRICTIONS ON SERVICE HOURS FOR THE ENTERTAINMENT SECTOR WAS ABOLISHED.
1978	PRIME MINISTER'S ORDER NO. 0201/20	THE PRIME MINISTER'S ORDER NO. 176/2518 (1975) WAS ABOLISHED. UNDER THIS ORDER, INDIVIDUALS FROM VARIOUS GOVERNMENT AGENCIES (INCLUDING THE MINISTRIES OF INDUSTRY, MILITARY, FINANCE, COMMERCE, COMMUNICATIONS AND OTHERS) WERE APPOINTED AS MEMBERS OF "THE NATIONAL COMMITTEE OF OIL INDUSTRY DEVELOPMENT AND POLICY"
1979	PRIME MINISTER'S ORDER NO. 1/2522 (1979)	IN ORDER TO COPE WITH THE SECOND OIL CRISIS, THE GOVERNMENT ISSUED REGULATIONS TO SECURE AN ADEQUATE OIL SUPPLY FOR THE COUNTRY. THIS ORDER INCLUDED THE FOLLOWING:

Table 7.3 (Contd.)

YEAR	LAWS AND REGULATIONS	
		<p>1. THE PRIME MINISTER'S ORDER NO. 4/2517 (1974) WAS ABOLISHED.</p> <p>2. THE PRIME MINISTER'S ORDER NO. 8/2517 (1974) WAS ABOLISHED.</p> <p>3. THE PRIME MINISTER'S ORDER NO. 24/2517 (1974) WAS ABOLISHED.</p> <p>4. REGULATIONS WERE ISSUED CONCERNING THE CONTROL OF OIL STORAGE, AND DISTRIBUTION APPLIED FOR INDIVIDUAL TRADING COMPANIES AND TRANSPORTERS.</p>
1979	PRIME MINISTER'S ORDER NO. 2/2522 (1979)	INDIVIDUALS (CONSISTING OF THE DEPUTY PRIME MINISTER, HIGH RANKING GOVERNMENT OFFICIALS FROM VARIOUS AGENCIES AND REPRESENTATIVES FROM PRIVATE OIL TRADING COMPANIES) WERE APPOINTED TO A COMMITTEE TO DEAL WITH OIL-RELATED ISSUES, COOPERATE WITH THOSE WHO HAD BEEN APPOINTED BY THE PRIME MINISTER'S ORDER NO. 1/2522 (1979) AND PROVIDE REQUIRED INFORMATION, DATA AND GUIDELINES ACTION TO FACILITATE GOVERNMENT MEASURES ON OIL-RELATED ISSUES.
1979	PRIME MINISTER'S ORDER NO. 3/2522 (1979)	PRIME MINISTER ORDERS NO. 48/2516 (1973) AND NO. 5/2517 (1974) WERE CANCELLED AND MORE GOVERNMENT OFFICIAL (IN ADDITION TO THOSE APPOINTED UNDER THE JURISDICTION OF PRIME MINISTER'S ORDER NO. 1/2522) WERE APPOINTED TO THE COMMITTEE.
1979	PRIME MINISTER'S ORDER NO. 4/2522 (1979)	ARTICLE 19 OF PRIME MINISTER'S ORDER NO. 1/2522 CONCERNING CONTROLLED QUANTITY OF DIESEL PURCHASED BY FARMERS, FISHERMEN, INDUSTRIALISTS AND OTHERS WAS REVISED.
1979	PRIME MINISTER'S ORDER NO. 5/2522 (1979)	THE DEFINITION OF "COMMITTEE" STATED IN THE PRIME MINISTER'S ORDER NO. 1/2522 WAS REVISED. UNDER THIS ORDER, THIS "COMMITTEE" WAS DEFINED AS "THE CENTRAL COMMITTEE FOR REMEDY AND PREVENTION OF OIL SHORTAGES" OF "THE REGIONAL COMMITTEE FOR REMEDY AND PREVENTION OF OIL SHORTAGES"
1979	PRIME MINISTER'S ORDER NO. 6/2522 (1979)	NO ONE WAS ALLOWED TO HOLD MORE GASOLINE AND DIESEL THAN NEEDED FOR NORMAL USE OR TO SELL THOSE PRODUCTS AT A PRICE HIGHER THAN CONTROLLED PRICES.
1979	PRIME MINISTER'S ORDER NO. 6/2522 (1979)	THE PRIME MINISTER'S ORDER NO. 2/2522 WAS ABOLISHED AND A NEW COMMITTEE FOR REMEDY AND PREVENTION OF OIL SHORTAGES WAS APPOINTED.
1980	PRIME MINISTER'S ORDER NO. 3/2523 (1980)	RESTRICTED SERVICE HOURS FOR NIGHT CLUBS AND DANCING PLACES WERE EXTENDED TO BE: 9:00 PM - 1:00 AM

Table 7.3 (Contd.)

YEAR	LAWS AND REGULATIONS	
1980	PRIME MINISTER'S ORDER NO. 4/2523 (1980)	TELEVISION BROADCASTING FROM 6:30 PM - 8:00 PM WAS PROHIBITED. AN AD HOC COMMITTEE TO DEAL WITH CRITERIA AND CONDITIONS TO BE GRANTED FOR USE OF ELECTRICITY IN INDUSTRIAL AND OTHER ACTIVITIES FROM 6:00 - 9:00 PM WAS APPOINTED.
1980	PRIME MINISTER'S ORDER NO. 7/2523 (1980)	<p>THE FOLLOWING WERE ABOLISHED.</p> <ol style="list-style-type: none"> 1) PRIME MINISTER'S ORDER NO. 248/2518 2) PRIME MINISTER'S ORDER NO. 0201/68 3) PRIME MINISTER'S ORDER NO. 0201/75 <p>NO SERVICE STATION OR RETAIL OUTLET WAS ALLOWED TO SELL FUEL ON SUNDAY AND FROM 9:00 PM- 5:00 AM FROM MONDAY TO SATURDAY.</p>
1980	PRIME MINISTER'S ORDER NO. 8/2523 (1980)	THE DEFINITION OF AN "OIL TRADER" STATION IN THE PRIME MINISTER'S ORDER NO. 1/2522, (1979) WAS REVISED. UNDER THIS ORDER AN OIL TRADER WAS TO REPORT TO THE GOVERNMENT WITHIN 15 DAYS ABOUT TYPE(S) AND QUANTITY OF FUEL SOLD. IN ADDITION, THE CONTROLLED QUANTITY OF DIESEL PURCHASED BY A FARMER WAS INCREASED FROM 100 LITRES TO 200 LITRES.
1980	PRIME MINISTER'S ORDER NO. 10/2523 (1980)	<p>THE FOLLOWING PRIME MINISTER'S ORDERS DEALING WITH ELECTRICITY CONSERVATION WERE CANCELLED.</p> <ol style="list-style-type: none"> 1) NO. 7/2522 (1979) 2) NO. 3/2523 (1980) 3) NO. 4/2523 (1980) 4) NO. 7/2523 (1980) 5) NO. 9/2523 (1980) <p>UNDER THIS ORDER,</p> <ol style="list-style-type: none"> 1) NO SERVICE STATION OR RETAIL OUTLET WAS ALLOWED TO SELL PETROLEUM PRODUCTS ON SUNDAY. ANY OTHER DAY, SERVICE HOURS WERE RESTRICTED TO 6:00 AM - 6:00 PM 2) THE USE OF ELECTRICITY FOR THE ADVERTISING OF COMMODITIES WAS PROHIBITED EXCEPT FOR THE SHOP'S NAME FROM 6:00 PM - 9:00 PM. FOR A MOVIE THEATER THE USE OF ELECTRICITY FOR ADVERTISING WAS ALLOWED DURING SHOWTIME. 3) SERVICE HOURS FOR RESTAURANTS, BARS, NIGHT CLUBS, MASSAGE PARLOURS AND OTHER WERE RESTRICTED. 4) RADIO AND TELEVISION BROADCASTING TIMES WERE RESTRICTED.
1980	PRIME MINISTER'S ORDER NO. 11/2523 (1980)	THE PRIME MINISTER'S ORDER NO. 8/2523 (1980) WAS REVISED.

Table 7.3 (Contd.)

YEAR	LAWS AND REGULATIONS	
1980	PRIME MINISTER'S ORDER NO. 12/2523 (1980)	NO SERVICE STATION OR RETAIL OUTLET LOCATED IN THE BANGKOK METROPOLITAN OR A MUNICIPAL AREA WAS ALLOWED TO SELL FUEL ON SUNDAY. ONES LOCATED OUTSIDE THE BANGKOK METROPOLITAN AREA AND IN NON-MUNICIPAL AREAS, COULD SELL FUELS EXCEPT DIESEL ON SUNDAY. SERVICE HOURS WERE LIMITED TO 6:00 AM. AND 6:00 PM. ON ANY DAY EXCEPT SUNDAY.
1981	PRIME MINISTER'S ORDER NO. 4/2524 (1981)	THE TELEVISION BROADCASTING TIME IN THE HARDYAI AND SONGKLA AREAS WAS REVISED.
1981	PRIME MINISTER'S ORDER NO. 6/2524 (1981)	RESTRICTED SERVICE HOURS FOR RETAIL OUTLETS LOCATED IN CHUNTHABURI AND RAYONG PROVINCES WERE EXTENDED.
1981	PRIME MINISTER'S ORDER NO. 9/2524 (1981)	RESTRICTED SERVICE HOURS FOR RETAIL STATIONS LOCATED IN CHIENGMAI AND LUMPOON WERE EXTENDED DUE TO THE FRUIT HARVESTING SEASON.
1981	PRIME MINISTER'S ORDER NO. 10/2524 AND NO. 11/2524	ELECTRICITY CONSERVATION MEASURES WERE RELAXED DUE TO A SPECIAL OCCASION.
1981	PRIME MINISTER'S ORDER NO. 14/2524 AND 15/2524 (1981)	RESTRICTED SERVICE HOURS FOR RETAIL STATIONS IN CERTAIN AREA WERE RELAXED.
1982	PRIME MINISTER'S ORDER NO. 7/2525 (1982)	GOVERNMENT MEASURES FOR CONTROLLING LPG TRADING WERE ISSUED AS FOLLOWS. 1) NO ONE EXCEPT A TRADER WAS ALLOWED TO SELL LPG TO A SERVICE STATION OR RETAILER. 2) NO ONE EXCEPT SERVICE STATIONS OR RETAILERS WAS ALLOWED TO SELL LPG TO CONSUMERS. 3) SERVICE HOURS WERE RESTRICTED TO 6:00 AM. TO 6:00 PM. 4) THE USE OF AN LPG CYLINDER IN A VEHICLE OR THE TRANSFER OF LPG FROM A GAS CYLINDER WAS STRICTLY PROHIBITED.
1982	PRIME MINISTER'S ORDER NO. 3/2525	RESTRICTED SERVICE HOURS FOR SELLING DIESEL FROM RETAIL OUTLETS LOCATED IN SAMUTSAKORN AND SURAT THANI WERE EXTENDED.
1982	PRIME MINISTER'S ORDER NO. 6./2525	RESTRICTED SERVICE HOURS FOR RETAILERS WERE RELAXED.
1983	PRIME MINISTER'S ORDER NO. 2/2526 (1983)	ARTICLE 19 OF THE ORDER NO. 4/2522 WHICH WAS REVISED BY THE ORDER NO. 8/2523 WAS ABOLISHED.

Table 7.3 (contd.)

YEAR	LAWS AND REGULATIONS	
1983	PRIME MINISTER'S ORDER NO. 7/2526	RETAIL STATIONS WERE ALLOWED SERVICE HOURS FROM 5:00 AM. TO 6:00 PM. IN BANGKOK. OUTSIDE OF BANGKOK, FUEL EXCEPT DIESEL COULD NOT BE SOLD FROM 6:00 PM. TO 5:00 AM. OF THE FOLLOWING DAY.
1983	PRIME MINISTER'S ORDER NO. 3 /2526	RETAIL OUTLET SERVICE HOUR RETRICTIONS WERE ABOLISHED DUE TO THE IMPROVING OIL SITUATION.
1984	PRIME MINISTER'S ORDER NO. 1/2527 (1984)	ARTICLES 4, 5, 6 OF THE PRIME MINISTER'S ORDER DATED MARCH 30, 1979 (THAT STATED THAT ANYONE WHO HELD MORE THAN 200 LITRES OF HSD AND/OR LSD HAD TO INFORM THE GOVERNMENT ABOUT QUANTITY AND STORAGE) WERE ABOLISHED.

the Prime Minister's office and Ministerial announcements as shown in Table 7.4.

7.1.5 Taxation and Import Duties

Domestically refined petroleum products were subject to the "Oil and Oil Products Tax Act" introduced in 1964. The aim of this Act was to tax domestic refineries in order to compensate for a decline in government revenue caused by a reduction in the volume of previously imported finished products. The law stipulated the methods and procedures as well as rates of taxation. Tax rates, however, had changed on several occasions because the government attempted to use taxes to stabilize oil prices and, at the same time, generate government revenue.

Imported petroleum products were subject to import duties specified and revised in several regulations dealing with custom tariffs. These tariffs were also adjusted several times, especially after the oil crisis, in order to ensure an adequate energy supply, conserve energy utilization or increase government revenue, whichever was favorable and applicable to the needs of the prevailing situation. The chronology of these regulations is presented in Tables 7.5(a), and 7.5(b).

7.1.6 Laws and Regulations : Retail Price Control

Laws and regulations concerning retail price control are based on the Anti-Profiteering Act of 1947. Under this Act, commodities not be sold at prices higher than the controlled prices--to prevent speculation. In 1974, the second Anti-Profiteering Act was promulgated; its main purpose was the revision and modification of the previous Act which, by that time, seemed to be out-dated.

After the first oil crisis, the need to control petroleum products prices was paramount. There were a considerable number of announcements from the Central and Regional Committees dealing with price control and anti-monopolistic practices and profiteering. The aim of these announcements was to change controlled retail prices of petroleum products whenever it was deemed necessary. The chronology of these changes is shown in Table 7.6.

7.1.7 Laws and Regulations : LPG

The main body of laws dealing with LPG, Revolutionary Decree No. 28, was not promulgated until December 19, 1971. This decree treated LPG separately from any other petroleum product because of its hydrocarbon nature as well as safety considerations. Under this law, the Ministry of Interior was authorized to issue the criteria and conditions whereby the retailing of LPG was to be controlled. However, it was not until ten years later that the first Ministerial Regulation (dated December 19, 1981) was published. This regulation--effective on February 27, 1982-- set forth detailed procedures and operational guidelines to be

Table 7.4

The Chronology of Laws and Regulations: Oil Fund

YEAR	LAWS AND REGULATIONS	
1977	PRIME MINISTER'S ORDER NO. 178/2520 (1977)	THE "OIL PRICE STABILIZATION FUND WAS ESTABLISHED IN ORDER TO STABILIZE THE DOMESTIC OIL PRICE. AN OIL TRADER WAS TO CONTRIBUTE A SPECIFIC AMOUNT OF MONEY FROM SELLING DOMESTICALLY REFINED OR IMPORTED REGULAR AND PREMIUM GASOLINE AND TO RECEIVE A SUBSIDY FROM THE FUND BASED ON SALES VOLUME OF FUEL OIL.
1977	PRIME MINISTER'S ORDER NO. 224/2520 (1977)	MINOR REVISION OF THE ORDER 178/2520 WAS MADE DUE TO ITS PRACTICAL DIFFICULTY. IN ACCORDANCE WITH THIS ORDER, A TRADER WOULD RECEIVE A SUBSIDY OF 8.8 SATANG/LITER WHEN FUEL OIL WAS SOLD AND HAD TO CONTRIBUTE 12.5 SATANG/LITER TO THE OIL FUND WHEN BUYING GASOLINE FROM DOMESTIC REFINERIES OR SELLERS.
1978	PRIME MINISTER'S ORDER NO. 0201/21 (1978)	THE ORDER 178/2520 WAS REVISED SINCE A NEW COMMITTEE CALLED " THE NATIONAL COMMITTEE FOR POLICY AND INDUSTRIAL DEVELOPMENT OF THE OIL INDUSTRY" WAS SET UP. THE AUTHORITY GIVEN TO THE OIL COMMITTEE (THE OIL POLICY COMMITTEE) WAS TRANSFERRED TO THE NEW COMMITTEE.
1978	PRIME MINISTER'S ORDER NO. 206/2521 (1978)	IMPORTERS WHO BENEFITED FROM 1% BAHT APPRECIATION HAD TO SEND THE EXTRA MARGIN TO THE NEWLY ESTABLISHED OIL FUND CALLED THE "OIL PRICE STABILIZATION FUND (FOREIGN EXCHANGE)
1979	PRIME MINISTER'S ORDER NO. 0201/9	THE "OIL PRICE STABILIZATION FUND" AND THE "OIL PRICE STABILIZATION FUND (FOREIGN EXCHANGE)" WERE ABOLISHED AND THE "OIL FUND" WAS ESTABLISHED.
1979	PRIME MINISTER'S ORDER NO. 87/2522 (1979)	THE ADMINISTRATION OF THE "OIL FUND" WAS REVISED FROM THAT STATED IN NO. 0201/9. THE MAIN FEATURES OF THIS ORDER WERE THE FOLLOWING. A) THE MINISTRY OF FINANCE WAS EMPOWERED TO DETERMINE EX-REFINERY PRICES (TAXES EXCLUDED) FOR PETROLEUM PRODUCTS AS A BASIS FOR SETTING RETAIL PRICES. CHANGES IN RETAIL PRICES WOULD LEAD TO CONSISTENT CHANGES IN WHOLESALE PRICES IMPOSED BY THE MINISTRY OF FINANCE. B) METHODS AND PROCEDURES FOR PRODUCERS, TRADERS AND IMPORTERS TO PAY OIL FUND TAXES.
1979	ANNOUNCEMENT OF THE MINISTRY OF FINANCE	EX-REFINERY PRICES, TARIFF RATES AND THE OIL FUND SUBSIDY WERE REVISED.
1979	PRIME MINISTER'S ORDER NO. 0201/54 (1979)	DUE TO THE CONTINUATION OF THE OIL CRISIS, PRODUCERS AND IMPORTERS WERE TO CONTRIBUTE TO THE OIL FUND IN ORDER TO SUSTAIN DOMESTIC PRICES OF OIL AND ELECTRICITY.
1979	ANNOUNCEMENT OF THE MINISTRY OF FINANCE	EX-REFINERY PRICES, TAX RATES AND THE OIL FUND SUBSIDY WERE REVISED.

Table 7.4 (Contd.)

The Chronology of Laws and Regulations: Oil Fund

YEAR	LAWS AND REGULATIONS	
1979	ANNOUNCEMENT THE MINISTRY OF FINANCE	EX-REFINERY PRICE OF KEROSENE WAS INCREASED FROM 3.7508 BAHT/LITRE TO 3.9687 BAHT/LITRE AND THE OIL FUND TAX WAS INCREASED FROM 0.3909 BAHT/LITRE TO 0.3988 BAHT/LITRE.
1980	PRIME MINISTER'S ORDER NO. 1/2523 (1980)	ORDERS NO. 0201/9 AND 0201/54 WERE REVISED. THE MAIN FEATURE OF THIS ORDER WAS THAT THE RESPONSIBILITY AND AUTHORITY OF THE MINISTER AND DEPUTY MINISTER OF FINANCE TO DETERMINE EX-REFINERY PRICES BECAME THE RESPONSIBILITY OF THE NATIONAL COMMITTEE FOR INDUSTRIAL DEVELOPMENT AND POLICY OF THE OIL INDUSTRY, PTT AND THE GOVERNOR OF PTT.
1980	ANNOUNCEMENT OF THE NATIONAL COMMITTEE FOR INDUSTRIAL DEVELOPMENT AND POLICY OF THE OIL INDUSTRY	EX-REFINERY PRICES, OIL FUND TAX AND SUBSIDY RATES WERE REVISED.
1980	PRIME MINISTER'S ORDER NO. 2/2523 (1980)	DUE TO THE EXPIRATION OF THE NATIONAL COMMITTEE FOR INDUSTRIAL DEVELOPMENT AND POLICY OF THE OIL INDUSTRY, THE DEFINITION OF "COMMITTEE" STATED IN THE ORDER NO. 1/2523 WAS CONFIRMED ON THE "NATIONAL PETROLEUM POLICY COMMITTEE."
1980	PRIME MINISTER'S ORDER NO. 5/2523 (1980)	AUTHORITY AND RESPONSIBILITY CONCERNING THE DETERMINATION OF OIL FUND TAX AND SUBSIDY WHICH WERE GRANTED TO PTT AND THE GOVERNOR OF PTT WERE TRANSFERRED TO THE MINISTRY OF FINANCE. THE NATIONAL PETROLEUM COMMITTEE WAS ALSO AUTHORIZED TO DETERMINE IMPORT PRICES FOR PETROLEUM PRODUCTS.
1980	PRIME MINISTER'S ORDER NO. 6/2523 (1980)	MINOR REVISION OF THE ORDER NO. 5/2523 (1980) CONCERNING CRUDE SUPPLIES WAS MADE.
1980	ANNOUNCEMENT OF THE NATIONAL PETROLEUM POLICY COMMITTEE	UNDER THE JURISDICTION OF PRIME MINISTER ORDER NO. 5/2523, ARTICLE 13(1), THE COMMITTEE STIPULATED METHODS AND PROCEDURES FOR CALCULATING THE VALUE OF IMPORTED CRUDES AND FINISHED PRODUCTS IN ORDER TO ESTABLISH A BASIS FOR RECEIVING SUBSIDIES FROM THE OIL FUND.
1980	ANNOUNCEMENT OF THE NATIONAL PETROLEUM POLICY COMMITTEE	THE IMPORT PRICE FOR LPG BASED ON THE SINGAPORE POSTED PRICE AND ITS SUBSIDY WERE DETERMINED.
1981	PRIME MINISTER'S ORDER NO. 1/2524 (1981)	AN OIL TRADER WHO BENEFITED FROM THE DIFFERENCE BETWEEN PREVIOUS AND PRESENT RETAIL PRICES (SINCE THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLISTIC ACTION INCREASED RETAIL PRICES OF PETROLEUM PRODUCTS) HAD TO SEND THE AMOUNT OF MONEY EQUAL TO THE VALUE OF OIL RESERVES TIMES THE DIFFERENCE BETWEEN THE TWO PRICES TO THE OIL FUND.
1981	PRIME MINISTER'S ORDER NO. 2/2524 (1981)	A SERVICE STATION OR RETAILER WHO BENEFITED FROM THE DIFFERENCE BETWEEN THE PREVIOUS AND THE NEWLY ANNOUNCED PRICES WAS TO SEND THE EXTRA MARGIN TO THE OIL FUND.

Table 7.4 (Contd.)

The Chronology of Laws and Regulations: Oil Fund

YEAR	LAWS AND REGULATIONS	
1981	PRIME MINISTER'S ORDER NO. 3/2524 (1981)	THE ORDER NO. 2/2524 WAS SLIGHTLY REVISED STATING THAT A RETAILER DID NOT HAVE TO CONTRIBUTE TO THE OIL FUND FOR 5% OF THE OIL STORED IN UNDERGROUND TANKS.
1981	PRIME MINISTER'S ORDER NO. 5/2524 (1981)	ORDERS NO. 2/2524 AND 3/2524 WERE ABOLISHED. REVISED METHODS AND PROCEDURES OF SENDING MONEY TO OR RECEIVING SUBSIDY FROM THE OIL FUND WERE ISSUED BY THIS ORDER IN ORDER TO STABILIZE DOMESTIC RETAIL PRICES AT THE TIME THE CRUDE PRICE WAS INCREASING.
1981	PRIME MINISTER'S ORDER NO. 7/2524 (1981)	REFINERIES WERE EXEMPTED FROM ORDER NO. 1/2524.
1981	PRIME MINISTER'S ORDER NO. 8/2524 (1981)	GOVERNMENT APPROVED A PAYMENT TO PTT TO COMPENSATE FOR THE HUGE AMOUNT OF INTEREST COST PAID BY PTT RESULTING FROM GOVERNMENT POLICY ON OIL RESERVES. THE AMOUNT REIMBURSED INCLUDED RENTAL OF VESSELS WHICH ACCOUNTED FOR 106.714 AND 272.364 MILLION BAHT IN 1980 AND 1981 AND THE INTEREST PAYMENT OF 107.80 MILLION BAHT.
1981	PRIME MINISTER'S ORDER NO. 12/2524 (1981)	DUE TO AN INCREASE IN TRANSPORTATION COSTS AND IN RETAIL PRICES OF PETROLEUM PRODUCTS, A SERVICE STATION WAS EXEMPTED FROM THE REGULATION (NO. 5/2524)
1981	PRIME MINISTER'S ORDER NO. 13/2524 (1981)	THE PROCEDURES AND METHODS OF INSPECTION OF PRODUCT QUANTITIES AND MONEY TO BE CONTRIBUTED TO THE OIL FUND WERE REVISED FOR PRACTICAL PURPOSES.
1981	PRIME MINISTER'S ORDER NO. 18/2524 (1981)	UNDER THE ORDER NO. 206/2521, IMPORTERS WERE TO BE TAXED OR GRANTED A SUBSIDY FROM THE OIL PRICE STABILIZATION FUND (FOREIGN EXCHANGE) WHICH HAD BEEN TERMINATED BY ORDER NO. 0201/9; THEREFORE, THE GOVERNMENT APPROVED PAYING IMPORTERS FOR THE EXCESS AMOUNT WHICH HAD BEEN SENT TO THE FUND.
1982	PRIME MINISTER'S ORDER NO. 19/2524 (1981)	THE COMPENSATION FOR SERVICE STATION MARKETING ACTIVITIES WAS RAISED.
1982	PRIME MINISTER'S ORDER NO. 5/2525 (1982)	THE ORDER STATED THAT AN OIL TRADER HAD TO INCREASE MARKETING MARGIN FOR A SERVICE STATION DUE TO THE INCREASING COST OF MARKETING ACTIVITIES AND, IN DOING SO, AN OIL TRADER WAS ABLE TO RECEIVE THE PAID AMOUNT FROM THE PERMANENT SECRETARY OF THE MINISTRY OF FINANCE.
1982	PRIME MINISTER'S ORDER NO. 8/2525 (1983)	THE ORDER CONCERNED COMPENSATION FOR SELLING, DISTRIBUTING AND CONSUMPTION OF LPG. DUE TO THE FACT THAT THE RETAIL PRICE FOR LPG USED FOR COOKING HAD BEEN KEPT VERY LOW THROUGH GOVERNMENT SUBSIDY AND THAT LPG HAD BEEN INCREASINGLY USED IN VEHICLES (WHICH TENDED TO INCREASE THE GOVERNMENT BURDEN) THE GOVERNMENT REVISED METHODS FOR OBTAINING THE SUBSIDY FROM LPG SALES TO TO ENSURE LOW PRICE LPG FOR COOKING WITHOUT THE EXCESSIVE BURDEN.

Table 7.4 (Contd.)

The Chronology of Laws and Regulations: Oil Fund

YEAR	LAWS AND REGULATIONS	
1982	PRIME MINISTER'S ORDER NO. 9/2525 (1982)	SINCE THE PROCESS OF COMPENSATION TO AN OIL TRADER WAS TIME-CONSUMING, OIL TRADERS WERE ALLOWED TO DEBIT THEIR ACCOUNTS FOR THE AMOUNT THEY HAD TO PAY THROUGH THE ACCOUNTING SYSTEM. HOWEVER, THE AMOUNT ALLOWED WAS NO GREATER THAN 75% OF THE TOTAL PAYMENT THEY HAD TO MAKE.
1982	PRIME MINISTER'S ORDER NO. 10/2525 (1982)	SINCE LPG QUANTITIES WHICH WERE SUBSIDIZED WERE FREQUENTLY MISREPORTED, THE COMMERCIAL REGISTRATION DEPARTMENT, MINISTRY OF COMMERCE, WAS AUTHORIZED, UNDER THIS ORDER, TO INSPECT AND CHECK RELEVANT, REQUIRED DOCUMENTS.
1982	PRIME MINISTER'S ORDER NO. 11/2525 (1982)	UNDER THIS ORDER, THE MARKETING COMPENSATION FOR A RETAILER WAS RAISED. OIL TRADERS, THEREFORE, HAD TO INCREASE THE DISCOUNT TO RETAILERS AND APPLY FOR PAYMENT OF THAT AMOUNT FROM THE OIL FUND.
1983	PRIME MINISTER'S ORDER NO. 1/2526 (1983)	TO SHORTEN THE TIME-CONSUMING PROCESS OF OIL FUND ADMINISTRATION, AN OIL TRADER WAS ABLE TO DEBIT AND CREDIT UP TO 75% OF THE AMOUNT TO BE PAID AGAINST THE OIL FUND.
1983	PRIME MINISTER'S ORDER NO. 4/2526 (1983)	METHODS AND PROCEDURES OF ADMINISTERING THE OIL FUND WERE REVISED.
1983	PRIME MINISTER'S ORDER NO. 5/2526 (1983)	REFINERY HAD BENEFITED FROM THE TIME LAG BETWEEN A DECREASE IN CRUDE PRICE AND DECREASES IN PETROLEUM PRODUCT PRICES. THIS MARGIN, ACCORDING TO THE NATIONAL PETROLEUM POLICY, HAD TO BE CONTRIBUTED TO THE OIL FUND.
1983	PRIME MINISTER'S ORDER NO. 8/2526 (1983)	THE WIDESPREAD SUBSTITUTION OF LPG FOR GASOLINE RESULTED IN AN EXCESSIVE DEMAND FOR LPG. TO MATCH THE LPG DEMAND TO DOMESTIC PRODUCTION CAPACITY, THIS LAW AIMED AT TAXING PRODUCERS AND IMPORTERS OF LPG IN ORDER TO NARROW THE GAP BETWEEN LPG AND GASOLINE PRICES AND HENCE DISCOURAGE SUBSTITUTION OF THESE PRODUCTS.
1985	PRIME MINISTER'S ORDER NO. 1/2528 (1985)	THE OBJECTIVE OF THE ESTABLISHING OIL FUND IS TO STABILIZE PETROLEUM PRODUCT PRICES THROUGH TAXATION AND SUBSIDIZATION. HOWEVER, IT TURNED OUT THAT SOME SUBSIDIZED PRODUCTS WERE PURCHASED BY DOMESTIC AND INTERNATIONAL SHIPS AND VESSELS WHICH CAUSED EXCESSIVE BURDENS ON GOVERNMENT. THIS ORDER, THEREFORE, STATED THAT PETROLEUM PRODUCTS SOLD TO SHIPS OR VESSELS DID NOT QUALIFY FOR SUBSIDY.
1985	PRIME MINISTER'S ORDER NO. 2/2528 (1985)	THE NATIONAL PETROLEUM POLICY COMMITTEE APPROVED A PAYMENT TO PTT TO COMPENSATE FOR EXPENSES INCURRED FROM GOVERNMENT POLICY CONCERNING OIL STORAGE.
1986	PRIME MINISTER'S ORDER NO. 2/2529	SOME REVISIONS CONCERNING THE EXAMINATION OF PETROLEUM PRODUCT PROCESSING SPECIFIED IN PRIME MINISTER'S ORDER NO. 5/2524 WERE MADE.

Table 7.4 (Contd.)

The Chronology of Laws and Regulations: Oil Fund

YEAR	LAW AND REGULATIONS	
1986	PRIME MINISTER'S ORDER NO. 3/2529	PRIME MINISTER'S ORDER NO.5/2524, 13/2524, 4/2526 6/2526, 8/2526, 1/2528, 2/2529 WERE CANCELLED AND NEW MEASURES ISSUED FOR OIL FUND ADMINISTRATION WHICH WERE DEEMED SUITABLE FOR THE CHANGING OIL SITUATION.
1986	PRIME MINISTER'S ORDER NO. 5/2529	THE DEFINITION OF "COMMITTEE" UNDER ARTICLE 2 OF PRIME MINISTER'S ORDER NO. 3/2529 WAS CHANGED TO PETROLEUM POLICY SUBCOMMITTEE".
1987	PRIME MINISTER'S ORDER NO. 1/2530	LPG FILLED IN CYLINDERS NOT EXCEEDING 50 KG. IN SIZE IS QUALIFIED FOR SUBSIDY.

Table 7.5 (A)

Laws and Regulations : Tax

YEAR	LAWS AND REGULATIONS	
1964	OIL AND OIL PRODUCT TAX ACT, B.E. 2507 (1964)	SINCE DOMESTIC REFINERIES LAUNCHED OPERATIONS IN THE COUNTRY, THE IMPORTED SUPPLY WAS REDUCED. TO COMPENSATE FOR DECREASING GOVERNMENT REVENUE DERIVED FROM IMPORTED PETROLEUM PRODUCTS, GOVERNMENT IMPOSED THIS LAW WHOSE MAIN FEATURES ESTABLISHED PROCEDURES AND THE AMOUNT OF TAX TO BE PAID BY DOMESTIC REFINERIES.
1964	MINISTERIAL REGULATION B.E. 2507 (1964)	UNDER ARTICLES 4, 6, 8, 10 (2) AND 17 OF THE 1964 TAX ACT, THE MINISTER OF FINANCE SPECIFIED TAX RATES FOR ALL TYPES OF PETROLEUM PRODUCTS AND STEPS AND PROCEDURES OF TAX PAYMENT.
1965	OIL AND OIL PRODUCT TAX ACT (2), B.E. 2508 (1965)	AUTHORIZED THE DIRECTOR-GENERAL OF THE EXCISE TAX DEPARTMENT TO GIVE TAX REBATES AND EXEMPTIONS TO THOSE WITH PRIVILEGES.
1965	MINISTERIAL REGULATION NO. 2, B.E. 2508 (1965)	REVISION OF 1964 MINISTERIAL ORDER CONCERNING TAX REBATES FOR EXPORTED OIL AND OTHER PRODUCTS.
1965	MINISTERIAL REGULATION NO. 3, B.E. 2508 (1965)	TAXES ON LIQUID LUBRICATING OIL DERIVED FROM USED LUBRICATION OIL WERE DECREASED. THE PERIOD OF TAX PAYMENT EXTENDED WAS TO 30 DAYS AT THE BEGINNING OF REFINERY OPERATIONS.
1968	MINISTERIAL REGULATION NO. 4, B.E. 2511 (1968)	TAXES ON BITUMEN AND ASPHALT (WHICH WERE LEFT OUT OF THE MINISTERIAL REGULATION NO. 1 (1964)) WERE IMPOSED UNDER THIS REGULATION AND THE TAX REBATE APPLICATION FORM WAS REVISED.
1970	COURT REGULATION OF DOMESTICALLY PRODUCED OIL AND OIL PRODUCT TAX B.E. 2531 (1970) (THIS REGULATION BECAME AN ACT IN THE SAME YEAR)	THE TAX ON GASOLINE WAS INCREASED FROM 0.80 BAHT TO 1.00 BAHT.
1970	MINISTERIAL REGULATION NO. 5, B.E. 2513 (1970)	THE TAX ON GASOLINE WAS INCREASED FROM 0.80 BAHT/LITRE (STATED IN NO. 3 1965) TO 1.00 BAHT AND TAX ON FUEL OIL WAS DECREASED FROM 0.12/LITRE BAHT TO 0.10 BAHT.
1970	MINISTERIAL REGULATION NO. 6, B.E. 2513 (1970)	THE TAX ON GASOLINE FROM 1.00 BAHT TO 0.80 BAHT PER LITRE WAS DECREASED.
1971	MINISTERIAL REGULATION NO. 7, B.E. 2514 (1971)	THIS REDUCED THE TAX ON FUEL OIL FROM 0.10 BAHT PER LITRE TO 0.04 BAHT PER LITRE.
1973	COURT REGULATION OF REVISION OF OIL AND OIL PRODUCT TAX ACT B.E. 2507 (1964), (2) B.E. 2516 (1973)	THE TAX ON GASOLINE WAS INCREASED FROM 1.00 BAHT TO 1.30 BAHT AND FROM 0.12 BAHT TO .30 BAHT FOR FUEL OIL AND DIESEL.

Table 7.5 (A) (Contd.)

Laws and Regulations : Tax

YEAR	LAWS AND REGULATIONS	
1973	MINISTERIAL REGULATION NO. 8, B.E. 2516 (1973)	THE TAX ON GASOLINE FROM 0.80 BAHT/LITRE TO 1.00 BAHT/LITRE WAS INCREASED.
1973	MINISTERIAL REGULATION NO. 9, B.E. 2516 (1973)	THIS INCREASED THE TAX ON GASOLINE AND DIESEL FROM 1.00 BAHT AND 0.12 BAHT TO 1.30 AND 0.30 BAHT/LITRE, RESPECTIVELY
1973	MINISTERIAL REGULATION NO. 10, B.E. 2517 (1974)	THIS DECREASED THE TAX ON GASOLINE, KEROSENE AND FUEL OIL FROM 1.30, 0.33, 0.04 BAHT/LITRE TO 1.10, 0.13 AND 0.02 BAHT/LITRE, RESPECTIVELY, DUE TO THE FACT THAT THE COST OF CRUDE OIL INCREASED AND THE GOVERNMENT WANTED TO SUSTAIN THE PETROLEUM PRODUCTS PRICES..
1974	MINISTERIAL REGULATION NO. 11, B.E. 2517 (1974)	TO SUSTAIN THE PRICE OF LPG WHILE COST OF PRODUCTION INCREASED, THE GOVERNMENT LOWERED THE TAX ON LPG TO 300.00 BAHT/METRIC TON.
1974	MINISTERIAL REGULATION NO. 12, B.E. 2517 (1974)	THIS INCREASED TAX ON KEROSENE FROM 0.13 TO 0.17 BAHT AND DECREASED THE TAXES ON GASOLINE DIESEL AND FUEL OIL FROM 1.10, 0.30 AND 0.02 BAHT/LITRE TO 0.93, 0.22 AND 0.001 BAHT/LITRE, RESPECTIVELY.
1975	MINISTERIAL REGULATION NO. 13, B.E. 2518 (1975)	THE TAX ON LPG FROM 300.00 BAHT TO 1.00 BAHT/METRIC TON WAS DECREASED.
1977	MINISTERIAL REGULATION NO. 14, B.E. 2520 (1977)	TAXES ON GASOLINE AND KEROSENE FROM 0.93 AND 0.17 BAHT PER LITRE TO 1.27 AND 0.22 BAHT/LITRE RESPECTIVELY WERE INCREASED.
1977	MINISTERIAL REGULATION NO. 15, B.E. 2520 (1977)	THIS DECREASED THE TAX ON GASOLINE TO 1.10 BAHT PER LITRE AND FOR KEROSENE AND DIESEL, THE TAX WAS REDUCED TO 0.14 BAHT PER LITRE.
1978	COURT REGULATION OF REVISION OF OIL AND OIL PRODUCT TAX ACT B.E. 2507 (1964), (3), B.E. 2521 (1978) (BECAME AN ACT IN THE SAME YEAR)	INCREASED TAX ON GASOLINE TO 1.83 BAHT.
1978	MINISTERIAL REGULATION NO. 16, B.E. 2521 (1978)	THE TAX ON GASOLINE TO 1.83 BAHT/LITRE WAS INCREASED.
1979	COURT REGULATION ON ALLOCATION OF OIL AND OIL PRODUCT TAX REVENUE B.E. 2522 (1979)	TAX PAYERS HAD TO PAY 1% IN ADDITION TO THE AMOUNT THEY HAD TO PAY UNDER THE OIL AND OIL PRODUCT TAX ACT THIS ADDITIONAL TAX REVENUE WOULD BE CHANNLED TO THE MINISTRY OF THE INTERIOR AFTER 5% WAS DEDUCTED FOR REGIONAL ADMINISTRATION EXPENSES. THIS LAW AIMED AT COLLECTING ADDITIONAL REVENUE (AFTER BUSINESS TAX WAS EXEMPTED) IN ORDER TO ALLOCATE IT TO REGIONAL ADMINISTRATION.

Table 7.5 (A) (Contd.)

Laws and Regulations : Tax

YEAR	LAWS AND REGULATIONS	
1979	COURT REGULATION ON REVISION OF OIL AND OIL PRODUCT TAX ACT NO. 4, B.E. 2522 (1979)	THE MAIN PURPOSE OF THIS LAW WAS TO COLLECT TAX REVENUE ON A VALUE BASIS IN ADDITION TO A QUANTITY BASIS AND TO EXEMPT THE BUSINESS TAX.
1979	MINISTERIAL REGULATION NO. 17, B.E. 2522 (1979)	AFTER THE 1979 COURT REGULATION NO. 4 WAS PROMULGATED, A NEW TAX RATE SYSTEM USING BOTH A QUANTITY AND VALUE BASIS FROM PRODUCERS OR IMPORTERS OF GASOLINE KEROSENE AND DIESEL) WAS ISSUED IN ORDER TO COLLECT REVENUE FOR THE OIL FUND TO STABILIZE FUEL OIL PRICES UNDER THE LAW OF REMEDY AND PROTECTION FROM OIL SHORTAGES.
1979	COURT REGULATION NO. 5 B.E. 2522 (1979) AND MINISTERIAL REGULATION NO. 18, B.E. 2522 (1979)	THIS INCREASED TAX RATES FOR KEROSENE AND DIESEL FROM 10% OF TOTAL VALUE PRODUCED OR IMPORTED (AS STATED IN COURT REGULATION NO. 5) TO 15%.
1979	MINISTERIAL REGULATION (MINISTRY OF INTERIOR)	UNDER THE 1979 COURT REGULATION ON ALLOCATION OF OIL AND OIL PRODUCT TAX REVENUE THE MINISTRY OF INTERIOR PROVIDED, UNDER THIS REGULATION, THE METHOD OF ALLOCATION.
1979	MINISTERIAL REGULATION NO. 19, B.E. 2522 (1979)	THIS PROVIDED THE METHOD OF WEIGHTED AVERAGES FOR PETROLEUM PRODUCT PRICES WHEN THE VALUE OF PRODUCTS ARE USED AS THE BASIS FOR TAXATION.
1980	MINISTERIAL REGULATION NO. 19, B.E. 2523 (1980)	MINISTERIAL REGULATIONS WERE REVISED WITH THE REDUCTION OF RETAIL PRICES OF KEROSENE AND LPG FROM 15% AND 5% TO 6.8% AND 0.0001%, RESPECTIVELY.
1981	MINISTERIAL REGULATION NO. 20, B.E. 2524 (1981)	DUE TO A DRAMATIC INCREASE IN THE CRUDE OIL PRICE, TAXES ON GASOLINE, KEROSENE, DIESEL AND PETROLEUM WERE REDUCED.
1981	DOMESTICALLY PRODUCED OIL AND OIL PRODUCT TAX ACT (3), B.E. 2524 (1981)	THE 1964 OIL TAX ACT WAS REVISED TO INCREASE THE FINE FOR DOMESTIC PRODUCERS WHO FAILED TO PAY THE OIL TAX IN THE TIME SPECIFIED IN THE MINISTERIAL REGULATION.
1983	MINISTERIAL REGULATION NO. 21, B.E. 2526 (1983)	THE TAX ON GASOLINE WAS INCREASED FROM 33.8% TO 36.2%.
1983	MINISTERIAL REGULATION NO. 22, B.E. 2526 (1983)	THIS INCREASED THE TAX ON GASOLINE, KEROSENE, DIESEL, LPG AND ASPHALT. THE TAX ON GASOLINE INCREASED FROM 36.2% TO 42%; THAT FOR KEROSENE AND DIESEL FROM 6.4% AND 13.3% TO 15%, AND FOR LPG AND ASPHALT FROM 0.001% AND 3.7% TO 5%.
1984	EXCISE TAX ACT B.E. 2527	EXCISE TAXES ON VARIOUS COMMODITIES CLASSIFIED BY CODE GROUP WERE PROVIDED UNDER THIS ACT.

Table 7.5 (A) (Contd.)

Laws and Regulations : Tax

YEAR	LAWS AND REGULATIONS	
1986	COURT REGULATION OF EXCISE TAX ACT (2) B.E. 2529 (1986)	THE 1984 EXCISE TAX ACT WAS REUSED. UNDER THIS ACT, TAX FOR GASOLINE WAS 42%; 34% FOR KEROSENE, DIESEL AND LPG; AND 9% FOR FUEL OIL ON A VALUE BASIS. ON A QUANTITY BASIS, THE TAX ON GASOLINE WAS 5 BAHT/LITRE; 4 BAHT/LITRE FOR KEROSENE, DIESEL AND LPG AND 1 BAHT/LITRE FOR FUEL OIL. THE MAIN OBJECTIVE OF THIS REGULATION WAS FOR GOVERNMENT TO SET SPECIFIC TAX RATES AS REQUIREMENTS SO THAT THEY ARE ESTABLISHED WHEN PETROLEUM PRODUCT PRICES ARE DEREGULATED IN THE FUTURE.
1986	ANNOUNCEMENT OF THE MINISTRY OF FINANCE NO. 5	THIS REDUCED EXCISE TAXES OF GASOLINE, KEROSENE, DIESEL, FUEL OIL AND LPG.
1986	ANNOUNCEMENT OF THE MINISTRY OF FINANCE NO. 6	THIS ANNOUNCED MINOR REVISIONS IN THE REDUCTIONS OF THE EXCISE TAX ON DIESEL AND LPG.
1987	ANNOUNCEMENT OF THE MINISTRY OF FINANCE NO. 7	THIS CANCELED OF ANNOUNCEMENTS NO. 5, 6 (1986) AND CHANGED THE EXCISE TAX IMPOSED ON VARIOUS PETROLEUM PRODUCTS.

Table 7.5 (B)

Laws and Regulation : Import Duty on Petroleum Products

YEAR	LAWS AND REGULATIONS	
1926	CUSTOM TARIFF ACT B.E. 2469, 1926	ALL COMMODITIES IMPORTED OR EXPORTED WERE SUBJECT TO IMPORT DUTIES OR TARIFFS (UNDER THIS LAW, 0.20 BAHT PER 4.546 LITRE TARIFF WAS IMPOSED ON IMPORTED GASOLINE.
1928	REVISED TARIFF ACT (1), B.E. 2471 (1928)	THIS REVISED THE 1926 CUSTOM TARIFF ACT
1930	REVISED CUSTOM TARIFF ACT (2), B.E. 2473 (1930)	CUSTOM TARIFF RATES ON CERTAIN COMMODITIES WERE CHANGED AND A TARIFF OF .10 BAHT PER 4.546 LITRES WAS IMPOSED ON KEROSENE.
* CUSTOM TARIFF ACTS AND COURT REGULATIONS WERE ISSUED AND REVISED SEVERAL TIMES DURING 1935 AND 1959 AND THERE WERE 12 CUSTOM TARIFF ACTS AND 6 COURT REGULATIONS ISSUED DURING THIS PERIOD.		
1960	COURT REGULATION OF CUSTOM TARIFF, B.E. 2503 (1960)	ALL ACTS AND COURT REGULATIONS ISSUED DURING 1935-1959 AND THE DESIGNATION OF TARIFF RATES FOR COMMODITIES IMPORTED AND EXPORTED AS WELL AS THE METHODS AND PROCEDURE OF TARIFF COLLECTION WERE CANCELLED UNDER THIS ACT. TARIFF RATES WERE IMPOSED 0.05 BAHT PER LITRE FOR CRUDES, 0.70 BAHT FOR GASOLINE, 0.33 BAHT FOR KEROSENE, 0.10 BAHT FOR DIESEL, 0.66 BAHT OR 52% FOR LUBRICATING OILS AND 27.5% FOR PETROLEUM GAS.
1964	CUSTOM TARIFF ACT (3), B.E. 2507 (1964)	IMPORTED PETROLEUM CRUDE WAS EXEMPTED FROM THE CUSTOM TARIFF IN ORDER TO PROMOTE DOMESTIC REFINERIES.
1973	COURT REGULATION OF CUSTOM TARIFF, NO. 25, B.E. 2516 (1973)	IMPORTED GASOLINE, KEROSENE, DIESEL, HEAVY OIL FOR STEAMERS AND LUBRICATING OIL WERE SUBJECT TO TARIFF RATES OF 1.30, 0.33, 0.30, 0.12 AND 0.66 BAHT PER LITRE, RESPECTIVELY, IN ORDER TO CONSERVE ENERGY USE AND INCREASE GOVERNMENT REVENUE.
1975	COURT REGULATION OF CUSTOM TARIFF, NO. 27, B.E. 2518 (1975)	TARIFF RATES FOR HEAVY OIL USED IN STEAMERS FROM 0.12 BAHT TO 0.01 BAHT PER LITRE WERE DECREASED.
1977	COURT REGULATION OF CUSTOM TARIFF NO. 32, B.E. 2520 (1977)	DUE TO THE LPG SHORTAGE IN THE COUNTRY, THE IMPORT DUTY FOR LPG WAS REDUCED FROM 27.5% OF TOTAL VALUE TO 0.001 BAHT/KG.
1978	COURT REGULATION OF CUSTOM TARIFF NO. 34, B.E. 2521 (1978)	THE IMPORT DUTY ON GASOLINE WAS INCREASED FROM 1.30 BAHT TO 1.83 BAHT PER LITRE.
1979	COURT REGULATION OF CUSTOM TARIFF NO. 37, B.E. 2522 (1979)	THE IMPORT DUTY FOR GASOLINE WAS INCREASED TO 2.02 BAHT PER LITRE AND THAT FOR KEROSENE AND DIESEL WERE DECREASED TO .15 BAHT PER LITRE.

Table 7.6

Laws and Regulations : Price Control

YEAR	LAWS AND REGULATIONS	
1947	ANTI-PROFITEERING ACT B.B. 2490 (1947)	THIS PROHIBITED THE SELLING OF COMMODITIES AT HIGHER THAN MAXIMUM CONTROLLED PRICES AND FOR SPECULATION.
1974	ANTI-PROFITEERING ACT (2), B.B. 2517 (1974)	SOME ARTICLES STATED IN THE 1947 PROTECTION OF PROFITEERING ACT WERE CONSIDERED OUT OF DATE AND IN NEED OF REVISION. MODIFICATIONS AND REVISION WERE MADE IN THIS ACT WHERE SUITABLE.
1975	ANNOUNCEMENT OF THE ANTI-PROFITEERING COMMITTEE, NO. 101, B.B. 2518 (1975)	THIS CONTROLS SET AND DETERMINED MAXIMUM PRICES FOR LUBRICATING OILS.
1979	ANNOUNCEMENT OF THE ANTI-PROFITEERING COMMITTEE, NO. 2, B.B. 2522 (1979)	PRICE CONTROLS FOR FUEL OIL, PREMIUM GASOLINE, REGULAR GASOLINE, KEROSENE, HIGH SPEED AND LOW SPEED DIESEL WERE SET.
1979	PRICE CONTROL AND ANTI MONOPOLY ACT, B.B. 2522 (1979)	DUE TO SEVERAL LOOPHOLES IN THE 1947 AND 1974 ANTI-PROFITEERING ACTS, THEY WERE CANCELLED THIS NEW LAW WAS AIMED AT PROTECTING CONSUMERS FROM PROFITEERING AND MONOPOLISTIC PRACTICES.
1979	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO. 4, B.B. 2522 (1979)	THIS CONTROLLED RETAIL PRICES OF LPG AND ASPHALT AND INCREASED CONTROLLED RETAIL PRICES OF PREMIUM AND REGULAR GASOLINE, FUEL OIL, KEROSENE AND DIESEL STATED IN PROCLAMATION NO. 3 (1979)
1980	ANNOUNCEMENT THE CENTRAL COMMITTEE OF ON PRICE CONTROL AND ANTI-MONOPOLY NO. 16, 1980	THE CONTROLLED RETAIL PRICES OF ALL TYPES OF PETROLEUM PRODUCTS FROM THOSE STATED IN NO. 4, 1979 WERE INCREASED DUE TO INCREASING CRUDE PRICE.
1980	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO. 18, B.B. 2523 (1980)	THE CONTROLLED RETAIL PRICES OF LPG, KEROSENE, HIGH SPEED AND LOW SPEED DIESEL WERE DECREASED FROM THOSE STATED IN NO. 16.
1980	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO. 25, B.B. 2523	LPG AND KEROSENE WERE INCLUDED IN THE LIST OF CERTAIN COMMODITIES OVER WHICH THE GOVERNMENT CONTROLLED THE PRODUCTION, DISTRIBUTION, TRADE, IMPORTS AND STORAGE. IN ACCORDANCE WITH THIS REGULATION, PRODUCERS, IMPORTERS AND TRADERS HAD TO INFORM GOVERNMENT OFFICIALS ABOUT QUANTITY (PRODUCED, IMPORTED OR TRADED) AND SELLING PRICE ON A MONTHLY BASIS.

Table 7.6 (Contd.)

Laws and Regulations : Price Control

YEAR	LAWS AND REGULATIONS	
1981	ANNOUNCEMENT OF CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO. 42, B.E. 2524 (1981)	CONTROLLED RETAIL PRICES OF LPG, FUEL OIL, PREMIUM AND REGULAR GASOLINE, KEROSENE, HIGH SPEED AND LOW SPEED DIESEL WERE INCREASED FROM PRICES STATED IN IN NO. 16 AND NO. 18, 1980.
1986	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO. 106, B.E. 2529 (1986)	RETAIL PRICES FOR VARIOUS PETROLEUM PRODUCTS EXCEPT KEROSENE WERE CHANGED.
1987	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY, NO.108, B.E. 2530 (1987)	CONTROLLED RETAIL PRICES FOR LPG WERE CHANGED.
1987	ANNOUNCEMENT OF THE CENTRAL COMMITTEE ON PRICE CONTROL AND ANTI-MONOPOLY , NO.110, B.E. 2530 (1987)	RETAIL PRICES OF FUEL OIL WERE CHANGED.

Note: There were a considerable number of regional committee announcements on price controls and anti-profitteeing which are not included here. Most of them concerned controlled retail prices of petroleum products.

followed by those seeking to engage in the LPG business in order for them to qualify for permission to operate.

Ministerial Regulation No. 2 was issued in 1982 as a revision to Articles 61 and 63 of the previous regulation in order to extend the grace period for those LPG stations that had launched business operations before December 29, 1981 without the required permission since the inspection of LPG tanks was more time-consuming than had been expected.

Ministerial Regulation No. 3, effective on December 23, 1982, was issued in order to make minor revisions to No. 2, to make the regulation more suitable to prevailing circumstances. This regulation, however, resulted in the unfair treatment of certain LPG stations; this was mainly due to Article 23 which stipulated that an LPG facility had to be located at least 200 metres from schools, hospitals, embassies, stadiums and theaters. In addition, under Article 34, it stated that LPG outlets located within the area of an oil service station which had been granted permission to operate before December 29, 1981 were exempt from Article 23. Table 7.7 shows the main features of the regulations concerned with LPG stations.

7.2 Review of Existing Laws and Regulation

This section attempts to review existing laws and regulations as well as contractual agreements of downstream oil business activities. It also attempts to prepare, for the consideration of the government, updated laws and regulations which would provide for competition in oil refinery, import, wholesaling and retailing activities--aimed at controlling over-development and encourage up-to-date practices. As a first step in providing a guideline for updating the existing laws and regulations, an attempt is made to review the present Petroleum Act, Petroleum and Petroleum Product Tax Act and many Ministerial Regulations of Thailand.

Laws and regulations governing downstream activities are, at present, subject to being outmoded as international and domestic economic circumstances change. Some of these laws and regulations should, therefore, be reviewed and perhaps, modified to ensure that:

- o proper activities (including refining, importing, wholesaling and retailing) are carried out,
- o competition in the oil business will be promoted,
- o the environment will be protected,
- o the government will receive fair and reasonable tax revenue,
- o government policy will be consistent with existing national objectives concerning the oil business.

The discussion in this chapter will serve as the basis for considering revised laws and regulations concerning oil

Table 7.7

Laws And Regulation : LPG Retail Station

YEAR	LAWS AND REGULATION	
1971	REVOLUTIONARY DECREE NO. 28, DEC. 29, 1971	FILLING LPG CYLINDERS IS VERY DANGEROUS AND CAN CAUSE A LOT OF DAMAGE TO PEOPLE AND SOCIETY; THEREFORE, THE PROCESS OF FILLING AND RETAILING LPG NEEDS SPECIAL TREATMENT AND MORE SAFETY MEASURES COMPARED TO OTHER FUELS. UNDER THIS PROCLAMATION, THE MINISTRY OF INTERIOR WAS AUTHORIZED TO ISSUE MINISTERIAL REGULATIONS CONCERNING THE CRITERIA AND CONDITIONS FOR PERMISSION TO ENTER THE BUSINESS, METHOD OF FILING, STORING AND TESTING.
1981	MINISTERIAL REGULATION B.E. 2524 (1981)	AFTER THE 1971 REVOLUTIONARY DECREE, IT TOOK ABOUT 10 YEARS FOR THE FIRST MINISTERIAL REGULATION TO BE LAUNCHED (MEANWHILE, THERE WERE MANY GAS STATIONS ESTABLISHED WHICH DID NOT COMPLY TO THE LAW). THE FIRST MINISTERIAL REGULATION CONSISTED OF 7 SECTIONS INVOLVING: <ol style="list-style-type: none"> 1. APPLICATION AND EXTENSION OF ENTRY PERMISSION 2. FILLING METHOD AND PLACE, STORAGE AND RETAILING 3. SAFETY SYSTEM 4. CONTAINERS 5. SPECIFICATION AND EXAMINATION OF LPG CONTAINERS. 6. SIGNS ON LPG CONTAINERS 7. TEMPORARY PROVISION OF A GRACE PERIOD (STATING THAT LPG STATIONS NOT COMPLYING WITH THE LAW MUST BE IMPROVED AND CHANGED WITHIN 120 DAYS AFTER EFFECTIVE DATE FEBRUARY 27, 1982) OR BEFORE JUNE 26, 1982.
1981	MINISTERIAL REGULATION NO. 8, B.E. 2424 (1981)	THE LAW SPECIFIED EQUIPMENT AND SAFETY DEVICES FOR LPG USE IN AUTOMOBILE.
1982	MINISTERIAL REGULATION NO. 2, B.E. 2525 (1982)	THIS REGULATION EXTENDED THE GRACE PERIOD (FOR GAS STATIONS WHICH WERE NOT IN COMPLIANCE WITH THE 1981 MINISTERIAL REGULATION) FROM JUNE 26, 1982 TO OCTOBER 24, 1982 OR 240 DAYS AFTER THE LAW WAS EFFECTIVE. THOSE WHO WERE APPLYING FOR PERMISSION COULD CONTINUE OPERATIONS UNTIL NOTIFIED BY GOVERNMENT OFFICIALS. DURING THIS PERIOD, THEY MIGHT NEED TO ADJUST OR IMPROVE COMPLY WITH OPERATIONS TO THE LAW WITHIN 180 DAYS.
1982	MINISTERIAL REGULATION NO. 3, B.E. 2525 (1982)	THIS REGULATION (EXCEPT FOR ARTICLE 14 (1) OF MINISTERIAL REGULATION NO. 1 (1981) WHICH WENT INTO EFFECT ON JANUARY 1, 1984), WAS EFFECTIVE ON DECEMBER 23, 1982. THE MAIN FEATURES OF THIS REGULATION WERE AS FOLLOWS: <ul style="list-style-type: none"> - RELAXATION OF DISTANCE FOR STATION LOCATION FROM 500 METRES TO 50 METRES - STATION ENTRANCES AND EXITS MUST BE AT LEAST 4 METRE WIDE. - ELECTRICAL EQUIPMENT USED IN A GAS STATION MUST BE EXPLOSION-PROOF - MUST BE LOCATED AT LEAST 200 METRES FROM SCHOOLS, HOSPITALS, STADIUMS, EMBASSIES AND THEATERS.

UNDER ARTICLE 34, IT WAS STATED THAT OIL RETAIL GAS STATIONS WERE EXEMPT FROM THIS LAW IN TERMS OF DISTANCE.

Table 7.7 (Contd.)

Laws And Regulation : LPG Retail Station

YEAR	LAWS AND REGULATION	
1982	MINISTERIAL ORDER NO. 14, B.E. 2525 (1982)	UNDER THE JURISDICTION OF AUTOMOBILE ACT B.E. 2522 (1979), THIS REGULATION CONCERNED THE EQUIPMENT REQUIRED FOR LPG USE IN AUTOMOBILES FOR THE SAKE OF SAFETY. THE REGULATION WAS THE REVISIONS OF MINISTERIAL REGULATIONS NO. 8 (1981) AND NO. (1982) WHERE SPECIFIC, REQUIRED EQUIPMENT WAS NEITHER APPROPRIATE NOR PRACTICAL.
1983	ROYAL DECREE OF STANDARD LPG TANK FOR IGNITION ENGINE	THIS LAW REGULATED STANDARD LPG TANKS AS SPECIFIED IN INDUSTRIAL STANDARD NO. 370-2525. FOR LPG USED IN AUTOMOBILE AS A SUBSTITUTE FOR GASOLINE.
1986	MINISTERIAL REGULATION NO.4 B.E. 2529 (1986)	THIS REGULATION CANCELLED THREE PREVIOUS MINISTERIAL REGULATIONS AND ISSUED REGULATIONS TO CONTROL APPLICATION FOR AND EXTENSION OF PERMISSION TO ENTER INTO THE GAS RETAILING TRADE AND SAFETY CONCERNS (STORAGE, FILLING, CONTAINERS, PIPE, TESTING AND EXAMINATION OF GAS CONTAINERS, USE AND SO-ON). THIS REGULATION CONSISTED OF 15 CHAPTERS AND 132 ARTICLES CONTROLLING GAS RETAIL ACTIVITIES AND SAFETY.

activities.

7.2.1 Refinery

Establishing a Refinery Business

At present, Thailand has three refineries (excluding the first Military Refinery that has a capacity of 1,000 barrels per day). Of these, the refinery belonging to Thai Oil has a name-plate capacity of 65,000 barrels per day (B/D), Bangchak oil refinery has a capacity of 65,000 B/D, while the Esso refinery has a capacity of 63,000 B/D. The combined capacity of these three refineries stands at approximately 193,000 B/D.

The establishment of these refineries occurred under different circumstances and conditions as stated in each of their contracts. A new refinery may be subject to different conditions compared to those already in existence, depending on what is deemed most appropriate for the country at that time. However, it is also important to have some idea of the conditions and regulations facing the existing refineries when they entered the business.

Bangchak Refinery

Even before the establishment of the Bangchak Oil Refinery, the government recognized the importance of the oil business, and was reluctant to rely on the two major oil companies (Royal Dutch Shell and Standard Vacuum Oil) to import and supply kerosene and lubricating oil to the country. It was believed that these two foreign companies monopolized the oil business and that this resulted in political instability and unreasonably high prices. With this in mind, the government began to play a role in the oil business by setting up an Energy Division under the Ministry of Defense (in 1933) to supply petroleum to the military and to government agencies. The role of the Energy Division gradually expanded until it, eventually, (in 1937) became the Energy Department. However during this period, the Second World War broke out and energy became the most important strategic factor. In 1938, therefore, the government, introduced the Energy Act, forcing oil traders to reserve 50% of their total annual sales and to sell at regulated prices. This nationalistic law was biased against oil trading firms. In 1948, however, due to the fact that the country had been on the losing side in the World War, Thailand was asked to abrogate this Act and submit to the following contractual obligations.

- o Oil traders who did not comply with the law at that time were exempted from penalty.
- o The Thai government would not enter into joint ventures with foreign oil companies.
- o The government was obliged to allow oil traders to participate in government trading.
- o The Department of Energy was to be transformed into the Energy Division whose activities were limited to the

storage of oil for military use only*. In addition, the Department of Energy was forced to sell its operating assets at Chongnonsri to two foreign private oil companies for pound 240,000.

Those obligations gave these private oil companies considerable advantages and privileges. However, in 1956, when conditions had changed, Thailand successfully refused to comply with these obligations and the role of the Energy Division was once again revised in order to break the monopoly in the oil business and promote free trade. The Energy Division expanded its activities to include the construction of oil depots, storage tanks for emergency reserves, seaports and, finally, oil refineries. The first Military Refinery was built at Fang with a capacity of 1,000 B/D. It is conceivable that the decision regarding the establishment of this oil refinery (notwithstanding diseconomies of scale and inadequate oil reserves) may have been made due to political, rather than economic, considerations.

As the first Military Refinery was being built, plans for a second Military Refinery (with a capacity of 5,000 B/D) belong to the Ministry of Defense were implemented in the Prakanong district of Bangkok. In the beginning, a Japanese firm (Nigata Engineering) whose Far East Economic Universe Company acted as its agent, had been contracted to build the refinery. Later, in 1958, a contract was signed with Fuji Car Manufacture Co. Ltd and Commetary-Oissety Ltd., to complete construction of the refinery by 1963 at a cost of 400 million baht. However, these two companies failed to complete the refinery by the deadline stated in the contract. They had to renew this contract five times over a period of two years. During this period, the Petroleum and Petroleum Product Tax Act, (in B.E. 2507 and 2508, respectively) was promulgated. The Act was aimed at taxing petroleum and petroleum products produced domestically in order to compensate for the decline in government import duty revenue resulting from a reduction in imported energy. The impact of this Act was that the cost of petroleum products refined domestically would increase to such an extent that an oil refinery with a capacity of 5,000 B/D was expected to suffer a loss of 15 million baht per annum. The expected pre-tax profit was estimated to be about 85 million baht, whereas the liability of the 5,000 B/D refinery was estimated to be as high as 100 million baht, resulting in a loss of 15 million baht a year.** With this in mind, the Ministry of Defense, therefore, planned to expand the capacity of the refinery by an additional 10,000 B/D. Unfortunately, the cost of operating a refinery of this size was so high that the government decided to lease it to the private sector. The conditions proposed by the government for selecting a leasee were as follows:

* Confidential Document No.6546/2489 dated Oct. 28, B.E.2489.

** Thawee Panichwattanacharoen, "The Role of Multinational Corporations in the Oil Industry in Thailand," M.A. Thesis, Thammasat Graduate School, 1979, page 39.

- o The leasee had to pay the refinery's construction cost on behalf of the Thai government.
- o The leasee was to comply with the Petroleum and Petroleum Product Tax Act B.E. 2507.
- o The leasee was to increase the plant's refining capacity to 15,000 B/D.
- o The leasee was to reserve 45 days of crude supply and 30 days of petroleum products in the refinery.
- o The Energy Organization (EO) was the leasee's first priority and was to sell its petroleum products to the EO at reasonable prices.
- o The leasee had to agree to employ all Bangkok officials and employees for the period of the leasee's contract.
- o The leasee had to transfer the refinery--including assets and employees--to the government after 15 years of operation.

The Summit Industrial Corporation (Panama) was selected as the leasee and signed the contract effective December 30, 1964. The company launched operations in 1965. Later, agreements regarding the expansion of the refinery were made to increase the refining capacity from 15,000 B/D to 20,000 B/D and to 65,000 B/D, and to install additional equipment for producing carbon dioxide and dry ice. The following is a summary of the refinery's expansion.

- o During Oct. 1965 - Jan. 1968, the first refinery unit was improved, expanding its refining capacity to 9,000 B/D.
- o In June 1968, the second refinery unit was established, resulting in a capacity of 25,000 B/D and increased production of premium gasoline, bitumen and sulphur.
- o In July 1969, improvements were made to the second refinery resulting in a capacity of 37,000 B/D.
- o The third refinery unit was completed and started to operate at a 65,000 B/D capacity.

During the period of the lease, the benefits which accrued to the Thai government from the Summit Industrial Corporation were as follows:

- o Payment of the refinery construction costs with a capacity of 5,000 B/D was in the amount of 400,840,800 baht within five years.
- o A total of 330 million baht in rent was paid, details of which are as follows:

Year	Rent/Year (million baht)	Total (million baht)
1971 - 1972	5	10
1973 - 1975	20	60
1976	25	25
1977	40	40
1978	55	55
1979	65	65
1980	75	75

- o Starting on May 19, 1981 (which was into the sixth year of the lease) to 18 May 1991, Summit agreed to allocate 30% of its net profit, or 2.5% of the total sale value, or 20 million baht, whichever was the greatest, to pay for its rent on an annual basis.
- o The company was responsible for the payment of wages and special allowances to 400 officials of the Defense Energy Department. Nevertheless, during 1979-1980, Summit occasionally failed to comply with these conditions, particularly, regarding oil reserves, and there were disagreements between the employees and the firm. Consequently, on February 1981, the Thai government terminated the lease and started to operate the refinery (which was renamed the "Military Oil Refinery [Bangchak]") on its own.

Since then, the MOR has become a state-enterprise in nature, although not legally. The refinery suffered a loss of about 4,000 million baht a year due to its own shortcomings. Problems arose, as a result of both its own operations and government policy. The difficulties it encountered from within included inefficiency involving the technology of the refinery and over-staffing (resulting in a correspondingly high wage bill). Some problems were the deteriorated condition of the distilling unit, insufficient maintenance, inflexibility in conducting its business, and high interest on its initial operating funds. Two problems it encountered due to government policy were due to the long-term contract for crudes, and government control of fuel oil prices etc. To cope with these problems, the Military Oil Refinery was restructured and, in October 11, 1985, became the Bangchak Petroleum Co. Ltd. The main objective was to exempt the company from the bureaucratic regulations affecting the civil service and some other state enterprises and to allow it to operate in the manner of a private company-- and perhaps, to prepare for joint ventures with the private sector. Five-year Targets were set for company's operations to meet certain standards (in terms of returns, management, personnel, and technology of refinery equipment).

Thai Oil Company Ltd.

Thai Oil Co. Ltd. went into the oil refinery business during the same period that the Bangchak Refinery was established. In 1959, 20 oil companies, responding to the Thai government policy of promoting foreign investment, submitted their proposals for establishing oil refineries in Thailand. The government considered their proposals under the following conditions.

- o The refinery should possess a minimum capacity of 25,000 B/D.
- o The refinery had to be transferred to the government after a certain period of operation.
- o It should produce petroleum products which are necessary for military use and domestic consumption, such as LPG, premium gasoline, regular gasoline, jet fuel, diesel and

fuel oil.

- o The company had to agree to transfer 25% of its net profits to the Thai government.
- o The ex-refinery price of each petroleum product must never be higher than the c.i.f. price of imported products.

The outcome was that the Thai Oil Refinery Company (TORC) was selected to establish a refinery with a capacity of 30,000 B/D. The company signed the contract to establish and operate the refinery with the Ministry of Industry on September 25, 1961. BOI privileges extended over a period of five years (1964-1969). In 1967, TORC was allowed to expand its refining capacity to 65,000 B/D and was granted the right to conduct its business for seven additional years (extended from 1974 to 1981).

During its operation, the benefits which accrued to the Thai government from TORC were one of the following, whichever was the highest.

- o 30% of their net profit, or
- o 1.25% of total gross sales (after taxes); this increased to 2.5% after September 1975, or
- o The sum of 12 million baht.

In 1979, two years before the contract ended, TORC signed the second contract with MOI. It also signed a joint venture contract with PTT whereby PTT became the largest shareholder in the TORC, with 49 % of the issued share capital. This agreement, the first in Thailand on such a large scale between the public and private sectors, was to pave the way for a major expansion in TORC's refining capacity, something which had been under consideration for some time

In the second contract TORC agreed to channel part of its profits (coming from, or in consequence of, business carried on during an accounting period) to the Ministry of Industry. The estimation of the amount was based on the accounting methods laid down in the revenue code, as follows:

- o During the period when this capital had not yet been registered in the stock market, TORC agreed to pay 65% of its profit deducted by means of the corporate income tax for juristic companies.
- o After being registered, TORC agreed to pay 60% of its profit deducted by means of a corporate income tax applied to juristic companies whose shares were registered.

* The tax rates mentioned include the rate specified in the revenue code at present but have been limited to corporate income before exempted or deducted under the Investment Promotion Act 1960.

The Esso Refinery

Esso Standard of Thailand has been in the oil business in Thailand since 1894 under the name of the Standard Oil Co. Ltd. (New York). Due to the Anti-Trust Law in the U.S., the company changed its name to Esso Standard Eastern Co. Ltd. It was subsequently registered in Thailand under the name of Esso Standard (Thailand) and entered into the oil trade in this country.

In 1963, the establishment of the Thai Asphalt Manufacturing Company to produce mineral oil, was approved by the Cabinet. The company, located in the Sriracha District of Chonburi province, was designed to produce mainly asphalt and other "by products" of LPG, kerosene, diesel, fuel oil and lubricants, with the exception of gasoline. The company was allowed to consume crudes with an API gravity of less than 27.0 and at a capacity of up to 3,000 B/D. One year later, the Cabinet gave the refinery permission to produce naptha and reformat and to expand its refining capacity to 7,000 B/D. The refinery asked for permission to expand its capacity to 15,000 B/D and to 35,000 B/D within three years with the reassurance that it would not produce gasoline. In the meantime, the Thai Asphalt Manufacturing Co. asked for permission to transfer its business, together with its rights and duties, to Esso Standard (Thailand), thus making the latter an oil refinery with a 35,000 B/D capacity. The government decided to agree to the proposal under the following two conditions:

- o The prohibition regarding gasoline production was to remain in force.
- o The company was liable to pay 25% of its net profit from the production of its petroleum products with the exception of asphalt, to the government.

In 1970, the government allowed Esso to sell naptha and reformat in the country. Two years later, Esso proposed to pay either 2% of the total value of its refined products, except asphalt, deducted by means of excise and business taxes, or seven million baht a year, whichever would prove higher.

Before 1985 Esso was not a real oil refinery in the sense that it was not allowed to produce gasoline; also naptha produced by the refinery had to be transported to Bangchak for gasoline production. This increased the cost of gasoline produced by Esso but one point which is interesting to note here is that, under the contract signed by the government and Esso, transfer of the Esso refinery to the government after a certain period of operation was never mentioned as it had been in the contracts signed with Summit and TOC.

In 1985, the third phase of expansion was completed, thus raising Esso's refining capacity to 63,000 B/D. Furthermore, the refinery also received permission to produce gasoline.

It is obvious that the decision to approve the establishment of a given refinery was made under different conditions as stated in each individual contract. Each refinery was faced with different terms and contractual agreements, for example, regarding the government's share of net profits. There are, in fact, no definite terms and conditions which apply to all refineries. In addition, under the contracts signed with TOC and Summit in 1961 and 1965, respectively, clauses were included regulating ex-refinery prices as applied to these two refineries. In contrast, Esso, as a refinery and also as an oil trading company, was not subject to the ex-refinery price regulations. In practice, however, Esso was subject to regulated retail prices in accordance with the Act of B.E. 2490.

The Construction of a New or Expanded Refinery

In general, from the private-sector point of view, the decision to construct new or expanded facilities is based on the present net value of the investment. If the present net value of the investment project is higher than the cost of the shortage of imported petroleum products, then the project is economically feasible. In other words, the decision to invest in new or expanded refinery facilities depends crucially on:

- o the expected amount of domestic oil demand
- o c.i.f. prices of crude oil
- o c.i.f. prices of petroleum products
- o the cost of domestically produced petroleum products.
- o the construction costs involved in the expansion of the refinery.
- o taxes and special benefit payments to the government.

However, the government also plays a direct role in a company's decision to invest in the refining business. A proposal to construct or expand refining facilities must be submitted to the Ministry of Industry and the final approval of the project is made by the National Energy Policy Committee and the Cabinet. The main reason for government involvement in the investment decision process is because of its concern with the security of the country's oil supply. The expansion programs of the refineries which are under consideration or have been approved by the government are as follows.

Thai Oil Company Ltd.

Thai Oil planned its second expansion program in the early 1980s (The first expansion was done in 1967 which raised the capacity from 30,000 B/D to 65,000 B/D). The refinery is bound by a contract signed with the Ministry of Industry to submit the expansion plan to the government within a specified period of time. The chronology of the refinery expansion is as follows.

On December 12, 1979, the Ministry of Industry signed a contract with Thai Oil Company Ltd. In accordance with the

contract, the company was allowed to expand its refinery to meet the country's energy needs. On the same day, PTT also signed a contract setting up a joint venture with the major company shareholder; thus, PTT now holds 49% of the company's shares and the Crown Property Bureau holds 2%.

On October 18, 1983, TOC submitted a request to the Ministry of Industry to divide the second expansion program into two stages as follows.

- o In the first stage, the existing crude distillation capacity would be expanded to 83,500 B/D. In addition, a hydro cracking unit would be installed.
- o A consultant would be hired to conduct a feasibility study on the second stage of refinery expansion.

TOC cited three reasons to support its request for the split of the refinery expansion program. These reasons are as follows.

- o World oil situation had changed since the time TOC submitted its first refinery expansion request.
- o Domestic oil demand projection was revised downward.
- o It was more difficult to finance large expansion project than TOC had anticipated.

On November, 23, 1983, the Ministry of Industry (with Cabinet approval) gave TOC permission to expand the refinery in two stages. It also issued a statement of support for the project and reassured TOC that the Ministry would not terminate its contract with TOC in the case that TOC could not complete the expansion project on time.

On April 11, 1986, TOC signed a 20-year lease on the refinery with the Ministry of Industry. The lease covered the period between September 18, 1981 and September 17, 2001.

First-stage construction began in 1986; it is expected construction will be complete in late 1988. In the meantime, TOC has also conducted the feasibility study on the economics of second-stage expansion. The outcomes of the study indicate that TOC should construct a new 100,000 B/D crude distillation unit. However, this project, if approved by the government, will not be on stream until mid-1990s.

The Bangchak Refinery

In 1984, the Bangchak Refinery received government approval to revamp its refining facilities. The objective was to improve the efficiency of its crude distillation units.

- o Improvement in the efficiency of crude distillation unit number three is expected to be completed in 1989.
- o Improvement in the efficiency of crude distillation unit number two is expected to be completed in 1990.

By 1990, the Bangchak Refinery will have a refining capacity of 85,000 B/D. The refinery will also install a Reduced Crude Conversion (RCC) unit which will be on stream in 1993.

The Esso Refinery

Esso is also contemplating expanding its refining capacity. On July 21, 1987, Esso submitted a refinery expansion proposal to the Ministry of Industry asking for permission to expand capacity from 63,000 B/D to 110,000 B/D.

The government is now studying both Esso's proposal and that of Shell (who has also shown strong interest in building a new greenfield refinery). The government, therefore, must consider these proposals by taking the following factors into account:

- o According to the government's contract with TOC, the government must allow TOC to implement its second stage expansion program (to add a new 100,000 B/D crude distillation capacity after the mid 1990s).
- o Given that TOC and Bangchak refinery expansion projects are carried out, future domestic refining capacity shortages can be met by Esso expansion or by a greenfield refinery. It is possible that the country can accommodate an additional refining capacity of 40,000-50,000 B/D after the mid- 1990s.

The government has appointed a working group to study these private company proposals and to find answers to questions such as, what will the future oil demand level? or, "what are the benefits to the government from these companies?" The working group will make recommendations to the government (who will make the final decision on this matters) concerning refinery expansion policy.

Taxation

According to the Petroleum and Petroleum Product Tax Act, B.E.2507 and B.E.2508, petroleum and petroleum products are taxed with the rates frequently changing as specified by Ministerial Regulations.

Refiners are liable to pay taxes on petroleum and petroleum products. Those include gasoline, kerosene, fuel for jet and air craft, fuel oil, diesel and other similar oils, lubricating oil, petroleum gas, bitumen (asphalt), petroleum coke and other residues from petroleum including other types of oil or other products resulting from oil refinement.

At present, the basis for taxes on petroleum and petroleum products is either the value or the quantity, whichever is greater. Value refers to the price of petroleum and petroleum products as specified by the Director-General with the approval of the Ministers or the maximum price set by the Central Prescription of Prices of Goods and Anti-Monopoly Committee or the average of these set prices computed according to procedures specified in ministerial regulations.

The bases regarding quantity are as follows:

- o For gasoline, kerosene, fuel for jet aircraft, fuel oil, diesel oil, other similar types of oil and liquid lubricants, the tax base is the volume in litres at 30°C.
- o For non-liquid lubricating oil, the tax is weight in kilogrammes.
- o For LPG, the tax is based on weight in metric tons.

The Excise Department and provincial excise offices are the tax collecting agencies. Provincial tax offices are responsible for excise operations for petroleum and petroleum product industries located in the province concerned. Assessment of tax liability is done by provincial excise offices or the Excise Department after receiving forms and records on the quantity of petroleum and petroleum products leaving the refinery daily. Refiners must make a tax payment within 10 days after being notified by government officials as to the amount of their Tax liability. In case of failure to pay the tax within the specified period, an additional tax payment at 1% of the tax liability per month or part thereof-- but not less than 10,000 baht-- must be made.

If refiner records falsify information in their accounts or in reports or measurement forms in order to avoid tax payments, penalties are imprisonment for a period (from 3 months to 7 years) and a fine (from 2,000-200,000 baht). If a refiner moves or allows petroleum and petroleum products to be moved out of the refinery without compliance to the Act, penalties are imprisonment (for a period not exceeding 6 months) and a fine ten times the tax liability for the petroleum and petroleum products (but not less than 10,000 baht). In case of failure to comply with ministerial regulations specifying procedures of tax payment or reports, accounts or other information, the refiner is subject to a payment of a fine not exceeding 10,000 baht.

Refiners may request tax refunds from the Director-General of the Excise Tax Department in the following cases.

1. Petroleum and petroleum products which are exported, including oil filled in ships over 250 ton gross which have been authorized by customs officials to leave for foreign destinations.

2. Petroleum products filled in aircrafts which have been authorized by customs officials to leave for foreign destinations or used in an operation to aid the Thai government by foreign governments or international organizations.

3. Gasoline and lubricating oil used for vehicles belonging to diplomatic representatives, international organization and persons exempted from customs duty.

Quality Control

Since oil is one of the key commodities in the country with important economic implications, the government is empowered by

law to establish and strictly enforce minimum quality standards for petroleum products. The authority and responsibility for enforcement come under the Commercial Registration Department of the Ministry of Commerce. The objective of the law is to protect consumers so that they will get the kind of quality products required to maintain the efficiency of their engines and machinery.

In fact, strict quality control is enforced at every step of the operation, from the refining process to transportation, storage, distribution, and sale at retail outlets. The Ministry of Commerce has set minimum quality standards for most petroleum products to ensure that they will not cause any damage in their application. The quality of each oil product depends on its required properties of performance. For instance, gasoline is measured by its octane value, refining section and vapor pressure; diesel oil is measured by its cetane value, refining section and sulphur content; and LPG is measured by its heating value and vapor pressure.

At the refinery, the quality of crude oil is tested since crude from the same reservoir may be of a different quality. After being tested, crudes go into a storage tank to await the oil distillation process which will be efficiently controlled to produce desired products. After the production process further mixing and adjustment might have to be carried out in order to produce petroleum products up to the required standards. Then finished products will be stored in tanks for future delivery to oil trading companies. Finished products are delivered by rail and road or they are delivered by barge. The refinery's responsibility ends at the marketing company installation when the oil is accepted and discharged into the storage tank. As for delivery by truck, the refinery's responsibility ends at the discharge point when the oil is loaded onto the tanker. From there on, the oil trading firms are responsible for ensuring that the oil product quality is preserved until the products are distributed to retail outlets.

In each step of the operation, the Ministry of Commerce has complete authority to check in order to confirm that each product from the refinery meets required minimum standards. In practice, among all the finished oil products on the market, gasoline is the center of interest since it plays such an important role in the public's daily enhancers life. Some and some marketing companies (who mix octain at their depots) refineries produce gasoline of a higher quality than the minimum requirement although this practice is highly uneconomical. Given market competition, some oil trading companies may want to trade in higher standard gasoline so that they can advertize their excellence.

The quality specifications summarized in the Table 7.8 are based on international standards for petroleum products and on engine design developments. Standards have been revised from time to time to match the progress in engine design innovation. In

fact, since 1968 when standards for gasoline were first set, they have been changed three times (in 1980, 1982 and 1984) in accordance with trends in engine design. And during the period where there was a considerable price differential among petroleum products, the Commercial Registration Department used color as a preventive measure to differentiate between the different products. Regular gasoline which had originally been yellow or orange in color, was changed to red, whereas premium gasoline, (the original colour of which was red) was changed to light yellow. Kerosene, which was colourless, was changed to dark blue. It was intended that these colour specifications would obstruct attempts to mix high-priced products with low-priced ones.

Table 7.8
Quality Specification by Petroleum Products

Type	Important Qualities
Regular Gasoline	Minimum Octane = 83, red
Premium Gasoline	" = 95, light yellow
Kerosene	Minimum smoke point = 22 m.m., blue
High Speed Diesel	Minimum octane number = 47
Low Speed Diesel	" " " = 45
Lubricating oil	SAE 10w, 20w, 20, 30, 40, 50
Fuel oil	1) Max. Kinematic viscosity = 80 cst Max. Sulphur content = 3.0% 2) Max. Kinematic viscosity = 80 cst Max. Sulphur content = 3.2% 3) Max Kinematic viscosity = 145 cst 4) Max Kinematic viscosity = 180 cst 5) Max Kinematic viscosity = 230 cst 6) Max Kinematic viscosity = 280 cst
LPG	Max. vapour pressure = 14.06 kg./cm ²

Source: Ministry of Commerce, 1986.

Oil Reserves

Section 7 of the Oil Act B.E. 2509 states that firms engaging in the production or sale of petroleum products are required to maintain a legal reserve in accordance with the amount stated in the government gazette which is in the range of 5 to 20% of petroleum products produced or sold. According to The Ministerial Regulation B.E. 2518 during the time following the first oil shock, it was 5%, or an average supply of 18.25 days, for premium gasoline, kerosene, diesel fuel oil and crude; 7% or 25.55 days for regular gasoline and 20% or 73 days for jet fuel (as shown in Table 7.9)

Table 7.9
Oil Reserve Rate 1975-1986

Unit : Percent

Type	Reserve Amount	
	Percent of Total	Estimated number of days
Premium Gasoline	5	18.25
Regular Gasoline	7	25.55
Kerosene	5	18.25
Diesel	5	18.25
Jet fuel	20	73.00
Fuel oil	5	18.25
Crudes	5	18.25

Source : Ministry of Commerce.

The reserve rate, at that time, was considered to be quite low compared to some countries whose reserve rates averaged almost 90 days.* The economic implications of fixed oil reserves are twofold. If the rate is quite high, the investment costs of oil storage tanks as well as the interest income forgone will increase. However, in periods following fluctuating world oil prices, reserves may imply a foreign exchange saving, provided that prices of petroleum product continue to increase. In contrast, given the downward trend in oil prices, a high reserve rate will mean additional, unnecessary, costs to producers and traders.

In the past, the government took advantage of its oil reserves by postponing any increase in the ex-refinery price and retail price after OPEC increased its crude prices. The government usually delayed adjustment prices upward until the amount of crude bought before the price rise was finished. Some problems arose since crudes, bought at lower prices, were used for several purposes: (1) crude was held as the working capital of the refining process; and (2) crude held as reserve under the Petroleum Act of B.E. 2509. As a consequence, concerned government officials argued about which day was the most suitable for increasing prices to reflect real product costs.

The accounting system concerning oil reserves is different among refineries and oil trading companies. Some firms employ the FIFO system in evaluating their oil reserves whereas other firms rely on either the LIFO or moving weighted average. Different accounting systems lead to biased treatment among firms as far as oil reserves are concerned.

In addition, Esso, which is both a refiner and a trader seemed to have advantages over other trading companies. While others had to maintain reserves as either a refiner or as a trader, Esso, engaging in both activities, was treated only as one company.

Due to the declining oil price trends oil prices of the past two years, in July 1986 the Thai government reduced oil reserve rates to 3% for most petroleum products. Furthermore, refineries are also exempted from holding oil product reserves. As shown in Table 7.10, the reserve rate for gasoline, diesel, fuel oil and lubricating oil has been reduced to 3% of the total sales.

* Sivavong Changkasiri (1978), "Oil Problem and Politics in Thailand after the 1973 Oil crisis", Research Report, National Defense College, 1978.

Table 7.10

Oil Reserve Rates by Types of Petroleum Products

Type of petroleum product	Per cent
Premium Gasoline	3.00
Regular Gasoline	3.00
Kerosene	3.00
HSD	3.00
LSD	3.00
Fuel oil	3.00
Jet fuel, JP 1	3.00
Jet fuel, JP 4	10.00
Airplane fuel (oct = 100/130)	20.00
Lubricating oil for airplanes	20.00
Other lubricating oils	3.00
Non-liquid lubricating oil	3.00
Crude	4.00
LPG	0.12

Source : Ministry of commerce.

7.2.2 Importers

The Establishment of the Business

In accordance with Ministry of Commerce regulations, permission may be granted by the Ministry for the establishment of an oil importing company. The company will be allowed to trade in or import petroleum products if it fulfills the following requirements:

1. The construction of oil storage tanks of a certain minimum capacity in accordance with total legal reserve requirements has to be completed within 11 months.
2. The firm must maintain its reserves at a level equivalent to 3% of its total annual sales. However, the Director-General of the Commercial Registration Department has the right to grant a ten-day grace period, wherein a firm may maintain reserves at up to 40% of the legally required capacity.
3. The firm has to maintain a minimum trade volume of diesel and LPG at 100,000 tons per annum.
4. A definite number of outlets to which the firm will supply its petroleum products must first be determined.

Import Quotas

Except for high-speed diesel, Thailand has become less dependent on imported energy. In order to meet the domestic demand for this product, oil trading companies are allowed to import high-speed diesel for domestic use. However, the government believes that to ensure an available supply and streamline economic activities throughout the country, the importation of high speed diesel has to be under the control of the government through the Commercial Registration Department. According to a Ministerial Announcement concerning the importation of foreign commodities, dated Nov. 23, 1982, the Commercial Registration Department, has complete authority to control oil trading companies, under Section 6 of the Oil Act B.E.2521, involved in the trading and importation of high-speed diesel.

The traders and importers are subject to regulations issued by the Ministry to oversee and control their trade volume, to ensure they fulfill their import quotas as well as their obligation to buy from PTT. These regulations are based on the following criteria.

1. The total annual trade volume is determined quarterly, based on estimated national domestic demand.
2. In each quarter, each company is allowed to trade at the volume the company traded during the first two quarters of the three previous quarters. Further adjustments to the trade volume can be made if the designated amount is greater than the amounts requested by each individual firm. However, in case the designated amount is lower than the amount requested, each firm

is subject to a designated quota unless its demands are reasonable and there is still a surplus after quotas have been allocated to all firms.

3. For a company which has been in the business for less than three quarters, its quota of the trade volume in each quarter is determined by the amount permitted.

4. Total imports of high-speed diesel are fixed quarterly based on the country's needs after the available domestic supply and estimated volume of PTT's imports under Government-to-Government agreements have been deducted.

5. In each quarter, import quotas for each trading firm are determined by the amount estimated in (2) or (3), after deducting the amount that the company has arranged to buy domestically and the amount the firm has pledged to buy from PTT. Further adjustments to the imported amount may be made under the same conditions as stated in (2).

6. An oil trading company is allowed to increase or decrease its import quota for a particular quarter by up to 10% by adding the increase or decrease to either the previous or the following quarter, or both, within the same year.

7. An oil trading company is obliged to purchase petroleum products from PTT on a monthly basis in an amount proportional to the import quota.

Controls on the importation of petroleum products have resulted in the following problems.

- o The estimation of needs in each quarter is subject to error. In practice, the demand tends to be overestimated so as to avoid an oil shortage in the country.
- o New firms which receive permission to enter into the oil business cannot fulfill the requirement that states that oil storage tanks must be constructed within a period of 11 months as specified by law.
- o Some trading companies do not comply to the law in respect to oil reserves.
- o Some oil trading companies do not regularly import during the period; the result is that the actual oil imported falls short of their quota, and this leads to instability in terms of supply. In addition, to meet the quota by the end of each quarter, they might have to import products at higher prices.

It was found that small oil importers were inclined to fulfill the requirement regarding import quotas, reserves and the construction of oil storage tanks. This has important implications in terms of the stability of oil supply. This is partly due to the fact that oil prices are regulated and do not reflect the real opportunity cost of producing or importing them. It is conceivable that this stability will be improved if oil

prices are deregulated and import quotas abolished.

7.2.3 Major Oil Trading Companies

Establishment of Business

At present there are about 11 licensed oil trading companies engaged in trading activities as specified in the Section 6 of the Petroleum Act B.E. 2521. The firms included in the Section have to meet a trade volume of not less than 100,000 tons per annum and act as wholesalers in the oil business. These firms either purchase petroleum products from local refineries or import from abroad and distribute them to service stations and major consumers throughout the country.

According to the law, the government has control over a company's entry into the business in the sense that an investor deciding to engage in the wholesale trade under Section 6 of the Act has to apply for permission and which the Ministry of Commerce has the authority to grant it. The criteria for approval are based on two important conditions.

1. That the market is large enough for a newcomer, taking into account the number of existing companies and the state of the oil market.

2. That the applicant's financial status is satisfactory when his investment in the facilities necessary for engaging in the trading business are considered.

To receive the approval to initiate operations, an applicant has to fulfill the conditions stated in Ministerial Order 1/2528. The provisions of this regulation are as follows.

1. The applicant's firm has to complete the construction of oil storage tanks with a minimum capacity twice that of the legal oil reserve requirement within 270 days after receiving permission.

(It should be pointed at this juncture that since the requirement regarding storage tank capacity is stated in terms of the legal oil reserve, varying reserve rates during different periods of time may mean that investment costs differ for old and new firms).

2. In cases where the applicant's firm fails to meet the construction requirement within 270 days, it has a right to ask for permission to twice postpone the deadline by 30 days each time, making a total of 11 months after receipt of the permission.

(In practice, the requirement stipulating that construction be completed within 270 days or 9 months, seems to be rather unrealistic. Granting the right to petition for an additional two months may sometimes lead to more red-tape and create opportunities for bribery and corruption).

3. The applicant's firm has to report its progress during the construction period.

4. After construction is completed, the applicant's firm must inform the Ministry in order that officials may investigate and examine the storage facilities before the Ministry can grant the firm final approval.

Business Conduct

Under Article 6 on the Oil Fuel Act B.E. 2521 (1978) the major oil trading companies are subject to many regulations as set forth in the Act as well as Ministerial Orders and Ministerial Regulations aimed at regulating the amount of trade and petroleum products imports in the country. These firms are subject to the following controls:

1. They have to inform the Commercial Registration Department of any future plans regarding the importations of or trading in petroleum products three months in advance.

2. They have to report their monthly sales and the amount held in storage by the tenth day of each month.

3. They have to maintain reserves at a level equivalent to 3% of total annual sales unless they have good reason to appeal to the Director General of the Commercial Registration Department who has the authority to grant a ten-day grace period wherein the firm is allowed to maintain its reserves at up to 40% of the total amount required by law. The reserve amount has to be maintained within 90 days after oil storage tank construction is completed.

4. In cases where a firm fails to maintain the required reserves as stated in (3) over a continuous 30 day period or discontinuous period totaling 60 days, its license is to be revoked by the Minister.

5. Any trading company trading in LPG has to maintain reserves at a level equivalent to not less than 0.12% of total sales.

6. In cases where a firm fails to comply with the law, its license is to be revoked. It may reapply for a new license one year after the date of license termination.

Regarding sale of petroleum products, these oil trading companies are required to adhere to the following steps.

1. The quality of the products it sells must be ensured in terms of their API gravity.

2. Documents regarding product sales have to be produced and must include the following details.

- o Date of sales
- o Names of buyers and sellers

- o Type and quality sold
- o API (except for lub oil and LPG)
- o Type and registration numbers of transport vehicles
- o Seal numbers
- o Routes of transportation
- o Dates of discharges

The main concern underlying these steps is to ensure that the quality of petroleum products remains constant in order to protect consumers.

In cases where trading companies receive products from domestic refineries, the oil products will be inspected at the discharge point before they are distributed to service stations. These companies are equipped with efficient quality control devices and labs to test for quality. They also have control measures in force in the distribution process of products to service stations. All road tankers must pass quality checks to ensure they are in good working condition and that the oil tanks are functioning properly. All oil discharge outlets are properly sealed.

7.2.4 Retailers

Under Section 6 (2) of the Petroleum Act B.E. 2521, the oil retail trade is subject to regulations regarding the establishment and the conducting of a business. A firm located in Bangkok must apply at the Amphoe office where it is to be located. It costs 100 baht for the application fee and 1,000 baht for the license. Many steps and procedures are involved in applying for the license. These government agencies which may or may not issue a license to retailing stations are:

In Bangkok

1. Local police stations
2. Control Division, Police Department
3. Northern, Southern Bangkok Metropolitan or Thonburi Metropolitan Police Divisions.
4. Metropolitan Police Bureau
5. Control Investigation Bureau
6. Registration Division, Police Department
7. Ministry of the Interior
8. Public Works Department
9. Right of Way and Land Acquisition Division, Bangkok Metropolitan Administration (BMA)
10. Building Control Division, BMA
11. Environmental Health Division, BMA
12. The Department of Highways
13. Police Fire Brigade Division
14. Traffic Police Division

In other provinces

1. Amphoe office
2. The Amphoe committee
3. Provincial committee

4. Governor of the province
5. Public Works Department

The application form for a license in Bangkok is circulated to the 14 government agencies to investigate whether the applicant has complied with the law and pertinent regulations. Generally, there are many regulations issued by these agencies. The most important conditions which the applicant has to fulfill are as follows

1. A service station must not be located in a non-parking area in accordance with the Road Traffic Act.
2. A service station must be situated on a road not less than 8 meters in width, and at least 15 meters from curves or crossroads.
3. Filling pumps must be at least 3 metres from a public road.
4. In cases where there are other buildings located within a 20 meter radius of the filling pump, a fireproof wall 1.80 meters or 3.00 metres in height must be built at least 15 meters and 10 meters, respectively, from the pump.
5. No other building except the firm's office, with a maximum height of 4.50 meters, is to be built in a service station.
6. A service station may not be located less than 200 meters from another station engaged in the retailing of products from the same oil trader. However, in cases where different trading firms are involved, only one other station is allowed within 200 meters but it must be located at least 50 meters from the existing station.
7. A service station may not be located less than 500 meters along the road from PTT service outlets.
8. In special cases, the Director of the Public Works Department has the authority to consider each application on a case by case basis.

Generally, it takes about 165-450 days to process applications under consideration. The license is valid for 1 year and has to be renewed in December of each year.

7.2.5 Problems concerning laws and regulations

1. There are several laws and regulations involved in the process of approving a license-- the Oil Storage Act of B.E.2474, the Petroleum Act of B.E.2521 and 2522, and the Building Control Act B.E. 2522. An investor who decides to enter the retailing business has to comply with these laws and regulations and the application process takes a long time and involves many agencies.

In practice, it involves about 78 government desks and can sometimes take about 12 to 18 months. This complicated and tedious process may involve a lot of red-tape; consequently, in order to shorten the time, people resort to bribery which is, unavoidably, rampant. However, at present, the proposal that excludes the Police Department in the process of application has been approved.

2. Many laws and regulations have become outmoded as international and domestic economic circumstances have changed, and should hence be modified. The most important regulations that fit into this category are:

(1) The size of an oil storage tank in the ground has as its maximum capacity 5,000 litres.*

(2) To renew the license, the same steps and procedures have to be followed.

- o Ministerial Regulation B.E. 2474
- o Order of the Ministry of the Interior concerning the appointment of a committee to investigate oil storage facilities.
- o As technologies of oil distribution and storage have developed, private oil trading companies believe that some of the regulations concerning buildings, storage tanks, equipments, safety equipments and product specifications are outmoded and seemed to add unnecessary cost to the business.** It seems to be that some of these regulations with the main emphasis on safety should be carefully reconsidered in order to reduce redundant requirements and hence the cost of production without sacrificing the safety criteria.

(3) Regulations of the Police Department.

(4) Not only are there many laws and regulations involved, some of them are, perhaps, contradictory or redundant. For instance, both the Public Works Department (which enforces the Oil Storage Act) and the Building Control Division under the BMA (which takes care of the Building Control Act) investigate whether the applicant has complied with the laws concerning the construction of buildings and lay-outs. In practice, the results of their investigations may be different.

(5) Because so many organizations are involved in the process of approval, the whole procedure takes about a year and a half years to complete. Within that period, investment costs (in terms of construction, other investment costs and operating costs) may be subject to change because of inflation, and fluctuations in the cost of raw material and labor.

* Oil Storage Act B.E. 2530 was promulgated in order to review and change this maximum capacity of 5,000 litres. The reconsideration is at present in process.

** For detail, see "Summary of Obstacles and Recommendations of Laws and Regulations in Oil Retailing Business." The Shell Company of Thailand, July 1988.

(6) The application forms (1 A) and (2 A) used for 50 years are outmoded since circumstances have changed. These forms were designed for small retailers. As a consequence, they are not realistic in a modern-day business context and should hence be modified.

7.3 The Effect of Laws and Regulations on the Competitiveness of the Oil Industry

The Thai government, like that of any other country, has played an increasing role in the oil business. After the first oil crisis of 1973/1974 it recognized the importance of oil as the key to economic growth and stability. To secure an adequate and stable supply of petroleum at reasonable prices, the government has introduced several laws and regulations in order to control the demand for oil and grant the government the right to intervene in the oil business.

It is obvious that legislation exists in order to create a climate that is conducive to the growth and development of the oil industry. However, these laws and regulations need to be revised from time to time in order to ensure their practicality, efficiency and flexibility in terms of the current domestic and international economic situation. At present there are a number of laws and regulations which hinder the operation of the oil business and fail to promote competition within it. A summary of these laws, regulations and contractual agreements can be summarized as follows.

7.3.1 Refineries

The petroleum refining business in Thailand has been subject to many government rules and regulations. Because of the concern with the security of the country's oil supply, the government has tightly controlled nearly all aspects of the refinery business. To enter the oil refining business (or to expand existing capacity) a proposal must be submitted to the Ministry of Industry. However, final project approval is given by the National Energy Policy Committee and the Cabinet.

In order to make decisions regarding future national refinery capacity, the government has taken two important factors into account. First, future energy demand (for petroleum and its substitutes) is carefully appraised in order to determine the country's need for additional refining capacity. Then, the government must first consider Thai Oil's two-stage refinery expansion plan as it is bound by its contract with the refinery to allow it to expand. It is likely that Thai Oil's refining capacity will reach 183,000 B/D by the mid 1990s. Further, the government has also allowed state-owned Bangchak refinery to revamp its refining facilities; this will result in Bangchak's eventual capacity reaching 105,000 B/D during the same period. Competition from a greenfield refinery (or from Esso) is possible only if there will still be a shortage of refining capacity at

that time. However, under current oil demand growth and oil price assumptions there will be no need until after the mid 1990s.

Thus, it can be concluded that entry into the refining business is restricted at the present time by the government's contractual agreement with the TOC. Future entry is possible, however, when the demand out-grows planned capacity. It is likely that competitive bidding will be used as selection criteria for any future capacity expansion.

Other aspects of laws and regulations covering the refining business concern oil product pricing and taxation. Ex-refinery prices are set on the basis of the price posted in Singapore, adjusted for freight. Singapore prices are converted into baht and are reviewed weekly by the government. The pricing of oil products is the same for all refineries and is intended partly to promote local refinery efficiency. Refiners are also liable to pay taxes on all petroleum products. However, they can ask for tax refunds on products sold to aircraft, ships travelling to foreign destinations, and diplomatic and international organizations.

In addition, there are also laws and regulations controlling refiner product quality in order to protect consumer interests. The Ministry of Commerce is responsible for establishing minimum quality standards for all oil products. These standards are based on international practices and on engine design developments.

Further, there are also regulations requiring oil refineries to hold minimum legal petroleum reserves for reasons of supply security (see Table 7.2 for these regulations). Currently, oil refiners are required by law to hold 4% (of the previous year's total volume), of crude as legal reserve.

The above mentioned taxation, quality control and reserve requirement may have some impact on the profitability of local refineries. However, these regulations will have a strong impact on the competitiveness of local refineries--particularly with Singapore's--if the oil industry is deregulated.

7.3.2 Major Oil Companies

Entry into the oil trading business has been subject to government control. Section 6 of the Oil Act (B.E. 2521) stated that the establishment of new oil trading firms required the prior approval of the Minister in accordance with the criteria and procedures specified in Ministerial Regulations. In practice, the process of granting the necessary approval was subject to politics and influence. Also, there seemed to be biases in favor of certain private companies. (In many cases, these practices may indeed have led to unfair treatment and corruption.) However, in order to weed out irresponsible

companies, the National Energy Policy Committee currently revised the approval criteria and procedures needed to establish new oil trading firms. Under these new conditions, it is expected that value judgements will diminish during the approval process. This will also help increase the level of competition in the oil trading business.

Further, oil companies are also subject to other rules and regulations, such as the minimum legal reserve requirement. Oil companies are required by law to maintain 3% reserves on all products traded. Further, the amount of oil held on reserve is also subject to taxes and oil fund levies which have affected the profitability and competitiveness of many oil companies--especially the independent companies. (The exception is Esso which holds part of, its reserve at the refinery and is not subject to tax or oil-fund payments.)

In addition, the oil companies must also comply with the oil product quality standards as specified by the Ministry of Commerce. Finally, the oil product pricing by the oil companies is also under government control.

The above laws and regulations are applied to all oil companies including state-owned PTT. However, unlike other private companies, PTT, as the national oil company, is accorded a number of privileges which benefit its business and may, to a certain extent, impact on oil industry competition. These privileges are as follows:

(a) PTT has the right to sell petroleum products to the public sector, whereas private firms are limited to private-sector markets only. Figures reveal that PTT's sales to government agencies and state enterprises constitute a large share of the total volume sold. In fiscal year 1982, these sales, most of which were fuel oil and jet fuel, accounted for a total of 3,770 million litres (or 7% of total sales). The figure decreased to 1,697 million litres (or 47.92% of PTT's total sales volume) in fiscal year 1985, due to a reduction in the amount of fuel oil used by EGAT.

PTT's right to sell to government agencies and state enterprises has certain implications in terms of PTT's performance. On one hand, it enjoys an advantage over other private oil companies which have no right to sell to the public sector. On the other hand, PTT has been obliged to provide special credit terms to certain state enterprises--BMTA and SRT--which suffer considerable financial losses each year. In order to partially absorb this cost, Bangchak refinery also had to provide special credit terms for PTT. In 1984, PTT was given 57 days of credit--compared to the 19 days that TOC granted to oil trading companies. This is one of the reasons why Bangchak had suffered a loss for several years. However, the present credit terms given to PTT by Bangchak have been reduced to 19 days.

The price PTT charges for the same petroleum product varies. For that sold to government agencies and state enterprises, a fixed official price is charged. And, except where special discounts are granted to certain state enterprises (that are suffering a financial loss with regard to major consumers) and to PTT agents and outlets, the price charged by PTT is lower than that officially fixed by the government.

(b) The law prohibits any service station from being located within 500 metres (along the road) of a PTT outlet, whereas a private oil company's outlets are not allowed to be less than 200 metres from any other station belonging to the same oil company or 50 metres from another private company's.

As the national oil company, PTT has the authority to engage in certain activities related to the oil business that will benefit both the national interest and consumers. However, we believe any privileges granted to PTT should be extended to other private oil companies as well in order to promote competitiveness and efficiency in the long run.

7.3.3 Importers

In order to import controlled products (gasoline, diesel, kerosene and LPG) an oil company must obtain a license under Section 6 of the Oil Act (B.E.2521). Thus, the company must build oil storage tanks of a certain minimum capacity within a specified period of time, maintain a minimum legal reserve (3%), and be able to maintain a minimum trade volume of diesel and/or LPG at 100,000 tons per annum.

Further, oil companies are also subject to import quota rules if they wish to import HSD. The amount of quota is allocated quarterly based on the country's HSD requirement, the amount of HSD bought on a G-to-G basis by PTT, and each oil company's HSD sales volume in the preceding quarters. The last factor is designed to encourage oil companies to actively trade HSD in order to maintain their import quota level.

The rules and regulations controlling imports have had some impact on the profitability and the competitiveness of oil companies, particularly the independents who depend largely on "import gains." During a "favorable" time, independents usually request an increase in their allocated quotas. However, during "bad" times, many of them fail to maintain import quota commitments. In an effort to maintain sales volume, some independents sold HSD from their stock. This resulted in legal reserves falling below government requirements. As a result, for failing to maintain required reserves five independents had to leave the business in the past years when the government revoked their licenses. (see Appendix 3).

The regulation requiring construction of oil storage tanks is a necessary rule, although it may have some impact on competition. In the past the government revoked trading licenses

of six independents when they failed to build storage tanks within the specified period of time.

7.3.4 Retailers

Entry into the retail business is also subject to government control. An application for a license to build and operate a station must be reviewed by many government agencies in order to ensure that the location and the construction of the station conforms to government building codes and regulations. Thus, it usually takes a year or more for these agencies to approve or deny the application. Further, many of these regulations were enacted decades ago and are somewhat outdated in terms of the modern retail business practices. Examples of these regulations are those concerning the outlet's minimum frontage width (25 meters), location, fire and safety standards. Some of these regulations, like the size of the underground storage tank, are being revised, however. There are also regulations dealing exclusively with retailing LPG. According to Article 2 of Revolutionary Decree No. 28, dated December 29, 1971, "Without prior permission, no one is allowed to fill an LPG container possessing a capacity of more than 50 c.c. with LPG unless he complies with the Ministerial Regulation issued by authority of this decree."

This law made it clear that LPG should be treated separately from any other petroleum product due to its nature (which requires special handling for safety.) Under this law, the Ministry of Interior was authorized to stipulate various criteria and conditions whereby the retailing of LPG was to be controlled. However, it took ten years for the first Ministerial Regulation, dated December 29, 1981 to be announced. During that period, a large number of LPG service stations were established. Most of these were not in compliance with the first Ministerial Regulation even though many of them conformed to the 1931 Oil Storage Act which treated gas as if it were any other petroleum product. Under the terms of the new law, however, gas was to be treated differently from any other petroleum product due to its hydrocarbon properties. This was perhaps the starting point for the unfair treatment of independent LPG service stations which may be described as follows.

1. Under the first Ministerial Regulation, gas stations permitted by Ministry of the Interior to operate prior to December 29, 1981 were excluded from the law.

2. Article 34 of Ministerial Regulation No. 3 (1982) stated that LPG service stations had to be located at least 200 metres from schools, hospitals, embassies, stadiums and theaters. It should be noted that an LPG station located in an oil service outlet (which was permitted before December 29, 1981) was not subject to this regulation. This law was rather biased toward LPG stations located in the oil service outlets of the major oil trading companies. In terms of safety, however, whether a service station deals in one or more than one petroleum product is

irrelevant, as it can cause the same damage. Therefore, we believe if the government is really concerned about safety, such safety regulations should be applied equally and firmly enforced. LPG service stations dealing in LPG--whether they are located within or outside of existing oil outlets--should be accorded the same treatment. If the government believes that an independent LPG station has attempted to circumvent the law, we suggest that the government should enforce it; permission should be granted on the basis of whether the LPG station complied to the law or not.

After the third Ministerial Regulation came into effect in 1982, a number of petitions were presented by independent LPG outlets. Four years later, the fourth Ministerial Regulation was announced which again seemed to be biased against independent LPG outlets. In Article 125, it stated that LPG stations which have opened before December 29, 1981 (for whom safety precautions contravened those stated in Article 15 (1) and which had applied for permission to open before October 24, 1982) would have to make necessary improvements or adjustments to comply to the law-- by August 19, 1986--while their application was under consideration.

In fact, in our opinion the law should not be biased toward or against any particular group. It should be applied equally to all service stations. If it happens that an independent outlet was in violation of safety regulations, then the law should be strictly--but fairly--enforced rather than biased in favor of a certain group at the expense of the another.

PART IV

NATURE AND CHARACTERISTICS OF THE INDUSTRY

AND IMPLICATIONS FOR BARRIERS TO ENTRY

Chapter 8

Barriers to Entry

8.1 Nature and Characteristics of the Industry - General

8.1.1 Refining

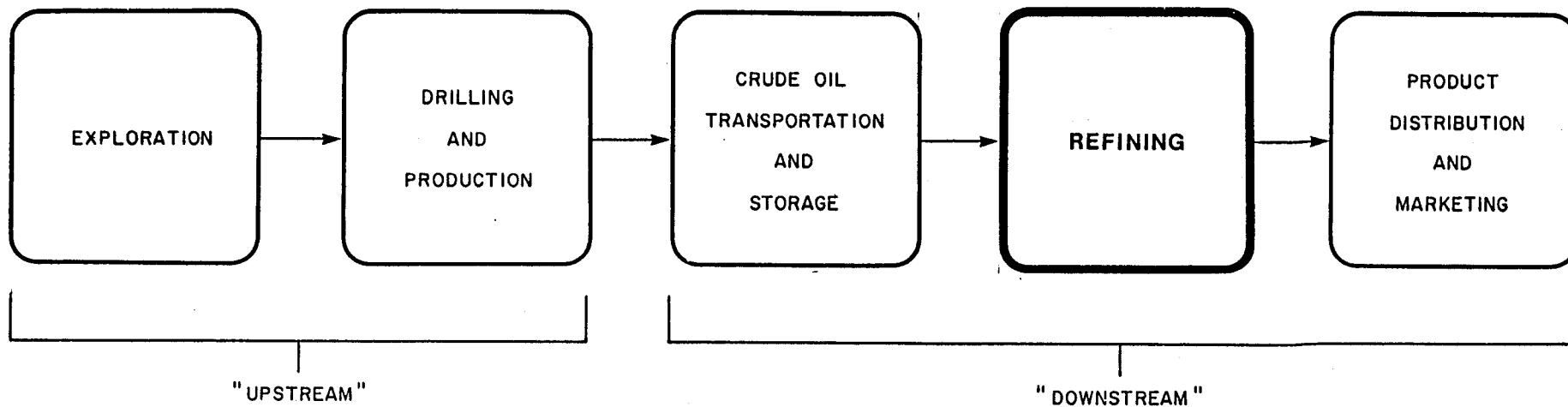
Crude oil itself has limited usefulness as an end product. It has found some direct-burning applications as a fuel in industry and electricity generation but generally, it must be transformed into finished products for end use. This is the function of petroleum refining - it is the principal segment of the "downstream" end of the oil business which concerns itself with the transformation of crude petroleum into useful end products for delivery to final consumers. Figure 8-1 shows the relationship between the refining segment and the rest of the industry.

A petroleum refinery is an organized and coordinated arrangement of manufacturing processes designed to provide both physical and chemical change of crude petroleum into saleable products with qualities required and in the volumes demanded by the market. A typical refinery is an integrated system of equipment complexes of process units. Each process unit is itself an assemblage of pressure vessels, furnaces, heat exchangers compressors and pumps, all connected by pipes and valves. In addition to process units, a refinery is equipped with many large storage tanks, miles of interconnecting pipes and extensive facilities needed to support its operation and administration.

The industry has several fundamental characteristics:

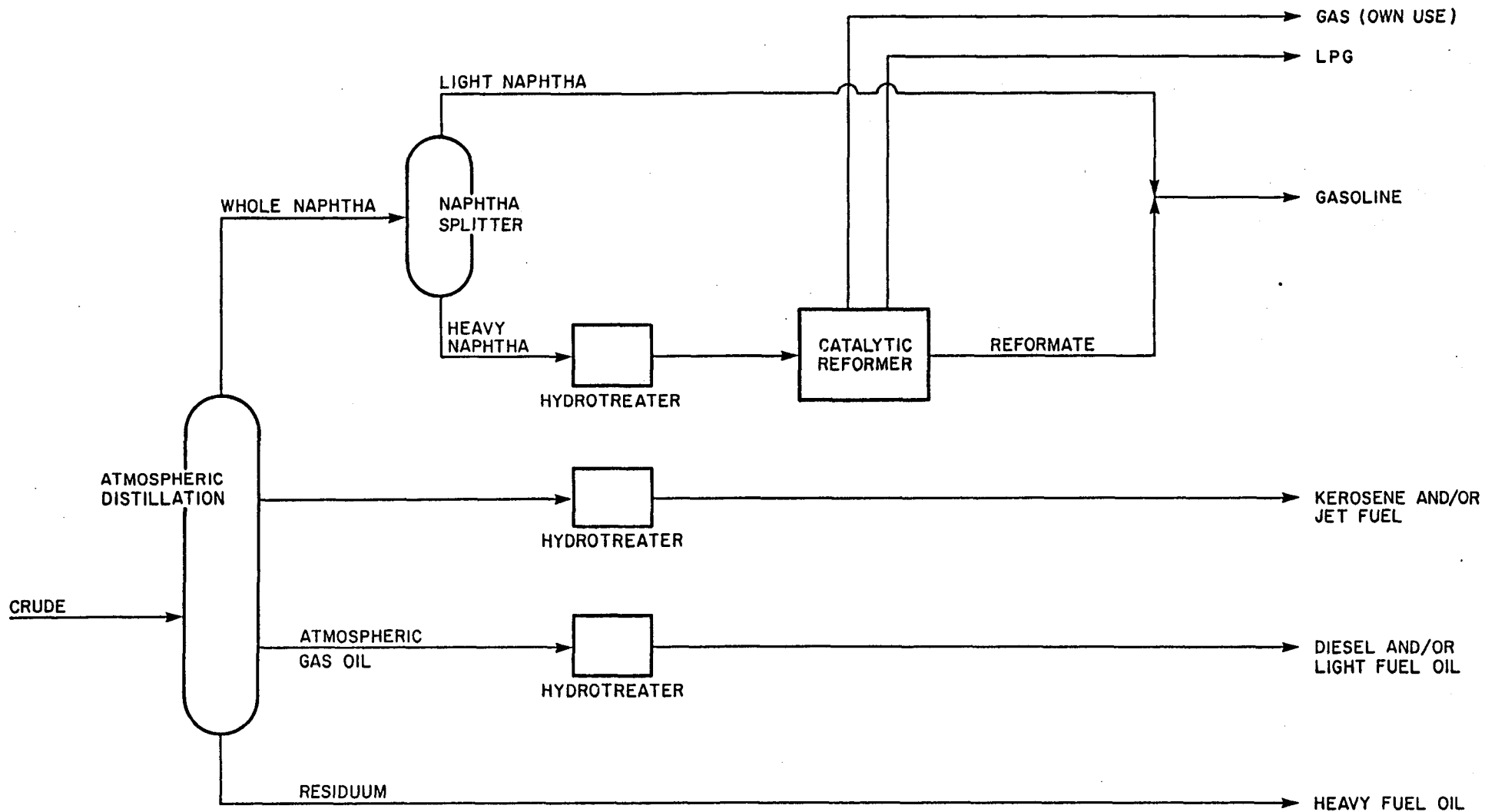
- o Continuous flow/production process, 24 hours per day, 7 days per week
- o High capital intensity
- o High degree of automation, with attendant low labour intensity
- o High quality, specialized labour
- o High fixed costs, low variable costs
- o Large economies of scale both in construction/capital costs and operating costs
- o Joint product operation; many different products produced from a common feedstock

Refineries are grouped broadly according to the extent of their conversion capability - that is, on the basis of their ability to convert heavier crude oil components into lighter, higher-value ones. At one extreme skimming, or "hydroskimming" refineries have no conversion facilities and simply physically separate the fractions which occur naturally in the crude oil; they generally have reforming for gasoline and hydrotreating of naphthas and distillates. Figure 8-2 provides a simplified schematic of a hydroskimming refinery. Such a refinery would



OIL INDUSTRY FUNCTIONS OR SEGMENTS

FIGURE 8-1



SCHEMATIC OF SIMPLE HYDROSKIMMING REFINERY

produce a limited range of finished products, with a high proportion of heavy fuel oil.

Although the hydroskimming refinery is fairly standard in its configuration, there is an infinite variety of more complex refinery types. Figure 8-3 illustrates in schematic form a typical catalytic cracking refinery. With its vacuum distillation and catalytic cracker it would produce a significantly higher yield of light products and lower yield of heavy fuel oil than a hydroskimmer - given the same crude oil feedstock. More complex refineries may be designed at the extreme to effectively produce all light, clean products and no heavy fuel oil. Such increases in complexity greatly increase the capital investment and operating costs per unit of throughput. The most complex refineries may cost 3 to 4 times as much as the simplest skimmer for the same crude throughput capacity.

The most important characteristics which bear upon the ability of a new participant to enter the refinery industry in a given country or region are:

- (1) Capital costs of refining
- (2) Economies of scale of refining
- (3) Nature of the product market
- (4) Crude Procurement/Supply Optimization

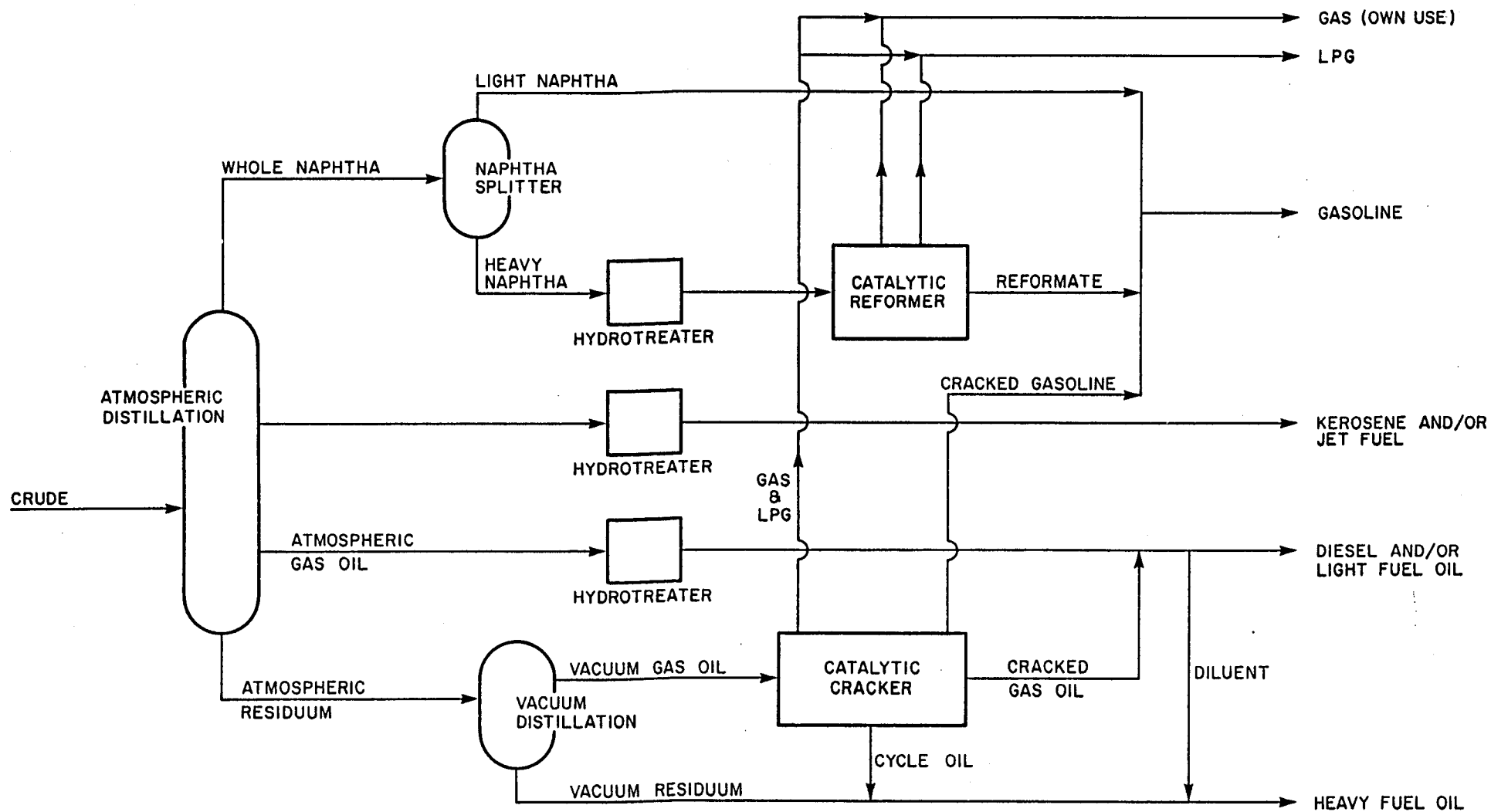
These factors are inter-related and are discussed below:

(1) Capital Costs of Refining

As indicated above one of the principal characteristics of petroleum refining is its capital intensity. Even the simple hydroskimming refineries entail a significant investment in process plant, tankage, terminals and working capital. A "grass roots" 60,000 B/D hydroskimmer would cost in the range of US\$ 200-300 million, not including working capital. A more complex, catalytic cracking refinery of the same capacity would cost in the range of US\$ 500-700 million exclusive of working capital. The major factors affecting the cost variability are location and its effect on construction costs and crude receiving mode and attendant terminal and tankage requirements. These numbers are indicative only.

(2) Economies of Scale of Refining

The most important economy of scale in the refining industry relates to capital cost of the plant. The throughput of a plant is roughly proportional to the volume of its process units while the amount of materials and fabrication effort, hence investment cost required to construct the units, is more proportional to the surface area of the vessels, tanks, pipes etc. Since the area of a sphere or cylinder varies as the two-thirds power of volume, the cost of constructing process plant units increases roughly as



SCHEMATIC OF CATALYTIC CRACKING REFINERY

the two-thirds power of throughput capacity*. Figure 8-4 illustrates a typical investment vs. capacity curve for catalytic cracking conversion refineries in North America - 1986 basis. The curve shows that unit investment costs decrease from \$11,000 to \$7,000 per daily barrel as refining capacity is increased from 50,000 to 200,000 barrels per stream day. Many operating costs such as energy usage and labour also tend to rise less than proportionately with process unit size.

(3) Nature of the Product Market

If the market is already sizeable and dynamic and growing, there is more scope for new entrants. For example it would be much easier for a new refiner to get going in a product market of 250,000 B/D growing at 6% per annum than a market of 100,000 B/D growing at 2% per annum. It would take years for a new entrant, without significant product sales already as a marketer, to build up sufficient refinery sales to meet minimum refinery scale requirements in a small and static market.

The best market situation would be one where an independent marketer (or possibly an MN Major without refining there) had a significant share of the existing product market and where the market is reasonably large and dynamic. It would not be a major task to combine its existing markets, penetration of existing markets of others and high penetration of new market growth to arrive at minimum throughput required for a refinery.

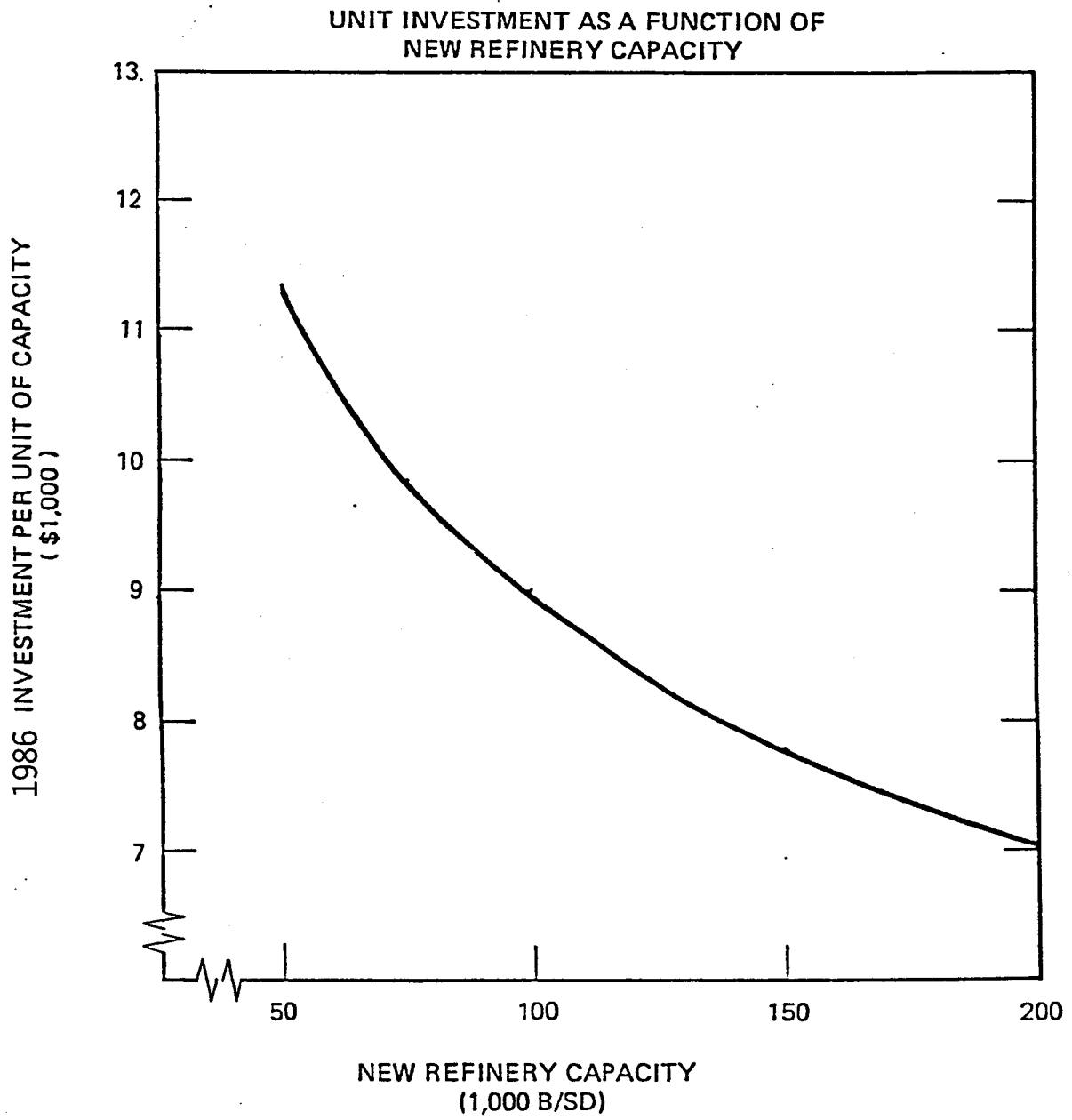
Although there are some very real unit cost advantages in building a large refinery vs. a small one there are certain diseconomies which may come into play - particularly when the larger crude supply - refining - product supply "envelope" is considered. There must be adequate demand for the refinery's output within reasonable proximity of the refinery. There is a trade-off between refinery capital costs and other economies of scale and transportation costs. Total delivered costs may be less with a group of small refineries shipping products over short distances than with one large lower-cost plant shipping over much greater distances.

Other diseconomies may occur in the areas of:

- o management and administration - large complexes may become too unwieldy to manage compared with smaller, tighter-run operations.
- o lack of flexibility - a large plant may become too large a factor in the total product supply scene, therefore cutting down options for supply diversification.

* A point can be reached where units become so large that extra structural reinforcement and special fabrication is required; the two-thirds rule would no longer apply and diseconomies of scale would set in.

FIGURE 8-4



- o modularization of construction - the trend towards minimization of expensive field erection by fabricating skid-mounted modular units in factory-type shops has tended to flatten if not even reverse the investment vs. capacity curve at some ranges and in some cases. Only relatively small process unit packages can be modularized. To apply modularization to a bigger plant one must split the units up into smaller units or production trains.

(4) Crude Procurement/Supply Optimization

Crude procurement is probably one of the most important aspects of refinery operations as the profitability of the refinery may be determined by its ability to acquire the needed crudes at reasonable prices. Furthermore, if the oil business is deregulated in the future, the refinery will have to be able to optimize its production by taking into account the finished product import option as well. In this regard, a MN Major, who has a large network of inter-affiliate companies, may have a relative advantage in acquiring crudes and products compared to an independent oil company.

8.1.2 Distribution and Marketing

Certain elements of a petroleum products distribution and marketing system are analogous to refining in that they are highly capital intensive and have high fixed costs in relation to variable costs. This would especially apply to bulk distribution terminals, product pipelines and retail outlets. Other elements of the system such as road tanker transport are more evenly balanced between capital and labour costs and have a higher proportion of variable costs in relation to fixed.

Terminal

A primary bulk terminal receiving supplies by water would generally require total tankage equal to the typical cargo size received plus 10 or 15 days throughput volume as working capacity. The latter working capacity could vary depending on the typical supply interruption contingencies that must be handled. The terminal would generally accommodate a mix of products - gasoline, jet/kerosene, HSD and heavy fuel oil. The high vapour-pressure products such as gasoline would require more expensive tankage than the lower vapour pressure HSD and heavy fuel oil. The latter product, however, may require heating coils depending on ambient conditions and product source/quality.

A good "rule-of-thumb" on the overall cost of a mixed product terminal is currently about US\$ 12.00 per barrel of storage. This is an "all-in" rough investment cost of tankage, ancillaries civil works, building etc. but would exclude any dock or pier cost. As an example of a terminal investment let us consider a 30,000 B/D distributor receiving 150,000 barrel

cargos. Based on 10 days working storage we would have some 450,000 barrels of total terminal capacity. At \$12.00 per barrel the total investment would be \$5.4 million.

Road Transport

The biggest cost elements in the road transport of petroleum products are truck investment, labour and fuel cost. A typical road tanker cost would be about US\$ 30,000 for one of 12,000 litres capacity or US\$ 50,000 for 25,000 litres carrying capacity. A trucking contractor with a mixed fleet of 10 or 12 trucks would, therefore, have an investment of less than US\$ 0.5 million for vehicles.

Retail Outlets

The main elements in the capital cost of a retail service station outlet are land cost, building, underground storage tanks and pumps. As in refining, the fixed costs of an outlet are high in relation to variable costs. Unlike other retail operations they require specialized pumping and storage equipment that cannot be used for any other product. Gasoline outlets have fixed "occupancy costs" which include the capital outlined above as well as utilities, fees, insurance, maintenance and attendant labour. The capital cost per outlet can vary considerably due mainly to land cost and type/size of station; they are generally in the \$100 to 200 thousand range per outlet excluding inventory. The latter investment can be significant - generally 3 or 4 days sales on average.

8.2 Minimum Investments, Entry Fee in Thai Context

8.2.1 Refining

Although the importance of economies of scale in refining were discussed above, the particular market and geographical context must be considered before drawing any conclusions. In the case of Thailand it may not be sufficient to be competitive with existing refiners but a new refinery may have to compete with imported product supply from the large refineries in Singapore. Under certain circumstances a new, simple refinery of modest capacity might be able to compete against both domestic and Singapore refiners. For example, an up-country refinery tied into local, landlocked crude supply and supplying local, up-country markets would probably be very competitive with both domestic and offshore refiners competing for the same market. The better transport economics of crude and product supply for a refinery even as small as 10,000 to 20,000 B/D could easily outweigh the economies of scale of the larger refinery plants. This is highlighted as a possible entry opportunity.

Failing this, it is difficult to see how a new refinery on the coast of a size much smaller than present refineries could hope to compete unless it employed sophisticated refining

technology or received some special crude supply benefits not available to the others. In this case it is felt that 50,000 B/D would be a minimum size which would both keep costs in line with those of present refiners and be achievable in a throughput sense within the size and dynamics of the Thai market. It was also assumed that the refinery would have some conversion such as TOC, since such a large facility would have difficulty marketing its fuel oil yield - particularly in a natural gas-rich environment.

These two cases would set an entry fee range of:

		MM US\$			MM Baht
		Plant	Working	Total	
(1)	Small, landlocked 15 MBD	60.0	10.0	70.0	1,800
(2)	Large, coastal 85 MBD	450.0	30.0	480.0	12,340

As indicated the entry fee could range from 1,800 to 12,340 million Baht depending upon the assumptions.

The above investment figures for the 85,000 B/D refinery are based on Shell's estimate. Shell is interested in building a large coastal refinery at Mab Ta Put, Rayong. This complex refinery will be consisting of 85,000 B/D crude distillation unit and 30,000 B/D "Hycon" conversion facility (Shell's latest conversion technology). The cost estimate includes off-shore crude receiving facilities (jetty, berthing and submarine pipelines) for VLCC valued at \$45 million.

8.2.2 Distribution and Marketing

Because of the recent growth in independent HSD importers - terminal operators there are some data points on the minimum size of facilities established and some actual cost information.

Cosmo oil recently built a HSD receiving and storage terminal totalling 14,000 tonnes or 105,000 barrels capacity at a total investment cost of 20 million Baht. This excludes any cost for land or jetty which is rented. This works out to a cost of US\$ 7.33 per barrel which is somewhat cheaper than our "rule-of-thumb" \$12.00, but the latter would have to include land cost.

Northeastern oil in mid 1986 had HSD terminal storage of 18 million litres, or 113,000 barrels capacity and completed another 63,000 barrels by end-1986 for a total of 176,000 barrels.

Siam Gas Industries has 2 marine HSD receiving and storage terminals, one of 14 million litres or 88,000 barrels at Bangkok, and another at Surat Thani of 16 million litres or 101,000 barrels.

From this company information and our knowledge of the typical vessel/cargo size and average offtake it appears that a

terminal of some 100,000 barrels storage capacity is roughly the minimum size required for a terminal operator to get into business. Assuming the company must buy the land and the jetty it is estimated that the minimum cost would be about 40 million Baht. Some companies have chosen to purchase their own small (5000 DWT) coastal tanker to get supplies from foreign sources. Such an approach to owning rather than chartering in a vessel is the choice of the operator and would increase its total investment, but is not considered essential.

If we assume an independent, in addition to HSD, wishes to enter the gasoline distribution and marketing business as well as own its own truck fleet to support both the HSD distribution and gasoline retail network, it is estimated that its total minimum investment would be roughly the following:

	<u>Millions Baht</u>
Basic HSD terminal	40
Gasoline storage "add-on"	20
Truck fleet, including shop and yard	10
Retail network - 15 stations	60
Working capital, miscellaneous	<u>30</u>
	160

It is assumed that the retail network would be within easy access by direct road tanker of the Bangkok terminal. This implies that no additional up-country storage terminals would be required and a truck fleet of 4 to 6 vehicles in the 12,000 to 16,000 litres size would suffice to serve both its HSD and gasoline business. The working capital is based on carrying an average inventory of 8 million litres at 3.5 B/litre, plus miscellaneous.

8.3 Financing and Capital Markets in Thailand

The Thai economy, like that of other less developed countries, is characterized by its dual nature in terms of economic activities and markets. The capital market and money market are no exceptions; each has its formal and informal aspect. In a formal market, business is conducted in accordance with a set of arrangements agreed upon which provide a regular disciplinary framework -- regarding such matters as credit control and regulations concerning interest rates. On the other hand, an informal market is free from outside intervention as well as from the limitations imposed by rules and regulations.

The formal financial market consists of 14 institutions, namely, the Bank of Thailand, commercial banks, finance companies, insurance companies, the Bank of Agriculture and Agricultural Cooperatives, savings cooperatives, agricultural cooperatives, credit foncier companies, the Government Saving Bank, pawnshops, the Industrial Finance Corporation of Thailand (IFCT), The Government Housing Bank, The Small Industrial Finance

Office (SIFO) and the Securities Exchange of Thailand.

Of these, commercial banks are the most important financial institutions, whether seen from the point of view of accumulated deposits or the amount of credit granted (as shown in Table 8.1 and 8.2). The rate of expansion of commercial banks has developed to make them the most important intermediary in the financial sector.

At present, there are 30 commercial banks in Thailand; ten of them are registered within the country and the rest are registered abroad. Since a foreign bank located in Thailand acts as a branch of the main bank elsewhere, it, unlike Thai commercial banks; does not have the right to open new branches in the country. By the end of 1986, Thai commercial banks had a total of 1820 branches, constituting about 97.71% of the total deposits and about 96.21% of the total amount of credit in the banking system.

The second most important financial institution are the finance companies. These companies borrow funds from the public by issuing promissory notes (or a similar means) and lend these borrowed funds to third parties. By 1985, The Ministry of Finance had authorized approximately 100 finance companies. These finance companies differ from commercial banks in that they are not allowed to deal in foreign exchange and may not issue checks. In addition, monies received from the public, which are considered "deposits" in the case of commercial banks, are regarded as "borrowings" in the case of finance companies.

Commercial banks and finance companies both play a very important role in Thailand's financial sector. In 1985, their share of credit and savings constituted about 89.07% and 84.23% of the total, respectively. These two institutions compete with each other in providing funds to those who need to borrow money for investment.

The decision as to whether to establish a new firm or expand an existing one depends heavily on whether one can obtain credit from financial institutions. Thus, since the financial sector is substantially dominated by commercial banks, the discussion in this section emphasizes the role of bank credit in business. Commercial banks are also private enterprises seeking maximum profit. The magnitude of profit for commercial banks depends on their ability to manage their assets and liabilities.

Different banks have different credit policies depending on their own resources (such as capital funds, branches and other endorsements). However, they all use more or less the same criteria when considering whether or not to grant credit to a particular business. The factors determining whether or not a loan request is justified are as follows:

(1) Purpose. Commercial banks examine the real purpose behind the loan request. They seem to grant loans which are

Table 8.1
Credits by Financial Institutions

Unit : Percent

Institutions	1972	1985
Commercial Banks	75.11	74.99
Finance Companies	12.97	14.08
Government Saving Bank	0.78	0.20
Other Institutions	11.14	10.75
Bank for Agriculture & Agri. coop.	3.66	3.11
Government Housing Bank	0.26	1.61
IFCT	0.24	1.13
SIFO	0.16	0.01
Credit Foncier Companies	0.19	0.40
Insurance Companies	1.21	1.04
Agriculture Cooperatives	1.54	0.84
Saving Cooperatives	1.55	1.95
Pawnshop	1.33	0.66

Source : Bank of Thailand.

Table 8.2
Household Saving by Financial Institutions

Institutions	Unit : Percent	
	1972	1985
Commercial Banks	75.27	74.73
Finance Companies	3.59	9.50
Government Saving Banks	16.32	9.18
Other Institutions	4.83	6.59
Bank for Agriculture & Agri. coop.	0.43	0.41
Government Housing Bank	-	1.16
IFCT	-	-
SIFO	-	-
Credit Foncier Companies	-	0.34
Insurance Companies	2.43	0.39
Agriculture Cooperatives	0.21	0.27
Saving Cooperatives	1.76	2.02
Pawnshops	-	-

Source : Bank of Thailand.

intended to be used as working capital since they are short-term--and, hence, low risk--loan requests whose purpose is to invest in desirable assets. In principle, commercial banks are reluctant to grant credit for refinancing, dividend payments, investing in other companies' shares and profiteering. However, they may consider each request on a case-by-case basis depending on several factors. For instance, a loan, whose purpose is refinancing, may be granted by a commercial bank if the debtor is a prospective, good future customer. A loan to pay dividends (although commercial banks believe dividends should be paid out of company profits) may be granted if the commercial bank believes that the accounting profits does not reflect real business profitability. Loans for other purposes are considered on a case-by-case basis and depend heavily on collateral.

(2) Payment. Commercial banks have to ensure that its debtors are capable of paying their debts after considering the viability and profitability of the projects to be financed by bank credit. They have to examine the terms of payment and other factors affecting the client's ability to repay the debt at the agreed-upon time (the feasibility of a particular project or the rate of return, the profit after tax, income earned from assets, and other sources).

(3) Protection. Commercial banks have to secure their loans by asking for some kind of collateral; This may consist of real estate or be a personal guarantor. If real estate is used, bank officials will investigate the assets and appraise the value of the property. Then, the bank manager will decide whether the loan should be approved and how large it should be. Due to uncertainties, banks tend to require a great deal of collateral against a loan request. The size of the loan granted is usually not more than 60% of the appraised value of the collateral. A personal guarantor can, perhaps, be substituted for collateral to secure credit--but only for a limited amount. It can take the form of either a statement of joint obligation or the guarantor's proof of security. The former is more advantageous to the creditor since it provides the creditor with the assurance of the obligation of both the principal debtor and the joint debtor. If the reputations of the borrower and guarantor are satisfactory, thus, collateral may not be needed.

Commercial bank loans in Thailand can be classified into three groups, namely, term loans, overdrafts and discounts. Discounts and overdrafts are mostly short-term. However, an overdraft can sometimes be considered long-term for a few credit-worthy borrowers since it can be renewed again and again. An overdraft is a committed loan and, from the point of view of borrowers, it is the most flexible type of credit. That it is the most popular type of commercial bank loan is evidenced by its share representing almost 57% of all commercial bank loans. However, from a commercial bank's point of view, this type of loan is not efficient as it uses the bank's resources and facilities inefficiently. Every commercial bank tends to convert overdrafts to term loans as part of its long-term policy.

The second most popular type of commercial bank lending are "discounts" of bills which, in 1985, constituted about 35% of all bank loans. The reasons why discounts have become popular are that (1) the bill is a kind of collateral in itself; and (2) banks can use the discount window at BOT if they need to convert discounts into cash.

In 1985, the term loan constituted about 18% of total lending. The maturity of a term loan is mostly short-term (within one year) and some form of collateral is required.

Most of the credit provided by commercial banks goes into the wholesale and retail trade (as shown in Tables 8.3 and 8.4) because these activities require a large amount of working capital, turnover duration is short, and the risks are low. The next important sector, which accounts for about 20% of all commercial bank loans, is the manufacturing sector, followed by private consumers, and the export, import and agricultural sectors.

Within commercial banks and other financial institutions, interest rates vary widely (as shown in Table 8.5). In theory, multiple interest rates are not plausible since the mobility of capital funds and perfect knowledge do not allow for multiplicity of interest rates. However, in the real world (where capital markets and information concerning them are imperfect and where there are laws and regulations to control interest rates), commercial banks and other financial institutions can, in practice, charge different interest rates to different customers depending on the size and type of the customer's business, administrative costs, the personal relationship between bank and client, the value of collateral and the risk premium. As shown in the Table, the prime rates for overdrafts and loans were reduced from 16.00-16.50% in 1983, to 14.00% in 1986 and currently stand at 11.5%. The average loan rates charged by finance companies are 1-2% higher than those charged by commercial banks.

Although the formal money market plays an important role in the Thai economy, one cannot deny the crucial importance of its counterpart, the informal market. It has been estimated that approximately 80% of all funds available in the private sector originated from internal sources and from the informal money market. The informal money market has a tendency to grow rapidly. Organized money sectors are segmented and relay unfulfilled demands for loans to the informal market. Entry into the formal financial market is not completely open to all economic units, especially the smaller ones. As a result, the informal market is a major source of funds in that it is able to absorb the excessive number of demands that spill over from the formal market. The unorganized money market also provides funds

* Supachai Panitchakdi. "Issues in Banking and Finance in Thailand, 1975-1980," 1981, page 69.

Table 8.3

Total Credit of Commercial Bank by Economic Sectors : 1980-1984

Unit : Billions Baht

Economic Sector	1980	1981	1982	1983	1984	1985
Agriculture	12.59	16.04	17.45	30.45	37.41	39.36
Mining	1.70	1.81	1.83	2.44	2.84	3.36
Manufacturing	41.16	58.33	67.33	88.71	106.05	122.58
Construction	11.88	13.03	14.33	21.77	26.14	29.43
Non-movable Asset	6.76	6.97	7.62	12.22	16.78	19.45
Imports	29.69	25.11	24.53	34.57	36.05	34.19
Exports	24.87	26.08	26.34	32.02	39.73	45.02
Wholesale and Retail Trade	49.47	58.82	67.81	101.27	113.01	122.26
Public Utility	6.76	5.92	6.56	6.55	7.48	9.55
Banks and Other Financial Business	14.48	12.75	14.18	25.71	30.30	33.07
Services	8.27	12.03	14.99	19.70	24.25	26.93
Private Consumption	16.58	21.18	22.77	36.54	41.80	45.56
Others	0.10	-	-	-	-	-
Total	224.31	258.11	285.74	411.95	481.84	530.76

Source : Bank of Thailand.

Table 8.4
Distribution of Commercial Banks' Credit by
Economic Sector : 1980-1984

Unit : Percent

Economic Sector	1980	1981	1982	1983	1984	1985
Agriculture	5.61	6.22	7.22	7.39	7.76	7.42
Mining	0.76	0.70	0.62	0.60	0.59	0.63
Manufacturing	18.35	22.60	21.15	21.53	22.01	23.10
Construction	5.29	5.05	5.24	5.28	5.43	5.54
Non-movable asset	3.01	2.70	2.76	2.96	3.48	3.66
Import	13.24	9.73	7.82	8.39	7.48	6.44
Export	11.09	10.11	9.45	7.77	8.25	8.48
Wholesale & Retail						
Trade	22.05	22.79	24.94	24.58	23.45	23.03
Public Utility	3.01	2.29	1.84	1.59	1.55	1.80
Banks and Other						
Financial Institutions	6.46	4.94	5.49	6.24	6.29	6.23
Service	3.69	4.66	5.23	4.78	5.03	5.07
Private Consumption	7.39	8.21	8.24	8.87	8.68	8.58
Others	0.05	-	-	-	-	-
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source : Bank of Thailand.

Table 8.5
Structure of Interest Rates of
Commercial Banks : 1983-1986

				Unit : Percent
<u>Type</u>	1983	1984	1985	1986 [*]
Loan and Overdraft (Ceiling)				
Priority Sectors	17.50	17.50	17.50	15.00
Others	17.50	19.00	19.00	15.00
Discount Rates on				
Agricultural Bill	-	-	-	-
Other Bills Rediscounted at BOT	7.00	9.00	9.00	7.00
Others	19.00	19.00	19.00	15.00
Prime Rates				
MOL	16.50	16.50	15.50	14.00
MLR	16.00-16.50	16.50	15.50	14.00

Note : June 1986

Source : Bank of Thailand.

on an informal basis. The arrangement is suited to the way in which small businesses are operated. They may be disqualified from taking advantage of the more formal avenues of finance in that they fail to prove their credit worthliness or prepare a feasibility study or to demonstrate an adequate financial flow to justify their loan request. For small businesses, informal finance is their major source of financing since they have great difficulty in fulfilling the requirements of a loan request. In addition, commercial banks and other financial institutions have an aversion to taking risks and thus tend to discriminate against small borrowers with no collateral and borrowers with no connections to formal institutions. These are the reasons why informal financial sources become increasingly more important as economic activities expand.

Disqualified borrowers and small borrowers who have failed to obtain credit from formal financial institutions turn toward self-financing or other non-institutional means of financing. If they have to rely on self-financing, the launching (and/or expansion) of a small firm is more difficult. Apart from self-financing, they may turn to other non-institutional means of financing. The most popular means of financing, especially among the Chinese, is a credit rotating scheme which was originally called "Share Pea Huay". The Chinese traditionally use this scheme to finance their businesses. Apart from this scheme, small businesses can turn to non-licensed financial institutions engaged in the financial business--especially in the form of discount checks. These illegal financial institutions offer a higher rate of interest on deposit and charge a higher lending rate than official, controlled rates.

Through these informal means of financing, transactions are conducted mostly through personal contacts, relatives and people who can be trusted. The capital funds for a new or expanding firm are generally mobilized through self-financing, the immediate family or relatives because the entrepreneur lacks the collateral to qualify for a loan from institutional sources, or because it is more convenient not to prepare the many documents required for a loan request. However, apart from self- or family-financing, credit from the unorganized market, especially in the form of discount checks, entails higher interest rates compared to those of formal institutions, due to the opportunity cost of the funds, the risk premium and, perhaps, monopoly profit.

Financing and Credit in the Oil Business

Credit financing in the oil business varies according to the size of company, the particular type of investment and the kind of business. Companies engaged in refining and the wholesale trade require huge amounts of investment funds and working capital. These well-established companies qualify for credit and loan facilities from both the domestic and international organized money markets. Major oil-trading companies, are well-established and enjoy a good reputation and

qualify for loans from foreign and domestic financial institutions. Furthermore, they can borrow from domestic commercial banks at very low interest rates compared to other, medium-sized or small firms. At present, they are able to obtain loans at a 6-8% interest rate while the prime rate is about 11-12%.

Problems concerning financing are quite pronounced for small-scale businesses engaged in importing, wholesaling, jobbing and retailing. These small businesses have to rely on self-financing and unorganized money markets. They do not qualify for loans from formal institutions due to their inability to meet the necessary requirements: they either lack substantial collateral, are unwilling to deal with the profusion of loan documents, fail to meet required accounting standards or have no connection with financial institutions. From the supply perspective, on the other hand, formal financial institutions, due to their aversion to risk-taking, may extend preferential treatment to big companies and discriminate against small borrowers. The effect of supply and demand drive small businesses to the unorganized money market or to self-financing as previously described.

Commercial credit plays a very important role for retailers and jobbers. It was found that most of the credit in the oil business is commercial credit as opposed money borrowed from the formal sector. These businesses can get oil in advance and receive commercial credit. They have a certain period of time within which to make payment. The terms of credit vary in accordance with the degree of trust, the quantity purchased, the type of oil product and the degree of competition. This commercial credit can also be regarded as credit from the informal money market. The report from BOT reveals that commercial credit is the major source of working capital for jobbers and retailers engaged in the oil business, (as it is for those engaged in the manufacture of construction materials, medicines, automobiles, electrical appliances and consumer products).

The advantage of commercial credit over borrowing from a financial institution is that the client gets a "loan" without going through the complicated process involved in requesting it--and without the substantial collateral required.

In general, the interest rate charged for commercial credit is in the range of 20-30% per annum,* considerably higher than the formal money market rates. However, oil business, commercial credit interest rates are believed to be lower than 20%. Sellers and importers only provide credit for lubricating oil since other types of fuels have to be bought on a bulk basis and the turnover rates of other fuels are rather high. Except for lubricating oil, all other types of fuel are sold on a cash

* The rate of interest is computed as follows. It is the difference between the price charged under the credit scheme and the price on a cash basis.

basis. However, in practice, payments have to be made within 7 days. As for other trading activities (such as those performed by a jobber) buyers receive commercial credit which varies in accordance with the quantity purchased and the degree of trust.

Unlike commercial credit granted in other types of trading business, most of the commercial credit in the oil business, about 83% of the total, requires collateral. The types of collateral that sellers use to secure credit are shown in the following Table.

Table 8.6
Types of Collateral Used to Obtain Credit
in the Oil Trading Business

Type	Percent
Bank Guarantee	57.0
Draft or Bill of Exchange	29.0
Check (dated in advance)	14.0

Source : Prapren Saisongkroa. "Commercial Credit." Monthly Economic Report, July 1986, p.51.

Since commercial credit is secured by collateral, the percentage of bad debts is quite low compared to other businesses (such as those involving electrical appliances and consumer products). Bank debts from jobbers and small wholesalers constitute 0.24% and 0.04% of total sales value, respectively, compared to 0.56% and 1.31% in the consumer product wholesaling business.*

The commercial credit provided to medium- or small- scale firms engaged in the oil business forms the basic element for the expansion and growth of these firms-- although they are charged relatively high interest rates. For those who have no alternative loan source, the informal credit market and, hence, commercial credit allow them to pursue their business.

* Ibid, page 54.

8.4 Prospects for New Entrants

At present, the financial sector in Thailand is marked by a sharp increase in liquidity in the banking system. This is a result of the infusion of foreign exchange from the balance of payments surplus and the sluggishness of the local demand for credit. Since the first half of 1986, commercial bank credit has grown at a rate of 5-6% per annum while deposits have expanded at a rate of 12-13% -- resulting in excess liquidity in the banking system. The relatively slow growth of credit expansion was due to very low demand in terms of investment and the adoption of a more cautious lending policy on the part of commercial banks. This excess liquidity led to a decrease in the domestic interest rate. As a result, the commercial bank interest rate on loans (prime rate) decreased from 17% (in 1983) to 11.5% (in 1988).

However, decisions regarding investments do not depend only on the interest rate. Investors have to ensure that there is an adequate domestic demand for their product or service. The subdued investment climate that started at the beginning of the 1980's seems to be prevailing, although the situation is gradually improving. And, as long as investors are still pessimistic about the economic outlook, considerable interest rate decreases can, to a certain extent, stimulate domestic investment.

As the Thai economy gradually recovers (with the assistance of the trend toward reduced interest rates and the favorable economic atmosphere) investors, comparing the present to the last few years, may find it a more suitable time to invest.

PART V

INDUSTRY CONDUCT

Chapter 9

Industry Conduct

9.1 Introduction

This Chapter provides a detailed analysis of industry conduct in refining and downstream oil sub-sectors. As stated in previous Chapters, the government has placed stringent controls on all aspects of oil industry operations. Prices are controlled at the refining as well as retail levels and oil product imports are regulated. There are also many rules and conditions for controlling entry into the oil and refining business in Thailand. These controls inevitably affect oil company operations as well as conduct.

The following sections will thus describe how the oil companies try to cope with a controlled business environment while attempting to compete with each other in the market place. Some of the questions to be discussed are as follows.

- o How do the refiners behave and how do they compete for business?
- o What are the existing forms of price and non-price competition in the downstream sector? How do they compete for retail business? industrial customers?
- o Who are the major "players" in the downstream oil sectors; what are the role function of independent oil companies? the role and function of jobbers?
- o Is there any evidence of a "dominant" oil company in any particular region? in any product line?

The information presented in this Chapter will be useful for analyzing the present level of competitiveness in the oil industry. Understanding how business is conducted is essential to the formulation of policies for deregulating the oil industry.

9.2 Oil Industry Conduct-Refining

9.2.1 How Refinery Prices Are Set

As stated in Sections 6.1 and 6.2.1, the ex-refinery price is set by calculating CIF Bangkok based on the average posted prices of the six refining companies in Singapore plus freight, insurance and losses.

(a) The average posted price of the six refining companies (Shell, Caltex, BP, Esso, Mobil and Singapore Refining Corporation) during a particular week is calculated.

(b) The average freight rate (based on the London Tanker Broker's Panel) is determined.

(c) The insurance rate (using Lloyd's standard rate) is established.

(d) Losses (0.5% of CIF Bangkok) are calculated.

The sum of [(a)+(b)+(c)+(d)]E is the ex-refinery price of the following week (where E is the exchange rate).

The government has appointed a working group whose members are officials from concerned government agencies; the group monitors the development of the prices posted in Singapore. Ex-refinery prices are announced by the government on a weekly basis.

9.2.2 Behavior of Refineries in a Price Control Environment

It is interesting to analyze the behavior of refineries that have been operated under strict price control. To see how these refineries compete for business locally we group the types of competition into three broad categories as follows:

1. Competition Among Local Refineries

Local refineries in Thailand have been selling products under contracts (or until recently unwritten agreements in case of Bangchak) with customers from the early days of their operation until the present. Their main customers have been the major oil companies which are Shell, Caltex, PTT, and Esso. Under the current arrangements, Shell is lifting about half of Thai Oil production, and the remaining output has been sold to Caltex and PTT. PTT also lifts most of the products from Bangchak while the Esso refinery sells most of its products to its own network (see Table 9.1).

Independent oil companies can acquire some products directly from Bangchak. However, they still have to import most of HSD under the government arranged quota.

Moreover, all of the refineries usually sell their products at the same government controlled ex-refinery prices (except jet fuel). The only difference is in the credit terms. Thai Oil gives 19-day credit to their customers while Bangchak, until recently, gave 45-day term to PTT. Further, it is likely that Shell and Caltex will continue to lift most of their products from Thai Oil due to their commitment with the refinery. Esso will also continue to lift from its own refinery while PTT is bound by a commitment to lift most of its product from Bangchak.

Therefore, it can generally be concluded from the above arrangement that there may not be strong direct competition among the three local refineries in terms of sales.

2. Competition with Local Oil Importers

Although the local refineries are not allowed to import,

Table 9.1

1987 Lifting from Local Refineries

Unit : Thousand Litres

	Shell	Caltex	Esso	PTT	BCP	Mobil	Independents	Total
TOC								
Premium Gasoline	304,797	175,616	0	58,923	0	0	0	539,336
Regular Gasoline	306,139	227,299	0	55,742	0	0	0	589,180
Kerosene	33,440	16,212	0	404	0	0	0	50,056
High Speed Diesel	605,448	473,592	0	183,331	0	0	0	1,262,371
Low Speed Diesel	18,805	0	0	28,892	0	0	0	47,697
J.P.1	238,137	160,255	0	163,053	0	0	0	561,445
Fuel Oil	311,659	141,214	561	79,912	0	0	0	533,346
L.P.G. (M.KG.)	40,117	4,534	0	2,698	0	0	0	47,349
ESSO								
Premium Gasoline	3,481	13,225	276,110	1,420	0	0	0	294,236
Regular Gasoline	5,308	26,450	421,631	8	9,197	0	0	462,594
Kerosene	0	0	20,041	0	219	0	0	20,260
High Speed Diesel	196	195	1,336,369	0	1,879	0	0	1,338,639
Low Speed Diesel	0	0	48,992	0	0	0	0	48,992
J.P.1	2,710	0	503,694	0	0	0	0	506,404
Fuel Oil	9,360	8,922	866,214	5,769	0	0	0	890,265
L.P.G. (M.KG.)	0	0	62,604	0	0	0	0	62,604
BCP								
Premium Gasoline	0	2,110	8,807	348,627	0	0	0	359,544
Regular Gasoline	0	1,014	0	150,795	0	0	0	151,809
Kerosene	10,658	0	0	37,346	0	0	326	48,330
High Speed Diesel	0	4,150	0	992,774	0	0	26,602	1,023,526
Low Speed Diesel	0	0	0	0	0	0	0	0
J.P.1	0	0	0	0	0	0	0	0
Fuel Oil	0	0	1,824	686,220	0	0	0	688,044
L.P.G. (M.KG.)	0	0	0	36,783	0	0	401	37,184

Source: Ministry of Commerce.

there is no fear by refiners of competition from foreign imports by oil trading companies. As mentioned earlier, local refineries have been protected by the government's import controls. Oil traders must obtain import permits which will be given only for certain products that cannot be sufficiently supplied by local sources.

3. Competition with Singapore Refineries

Under the strict import controls, local refineries do not have to compete directly with refineries in Singapore. However, without import control, the existing pricing structure cannot provide 100% protection for local refineries from competition from foreign sources. According to Table 9.2, the announced price of gasoline in November 1986 was lower than the ex-refinery price. The government then adjusted the taxes and oil fund levy on import upward, so the product acquisition cost of oil companies would always be the same from local and foreign sources. However, the oil importers can often import oil products at C.I.F. values that are lower than the announced import prices, thus giving them extra "trading margins" in addition to the marketing margins, and providing them with incentive to import.

Table 9.2

Premium Gasoline Pricing Structure

Effective : November 14, 1986

Unit : Baht per Litre

	Price	Taxes	Oil Fund	Product Acquisition Cost
Ex-refineries	3.6873	4.444	0.1467	8.278
Import	3.6316	4.454	0.2024	8.278

Source : PPSC Announcement.

However, the setting of unitary ex-refinery prices has provided "indirect" competition among local refineries in such a way that their profitability, to a certain extent, would be a reflection of their performances. Furthermore, the level of ex-refinery prices set by the government has never been excessively high which means the refineries must also try to improve their efficiency.

One of the ways to lower unit cost is to run the refinery at full capacity. Table 9.3 shows that Thai Oil and Esso have done so by continuously producing at levels higher than their rated capacity. Bangchak, on the other hand, has chosen to shut down the inefficient units and has been running at 40-45,000 B/D during the past few years.

However, the profitability of local refineries also depends on factors other than their efficiency such as the level of credit terms they have to provide their customers, and the extent of Government to Government crude intake that they must accept. These are the subjects of our interest in the sections that follow.

9.2.3 Crude Oil Acquisitions by Local Refiners

Referring to Chapter 3, all three refiners differ as to how they acquire crude oil. Thai Oil manages their own crude acquisition in terms of the type of crudes they want to use, and also the kind of purchasing arrangements and prices that they prefer. However, Thai Oil has been bound by contracts to place the orders of some crude purchases it has selected through Shell and Caltex who are the shareholders of Thai Oil.

Table 9.3
Capacity Utilization

Unit : Barrel per Day						
Company	1985		1986		1987	
	Rated Capacity	Utilization	Rated Capacity	Utilization	Rated Capacity	Utilization
Thai Oil	65,000	66,389	68,000	68,774	68,000	67,153
Esso	63,000	56,940	63,000	61,742	63,000	65,993
Bangchak	65,000	41,600	65,000	42,275	65,000	43,619

Source : Fuel Oil Division, Ministry of Commerce.

For Bangchak, PTT still continues to procure crude for the refineries even though BPC is now a separate state enterprise. Therefore, PTT and BPC must be working closely on crude oil management.

Esso refinery manages its own crude oil procurement through its affiliates.

Table 9.4 highlights the approximate crude oil supply arrangement by local refineries. Thai Oil and Bangchak have to share the Government to Government crudes, as well as Phet and condensate from Gulf of Thailand. Esso, on the other hand, has refined crude supplied through its affiliates. Thai Oil and Bangchak have also purchased crude on the open market.

Table 9.4
1986 Crude Supply Arrangements (Approximate)

Unit : Thousand Barrels per Day

	Thai Oil	Bangchak	Esso
1. Government To Government			
Oman	10	10	-
Malasia	5	-	-
2. Phet, Condensate	5-10	10-15	-
3. Interaffiliates	30	-	63
4. Open Market	10-15	25-30	-
Total	65	50	63

Source : Oil Refineries.

9.2.3.1 Crude Oil Acquisition under Changing World Oil Prices. World crude oil prices have begun to soften after the second oil crisis because of the slowdown of oil consumption as well as the increase of the world crude supply. The drop in world oil prices has been reflected in the C.I.F. values of crude imports by local refineries (see Table 9.5). During the period 1982-1985, the C.I.F. values of imports dropped by US\$7 to about US\$28 per barrel.

There were two basic purchasing arrangements by all refiners during the above period: GSP, and spot. The exception is Esso which has purchased all crude on long-term contract with affiliates.

Nonetheless, the crude costs of all refiners were nearly the

same during 1982-1985, despite the variation in types of crude used by these refineries. Bangchak costs were higher than average because of the relatively high content of Government-to-Government crude.

However, the situation started to change abruptly during late 1985 and early 1986 when the sudden oil glut resulting from increased supply by Saudi Arabia began to drive down the prices. World prices continued to fall precipitiously throughout the first three quarters of 1986 creating chaos in crude oil markets. No one knew when the fall would bottom out, and at what price level.

Table 9.5

Average C.I.F. Value Of Crude Imports

Unit : US.Dollar per Barrel

Year	Thai Oil	Esso	Bangchak	Total
1982	35.30	35.10	37.50	35.97
1983	30.90	29.20	30.50	30.20
1984	29.40	29.60	30.00	29.67
1985	27.80	28.00	29.50	28.43
1986	14.87	15.23	15.04	15.05
1987	18.37	18.07	18.17	18.20

Source : Fuel Oil Division, Ministry of Commerce.

Throughout 1986 and 1987, oil refiners tried to minimize their risk by diversifying the sources of supply. They also diversified purchasing methods by abandoning long-term contracts on GSP since the situation was too unstable for a long-term commitment. There were three basic arrangements that refiners commonly used:

1. Spot Refiners and suppliers settled the price immediately upon loading of crude.

2. Formula Purchased prices were tied to a basket of crude according to agreed formula. Refiners would not know the purchased prices until several weeks later.

3. Net Back The prices of crude were tied to the yields of refiners. The purchased prices could not be determined until several months after loading.

Refiners have applied a combination of these three as well as some other arrangements for their crude purchasing in order to minimize their risks. Since each refiner has a different

perception of the future outlook of crude prices, they hedge their risks differently from the others.

As a result, prices for the same crude purchased by different refiners for the same delivery date have been significantly different. According to Table 9.6, the average 1986 price of Tapis for Esso was US\$15.71 per barrel, while the price for Bangchak was US\$13.94. On the otherhand, the 1987 prices were US\$18.55 and US\$19.05 for Esso and Bangchak, respectively. The prices of Oman crude for Thai Oil and Bangchak were also markedly different.

As long as the situation remains volatile, crude oil prices for each refinery will continue to be different.

9.2.3.2 Crude Oil Acquisition in Response to Changing Domestic Oil Demand Pattern During the 1950's, the country only consumed three types of fuels: gasoline, diesel, and kerosene. Total consumption at that time was less than 1 billion litres per year, all of which was imported (see Table 9.8).

When all three major refineries came into operation in 1965, middle distillates were the dominant fuel since their total share in consumption was 68%. Gasoline and fuel oil shares were about equal at 15% to 20% (see Table 9.9). Output of local refineries at that time were able to supply about half of the country's consumption of all products except fuel oil (see Table 9.10).

Fuel oil consumption continued to grow strongly during the 1970's with growth rates exceeding 12% per year throughout the period. Fuel oil consumption, therefore, rose from 397 mmlt in 1965 to 4720 mmlt in 1980, most of which was consumed by EGAT for their power stations.

Gasoline also continued to grow strongly in the early 1970's despite an oil crisis with growth rates exceeding 10% per year. The reasons were the rapidly increasing passenger car population during the period coupled with the lack of a substitute such as automotive LPG. However, consumption of gasoline began to slow down after the mid 1970's when growth rates were averaging only about 2.6% per year.

For middle distillates, the growth rates between 1965 to 1970 were also strong. Table 9.7 shows that the annual growth rate during that period exceeded 10% with the main contribution coming from diesel fuel. The rates began to slow down to about 8% during the early 1970's, and dropped further to 4.6% toward the end of the decade. However, with relatively large bases, the above percentage growth implied significant increases in terms of the volume of middle distillates consumed (see Table 9.8).

During the first half of 1980's, gasoline consumption was falling at about 1.4% per year as a result of significant conversion to automotive LPG (with very minor changes to diesel). Fuel oil consumption had also been decreasing at high rates of

about 14% per year because of fuel diversification by EGAT's power plants. Middle distillates, the other hand, continued to grow at significant rates of around 5.3% during that period.

It is quite clear from the above summary that the oil consumption pattern of the country has been changing continuously ever since the days the refineries came on stream. According to Table 9.9, and the corresponding Figure 9.1, the consumption pattern started out with middle distillates share high (68%) compared to gasoline (15.6%) and fuel oil (15.7%) in 1965. During the following 15 years, gasoline and fuel oil consumption was growing at more rapid rates than middle distillates resulting in a falling share of the latter from 68% to 42% in 1980. During the first half of 1980's, however, the share of middle distillates has been growing again as a result of falling demand for gasoline and fuel oil as mentioned earlier.

In response to the changing consumption pattern, local refineries also had to adjust their output toward the demand. They also had to expand their capacities to meet the growing consumption. According to Table 9.10, during the first years of operations, local refineries were able to satisfy only 52% of total consumption, and the rest had to be met by imports. However, they were able to supply nearly 80% of total fuel oil demand at that time.

In 1970, the refineries capacities were expanded to 69,000 B/D, and were able to supply 74% of total consumption. The refineries yields at the time were high on fuel oil and were capable of supplying over 90% of total fuel oil demand. On lighter ends, they were able to meet 86% of total gasoline requirements, but only 53% of diesel consumption.

In 1975, the refineries capacities were expanded further to 131,000 B/D and were nearly sufficient to meet the country's oil products demand. Statistics in Table 9.10 show that there were very small amounts of imports required for gasoline and fuel oil in that year. The country was also nearly self sufficient in total middle distillate products. However, it still had to import a quarter of its diesel fuel.

In 1980, oil consumption had outgrown output from local refineries resulting in higher import requirements, especially for fuel oil. During that period, most refineries had changed their yield pattern by producing a higher proportion of middle distillates and a lesser share of fuel oil in order to meet a growing distillates demand as well as to generate higher revenues for the refineries.

In the mid 1980's, refiners continued to change their yield toward higher middle distillates, but were still able to meet only 60-65% of the demand. However, they were capable of producing nearly all of the gasoline and fuel oil requirements since the demand for these two products had been falling during this period.

Table 9.6
Crude Price by Refineries

Unit : US.Dollar per Barrel

Company	1986		1987	
	Tapis	Oman	Tapis	Oman
Thai Oil	14.69	15.34	-	17.99
Esso	15.71	-	18.55	-
Bangchak	13.94	15.76	19.05	18.31

Source : Fuel Oil Division, Ministry of Commerce.

Table 9.7
Average Annual Growth Rates of Oil Consumption

Unit : Percent

Period	Gasoline	Diesel	Middle Distillates	Fuel oil	Total *
1955-1960	18.6	21.1	17.2	-	12.6
1960-1965	-5.0	14.5	20.6	25.0	14.0
1965-1970	24.0	17.5	11.0	26.0	16.4
1970-1975	11.4	6.5	8.0	15.9	10.9
1975-1980	2.6	5.0	4.6	12.5	6.9
1980-1985	-1.4	6.1	5.3	-13.7	0.01
1985-1987	11.5	7.9	7.9	3.1	7.5

Source : Oil and Thailand, and NEA News, National Energy Administration.

Table 9.8
Consumption of Oil Products

Unit : Million Litres

Year	Gasoline	Diesel	Middle Distillates	Fuel Oil	Total *
1955	215.00	204.00	305.00	-	723.70
1960	505.00	531.00	674.00	128.10	1,307.00
1965	392.60	1,045.80	1,718.00	397.00	2,516.00
1970	1,152.10	2,348.00	2,904.00	1,255.60	5,396.00
1975	1,976.90	3,221.00	4,268.00	2,622.00	9,061.00
1980	2,248.70	4,110.00	5,344.00	4,721.00	12,699.00
1985	2,089.80	5,522.00	6,913.60	2,255.00	12,319.00
1987	2,596.67	6,428.46	8,047.92	2,395.31	14,232.32

Note : * Total includes LPG

Source : Oil and Thailand, and NEA News, Nation Energy
Administration.

Table 9.9
Share of Consumption of Oil Products

Unit : %

Year	Gasoline	Diesel	Middle Distillates	Fuel Oil	Total *
1955	29.71	28.19	42.14	-	100.00
1960	38.64	40.63	51.57	9.80	100.00
1965	15.60	41.57	68.28	15.78	100.00
1970	21.35	43.51	53.82	23.27	100.00
1975	21.82	35.55	47.10	28.94	100.00
1980	17.71	32.36	42.08	37.18	100.00
1985	16.96	44.83	56.12	18.31	100.00
1987	18.24	45.17	56.55	16.83	100.00

Note : * Total includes LPG

Source : Oil and Thailand, and NEA News, National Energy
Administration.

Table 9.10
Percentage of Product Supplied by Local Refineries

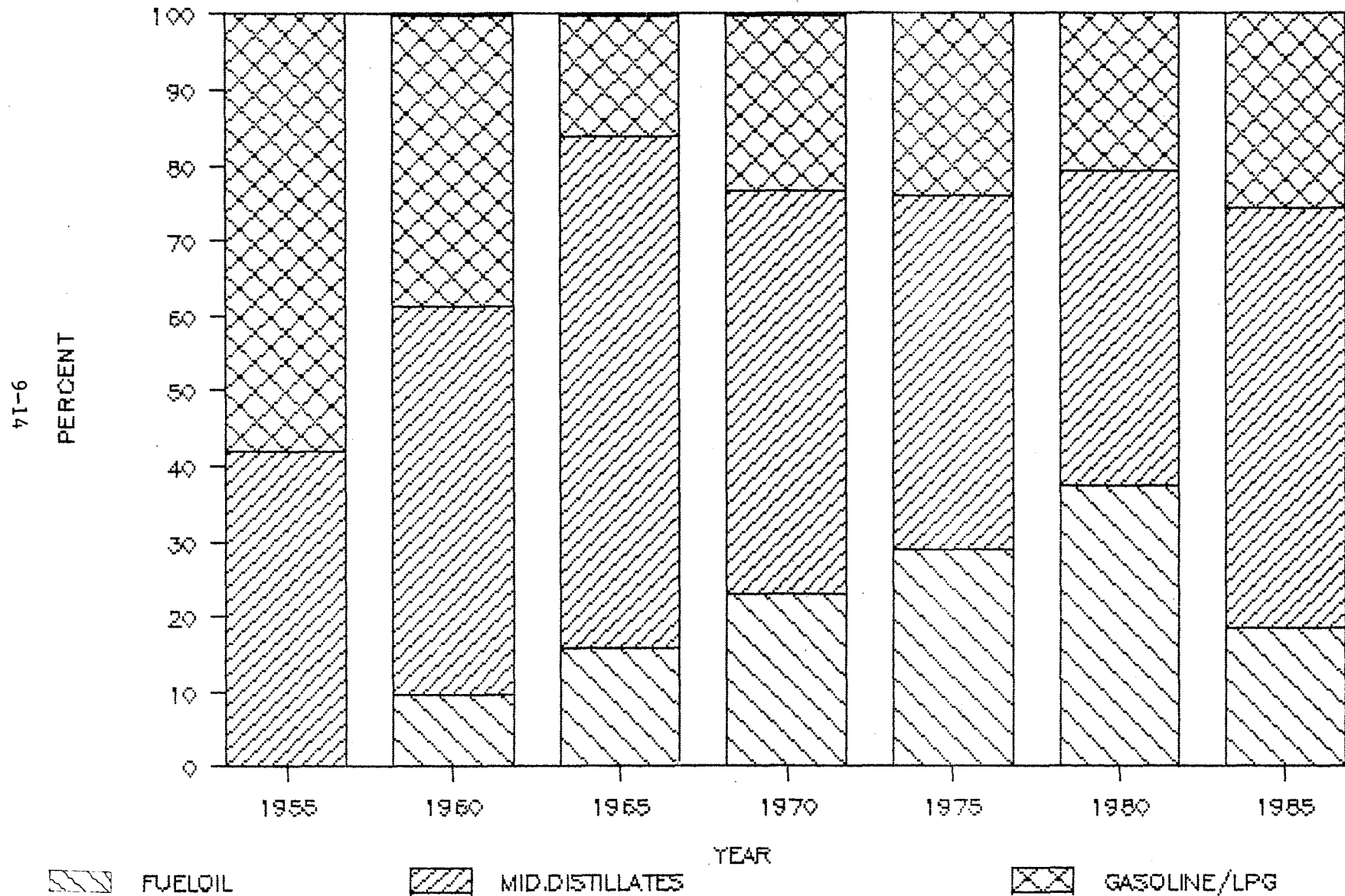
Unit : Percent of Total Consumption

Year	Gasoline	Diesel	Middle Distillates	Fuel Oil	* Total
1965	52	51	45	78	52
1970	86	53	59	91	74
1975	98	76	94	99	92
1980	80	64	69	56	69
1985	98	61	66	95	78
1987	93	54	61	88	68

Note : * Total includes LPG

Source : Oil and Thailand, and NEA News, National Energy
Administration.

FIGURE 9 - 1
CUT OF THE BARREL



If we look more closely at the changing yield patterns of each refinery, we will see that refiners have been changing their yields' pattern from fuel oil toward middle distillates and lighter ends.

1. Bangchak

According to Table 9.11, the yields of Bangchak refinery in 1975 had been 53% fuel oil and only 24% middle distillates. The reason for such a high proportion of fuel oil was that the refinery at that time had been using crude mainly from the Middle East region which generally contains high fuel oil yields (see Table 9.14). The crude slate of Bangchak in 1975 consisted of 50% Arabian Light and 25% of other medium and heavy Arab crude. These Middle East crude yield approximately 50% or more fuel oil under the simple distillery refining process - (which is the process at Bangchak refinery).

In 1980, Bangchak changed its yield pattern by changing crude slade toward more Arab Light and lesser medium and heavy crude. As a result, the proportion of fuel oil yield dropped to 47%, and middle distillates rose to 34%.

In 1985, Bangchak rearranged crude purchases by buying less from Arab countries and more from the Far East region. The switch had a strong impact on the refinery yields since Far East crude generally has very low fuel oil yields compared to middle distillates and lighter ends (see Table 9.14). Fuel oil's share in Bangchak's 1985 production was down to 39% which was equal to its middle distillates yields. Gasoline yield was also up from 17% in 1980 to 20% in 1985.

Note that Bangchak refined nearly half of total Phet crude production in 1985 plus some condensate from Gulf of Thailand. Phet crude has a relatively high yield of fuel oil (high pore) compared to Seria of Brunei or Miri of Malaysia. Domestic market for high pore fuel oil is limited mainly to the power sector where Bangchak has been the major supplier.

2. Thai Oil

According to Table 9.12, the yield pattern of Thai Oil refinery has been roughly constant during the past ten years. The proportion of fuel oil has been kept low at around 15-17%. On the other hand, Thai Oil output of middle distillates has been over 50% since 1975. The remaining yields have been lighter ends including LPG, and some bitumen.

Given its conversion capability, Thai Oil has been more flexible than other local refineries in selecting crude intake. In 1975, most of the crude for Thai Oil came from the Middle East which consisted mainly of Arabian Light and Qatar. They also bought Malasian crude.

In 1980, most of Thai Oil crude still came from Middle East,

Table 9.11
Bangchak Crude Oil Refined

Unit : Million Litres

Type of Crude Oil		1975	1980	1985	1986	1987
Middle East						
1. Saudi Arabia	Arabian Light	1502	1976			
	Arabian Medium		192	188	97	108
	Arabian Heavy		71	96		
	Arabian Berri		324			
2. Oman	Oman			17	877	192
	Oman Light			674		
4. UAE	Murban			96		
	Zakum				100	198
	Albukuch					98
5. Neutral Zone	Medium	558				
	Heavy	94				
	Neutral Zone	94				
5. Egypt	Ras Gharib	86				
6. Iraq	Basrah	181				
7. Kuwait		99			97	492
8. Dubai						107
9. Qutar	Qutar				84	
	Qutar Marine					96
Far East						
10. Malaysia	Miri	66		70		
	Tapis			328		
	Tapis Blend			75	298	555
	Labuan			77		39
11.	Phet & Condensate			774		
12. Australia	Gippsland				96	103
13. Brunei	Brunei Light					76
14. Other Import		418				
15. Constituted Crude Oil			18			
Percentage Share of Refined Output (%)						
	Gasoline	18	17	20	19	21
	Diesel	18	29	36	39	39
	Total Middle Distillates	24	34	39	41	42
	Fuel Oil	53	47	39	35	30

Sources : National Energy Administration (1975 - 1985), and
Ministry of commerce (1986, 1987).

Table 9.12

Thai Oil Crude Oil Refined

Unit : Million Litres

Type of Crude Oil		1975	1980	1985	1986	1987
Middle East						
1. Saudi Arabia	Arabian Light	823				106
	Arabian Medium			310		
	Arabian Heavy			104	190	
	Arabian Natural		517			
	Tailored Arabian					
	Light	86				
2. Iran	Spiked Iranian			108		
	Iranian Heavy			108		
	Iranian Light				95	
3. Oman	Oman Natural			843	730	843
4. UAE	Murban	145	182			
	Dubai		104		95	
	Zakum		47			
5. Kuwait		191	122		143	432
6. Qatar		1543	1789		289	
7. Neutral Zone	Khafji			98	91	103
8. Egypt	Gulf of Suezmic					105
Far East						
9. Brunei	Syria Natural		768	1254		
	Syria Light				978	942
	Champion				26	
	Brunei Light				295	398
10. Malaysia	Tapis Blend			76	99	
	Miri	514	135		252	322
11.	Phet & Condensate			909		
Percentage Share of Refined Output (%)						
	Gasoline	26	27	28	27	28
	Diesel	35	36	34	32	33
	Total Middle Distillates	54	54	53	51	50
	Fuel Oil	17	17	15	12	14

Sources : National Energy Administration (1975 - 1985), and
Ministry of commerce (1986, 1987).

but the volume of Far East crude intake also grew. However, in 1985, the crude slade was changed significantly toward more Far East crude as well as indigenously produced Phet.

3. Esso

Esso like Bangchak, is a simple refinery that has changed the yields by varying crude inputs. As indicated in Table 9.13, Esso yields in 1975 were about 40% fuel oil and 50% middle distillates. Esso was not allowed to produce gasoline at that time and had to send their naptha and reformat outputs to other refineries.

Esso bought all of its crude from the Middle East in 1975. The basic ones were Arabian Light and Tailored Arabian Light.

In 1980, they began to buy crude from the Far East which was mainly Malaysian's Tambungo. The proportion of Far East crude intakes for Esso had been gradually increasing to nearly 70% in 1985. Consequently, their fuel oil yields had been falling to only 21% of their total yields in 1985.

Esso was also allowed to produce gasoline at its refinery in 1985; the yield was 18%. The Esso refinery has not usually been asked to refine Phet or other crude bought by the government. However, ESSO once refined 150,000 BBL Mirilight bought under G-to-G arrangement.

It can be concluded that all of the refineries have changed their crude arrangements by refining a higher proportion of Far Eastern crude. The basic reason for the change has been to decrease the proportion of fuel oil yields and to increase the output of lighter products, particularly middle distillates, in order to satisfy the changing domestic oil consumption pattern. Another reason is that the refineries have gained higher revenues by producing less fuel oil and more products of higher value. Finally, the refineries (except for Esso) have to vary part of their crude intake to accept crude purchased though government-to-government arrangements. This latter reason is the subject of our next section.

9.2.4 The Extent of Government-to-Government Crude Oil Purchase Commitments and their Impact on Refinery Profitability

For reasons of oil supply security, the government purchases some crudes based on long-term government-to-government (G-to-G) contracts. The purchase arrangements were made by PTT and the crudes were refined at the government-owned Bangchak refinery. Some of the crudes were also refined at Thai Oil where the government is the major shareholder. Esso has never been asked to refine government-to-government crude.

During the 1980-1981 period, a G-to-G crude purchase was made from Malaysia; it was based on the Government Selling Price (GSP) or the posted price. The amount purchased was 10,000-

Table 9.13

Esso Crude Oil Refined

Unit : Million Litres

Type of Crude Oil		1975	1980	1985	1986	1987
Middle East						
1. Saudi Arabia	Arabian Light	322	1067	158		87
	Arabian Medium		35	174	298	307
	Arabian Heavy		59			
	Arabian Berri		153			
	Tailored Arabian Light	1517	392			
	Tailored Arabian Medium		105	209		
				240		
2. Oman						
3. UAE	Dubai			286	311	585
	Murban					143
	Zakum					53
	Umm shaif					104
4. Qatar		81	721			80
5. Kuwait	Kuwait Reconstituted				515	333
Far East						
5. Brunei	Champion			561	490	477
	Brunei Light					47
6. Malaysia	Tambungo		111	186	74	
	Tapis Blend		56	1516	1816	1686
	Labuan					41
7. Mubarex			56			
8. Australia	Jabiru				109	
Percentage Share of Refined Output (%)						
Gasoline		-	-	18	19	20
Diesel		31	32	41	38	36
Total Middle Distillates		50	45	55	52	50
Fuel Oil		40	28	21	22	23

Sources : National Energy Administration (1975 - 1985), and
Ministry of commerce (1986, 1987).

15,000 B/D, and all of the crude was refined at Bangchak.

The second oil crisis in 1979 prompted the government to sign in 1982, a long-term, three-year contract, with Saudi Arabia to purchase Arabian crude. The reason for the purchase was to secure a steady supply of crude at a stable price for the country. The amount contracted was 65,000 B/D based on the GSP. The crude was refined at Bangchak (50,000 B/D) and by Thai Oil (15,000 B/D). Further, the government continued to purchase G-to-G crude from Malaysia (see Table 9.15).

Contracting with Saudi Arabia turned out to be a poor decision. Soon after the contract was signed, world oil prices began to decline. More importantly, spot prices came down much faster than the posted price (on which the government contract was based). During 1982-1984, the spot price of Arab light was US\$1-2/BBL lower than that posted.

The G-to-G commitment thus had a significant impact on the profitability of domestic refineries, particularly Bangchak. The amount of Arab crude accounted for nearly all Bangchak's refining capacity. Furthermore, Arab crude also generated a large proportion of fuel oil, a low-value product (see Table 9.14). Refining this G-to-G crude was one of the reasons that the Bangchak refinery suffered significant losses during this period.

In 1985-1986, the amount of G-to-G crude purchased was relatively small. Refiners acquired their crudes mostly on spot or through arrangements as discussed in Section 9.2.3.

9.2.5 Evidence of Cross-Subsidization Within a Fully Integrated Oil Company

One of the questions that is often asked is whether it is beneficial for an oil marketing company to own a refinery in Thailand where prices are controlled. The answer is it depends on the rates of return the company can expect from investment in a refinery. In our opinion, refineries in Thailand have received a considerable degree of protection from the government in terms of reasonable ex-refinery price settings and protection for competition from imports. In this regard, local refineries should be able to make reasonable returns on their investment.

However, refineries have also suffered at times resulting from the short-sighted energy policies of the government that has led to distortion in the oil consumption pattern leading to imbalances between the supplies from refineries and the demand. The delay in decision making also causes refiners to suffer occasional short term losses when ex-refinery prices are not adjusted quickly enough to follow the changing world crude oil prices. Moreover, certain refineries must also refine crude committed by the government at relatively high prices.

Table 9.14

Typical Crude Oil Yields from Simple Distillation

Unit : Percent by Weight

Type of Crude Oil	API Gr	Light Distillates	Middle Distillates	Residual
Middle East				
Arabian Light	33.4	23.0	33.0	45.0
Kuwait	31.1	21.0	20.0	59.0
Iranian Light	33.6	23.0	30.0	47.0
Oman	34.0	13.0	36.0	51.0
Arabian Heavy	28.0	18.0	9.0	73.0
Qatar	41.3	32.6	32.7	34.7
Far East				
Seria *	37.0	20.0	62.0	13.0
Champion *	22.0	8.5	60.0	27.6
Tapis Blend *	44.0	21.5	67.9	5.7
Phet *	40.6	18.0	41.0	36.0

Note : * % by Volume

Sources : 1985 Oil Economist's Handbook and Oil Refineries.

Table 9.15
Government to Government Crude Oil Purchases

Crude Type	Quantity B/D	Terms	Contract Duration	Refined by
1980				
Malaysia - Miri	4,000	GSP	Jun - May 80	Bangchak
	10,000	GSP	Jul - Dec 80	Bangchak
Tapis	50,000 mt	GSP	Dec 80	
1981				
Malaysia - Miri	10,000	GSP	CY 1981	Bangchak
1982				
Malaysia - Miri	10,000	GSP	CY 1982	Bangchak
Arabian Light				
Medium	65,000	GSP	1982 - 1984	Bangchak 50,000
Heavy				TORC 15,000
1983				
Malaysia - Miri	5,000 - 10,000	GSP	CY 1983	Bangchak
1984				
Indonesia - Handil	5,000	GSP	Apr 84 - May 85	Bangchak
China - Chengli	100,000 mt	GSP	1984	Bangchak
Malaysia - Miri	10,000	GSP	1984	Bangchak
1985				
Malaysia - Tapis				
Miri	5-10,000	Term	Apr 85 - Mar 86	Bangchak
Labuan		Prices		TORC
Buntulu				
Oman	10,000	PDO	Apr 85 - Mar 86	Bangchak
				TORC
1986				
Malaysia	5,000	Term	Oct 86 - Sept 87	TORC
		Prices		
Oman	15,000	PDO	Apr 86 - Mar 87	Bangchak
				TORC
Iranian Light	80,000 mt	GSP	Sept 86	TORC

Note : PDO = Petroleum Development of Oman

Source : Petroleum Authority of Thailand.

Nonetheless, a refinery that is well managed can cope with these problems and can expect to earn profit under the price control environment and the above protections.

In our opinion, an oil marketing company that also owns a refinery should have competitive advantage over a pure marketing company. The reason is that owning a refinery would increase flexibility of the oil company in terms of supply arrangements in the short as well as long run to match marketing planning and vice versa. The integrated company can also increase efficiency and reduce operating costs since certain facilities can be shared between the refinery and other sectors. A well managed integrated company, therefore, has an option of "transferring" this benefit to the marketing sector to enhance the competitive strength of downstream trading.

The reason that the transferred benefit could affect competitive position is that downstream marketing margins are strictly controlled by the government. The allowed margins are generally very small and thus a company that can find "extra" margins will certainly have a competitive advantage over rivals who cannot. Transferring of upstream benefit is one of the ways to gain such extra margins. Section 9.3 will discuss in more detail some other ways to gain them.

However, an integrated company is allowed by Thai law to report consolidated financial statements to the tax office. This means we have no way of knowing whether the company has actually been subsidizing downstream activities from upstream profits, nor the extent of such subsidization if it does exist. Nonetheless, we can still make some observations about the ability and the possibility of a company's doing so.

Historically, there have been only one fully integrated oil company in Thailand which is Esso. However, PTT also took part in a refinery operation during 1981-1985.

(a) PTT The national oil company was once a partially integrated oil company when the government revoked Summit's refinery operating license in 1981, and handed it over to PTT and DED who jointly operated the refinery until 1985. During that period, the refinery had lost 500-1,000 million baht per year for reasons such as the inefficiency of refinery operations and a government to government crude oil purchasing commitment (see previous section). Therefore, it was unlikely that the refinery could provide financial support to PTT operations in other sectors. The refinery is now run by Bangchak Petroleum Company which is a separate state enterprise.

However, PTT also has other upstream activities such as natural gas pipeline operations and a gas separation plant. Some of these activities like the natural gas pipeline operations have been quite profitable for PTT and the profit could possibly be used to gain PTT's strength in other areas.

(b) Esso This company is the only integrated company at the present time. We have reasons to believe that the company has been well managed, and both the refinery and downstream sectors have been profitable. Their consolidated financial statements reported to the government have shown relatively high net income after tax. If we deduct such income in a given year by the amount of Shell reported net income (the Shell Company of Thailand plus the Shell Thailand Manufacturing Ltd), the remaining would be a very rough approximation of Esso refinery profits which have been impressive (about 535 million baht in 1986).*

There are several factors that help improve Esso profitability relative to other oil companies and refineries. These factors are:

1. Esso refinery has not usually been asked to refine government- to-government crude. This may be because the government has no share holding in the company. However, the government has the right to ask Esso to refine the crude if it so wish (like in 1979).

2. Before the government changed the reserve requirement rule in 1986, Esso, as an integrated company, was allowed to apply the same required oil product reserves for both the refinery and downstream marketing sectors. Such allowance would work like an "indirect" cross-subsidization between refinery and downstream sectors since the company could save over one hundred million baht each year in working capital costs.** That amount of money could be used for marketing as well as other purposes.

Futhermore, Esso continues to benefit from the current oil reserve requirement rule. By keeping part of oil product reserves at its refinery, Esso can avoid paying taxes and oil fund levy on this part of the reserves. This "saving" amounted to several million baht in 1987 (oil fuels only).

3. Unlike Thai Oil and Bangchak, Esso is not bound by contract with MOI to hand over the refinery to the government after a certain period of time of operations. This exemption has indirect impact on profitability since Esso can confidently and continuously invest in programs to improve the refinery efficiency. ESSO's highly efficient operation is one of the reasons for having profitable refining business.

* Shell and Esso have had about the same market share. They are also presumably equally efficient. However, their profits could be different due to different accounting procedures and investment programs.

** We estimated that the value of reserve stock, excluding lubes, of Esso in 1985 was around 860 million baht (Reserve volume x product acquisition costs).

4. Esso has acquired crude oil (and finished products) through its foreign affiliates and thus has an advantage over Thai Oil and Bangchak in terms of higher flexibility and speed of crude oil and products procurements. It also has an opportunity of using "transfer pricing" with its foreign affiliates.

With all of the above factors in mind, we believe that Esso, as an integrated company, has benefited significantly from having a refinery and could possibly have used some of the benefit to gain competitive strength in other sectors, especially in marketing. Such behavior is understandable and we believe other companies would have done the same had they been in Esso's position.

9.3 Oil Industry Conduct - Downstreams

In this section we will analyze the structure of price competition (direct and indirect) and non-price competition among oil companies. The objective is to try to understand the behavior of these companies concerning their attempt to gain market shares under the strict price control environment.

9.3.1 "Price" Competition

In a market where oil prices are not regulated competition to increase sales is usually strong, and can take on many forms. One of the most commonly used strategies by the oil companies, however, is to cut prices. Price cutting would normally lead to increase sales and perhaps profits for a certain period of time until competitors react by reducing prices to match. In that case, all companies would be selling at the original quantities but at a lower price.

However, price matching may be difficult if the companies have different cost structures. In retail business, independent retailers usually succeed in selling at slightly lower prices than majors simply by cutting services down to a minimum or zero as in the case of self-service gas bars. Price cutting in this fashion normally would not lead to "cut throat" competition since the full-service stations and gas bars are serving different groups of customers.

Pricing of oil products is probably one of the major tasks of oil companies in the unregulated market. Companies' margins depend not only on how they control the costs, but very significantly also on how they set the prices.

The situation is quite different in Thailand where, theoretically, pricing of oil products has small effects on companies' profitability* since profits depend on marketing margins that are controlled by the government. In other words, retail prices can be adjusted upward or downward, but companies' earnings per litre of oil sold will remain constant unless the margins are also allowed to change.

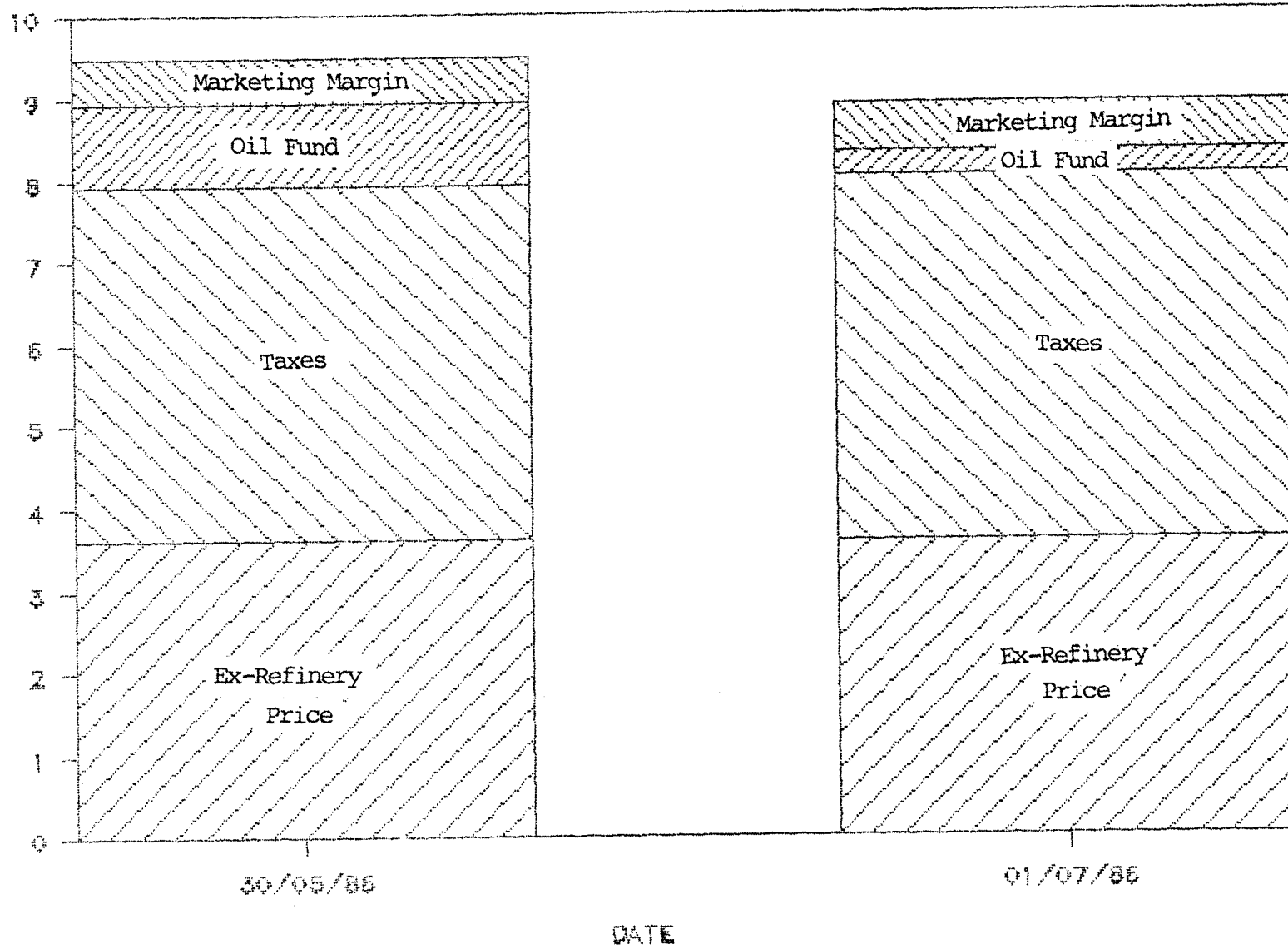
Figure 9.2 highlights the price structure of premium gasoline when the government changed retail prices from 9.5 baht per litre to 8.9 baht per litre in July 1986. In this case the government simply lowered the oil fund levy to compensate for changing retail prices and the ex-refinery prices while holding taxes and the marketing margin constant. Therefore, changing retail prices gave no direct effect on companies' profits or market share positions.

* Lower the controlled prices may have indirect impact to all companies if consumers respond by consuming more oil. Costs of working stock vary with product acquisition costs, not retail prices.

FIGURE

9.2

RETAIL PRICE OF PREMIUM GASOLINE



9-27
11/8

The marketing margin is probably the most important determinant of how much "room" is available for oil companies in the country to compete. However, since the controlled margin is the same for everyone, the ability of a company to compete will depend on two factors.

1. Effective costs control

Marketing margins are the main source of income for most oil companies, and net profits are roughly equal to company gross margin minus all costs and taxes.* This means company profit varies inversely with costs.

In Thailand, unit cost is probably the determinant of the competitive "strength" of an oil company. The reason is simply because a company that has a lower unit cost will have extra marketing margin available for competition in terms of more rebates and discounts for its customers (to be explained in detail shortly). It also means the company can withstand prolonged competition and still remain profitable.

In general, the unit cost consists of two parts:

(a) Unit fixed cost A company can lower unit fixed cost by simply increasing sales volume. So it is vital that a company tries to maintain or gain market share.

(b) Unit variable cost This unit cost does not vary with the level of sales, but inversely with the company's efficiency.

2. The ability to gain "extra margin"

Although marketing margins are controlled, oil companies can still increase their margins at least in four of the following ways:

(a) Trading Gain According to the import pricing structure discussed in Chapter 7, the government set controlled import prices using various measures such as average Singapore refineries posting, minimum posting, or Singapore spot depending on the government policy and oil price situation at that particular time. These measures could be changed abruptly without prior announcements by the government in order to prevent speculations by the oil trader.

However, an experienced oil company can usually find a way to take advantage of the import pricing structure. For example, a policy to base controlled import price on previous week average Singapore posting can create an opportunity for trading gain if the posted prices in Singapore continue to slide down further into the current period. If the C.I.F. values of oil company import fall below the controlled import price in that particular day, the company would gain windfall profits that could be added

* Gross margins = unit margin x volume

directly to their marketing margins. Figure 9.3 illustrates this point by showing larger block of marketing margin than the controlled level resulting from lower actual C.I.F. value of import.

The company can also "beat" the minimum Singapore posting by buying from spot. This buying practice was very popular during the period before 1985 where spot prices were consistently lower than postings.

However, during the time of rising oil prices the importers could find themselves in a difficult situation since the controlled import prices usually have not been adjusted upward quickly enough to catch up with actual C.I.F. values. Furthermore, if the spot price happens to be higher than the posted prices importers will have to face some losses.

Oil companies will usually continue to import despite losses for fear of losing future import quotas which are determined by today's performance. They also try to get supply domestically if that is possible to minimize losses. In this situation the major companies can sustain the losses longer than the independent importers whose cash flows could be wiped out with only a few misjudgments.

In the past, the government usually responded to oil company requests only after some delay. In the case of HSD, for example, the government changed the import price from average Singapore posting to Singapore spot on February 7, 1985 when the HSD price began to fall continuously. However, when spot prices of HSD went back up again in early August 1986, the government continued to use spot pricing until November 28, 1986 when it changed the basis to average Singapore posting. During August-November, importers had to face some losses.

The major companies also have advantages over independent companies in other respects. In the business of trading, timing is very important since any delay could turn assured profits into complete losses. The major companies are quicker to react than the independents because all of oil can be made instantly upon receiving the orders. In contrast, independent importers usually face the delay of having to search for suppliers as well as the delay of opening the required letter of credits.

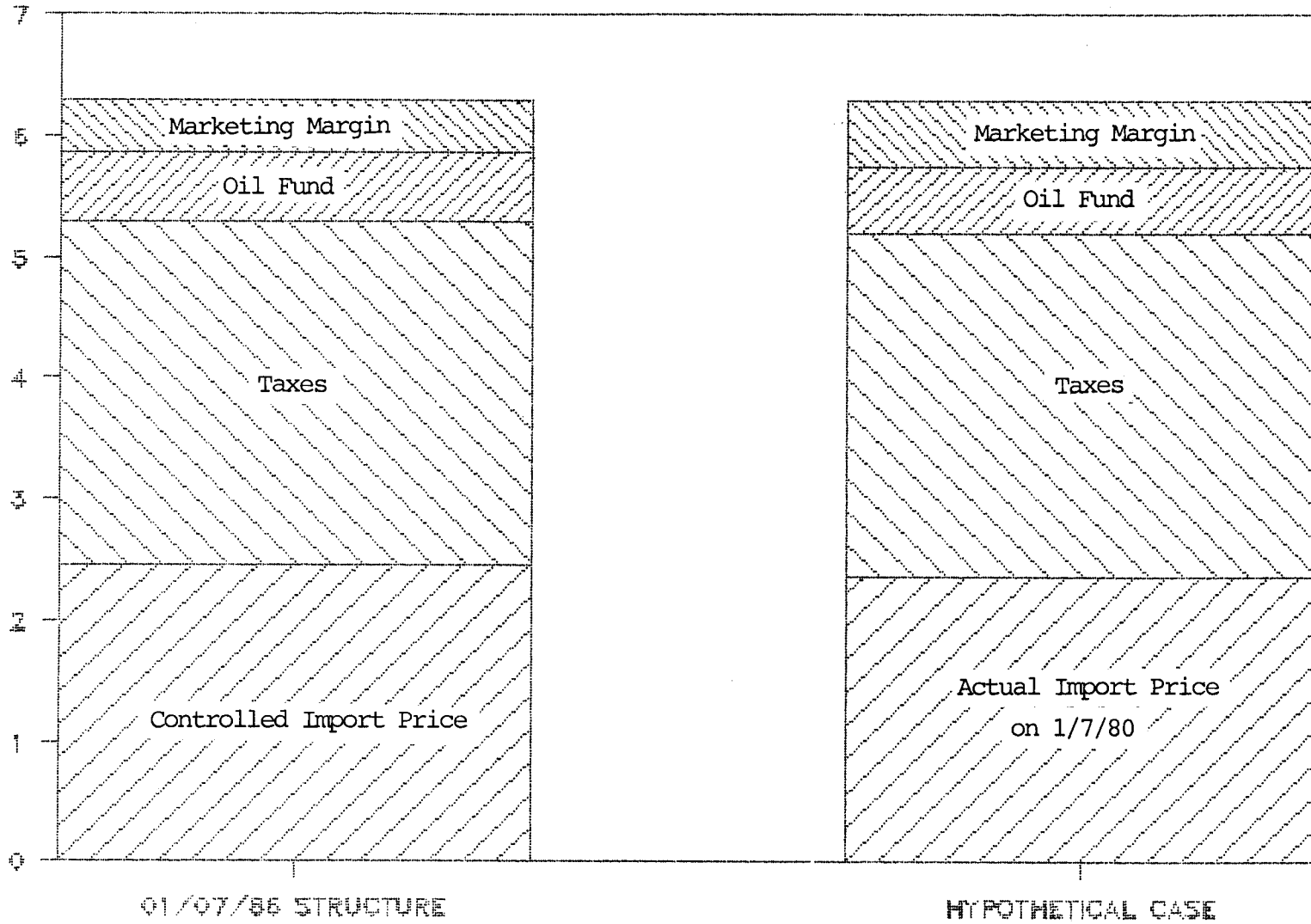
Majors also have the advantage of having lower unit shipping costs since the size of their parcels are much larger than those of independent importers (see Chapter 4 for detail).

(b) Transportation Gain According to Chapter 6 retail prices of oil products sold up-country are higher than those in Bangkok (except LPG, see also Chapter 6). The price differentials are in fact the transportation allowances that the government add to Bangkok prices for the shipping costs of oil to various parts of the country. These allowances usually vary directly with distance from Bangkok.

FIGURE

9.3

TRADING GAIN HIGH SPEED DIESEL



However, in calculating the differentials, the government also considers the geographical locations in addition to distances. In areas where there are high mountains with poor accessibility, the cost of transport will be higher than those locations with same distance but with direct rail access. In general, the costs will be the average of actual transport costs obtained from various oil companies, using the most practical means of transportation to each location.*

This structure provides incentive for oil companies to improve efficiency on their transportation of oil since all cost savings (below government allowed level) would be added directly to margins. Figure 9.4 illustrates this point. Current differential allowed for HSD to Chumporn is 33 satang per litre which means current selling price of HSD in Chumporn is 6.63 Baht per litre. The cost is based on rail transport from Bangkok. If, however, an oil company can ship HSD directly to Chumporn by barge, or indirectly to Suraj Thani by barge and then by truck to Chumporn, it is possible to save a shipping cost of a few satang per litre which would make marketing margins become larger. However, the company must have barge receiving facilities nearby.

This also means oil companies who have more up-country depots will have more opportunities to make transport gains, and thus have a competitive edge from lower unit costs, and larger unit margins (section 9.5.1 will explain further in detail).

(c) Illegal Activities Because the marketing margins have been tightly controlled, some unethical traders will look for any opportunities that are opened to them, whether or not they are legal, to make extra margins. Ironically, the tightly controlled structure usually opens loopholes for unscrupulous practices. The more complicated the system becomes, the more loopholes grow.

An example of such a practice is the adulteration of Kerosene into high speed diesel resulting from the retail price differential between the two fuels. In 1978, the price of kerosene was actually higher than HSD. During the second oil crisis, the government allowed the price of kerosene to rise relatively slowly for fear of economic impacts on rural farmers who used kerosene for lighting. The price differential between kerosene and HSD began to widen from 0.32 baht per litre in 197 to 1.27 baht per litre in 1982.

Such a differential created an opportunity for unethical traders to mix kerosene with HSD using the proportion (up to 50%) that would not affect the performance of diesel engines, and earned handsome extra margins. For instance, a 25% mixture of kerosene to HSD in 1982 would earn an extra margin of over 0.3 baht per litre.

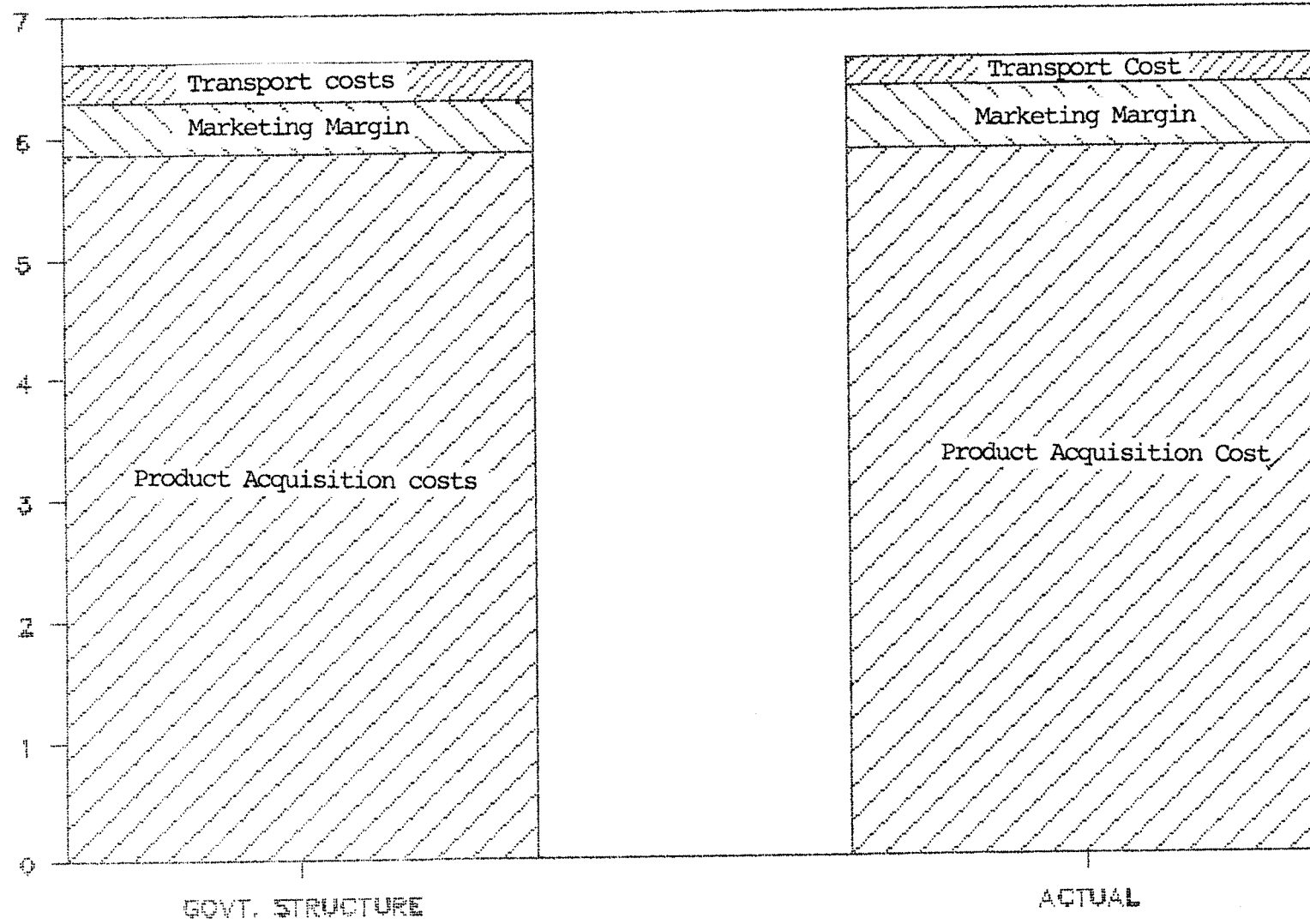
The adulteration practice started in 1979 when kerosene

* In practice up-country retail oil prices are set by provincial authorities using MOC transport allowances as a guideline.

FIGURE 9.4

TRANSPORTATION GAIN HIGH SPEED DIESEL

9-32
RETAIL PRICE (¢/LT)



consumption began to grow until 1984 when the government effectively stopped such practice by allowing consumers to buy bulk kerosene only with permits from the Commerce Ministry (Adulteration of packed kerosene is not profitable due to the added cost of the can).

The amount of kerosene used for adulteration was estimated to be as high as 355 mmlt in 1983 where as much as 33 million baht was illegally earned. (The estimation was based on the assumption that kerosene used for usual purposes fell at about 8% per year between 1978 to 1985, the two years where adulteration did not exist). Another illegal practice has been the decanting of LPG into different size cylinders and from cylinders to automotive vehicles. These activities were encouraged by the pricing policy of the government, and would continue if such policy remains (see Chapter 6 for LPG pricing structure).

Other activities that are questionable are the sales of fuels through a network of drum pumps at prices exceeding the controlled retail levels. There have been reports of HSD smuggled into the country by fishing boats. However, it is difficult to estimate the volume of such activities due to the lack of data.

(d) Petition to the Government Oil companies also make occasional petitions to the government requesting the adjustment of marketing margins. In the past, the government responded by granting occasional margin increases. However, the size of the increases were normally much lower than what the oil companies had asked for. One of the reasons for this discrepancy that the government was skeptical of the cost estimates submitted by the oil companies, and believed the figures might be too high. Other economic and political considerations also played very important parts in the government decision.

9.3.1.1 The Existing Forms of Price Competition In general, the consumers' perception of competition in the oil industry is usually limited to the price cutting at retail stations and the advertisements of oil products using mass media. In this regard, Thailand's oil industry appears "tame" since retail prices at stations are virtually the same in a given location, and the advertisements of oil products are relatively few compared to other consumer goods.

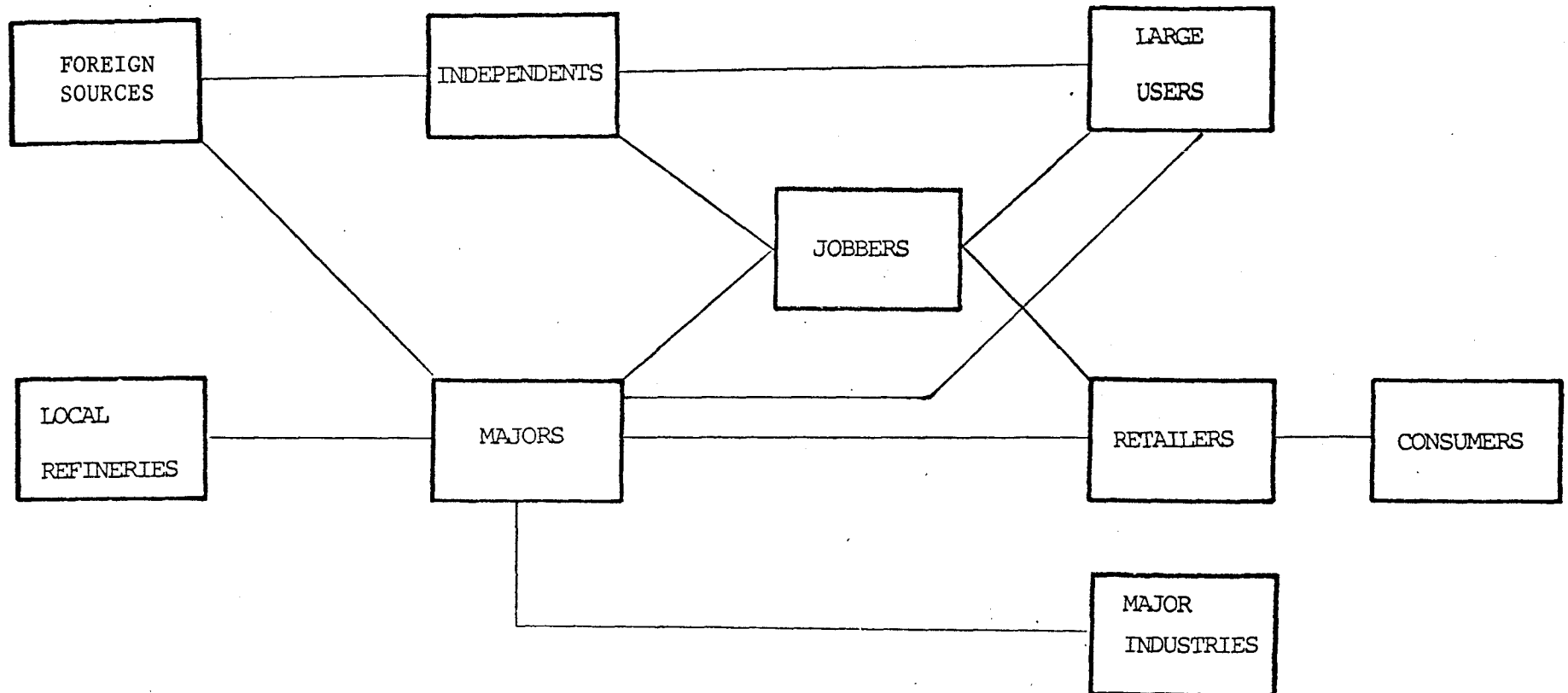
In practice, however, oil business is much more than the flow of oil from retail stations to endusers. Figure 9.5 illustrates typical transactions of oil in various stages beginning from refinery and imports. The selling prices are either ex-refinery prices or controlled import prices.

The products then flow out the main installation into the "market", and the fierce competition begins.

It may come as a surprise to some that, even though the prices and margins are under control, competition in the Thai oil market has taken on most of the forms one could imagine, even

Figure 9.5

The Oil Trading Business in Thailand



direct price cutting. The degree and the form of competition depend strictly on the stage in the oil transaction, and the type of fuel in question. For example, competition is probably strongest for HSD that flows from jobbers to retail stations (and some industrial users) where direct price cutting has commonly been used. On the other hand, competition is weakest for fuel oil products that flow from oil companies directly to industrial users (Section 9.33 will provide detail on this transaction).

In addition to direct price cutting, oil companies also use indirect "price" competition such as rebates, discounts, and credit terms. As we shall see, each of these indirect methods may be used independently or jointly depending on the level of competition.

(a) Discounts In general, a discount is a sum of money deducted from unit selling price immediately upon the purchase of oil products. A common type is the cash discount given to customers who pay cash upon placing the orders. Another type is the high volume discount given to customers who place high volume orders, and the rate of a discount could go up in stages as volumes get higher.

(b) Rebates Rebates is another form of discount, but the payments will be made after the achievement of certain conditions by customers. For example, an oil company will give rebates of 5 satangs for every litre of fuel sold by its wholesaler if the sales volume of that wholesaler reaches 1 million litres within a given month*. The rebate scheme is designed to provide incentives for wholesalers to push for higher sales volumes.

In practice, there are numerous types of rebates which vary from customer to customer, and from oil company to oil company, depending on the types of fuels and the level of competition. In general, rebates for products that have high competition will be higher than the ones that are simpler to sell.

(c) Credit Terms In principle, customers are required to pay cash upon ordering the oil products. However, certain customers with good standing with the oil company may be given credit terms. Industrial customers also normally receive credit terms.

Length of credit terms vary by types of customers with industrial customers getting the longest periods. However, oil companies usually require industrial customers to provide a bill of exchange (B/E) equal to the amount of each purchase as a guarantee. The customers also normally have an option of providing bank guarantees equal to the estimated maximum purchase during a period of time as a substitute for B/E (see Table 9.16).

* The rebate is usually given as "credit" on subsequent purchases.

Table 9.16
Normal Credit Terms

From	To	Length	Products
Refineries	Thaioil - Shell, Caltex, PTT	19 Day	All
	Bangchak - PTT	19 Day	All
Major Oil Company	Retail Stations	Cash	All Except Lubs.
Major Oil Company	Industrial Consumers	30-45 Day+B/E	All
Major Oil Company	Jobbers	7-30 Day+B/E	Diesel, LPG, Regular Gas.
Independents	Jobbers	7-14 Day+B/E	Diesel, LPG
Jobbers	Retail Stations	Cash or 2-3 Day	Diesel, LPG, Regular Gas.
Retail Stations	Commercial Fleets	7-15 Day	All

Note : +B/E = with bills of exchange.

Source : Oil Companies Interviews.

At the other extreme, retail stations usually pay cash for their products, whether they are delivered by oil companies or jobbers. The only exception is for stations that also act as wholesalers and may receive credits.

Like rebates and discounts, credit terms may vary from one customer to the other, and also from oil company to oil company. Moreover, all these indirect price competition schemes are negotiable depending on the bargaining power of customers and the state of competition.

9.3.1.2 The Magnitude and Effectiveness of "PRICE" Competition, and Possible Financial Impacts on Oil Companies

In this section we will describe in detail the various types of price competition that are being used by the oil industry at each stage of the oil transaction, starting from oil companies down to retail stations.

Major Oil Companies

According to Figure 9.5, major oil companies sell their products to three main groups of customers. These are:

(a) Retail Station Each of the major companies has a large network of retail stations that are spread throughout the country. The number of stations for each of the companies ranges from about 500 for Caltex to 6-700 for Shell, Esso, and PTT. These stations are normally located in or near urban areas or along major highways where vehicle traffic is high.

Retail stations can be classified into two groups. First, the stations that only do retail sales. Second, the stations that have retail as well as wholesale business.

Most of the stations belong to the first group. The price competition among major oil companies in direct retail sales is not very strong, since the wholesale prices to dealers by major companies have been quite similar, according to 1985 statistics.

Table 9.17 shows 1985 average wholesales prices to dealers by major oil companies (line 3) which could be derived by subtracting dealers' margins from retail prices, or, inversely, adding companies' margins to product acquisition costs.

From this structure, it is quite clear that wholesale prices to dealers depend directly on the amount of margins the oil companies are willing to sacrifice. Since there is no law governing the split of total allowable margins between oil companies and dealers, actual allocations depend mainly on agreements between the two parties.

As shown in Table 9.17, the oil companies allow dealers to have higher margins (with the exception of HSD) because sales volume of each dealer is much smaller compared to the company.

Table 9.17

1985 Bangkok Retail Stations Price Structure

Unit : Baht per Litre

	Premium Gasoline	Regular Gasoline	High Speed Diesel
1. Product Acquisition Cost	11.1307	10.2748	6.2606
2. Average Major Oil Company Margins	0.2465	0.2343	0.2339
3. Average Wholesale Prices to Dealers	11.3770	10.5091	6.4945
4. Average Dealers Margins	0.3228	0.2909	0.2055
5. Retail Prices	11.70	10.80	6.70

Source : National Petroleum Policy Committee.

In general, oil companies usually keep wholesale prices to dealers fixed for all customers, and also roughly in line with other majors. This practice makes retail sales appear uncompetitive.

However, the companies then use rebates as a way of cutting the prices. The use of rebates are preferable to other measures for the following reasons:

1. The use of rebates will not provoke competition from other majors because no one would know exactly how many rebates were given to a particular dealer. Moreover, the terms of rebates usually vary by customer groups, region, time period, etc. Therefore, oil companies can effectively use rebates to achieve their specific targets. For example, extra rebates can be given only to dealers in the south to help improve market share that may have slackened.

2. Rebates provide better incentive for retailers to push for higher volume than other discount schemes. Dealers must work harder to earn rebates.

3. Unlike discounts that must be given on every litre of fuel sold, rebates will be paid to only certain parts of sales. And unlike credit schemes that will incur upfront costs for the company, rebates will be paid long after the sales were actually made. Therefore, rebates do have some financial advantages for oil companies over other schemes.

Note that the amount of rebates or discounts given to dealers will come directly off oil companies unit margins that are shown in line 2 of Table 9.17. We can see that the companies unit margins before expenses are only about 23-24 satangs per litre which are not very high. Thus only a few satangs in rebates given could have a significant impact on an oil company's profits. It is also clear that a company that can earn "extra" margins as discussed earlier will have an enormous advantage over competitors.

The magnitude of rebates for dealers, according to our conversation with some oil companies, is around 3-5 satangs per litre for a sales volume exceeding agreed monthly targets. Rebates also rise in stages with higher volumes receiving higher unit rebates.

In addition to a monthly target, some companies will also give half-yearly and yearly target rebates as incentives for dealers to put continuous efforts into increasing sales.

(b) Jobbers Competition among oil companies for sales to jobbers is a lot stronger than the sales to retail dealers. This is simply because oil companies will use jobbers only when they want to sell a large amount of fuel (usually HSD) in a short period of time. There are various reasons why an oil company wants to "dump" fuel into the market, but the main ones would be

to protect or regain a market share lost in a particular region resulting from dumping by the others. Or, some companies may want to find a simple way to correct for short run imbalances of their oil supply and demand.

There is practically only one way to sell a large quantity of fuel in a short time and that is to drastically cut the prices. The prices being cut here are the wholesale prices to jobbers which can be done by giving high discounts, rebates, and credit terms.

The companies usually give 7-30 day credit to jobbers (with B/E). However, it is difficult to estimate the amount of rebates given to jobbers because the range has been quite high. But the rule is that the rebates must be sufficient to make jobber competitive (with other jobbers) yet remain reasonably profitable. The range of rebates also depends on how urgently the company wants to "move" its product and how large the amount of fuel is. One informed source gave us the range of 5 - 10 satang per litre.

However, selling through jobbers is a very unprofitable undertaking despite the high volume nature of the trade. Yet most companies admit they need to keep jobbers as a part of their "arsenales" to defend market shares.

It has been estimated that about 20-25% of total HSD sold in 1985 was through jobbers. There was also a certain amount of LPG and gasoline sold through jobbers.

(c) Industrial Customers Details of this business will be discussed in section 9.3.3.

Independent Companies

The main business of all independent companies in Thailand has been to import oil products and try to earn trading gains. Referring to sections 4.1.3 and 4.2.2, these companies started their business in the country in the early 1980's by importing LPG and HSD. When imports of LPG were stopped in 1984, the companies switched to PTT for supplies, and their LPG trading began to decline. However, they are still allowed to import HSD under the allocated quota.

Most independents do not own retail stations, and some of them own only a small retail network. For LPG, however, the independents have a significant amount of capital investment in retail sales of LPG including cylinders and automotive outlets.

Since independents have not owned outlets for imported HSD, they must sell the product mainly through jobbers. Retail stations of major companies are not allowed to receive the product directly from independents. The question is how then could independents survive dealing significantly with jobbers?

The key to their survival depends largely on these factors:

(1) Independents' profitability depends on import gains. They must follow price movements very carefully, and then take advantage of the opportunities that are opened.

(2) Independents have no outlet which means they have no commitment to provide constant supply of HSD to the stations. They can delay their decisions to import during "bad times" while most majors cannot.

(3) Independents have extremely low unit costs in HSD trade. They have managed their business with only small staff and in relatively small offices. They do not have investment in a retail network, and very small investment in delivery equipment. Most of their investments have been in the storage facilities as required by the law.

During a favorable time, independents have been known to obtain very attractive margins. They may, in turn, give high rebates to jobbers in order to quickly sell their product to generate cash that is needed for the next orders.

It has been estimated that independents have given as high as 15-20 satangs per litre rebates to jobbers during favorable times, compared to only 5-10 satangs per litre rebates given by majors.

Independents also provide credits to some jobbers, but most of the terms are in cash. Independents are reluctant to build their own retail networks because of the uncertainties of product supplies. Independents have no secured sources of supply for products except LPG where they can lift from PTT's GSP. Until recently, they were unable to buy directly from local refineries, and they can only import HSD under a controlled quota. They can obtain products from PTT, but at wholesale not ex-refinery prices.

Independents will probably continue to trade with jobbers well into the future as long as they are still allowed to import HSD.

Jobbers

Jobbers have been part of Thailand's oil market for quite a long time. The people who become jobbers usually have long been in the oil business like dealers and contractors. So jobbers generally have very good knowledge of the oil business, which is very important because jobber trade is probably the most competitive oil market in the country.

The principle of jobber trade is to buy as cheaply as possible, and resell the product as quickly as possible. Jobbers' margins have not been high despite the fact that they can buy the product quite cheaply from suppliers. The reason is simply

because of the fierce competition prevailing in the market. A unit margin of only a few satang per litre is not very unusual for jobbers to obtain but with high volume they can still survive.

Once the purchase is made, jobbers will try to sell the product as quickly as possible to take advantage of credit terms given by an oil company. And jobbers usually sell only on a cash basis. The only effective tool jobbers use for competition is price cutting. The quicker they want to sell the product, the lower the price they must offer. This is the reason why jobbers' margins are usually quite small.

Major oil companies normally affiliate with some particular jobbers in an effort to put some control on their activities. However, these jobbers will buy from other companies if the prices are attractive. Smaller jobbers will buy from any source, even from other jobbers depending on price. It has been estimated that the total number of jobbers in Thailand, small and large, is about 15.

On the selling side, however, it is difficult to control where the product would go despite the policy of all oil companies to dump the product only in someone else's network. The reason is because jobbers will usually sell to whoever will give them the best price. Jobber customers can be classified into four major categories.

(a) Retail Stations Jobbers will approach a station owner and offer their selling prices. Occasionally, the dealer will also contact jobbers and ask for the prices. These prices are typically several satang lower than those set by major companies. When the dealer is satisfied with the price, he then places the order.

There are two types of retail stations that buy from jobbers:

1. Dealers who also do the wholesale trade. These dealers sell their products not only at retail stations, but also to nearby factories, truck fleets, drum pumps, etc., in bulk at competitive prices. These dealers, therefore, buy from jobbers regularly.

2. Dealer-owned stations. The control of major companies on this type of station is loose, and the dealers are free to buy part of their supplies from jobbers.

For the company-built stations, however, the opportunity to buy from a jobber is small because of the high monthly sales target set by the companies that dealers have to meet.

(b) Industrial Customers There are certain types of small and medium sized industry that buy HSD from jobbers. These customers usually own truck fleets or machinery that run on HSD.

They prefer to buy from jobbers than from retail stations because jobbers offer lower prices.

(c) Fishing Fleet Fishing boats use a large amount of HSD, and thus are an ideal target of jobbers. Jobber competition in the marine sector has always been strong.

(d) Other Jobbers Jobbers also constantly trade among themselves. However, what they are trading is not the physical volume of HSD, but the paper (or sales "vouchers") issued by oil companies.

When a customer places an HSD order with an oil company he receives a sales voucher stating the amount of purchase (normally 15,000 lts. or one truck load per voucher), at normal wholesale prices. The oil company will load a truck with HSD for whoever presents the voucher at its loading terminal.

This sales voucher is negotiable. A jobber who can meet a sales target and expect a 5 satang per litre rebate at month-end may decide to sell that voucher to another jobber at 2-3 stangs per litre discount off his purchase price. (The price stated on the voucher usually doesn't mean anything). The voucher can change hands again before it is finally redeemed for HSD at the loading terminal.

There are some jobbers who only trade vouchers and actually own no trucks. Each jobber usually has tens of vouchers from various oil companies in hand at any particular time. The trading of vouchers also makes dumping harder to control.

Selling the vouchers is the quickest way for a jobber to raise needed cash. For this reason, jobbers sometimes make the sales even for a meager profit.

Retail Stations

Dealers who do retail sales usually adhere to controlled retail prices, and use other means of competition to attract customers. There are a few reasons why dealers do not want to cut the prices.

Firstly, and perhaps most importantly, cutting the prices will affect dealers' margins on every litre of fuel sold. With the margins already at deficient levels, cutting the prices by even a few satangs a litre would simply mean most dealers may suffer significant losses.

Secondly, price cutting can easily provoke competition from nearby stations.

Thirdly, cutting the price by only a few satangs may not be attractive to drivers, particularly if they have to make the extra effort of coming to the station. A cut of 10 satangs may catch their attention, but it will simply mean huge losses to

dealers.

Incidents of dealers cutting retail prices were very rare. However, in 1982, when world oil prices began to soften, there was public pressure on the government to reduce controlled retail prices. The Oil Traders Association, which represents most dealers in the country, somehow joined the public protest, and persuaded some of their member stations to cut the selling prices of gasoline and diesel by about 5-10 satangs a litre. However, the protest lasted only a few weeks.

The only indirect price competition that has been fairly common, especially in Bangkok, is to provide short credits to commercial fleets. Dealers that we interviewed reluctantly give away credits only to retain the customers who would otherwise be filling at the other stations that also provide credit terms. Note also that most dealers pay cash to oil companies for their own purchases.

Those dealers who do wholesale trade do not cut prices at retail stations despite the extra margins they received from jobbers or oil companies. The reason is that they need these additional margins to compete in the wholesale business where competition is also very strong.

9.3.2 Non-Price Competition

In addition to the various price competitions mentioned above, the oil industry also uses a variety of non-price measures to increase sales volume. Examples of these measures are advertising, giveaways, and services. These sections will explain how oil companies use these tools to promote their sales.

9.3.2.1 Major Oil Companies Non-price competitions among major oil companies are limited to retail and industrial sales only. In the retail business, where most of the efforts will be put, competition can take on the forms of advertising, sales promotions, giveaways, and services. In most oil companies, retail sales have usually received most of the advertising budget because the companies realize that the public perception about oil business is retail stations. However, services appear to be the most effective way of competing in industrial sales among major companies.

(a) Advertising Major oil companies have allocated large sums of their budgets for advertising where each year they have spent tens of million of baht on sales campaigns. Among the most popular media are television, newspapers, magazines, and displays on retail stations. Oil companies will classify their audiences carefully into different groups, and will select the most appropriate advertising media for that particular group. This is done for the purpose of maximizing the "return" on every baht spent on these expensive activities. In general, oil companies' advertising objectives can be classified into three groups.

1. Company Image Oil companies usually have advertisement about the broad objectives and trading principles of their companies. From our observation, each company will select its own theme, and will try to build up the public image of the company along that line. For example, PTT, who is the national oil company, has a theme of nationalism where they emphasize supply commitments as well as public service responsibilities. Esso, on the other hand, tends to stress the efficiency of their human resources and commitment to high product quality standards. Shell appears to be building company image for having high service quality and the availability as well as the reliability of product supplies. Finally, Caltex seems to be paying more attention to product image than trying to develop a company theme.

2. Product Image Oil companies differ as to what products they want to emphasize. Most companies concentrate on lubricants advertising, and try to build a high quality image for their selected grades of lubs. For oil fuels, several companies have tried to develop public recognition of their gasoline quality by using different approaches. Caltex and Shell have been successful in introducing gasoline additives. PTT has based the superiority of their gasoline on the high octane ratings, while Esso has given consumers an assurance of the "purity" of its gasoline.

For other products, only PTT has actively promoted an LPG campaign, while none of the major companies have attempted to differentiate the quality of their HSD.

3. Service Image Service is one of the most important aspects of retail sales, and all companies usually have at least some advertisements in this regard.

For the advertising costs, oil companies usually pay for most, if not all, of the expenses themselves, and retail stations do not have to share the burden even though most of the advertisements are designed specifically for them. However, oil companies expect retail stations to cooperate by "behaving" consistently with the advertising themes. For example, after the launch of a good-service campaign, an oil company would expect their retail stations to provide active forecourt services so the customers could take notice and, hopefully, would come back again for future services. If dealers do not cooperate fully, which they often do not, the whole campaign may be wasted. This is also the reason why service advertisement usually appear to be somewhat exaggerated.

It is nearly impossible for an oil company to control the activities of its dealers. The most effective way is to try to "educate" them to their responsibilities. However, the payback period could be very long, and Esso appears to be the only company that is actively pursuing this objective.

(b) Giveaways This is a tactic used only in retail sales as a substitute for direct price cutting. There are two types of

giveaways. Firstly, the nationwide giveaway campaign which an oil company uses to promote nationwide sales of a certain product. Customers will receive gifts if they buy a minimum amount of that product (usually 300 baht for oil fuels). The gifts can be anything from toys, pencils, drinking glasses, to department store "green stamps". The costs of the giveaways are usually shared between oil companies and dealers with oil companies paying for all advertising expenses.

Secondly, station-owned giveaways are also being used by some dealers to promote the business of their own stations. This tactic is the only visible competition among dealers located along side each other, and is used as a substitute for direct price cutting however, oil companies do not usually share the costs with dealers in this case.

Nonetheless, giveaways do not actually cost dealers that much. The gifts usually have higher perceived values in the eyes of customers than a few satang price cutting, while costing the dealers much less. This is because dealers can buy these gift cheaply at wholesale prices and not all the customers claim the gifts though they meet the minimum purchasing levels.

(c) Services Major oil companies do not provide direct services to retail sales. This is the job of dealers. However, the companies must give direct services to industrial customers which will be discussed in detail in section 9.3.3.

(d) Sales Promotion Oil companies sometimes sponsor events like car racing in an effort to promote the sales of certain products, particularly lubricants. This type of campaign is generally very expensive.

(e) Quality The major oil companies are now competing intensely on the quality of their oil products as mentioned above. They are also encouraging their dealers to improve the quality of services at retail outlets.

9.3.2.2 Independents There are virtually no non-price competitions among independents, at least at the present time, for oil fuels. However, independents do advertise their LPG products that are sold in cylinders. For example, Siam Gas and Picnic Gas have been doing a lot of advertising for their cylinder LPG.

9.3.2.3 Jobbers There are also no non-price competition among jobbers, except in the form of providing reliable and prompt services to regular customers. However, prices are still the deciding factors for customers.

9.3.2.4 Retail Stations Dealers compete by using giveaways as discussed earlier. In addition, they also compete on various other non-price measures such as cleanliness, longer operation hours, flag waving, ..etc. In general, non-price competition tends to be stronger in Bangkok areas than in the up-country.

9.3.3 Competition for Major Industrial Customers Business

The bulk of heavy industrial fuels has been fuel oil. In this market, competition from independents has been small since they have not yet imported fuel oil.

9.3.3.1 Price Competition According to interviews with some larger manufacturing companies, there have been no significant differences in fuel oil prices offered by major oil companies. This is probably because the marketing margins allowed by the government for fuel oil have been low, and hence there is not much "room" for the oil companies to cut the prices (see Table 9.18)

In an attempt to keep fuel oil prices as low as possible, the government had, in effect, exempted fuel oil from paying taxes for several decades (tax rate was 0.001 baht per litre). In April 29, 1986 when world oil prices began to tumble, the government started to impose taxes on fuel oil for the first time. However, the rates imposed were still only fractions of those levied on other oil products. The current tax rate is 0.606 baht for fuel oil 1,500 comparing to 4.44 for premium gasoline and 2.98 for HSD.

Not only taxes have been kept low, marketing margins have been also suppressed. Statistics show that the fuel oil margin was kept at 0.10 baht per litre for nearly six years from mid 1979 to 1984 while inflation continued to rise. The margins were allowed to rise twice during 1984 to the present with the margin now at 0.176 baht per litre for fuel oil 1,500.

It is quite clear that the fuel oil business by itself has not been profitable for major oil companies. According to oil companies, the allowable margins are barely sufficient to cover their costs. Therefore, an attempt to cut the price would simply mean the companies must be operating in the red for fuel oil. It is also unlikely that oil companies can use price cutting as a competitive tool on an extended period of time.

However, another form of price competition that has been used commonly is credit terms. Manufacturing firms usually buy on credit, and settle the debts with oil companies once a month. The terms are practically the same which are 30-45 day with B/E. However, some of the larger firms are exempted from the B/E requirement. These terms are also negotiable.

Oil companies do not provide additional discounts or rebates to manufacturing firms since these incentives are not applicable for this type of industry.

9.3.3.2 Non-Price Competition We have found that prices and credit terms are not the only deciding factors for manufacturing firms to buy oil products. Most of them have used a set of criteria which are generally as follows.

Table 9.18
1988 Fuel Oil Margins

	Unit : Baht per Litre				
	600	1200	1500	2000	2500
Ex-refinery	2.0224	1.9734	1.9578	1.9420	1.9252
Taxes	0.6060	0.6060	0.6060	0.6060	0.6060
Oil Fund	0.4299	0.1653	0.0606	(0.0336)	(0.1268)
Marketing Margin	0.1719	0.1653	0.1756	0.1756	0.1756
Retail Prices	3.23	2.91	2.80	2.69	2.58

Note : () = Subsidies.

Source : PPSC Announcement and Ministry of Commerce.

1. Reliability of Supply This is probably the most important criterion other than the prices. A shortage of fuel supply, even for a short period of time, could mean huge losses for firms in term of disruption of the production process. To most firms, fuel costs savings received by buying cheaply from an independent, without a guaranteed supply are not worth the risk of huge losses due to production stoppage. For this reason, firms prefer to buy only from major suppliers. Furthermore, firms can keep their stock of fuels at the plant to a minimum level if there is no fear of shortages, thus reducing the interest costs for them.

2. Product Specifications Another reason why firms want to buy only from majors is that they can be assured that the quality of products will meet their specifications as required by equipment makers.

3. Services Major oil companies normally do not compete on supply security and product standard because there are no apparent differences among them on these features. However, they compete intensively for the services provided for the firms include installation of oil tanks, dispensers and equipments free of charges or on cost-sharing basis. Oil companies also provide free technical advice on how to use fuel burning equipment properly, or what grades of lubs and greases should be used for particular machinery. Most oil companies also make frequent visits to their customer's plants to make certain that oil supplies are running smoothly.

Some manufacturing firms we talked to have bought oil products from the same company ever since they started their operations. The idea of "diversifying" the sources of supplies has never been seriously considered because they actually feel more secure having a close relationship with an oil company. For this group of firms, competition from outsiders is difficult, especially under the condition that price cutting is not very effective.

However, there are also a number of firms who diversify their sources of oil supply. These firms believe oil companies will provide better services if the companies know they have to compete against each other. Product specifications and supply securities are not really the important factors in diversification decisions.

Oil companies would, therefore, try to hold on to the captive segment of their market while trying to penetrate into competitor's "territory" using various measures of service as tools.

9.3.3.3 Bidding and Contractual Arrangements Most companies we interviewed do not require bidding for oil products. Price and terms are negotiated verbally with the oil companies serving that particular firm. No contracts are signed, and the

shipments will be made upon receiving orders from the firms, usually by telephone calls. When there is a need to change the prices or terms, oil companies will notify the firms for a new round of verbal negotiation. Contacts and biddings are required mostly on purchasing of imported products like coal.

9.4 Reaction to Recent Decline in Oil Prices

During 1986 when world oil prices were falling rapidly, the government adjusted the controlled retail prices in the country downward three times. The price of premium gasoline fell from 11.70 baht per litre at the beginning of the year to 8.9 baht per litre in July, a total reduction of 24%. The government also took the opportunity to narrow down the price gap between gasoline and diesel fuel by allowing HSD prices to fall by only 6% during the same period. The price differential between gasoline and HSD is now 2.6 baht per litre compared with 6 baht per litre in 1982.

9.4.1 Evidence of Price-Cutting in 1986

As mentioned earlier, the ability for an oil company to cut prices depends mainly on margins available to that company, not the level of controlled retail prices. The prices can be changed several times without making any difference to the company in terms of its competitive position, unless the margins are also changed.

If, However, the company has trading gains from imports and decides to use these gains for marketing purposes, then the company can afford to reduce wholesale prices slightly without cutting deeper into the company normal margins. Then the changes in world oil prices may effect competition through the trading gains channel.

Nonetheless, the opportunity for an oil company to make import gains in 1986 appeared to be quite slim because of the switching of notional import prices from posting to spot in February, 1986. According to Table 9.19, average C.I.F. values of import of HSD were consistently higher than notional import price during the period of falling world prices. For example, notional HSD import in September was averaging 2.22 baht per litre, but the average C.I.F. of HSD during that month was 2.5 baht per litre. Therefore, those companies who imported HSD suffered trading losses.

In view of these statistics, price cutting of HSD in the country during 1986, if at all, had to stem from factors other than the fall of world oil prices.

9.4.2 Price Cutting due to Transport and Inventory Lag

When there is a change in controlled retail prices, there is also a possibility for oil companies to make windfall gains due

Table 9.19
1986 CIF Values of HSD

Unit : Baht per Litre

Month	Average CIF Value	Avg. S'pore Spots	Notional Import
January	5.63	-	5.38
February	5.07	3.93	4.45
March	3.40	2.90	4.25
April	3.10	3.01	3.08
May	3.17	2.61	2.71
June	2.81	2.45	2.55
July	2.22	1.86	2.46
August	1.88	1.94	1.87
September	2.52	2.45	2.22
October	2.63	2.51	2.37
November	2.67	2.65	2.46
December	2.82	2.83	2.58

Sources : Oil Companies, National Energy Administration
and NPPS Announces.

to oil stock or oil in transit that were bought at old prices. However, the government has effectively prevented such gain by checking those stocks prior to announcing the price changes.

The checking of stocks is a very tedious matter, requiring a large number of government officials. The checking is done at every retail station in the country, all at about the same time which is normally at around midnight on the day before the price change. All storage facilities and depots are also checked.

Stock checking can be done in Thailand because retail price changes are relatively infrequent. However, if the country were to change to a freely floating price system, stock checking in this fashion will have to be abolished and be replaced by a more practical system. In any event, windfall gains/losses will be a common feature under the unregulated pricing structure.

9.5 Evidence of "Dominant Firm"

In Chapter 4 the market shares of all licensed oil companies in all products were studied. In this section, we will look into this subject more closely to analyze the possibility of an oil company trying to "dominate" the sales in a certain region, or in a particular product line.

9.5.1 Control of Market by Region

We will divide the country into six regions as defined by the Ministry of Commerce, and will try to find out if there is a dominant company in any particular region. These regions are Central, North, Northeast, East, South, and Bangkok. The analysis in this section will be limited to retail sales because it is in this area that there is strong competition among oil companies in all regions. Industrial sales, on the other hand, are limited mainly to Bangkok and the Central area, and basically to fuel oil product.

There are a number of ways to define a dominant firm. A common way is to use relative market share which implies that the larger the company in terms of sales, the stronger that company becomes. However, in our opinion the size alone does not tell us about the competitive strength which is the key to regional dominance. We believe a strong company is the one that has a relative cost advantage over other companies. Such an advantage would enable the company to withstand prolonged competition and still remain profitable.

As mentioned earlier, the costs can be represented by unit fixed cost and unit variable cost. In retail sales, unit fixed costs are composed of the costs of building retail stations and all other distribution facilities, including oil storages. These costs can be lowered if average throughput per retail station can be increased. For the unit variable costs, which are basically the transportation costs of oil products, the company that has widespread oil depots with easy access by bulk transportation modes will have a relative advantage on unit variable costs over the company that has a limited number of such facilities. These two types of costs, when combined, will indicate the relative competitive strength of that particular company against its competitors in retail sales (See Table 9.20).

Unfortunately, the detailed cost structures of oil companies are not available for our study. So we must take an indirect route to approximate relative cost positions in retail sales in each region. The main task here is to identify relative throughput per retail station for each company in each region. The basic source of data for retail sales and number of stations by company by region is from the Department of Commercial Registration. The data that we used were for 1985 where we combined gasoline and HSD retail sales to approximate total retail volume. LPG was excluded from retail sales because we were uncertain about the quality of LPG data on regional sales as well

Table 9.20
Oil Depots by Company

	Shell	Esso	Caltex	PTT	Siam Gas	Siam United	World	Cosmo	Charoen	Hart
Central										
Bangkok	*	*	*	*	*	*				
Samut Prakarn								*	*	*
Samut Songkhram	*									
Nakhon Sawan				*						
Nonthaburi				*						
North										
Lampang	*	*		*						
Denchai		*		*						
Pittsanulok	*		*	*						
Chiangmai			*	*						
Northeast										
Udon Thani		*		*						
Ubon Ratchathani	*	*	*	*						
Khonkaen	*	*	*	*						
Korat	*			*						
East										
Chonburi		*	*	*						
Lhaumchabang		*								
U Tapao				*						
Changchoensao							*			
South										

Chumporn		*	*							
Suratthani	*	*	*	*	*	*				
Songkhla	*	*	*	*						
Phuket	*	*		*						
Nakhonsithammarat			*	*						

Note : Excluding Gas Depot

as the number of LPG filling stations (most of which were not properly registered).

From the above data, we can easily determine the shares of retail sales volume and the number of retail stations by company by region (See Table 9.21, 9.22). (Independents were excluded from the study here since they own relatively insignificant number of retail stations) Then we can proceed to plot graphs as shown in Figure 9.6 to Figure 9.12.

1. Bangkok Area

Figure 9.6 represents 1985 Bangkok retail position among major oil companies. The diagonal line is important since it equates the retail station share of a particular company with its retail market share. The company located on this line is considered a "normal" company whose share of sales volume corresponds exactly with its share of retail station.

From this figure, we can observe that the "ideal" position of a company is in the northwest quadrant where the company owns a relatively small share of stations, yet it is capable of capturing a large share of the market, i.e. the retail stations of that company are highly competitive and probably have relatively smaller unit fixed costs resulting from high average throughput per station.

On the other hand, the worst position is in the southeast corner where the company owns large network of stations, but is only able to capture a relatively small market share of sale volumes. Since the average throughput per station of such a company is low, its retail stations must not be competitive, and should consequently have high unit fixed costs.

This also means that the company that owns the largest retail network in a certain region may not necessary be the strongest company in the region when cost factors are also considered.

From the above criterion, we can see that Esso probably had the strongest retail network in the Bangkok area in 1985. Its position was clearly above the diagonal as well as to the left of Caltex and Shell. Thus Esso was capable of capturing the highest market share in Bangkok using a relatively smaller retail station network. This also implies that Esso stations were the most competitive by having relatively large throughput per station compared to other companies.

Shell and Caltex, on the other hand, had larger shares of retail stations than either Esso or PTT, but their positions were below the diagonal meaning their stations in Bangkok were relatively less competitive. Furthermore, Caltex appeared to be stronger than Shell in Bangkok in retail sales since its position was lying directly to the left of Shell.

Table 9.21
1985 Market Share in Retail Sales
(Gasoline & HSD)

Unit : Percent

	Bangkok	Central	East	North East	North	South	Total
PTT	15	19	24	24	26	31	23
Shell	25	25	34	25	26	18	25
Esso	30	28	24	29	30	22	27
Caltex	26	24	17	18	18	26	22
Independent	4	4	1	4	0	3	3
Total	100	100	100	100	100	100	100

Source : Ministry of Commerce.

Table 9.22
1985 Retail Stations Share

Unit : Percent

	Bangkok	Central	East	North East	North	South	Total
PTT	10	30	25	25	30	31	25
Shell	35	22	25	25	25	23	26
Esso	25	27	25	30	25	23	26
Caltex	30	21	25	20	20	23	23
Total	100	100	100	100	100	100	100

Sources : Estimated from Ministry of Commerce & Oil Companies.

For PTT, its number of retail stations in Bangkok has been small with the network share of only 10% in 1985. However, each PTT station appeared to be doing quite well with throughput per station higher than average. One of the reasons that PTT stations in Bangkok have had high throughput is because of a monopoly on sales to government owned vehicles. Since there are a large number of such vehicles in Bangkok, the throughput of PTT stations have also been accordingly high. On the variable costs advantage, all of the major companies have their main depots built in Bangkok and thus have similar transportation costs to retail stations. However, Esso has to pay for transportation of oil products from its refinery at Sri Racha to Bangkok, while all other major companies do not have such costs (PTT receives products from Bangchak, while Thai Oil delivers products to Shell and Caltex depots in Bangkok free of transportation changes).

It can be concluded that Bangkok area retail sales have been dominated by three large oil companies who have had about the same market share. However, Esso appears to have highest competitive strength in Bangkok even though the company must bear higher transportation costs. It is unlikely that PTT will be able to close the gap with other major companies in term of sales in Bangkok in the near future. The reason is that the investment costs in retail business have been increasingly high due particularly to high cost of land leases. Since PTT normally lets dealers invest in land and buildings, it will be difficult to find investors who want to step into the business which has high costs and low rates of return on investment.

2. Central Area (including Bangkok)

Figure 8.7 shows the relative competitive strength of oil companies in this central area which also covers Bangkok. A significant change from the previous figure is for PTT who now has the largest share of retail stations compared to the other major companies. However, PTT's position in 1985 was clearly below the diagonal implying that PTT stations had relatively small average throughput, i.e. less competitive than the others.

On the other hand, Caltex, Shell and Esso were just "normal" companies since their positions were just above the diagonal. From the figure, Esso took the lead in the Central region in terms of market share simply by having a larger retail network than Shell and Caltex. However, Esso did not have clear relative competitive strength as was in the case of Bangkok. Esso also had less depots in the Central area than Shell or PTT. (See Table 9.20).

Shell and Caltex positions were about the same in the Central region with market shares of about 25% each in 1985. However, Shell did have some competitive edge over Caltex since Shell had a larger number of depots in the area.

However, judging from figure 9.7, no single company had a

dominant position in the Central area even though it was the area on which all companies had focused their sales efforts most intensely. Table 9.23 shows that about half of each of oil company retail sales have been in the Central area. We expect the oil companies to continue to compete strongly to protect their market shares in this important region.

3. East

Figure 9.8 shows the relative positions of oil companies in the Eastern region. According to the statistics, all major companies had about the same shares of retail stations in 1985. However, their market shares were quite different. Shell appeared to have the dominant position in the region with a market share of about 35%, followed by Esso and PTT, and Caltex.

In terms of relative competitive strength, Shell stations were certainly the most competitive with average throughput per station significantly higher than the others. PTT and Esso were normal companies in term of retail competitiveness, and Caltex was the least competitive company. Caltex was also the only company that owned no depot in the region.

However, the East is the smallest region in the country having only four provinces with sales volume of 8% of total country retail sales. This means that the relative positions of oil companies as shown in Figure 9.8 can be changed more easily than in the larger regions.

4. Northeast

According to Figure 9.9, retail stations in Northeast region appeared to be equally competitive among the major companies. Their 1985 positions were scattered around the diagonal with no apparent difference in competitive strength. Esso had the largest market share by having the largest retail network which was about 30% of the total. Shell and PTT followed somewhat behind Esso with 25% each. The remaining share was captured by Caltex.

In terms of variable transport cost, Shell should have an advantage over the other companies since Shell has five oil depots in the region. (See Table 9.20). The other company that has a relatively large number of depots is PTT which has four facilities in the Northeast. The depots can help to reduce transport costs quite significantly because the Northeast is a very large region covering a land area of about 33% of the country. A company with a small number of depots, like Caltex, must transport oil by trucks to retail stations over relatively longer distances than Shell, and hence would have significantly higher variable transport costs.

5. North

As shown by Figure 9.10, Esso and Shell retail stations were more competitive than those of PTT and Caltex. Esso stations took

Table 9.23
1985 Retail Sales Concentration by Region by Company
(Gasoline & HSD)

Unit : Percent

	Bangkok	Central	East	North East	North	South	Total
PTT	18	41	8	16	14	21	100
Shell	28	49	12	15	13	12	100
Esso	31	51	7	16	13	12	100
Caltex	33	53	6	13	10	18	100
Independent	42	61	2	19	0	18	100
Total	28	49	8	15	12	16	100

Source : Ministry of Commerce.

the lead in term of throughput per station in 1985. PTT, on the other hand , had the largest number of retail stations in the area with the station share of about 30%. PTT also had the largest number of oil depots in the North. these depots should enable PTT to have a comparative distribution cost advantage since the Northern terrain its mountainous, making it expensive to transport oil by trucks to service stations. Therefore, the larger the number of depots. the lower the travelling distances of oil trucks, and hence, the lower the transport costs.

Judging from the existing facilities, PTT should be able to take the lead in the region. However, PTT must first try to increase the competitiveness of its retail stations, by taking advantage of its existing assets as mentioned above.

Caltex, on the other hand, will probably remain small compared to other major companies. They only have two depots in the area, and they would probably build retail stations only within serving distance of these two depots.

6. South

The South is also another interesting area where the oil distribution characteristics are unique from other regions. Firstly, all of the depots in the South are marine depots, served by barges directly from refineries. Therefore, the distribution costs to depots are relatively lower in the South than in other up-country regions. Secondly, Phuket depots on the western coast of the Southern peninsula also receive products directly from Singapore refineries (mainly HSD) which enable companies who own depots there to obtain trading gains from import as well as transportation gains*.

However, Shell and Esso, who own the largest numbers of depots in the South, including ones in Phuket, did not seem to be able to capitalize on their advantages. Their station shares were not large, and the average throughput per station were below diagonal. Furthermore, their retail sales concentrations (12% each) were lower than the regional requirement (16% of total country) - see Table 9.23.

On the other hand, PTT has seen an opportunity in the area and has been investing significantly to take the lead in terms of station share as well as market share. This is also the area which PTT has had its highest retail sales concentration (21% of its total sales) next to the Central area.

Caltex has also focused its sales effort in the south by having four depots built in the area, compared to one or two in other regions. Caltex retail stations have also been more competitive than those of any other major companies.

* Freight charges from Singapore-Phuket = 22-25 satang/lt
transportation allowed by the government from Bangkok-Phuket = 37 satang/lt.

So it is quite clear that the level of competition in the South will be very strong in the future, especially if Shell and Esso begin to put higher sales effort in the region in order to try to take the lead in the area. However, Shell and Esso will have to face resistance from Caltex and PTT who have also been well equipped to contend with competition.

7. Total Country

When we look at the overall picture of retail sales, as shown in figure 9.12, all companies look quite similar in terms of their competitiveness. Esso has taken a slight lead, followed by Shell. PTT and Caltex have been less strong, but the differences have not been significant. All companies have been more or less scattered around the diagonal - meaning they have been competitive relative to each other, with higher market shares coming as a result of having more retail stations.

This well-balanced competitive structure is important since it ensures that no single company can take an overall dominant position in retail sales. It is expected that each company will continue to try to put more effort in areas where it has relative competitive strength, and will try to maintain its position in areas where it has been less strong. However, all companies are expected to continue to compete strongly in the Central region where retail consumption will continue to be high.

As for the role of independent oil companies in retail sales, currently their participation has been very limited. Northeastern oil once had a few stations in the Korat area, while Mobil owns a small network in the South. These stations mainly sell HSD and lubricants since they have no reliable sources of gasoline supply. Most of the business of independents, therefore, has been restricted to the sales through jobbers, fisheries, and some direct customers.

We think that the role of independents should be increased in direct retail sales in order to enhance the level of competition. The role of independents will be very significant if retail prices were decontrolled since their existence will increase the level of competition. However, the question is where can they get the supplies for the products they will want to trade?

9.5.2 Control of Markets by Product Line

In this section we will analyze sales volume of oil companies to see if they tend to focus their efforts on any particular oil product, or try to compete in the broader range of oil fuels.

1. Gasoline Gasoline is probably the most basic product of an oil company, at least in the eyes of consumers. This is because people often associate an oil company with the business of running retail stations selling gasoline and some "other" oil

Figure 9.6

Relative Competitive Strength in Retail Sales

Bangkok

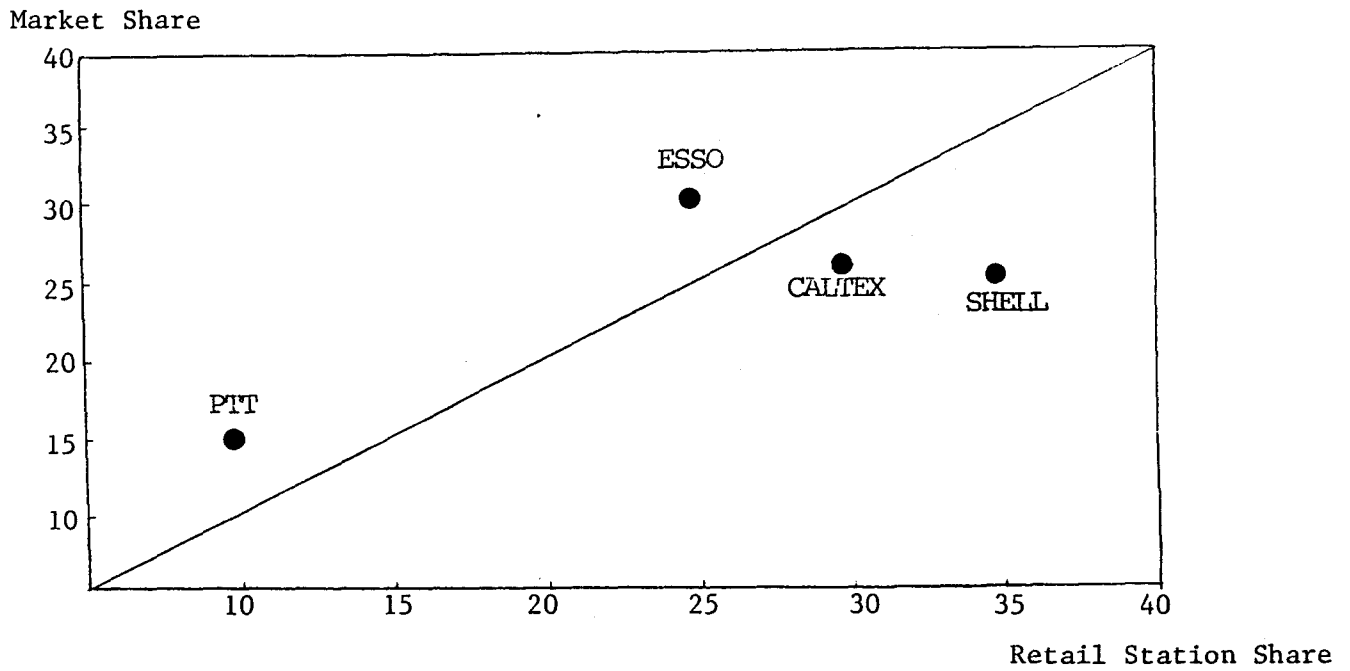


Figure 9.7

Relative Competitive Strength in Retail Sales

Central

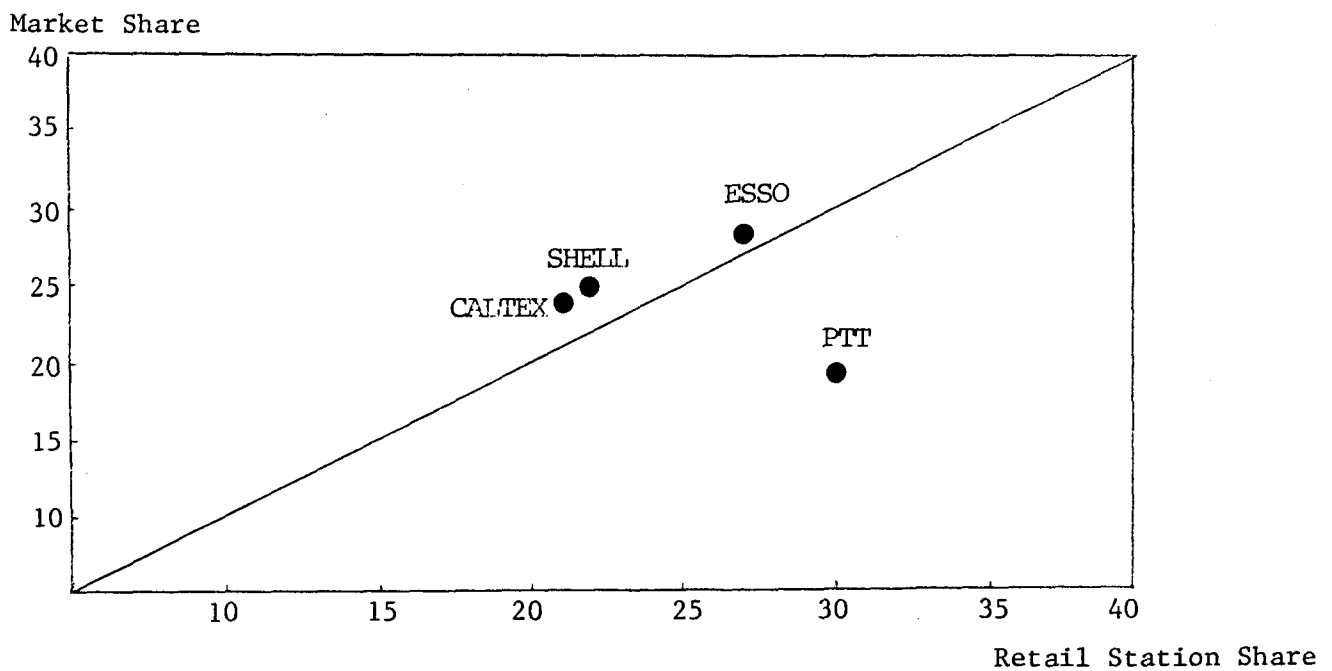


Figure 9.8

Relative Competitive Strength in Retail Sales

East

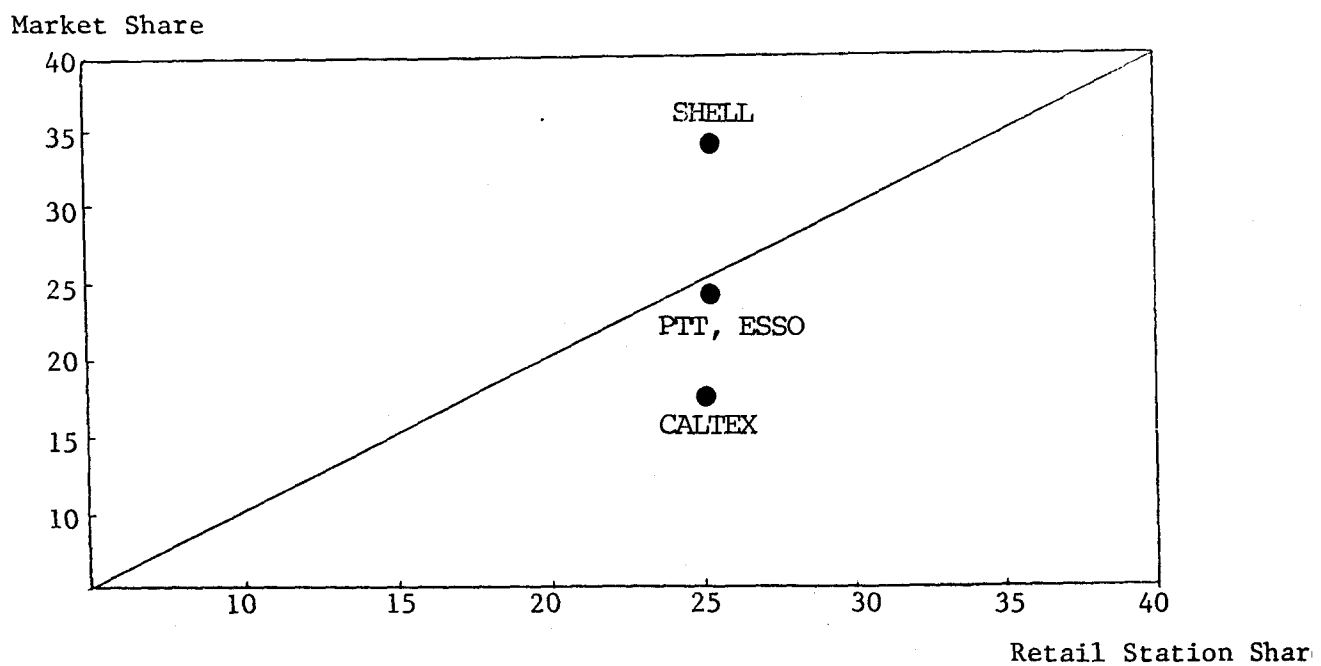


Figure 9.9

Relative Competitive Strength in Retail Sales

Northeast

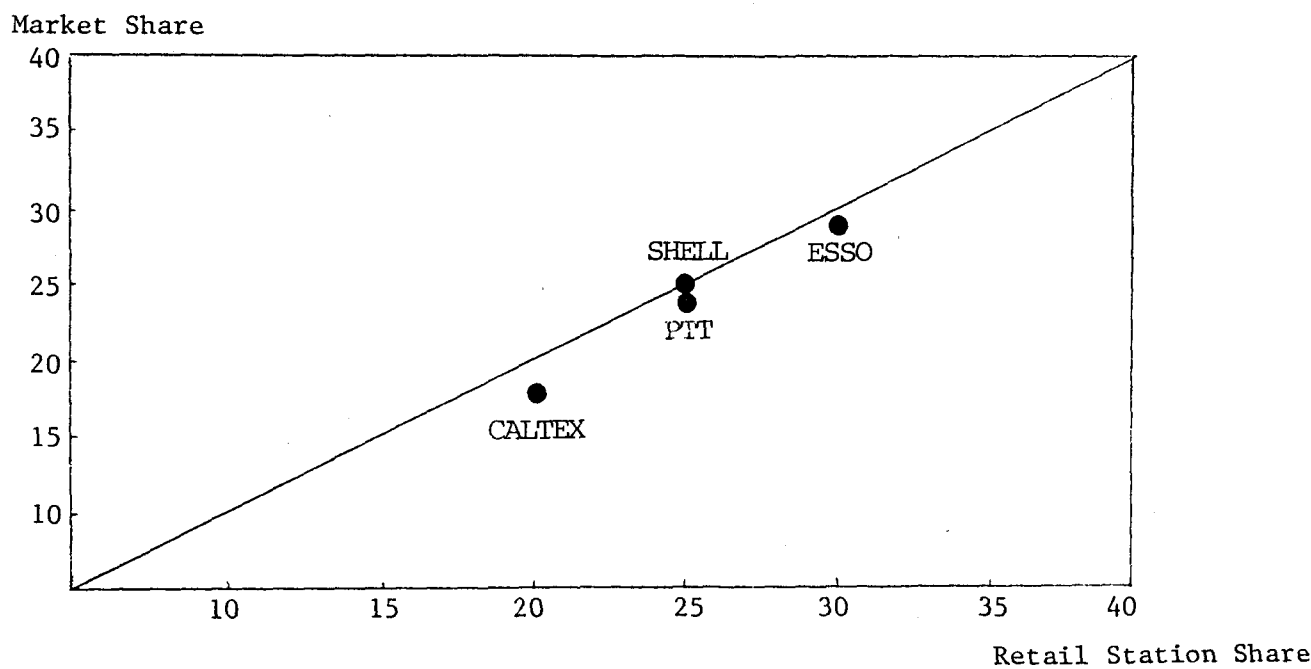


Figure 9.10

Relative Competitive Strength in Retail Sales

North

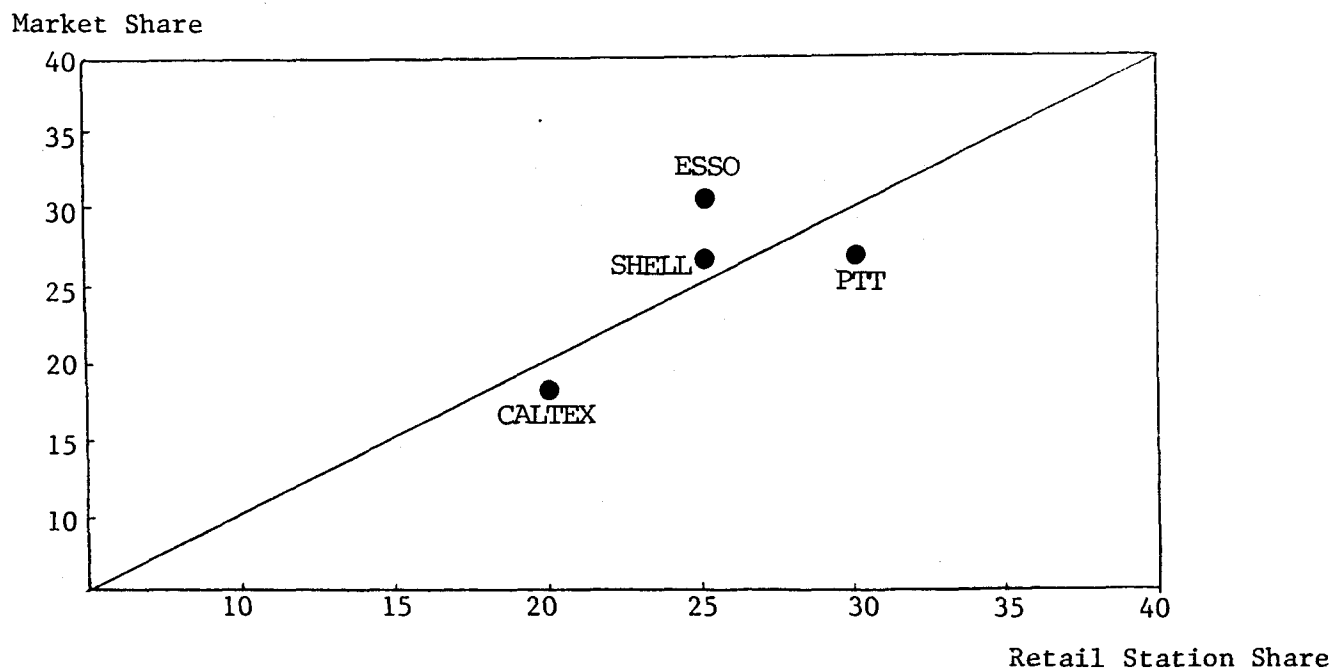


Figure 9.11

Relative Competitive Strength in Retail Sales

South

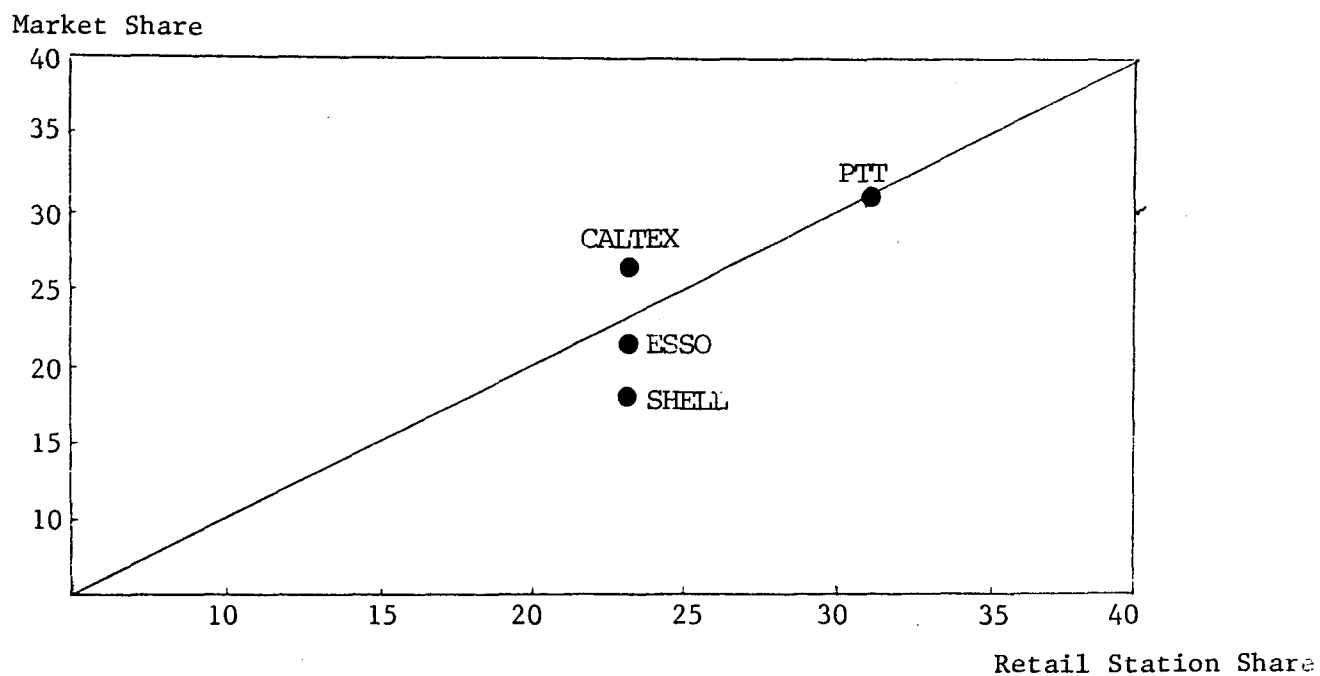
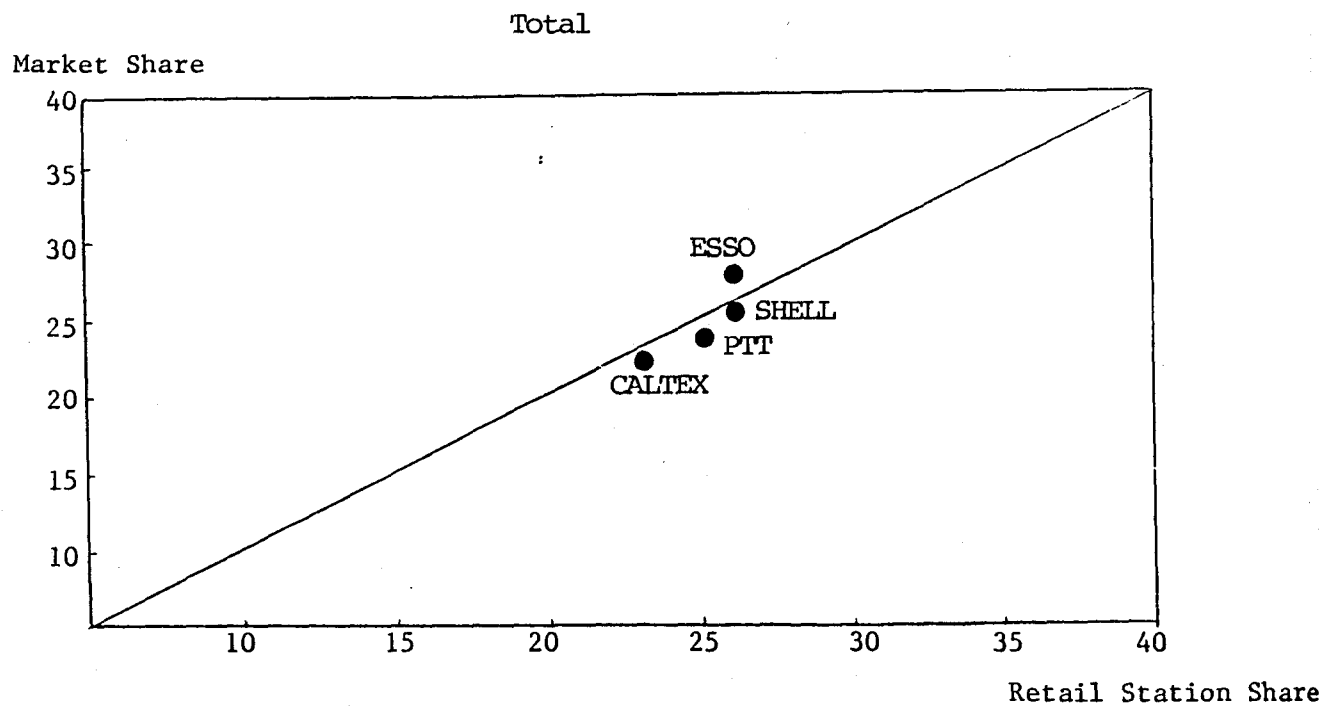


Figure 9.12

Relative Competitive Strength in Retail Sales



products.

In reality, gasoline is the core business of all major oil companies even though it may not be the most profitable product. One of the reasons that oil companies are competing strongly in gasoline market is because the sales of products with higher margins, like lubricants, depend directly on the volume of vehicle traffic to retail stations. In other words, if a car stops by for gasoline, its owner often has the car checked for lubes. He may also ask for car wash or other services that can bring in additional profit to the station.

Furthermore, gasoline itself also has relatively high margin comparing to other high volume fuels like HSD, and there are lower jobber sales.

For these reasons, we expect all major companies to compete strongly in this market which also means it is unlikely that any single company can have dominant control in gasoline sales.

Statistics in Table 9.24 show that in the Central area, where more than half of gasoline is sold, Shell and Esso are the two leading companies in term of sales with market share of about 28-30% each. Caltex is the next largest with market shares of about 21-23% followed by PTT whose share is less than 20%. Independents do not sell gasoline in the Central or any other regions except the South.

Relative gasoline market shares also correspond roughly with relative station shares among these companies. That is PTT, which has the smallest sized network in the Central area also has the smallest share of the market of gasoline.

Up-country, Shell and Esso are also the two leading companies in most regions. In the North, the shares of these two companies are about 27-28%. PTT, on the other hand, has been gaining market share quite significantly from 27.7% in 1984 to 29.5% in mid 1986. So these three companies are taking about a third of the market each, while Caltex is following far behind.

In the South, the relative positions are similar to those in the North with PTT taking 31% share of the market follow by Esso (27%) and Shell (21%). Shell appears to be weak in the South in comparison to their activities in other regions.

The South is also the only region that offers competition from a smaller trader Mobil. The company owns 8 retail stations in the South and receives its supply of gasoline from undisclosed domestic sources.

In the East, Shell has taken a strong lead in market share (38-40%) with more than 10% over its next rival Esso (26%). Moreover, they have out-sold other competitors using a relatively smaller retail network (see previous section). Therefore, Shell has the most competitive strength in the region, but it is still

Table 9.24

Sales Volume, Regional Market Share, by Company

Gasoline

Unit : Million Litres

Central												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	343.05	56.66	27.67	344.67	56.31	28.39	413.91	60.75	30.85	236.57	61.38	31.23
Shell	399.73	59.29	32.25	350.43	57.30	28.87	389.45	58.46	29.03	210.75	57.94	27.82
Caltex	279.21	61.74	22.52	286.90	61.53	23.64	281.32	62.88	20.97	165.21	61.28	21.81
PTT	217.60	46.10	17.55	231.86	46.54	19.10	257.01	47.12	19.16	144.95	46.88	19.14
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1,239.59	56.23	100.00	1,213.87	55.37	100.00	1,341.69	57.23	100.00	757.48	56.99	100.00
North												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	83.29	13.76	29.02	77.97	12.74	27.42	76.24	11.19	26.46	41.51	10.77	25.78
Shell	78.33	11.62	27.29	76.92	12.58	27.06	80.13	12.03	27.81	40.58	11.16	25.20
Caltex	45.81	10.13	15.96	47.10	10.10	16.57	43.11	9.64	14.96	25.83	9.58	16.05
PTT	79.62	16.87	27.74	82.31	16.52	28.95	88.69	16.26	30.78	53.07	17.17	32.96
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	287.05	13.02	100.00	284.30	12.97	100.00	288.17	12.29	100.00	160.99	12.11	100.00
South												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	72.34	11.95	27.55	79.22	12.94	27.86	73.05	10.72	25.02	43.17	11.20	25.52
Shell	57.37	8.51	21.85	56.39	9.22	19.83	64.91	9.74	22.23	38.65	10.63	22.85
Caltex	55.22	12.21	21.03	60.23	12.92	21.18	55.68	12.45	19.07	33.52	12.43	19.82
PTT	76.97	16.31	29.31	84.40	16.94	29.68	94.33	17.29	32.31	52.47	16.97	31.02
Others	0.68	100.00	0.26	4.12	99.85	1.45	4.01	100.00	1.37	1.32	100.00	0.78
Total	262.59	11.91	100.00	284.36	12.97	100.00	291.99	12.46	100.00	169.12	12.72	100.00

Note : * For January to June.

Sources : Ministry of Commerce and National Economic and Social Development Board.

Table 9.24 (Contd.)

Sales Volume, Regional Market Share, by Company

Gasoline

Unit : Million Litres

East												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	33.78	5.58	24.04	32.42	5.30	23.36	43.17	6.34	27.74	20.19	5.24	23.75
Shell	56.91	8.44	40.51	53.61	8.76	38.62	58.65	8.80	37.69	33.53	9.22	39.44
Caltex	26.95	5.96	19.18	25.48	5.46	18.36	23.74	5.31	15.25	14.40	5.34	16.93
PTT	22.84	4.84	16.26	27.29	5.48	19.66	30.06	5.51	19.31	16.90	5.47	19.88
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	140.47	6.37	100.00	138.79	6.33	100.00	155.62	6.64	100.00	85.02	6.40	100.00
Northeast												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	73.02	12.06	26.57	77.84	12.72	28.72	74.92	11.00	28.07	43.95	11.40	28.07
Shell	81.86	12.14	29.78	74.25	12.14	27.40	73.02	10.96	27.36	40.22	11.06	25.68
Caltex	45.03	9.96	16.38	46.59	9.99	17.19	43.56	9.74	16.32	30.63	11.36	19.56
PTT	74.96	15.88	27.27	72.33	14.52	26.69	75.38	13.82	28.25	41.79	13.52	26.68
Others	0.00	0.00	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	274.86	12.47	100.00	271.01	12.36	100.00	266.88	11.38	100.00	156.59	11.78	100.00
Total												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	605.48	100.00	27.47	612.10	100.00	27.92	681.29	100.00	29.06	385.40	100.00	28.99
Shell	674.20	100.00	30.58	611.60	100.00	27.90	666.16	100.00	28.42	363.72	100.00	27.36
Caltex	452.22	100.00	20.51	466.29	100.00	21.27	447.42	100.00	19.08	269.59	100.00	20.28
PTT	471.97	100.00	21.41	498.18	100.00	22.72	545.47	100.00	23.27	309.18	100.00	23.26
Others	0.68	100.00	0.03	4.13	100.00	0.19	4.01	100.00	0.17	1.32	100.00	0.10
Total	2,204.56	100.00	100.00	2,192.31	100.00	100.00	2,344.35	100.00	100.00	1,329.20	100.00	100.00

Note : * For January to June.

Sources : Ministry of Commerce and National Economic and Social Development Board.

far from dominating the area in gasoline sales.

Finally, the Northeast region appears normal with Shell, Esso and PTT sharing nearly a third of the market each. The rest of the market is for Caltex with no independents sales.

2. High Speed Diesel HSD has been the highest volume fuel sold in Thailand, and competition for the sales of this product has also been the strongest (see previous section). Statistics in Table 9.25 show that Shell, Esso and PTT are again the leaders in this market with overall market shares ranging from 24-27% in mid 1986.

Independents have also found this market challenging and they have successfully gained a market share that grew from a mere 0.5% in 1984 to 7.4% in 1986. The rising shares of independents have come at the expense of all major companies, except Esso. Esso's market share grew from 26.2% in 1984 to 26.9% in 1985, and to 27.1% in mid 1986.

In contrast, Shell's market share dropped from 26% in 1984 to 23.9% in 1986, while PTT's shares also fell from 27.3% to 24.9% during the same period.

We do not know what tactics Esso has used to gain market shares, but we do know that Esso had anticipated higher output, especially of HSD, resulting from their refinery expansion in 1985. Therefore, Esso had to be under pressure to expand their market to absorb addition refinery throughput. The marketing strategies they used have successfully gained higher market shares for them in HSD as well as in gasoline.

Esso's target for market growth appears to be in the Central region, where their market share rose from 22.7% in 1984 to 25.2% in mid-1986. Furthermore, Esso now sell 47% of their HSD in the Central region compared to 41% in 1984.

The other companies that have interest in the Central area have been the independents. These companies used to sell 56% of their HSD in the area in 1984. They are now selling 83% of their product there. As a result, their market shares are now 12% compared to 0.5% two years ago.

Caltex and PTT have sold about half of their HSD in the Central region without signs of a significant shift in area focus. Shell, on the other hand, has perhaps seen opportunities in other areas, and thus gradually decreased their 1984 sales of HSD from 47% in the Central region to 44.7% in 1986. Consequently, their market share dropped from 26% to 21% during that period.

In the North, Esso has taken the lead, followed by Shell, PTT, and Caltex. No one has a dominant position, and PTT appears to be lessening interest in the area.

Table 9.25

Sales Volume, Regional Market Share, by Company

High Speed Diesel

Unit : Million Litres

Central												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	503.22	40.91	22.70	658.09	44.86	25.08	673.44	46.11	23.07	402.62	49.14	23.02
Shell	574.51	47.05	25.92	604.24	45.39	23.03	590.92	44.56	20.24	343.12	45.15	19.62
Caltex	457.06	48.57	20.62	515.41	49.97	19.64	458.82	47.76	15.72	285.62	48.32	16.33
PTT	669.11	52.29	30.19	725.12	51.19	27.64	714.86	51.19	24.49	443.06	55.49	25.33
Others	12.50	55.77	0.56	120.98	58.82	4.61	481.21	80.14	16.48	274.60	76.98	15.70
Total	2,216.40	47.22	100.00	2,623.84	48.13	100.00	2,919.25	50.82	100.00	1,749.02	52.59	100.00
North												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	169.03	13.74	31.18	175.74	11.98	29.46	173.90	11.91	29.52	92.00	11.23	28.01
Shell	144.44	11.83	26.64	170.79	12.83	28.63	159.96	12.06	27.15	84.68	11.14	25.79
Caltex	82.64	8.78	15.24	99.01	9.60	16.59	95.56	9.95	16.22	61.02	10.32	18.58
PTT	146.07	11.41	26.94	151.04	10.66	25.32	144.86	10.37	24.59	80.77	10.12	24.59
Others	0.02	0.07	0.00	0.05	0.02	0.01	14.85	2.47	2.52	9.94	2.79	3.03
Total	542.19	11.55	100.00	596.63	10.94	100.00	589.13	10.26	100.00	328.40	9.88	100.00
South												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	232.19	18.88	27.88	269.05	18.34	27.83	243.37	16.66	25.81	135.64	16.56	25.29
Shell	154.13	12.62	18.51	187.94	14.12	19.44	183.86	13.86	19.50	132.97	17.50	24.79
Caltex	217.37	23.10	26.10	208.43	20.21	21.56	202.40	21.07	21.46	111.59	18.88	20.80
PTT	223.90	17.50	26.88	258.68	18.26	26.76	254.14	18.20	26.95	130.82	16.38	24.39
Others	5.25	23.43	0.63	42.69	20.76	4.42	59.17	9.85	6.28	25.41	7.12	4.74
Total	832.85	17.74	100.00	966.78	17.73	100.00	942.93	16.42	100.00	536.43	16.13	100.00

Note : * For January to June.

Sources : Ministry of Commerce and National Economic and Social Development Board.

Table 9.25 (Contd.)

Sales Volume, Regional Market Share, by Company

High Speed Diesel

Unit : Million Litres

	East											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	120.36	9.78	29.64	126.94	8.65	27.44	150.53	10.31	28.81	70.80	8.64	24.23
Shell	139.88	11.46	34.45	156.14	11.73	33.75	169.93	12.81	32.53	91.84	12.09	31.43
Caltex	65.36	6.95	16.10	69.47	6.73	15.02	70.19	7.31	13.44	43.41	7.34	14.85
PTT	80.43	6.28	19.81	105.80	7.47	22.87	95.75	6.86	18.33	45.87	5.74	15.69
Others	0.00	0.00	0.00	4.31	2.09	0.93	36.04	6.00	6.90	40.34	11.31	13.80
Total	406.02	8.65	100.00	462.66	8.49	100.00	522.43	9.10	100.00	292.26	8.79	100.00
	Northeast											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	205.22	16.68	29.46	237.21	16.17	29.57	219.21	15.01	28.45	118.22	14.43	28.19
Shell	207.98	17.03	29.86	212.21	15.94	26.46	221.49	16.70	28.75	107.32	14.12	25.59
Caltex	118.53	12.60	17.02	139.19	13.49	17.35	133.67	13.91	17.35	89.46	15.13	21.33
PTT	160.23	12.52	23.00	175.88	12.42	21.93	186.81	13.38	24.25	97.93	12.27	23.35
Others	4.65	20.73	0.67	37.65	18.31	4.69	9.21	1.53	1.20	6.44	1.81	1.54
Total	696.61	14.84	100.00	802.15	14.71	100.00	770.40	13.41	100.00	419.36	12.61	100.00
	Total											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	1,230.02	100.00	26.20	1,467.03	100.00	26.91	1,460.45	100.00	25.43	819.27	100.00	24.64
Shell	1,220.94	100.00	26.01	1,331.32	100.00	24.42	1,326.16	100.00	23.09	759.93	100.00	22.85
Caltex	940.96	100.00	20.05	1,031.51	100.00	18.92	960.64	100.00	16.72	591.10	100.00	17.77
PTT	1,279.73	100.00	27.26	1,416.52	100.00	25.98	1,396.41	100.00	24.31	798.44	100.00	24.01
Others	22.42	100.00	0.48	205.68	100.00	3.77	600.48	100.00	10.45	356.72	100.00	10.73
Total	4,694.07	100.00	100.00	5,452.07	100.00	100.00	5,744.14	100.00	100.00	3,325.46	100.00	100.00

Note : * For January to June.

Sources : Ministry of Commerce and National Economic and Social Development Board.

In the South, Esso and PTT have equally large market shares of 27-28%, follow by Caltex and Shell. Competition from independents has been quite strong in the South where their market shares have increased from 0.6% in 1984 to 4.5% in 1986.

In the East, Shell has taken a strong lead in HSD with a market share of 34% compared to 28% for Esso. This is also the area where Shell has an interest since their own share of HSD in the East has shown signs of steady increase. However, Shell is still not dominating the market.

Finally, Esso and Shell have the largest shares in the Northeast with nearly a third of total area sales by each of them. PTT's share has not been far behind (23-24%), followed by Caltex (16%). The competition from from independents has been declining significantly in the area.

3. LPG LPG is a fuel product in which independents have actively been involved. In fact, the combined market share of independents has been higher than any of the major oil companies (see Table 9.26). Their focus has been in the Central region where they have sold 80% of their product.

However, the Central region is also an area of concentration for all major oil companies. Shell and Esso have sold more than 80% of their LPG there, while PTT and Caltex have also sold 60-70% of their product there. Shell has maintained a market share lead in 1987 on an individual company basis with 22% of the share followed by Independents (36.7%), PTT (14.3%), Esso (14.1%) and Caltex (12.9%). Nonetheless none of these companies has had a dominant position in terms of sales volume.

Major oil companies and independents are competing on different markets. Independents have concentrated on the automotive segment where they have a large number of retail outlets. These outlets only sell LPG, and most of them do not have proper licenses. They also try to penetrate into the cooking, LPG market by introducing their own brands. On the other hand, major companies have sold mainly in cooking and industrial segments, with some small volume sold in the automotive network. The reason is that these major companies do not operate automotive stations without proper licenses, and these licenses are difficult to obtain.

In the North, independents' market shares have also been high (50%) while each of major companies has occupied a 20% or less share of the market. No one has a dominant position in the region.

In the South, Caltex has been gaining market share significantly, and is now holding a 31% share of the market. Independents' shares have been relatively small, and no one, again, has a dominant position here.

Table 9.26

Sales Volume, Regional Market Share, by Company

LPG (LT)**

Unit : Million Litres

Central												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	110.80	80.54	13.99	124.03	82.24	14.49	360.01	90.18	47.33	34.86	83.05	14.10
Shell	187.65	80.66	23.70	203.27	79.89	23.74	104.46	81.74	13.73	54.30	83.15	21.97
Caltex	56.86	75.17	7.18	109.64	75.27	12.81	61.69	74.54	8.11	31.89	71.43	12.90
PTT	105.85	79.59	13.37	93.09	70.87	10.87	58.24	62.50	7.66	35.37	62.50	14.31
Others	330.63	81.17	41.76	326.03	77.41	38.08	176.32	76.92	23.18	90.75	70.80	36.72
Total	791.79	80.29	100.00	856.06	77.58	100.00	760.71	81.61	100.00	247.16	73.41	100.00
North												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	5.20	3.78	13.82	5.64	3.74	10.51	4.21	1.05	13.19	1.47	3.50	8.08
Shell	6.02	2.59	16.00	8.44	3.32	15.73	3.49	2.73	10.94	1.69	2.59	9.31
Caltex	0.79	1.04	2.09	4.63	3.18	8.64	1.03	1.24	3.21	0.99	2.22	5.44
PTT	8.23	6.19	21.89	8.88	6.76	16.55	7.92	8.50	24.80	5.78	10.22	31.80
Others	17.37	4.26	46.19	26.05	6.18	48.57	15.29	6.67	47.86	8.25	6.44	45.37
Total	37.61	3.81	100.00	53.63	4.86	100.00	31.94	3.43	100.00	18.19	5.40	100.00
South												
1984			1985			1986			* 1987			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	7.16	5.21	15.41	6.85	4.54	11.65	6.82	1.71	17.09	1.92	4.58	9.40
Shell	13.68	5.88	29.43	13.69	5.38	23.28	6.74	5.27	16.90	3.64	5.57	17.79
Caltex	11.52	15.23	24.79	17.63	12.10	29.98	9.89	11.95	24.80	5.75	12.88	28.12
PTT	4.31	3.24	9.26	7.02	5.35	11.95	6.72	7.21	16.84	3.51	6.20	17.15
Others	9.81	2.41	21.10	13.60	3.23	23.14	9.72	4.24	24.37	5.63	4.39	27.54
Total	46.48	4.71	100.00	58.78	5.33	100.00	39.88	4.28	100.00	20.45	6.07	100.00

Note : * For January to June.

** LPG 1 Kg. = 1.8 Litres

Source : Ministry of Commerce and National Economic and Social Development Board.

Table 9.26 (Contd.)

Sales Volume, Regional Market Share, by Company

LPG (LT)**

Unit : Million Litres

	East											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	7.91	5.75	11.72	7.61	5.04	10.33	17.62	4.41	31.43	2.04	4.85	9.25
Shell	16.23	6.97	24.06	19.83	7.79	26.93	8.60	6.73	15.34	3.57	5.47	16.23
Caltex	5.64	7.46	8.37	6.43	4.41	8.73	2.82	3.41	5.04	2.47	5.52	11.20
PTT	8.46	6.36	12.54	11.66	8.87	15.83	9.98	10.71	17.80	4.93	8.71	22.40
Others	29.21	7.17	43.31	28.11	6.68	38.18	17.03	7.43	30.38	9.01	7.03	40.91
Total	67.44	6.84	100.00	73.63	6.67	100.00	56.06	6.01	100.00	22.01	6.54	100.00
	Northeast											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	6.50	4.72	15.15	6.70	4.44	10.91	10.53	2.64	24.18	1.69	4.02	5.85
Shell	9.09	3.91	21.19	9.23	3.63	15.04	4.50	3.52	10.32	2.10	3.21	7.27
Caltex	0.83	1.10	1.93	7.34	5.04	11.97	7.33	8.86	16.83	3.55	7.95	12.29
PTT	6.15	4.63	14.35	10.71	8.16	17.46	10.34	11.09	23.73	7.00	12.37	24.24
Others	20.31	4.99	47.37	27.37	6.50	44.62	10.86	4.74	24.94	14.54	11.34	50.36
Total	42.88	4.35	100.00	61.35	5.56	100.00	43.56	4.67	100.00	28.88	8.58	100.00
	Total											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	137.57	100.00	13.95	150.82	100.00	13.67	399.19	100.00	42.82	41.97	100.00	12.47
Shell	232.56	100.00	23.59	254.44	100.00	23.06	127.79	100.00	13.71	65.30	100.00	19.40
Caltex	75.64	100.00	7.67	145.67	100.00	13.20	82.76	100.00	8.88	44.64	100.00	13.26
PTT	132.99	100.00	13.49	131.35	100.00	11.90	93.20	100.00	10.00	56.59	100.00	16.81
Others	407.34	100.00	41.30	421.16	100.00	38.17	229.22	100.00	24.59	128.18	100.00	38.07
Total	986.20	100.00	100.00	1,103.45	100.00	100.00	932.15	100.00	100.00	336.68	100.00	100.00

Note : * For January to June.

** LPG 1 Kg. = 1.8 Litres

Source : Ministry of Commerce and National Economic and Social Development Board.

In the East, Shell and PTT are the two leading major oil companies each with over 20% of the market. Esso has shown no particular interest in the area despite their advantage in transportation costs. Independent shares have been around 40%.

In the Northeast, Caltex has also gained in market shares quite significantly. Their share rose from 2% in 1984 to 22% in 1986. PTT has also been active in the area with a share of 14% and 25% in 1984 and 1986, respectively. Shell and Esso shares have been dropping significantly during the period, which is also true for independents.

4. Kerosene Ever since the government action against adulteration of HSD in 1984, sales of kerosene have been dropping, and are now stabilizing around 150-160 MMLT per year. Shell is the leader in this market in terms of sales with a 36% market share, followed by Esso (29%) and Caltex (21%). PTT's share is small (11%), and there have also been some kerosene sales by independents in the South. (See Table 9.27).

It is difficult to know with certainty the breakdown of kerosene consumption into various uses. In our opinion, most of the kerosene usages now must be for industrial plants, like paint and solvent factories. This is indicated by concentration of sales of kerosene now in the Central area where electricity has become available in most villages. The availability of electricity has drastically reduced kerosene consumption for lighting which was its main use in the past.

In 1984, Esso supplied nearly half of the area consumption. Esso's share, however, has plummeted from 47% to 27% in 1986. Shell, on the other hand, has gained significantly, and is now leader in the Central area with over 40% market share. Shell is also the leader in the North (48%), follow by Esso (21%) Caltex (19%), and PTT (12%). Total consumption in the North is less than 10% of nationwide consumption.

The South is an area where Shell has shown no interest while Caltex and Esso have been the leaders with market shares of over 30% each. PTT shares have been slightly over 10% in the South as well as in other regions.

In the East, Shell and Esso together control over 70% of the market. They have over 35% each in market shares while Caltex and PTT sales have been small.

In the Northeast, where kerosene is still mainly being used for lighting, the relative market share positions are identical to those in the East where Shell and Esso are taking the lead with an over 35% share each. There have been no independent sales in the region.

Table 9.27

Sales Volume, Regional Market Share, by Company

Kerosene

Unit : Million Litres

	Central											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	106.44	79.38	47.40	32.32	62.12	31.82	24.86	56.61	27.36	7.99	49.28	23.07
Shell	62.52	72.34	27.84	40.18	65.97	39.55	38.77	70.51	42.68	13.94	58.94	40.24
Caltex	40.23	72.47	17.91	18.68	57.78	18.39	18.41	57.17	20.27	8.65	56.36	24.98
PTT	15.39	51.56	6.85	10.40	54.25	10.24	8.81	54.28	9.69	4.06	57.45	11.72
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	224.58	72.87	100.00	101.58	60.46	100.00	90.85	60.12	100.00	34.64	54.27	100.00
	North											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	5.70	4.25	33.67	2.43	4.68	17.10	2.82	6.41	22.68	1.46	9.02	25.29
Shell	6.80	7.87	40.20	7.28	11.96	51.14	5.82	10.58	46.88	2.45	10.35	42.35
Caltex	1.76	3.18	10.42	2.59	8.01	18.18	2.18	6.77	17.55	1.22	7.93	21.05
PTT	2.66	8.90	15.71	1.93	10.09	13.58	1.60	9.87	12.89	0.65	9.26	11.31
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	16.92	5.49	100.00	14.24	8.47	100.00	12.42	8.22	100.00	5.78	9.06	100.00
	South											
	1984			1985			1986			* 1987		
	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S
Esso	9.35	6.97	30.49	8.82	16.96	35.08	8.71	19.84	34.22	3.99	24.61	29.31
Shell	2.38	2.76	7.78	1.98	3.24	7.86	1.06	1.92	4.16	2.56	10.84	18.82
Caltex	9.62	17.32	31.36	6.99	21.61	27.78	8.44	26.21	33.15	3.98	25.94	29.25
PTT	7.00	23.46	22.84	3.77	19.68	15.00	3.46	21.35	13.60	1.53	21.71	11.27
Others	2.31	100.00	7.54	3.59	100.00	14.28	3.79	100.00	14.86	1.54	100.00	11.34
Total	30.66	9.95	100.00	25.15	14.97	100.00	25.46	16.85	100.00	13.61	21.33	100.00

Note : * For January to June.

Table 9.27 (Contd.)

Sales Volume, Regional Market Share, by Company

Kerosene

Unit : Million Litres

East												
1984			1985			1986			1987*			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	3.90	2.91	45.07	1.62	3.12	34.23	1.42	3.24	35.86	0.63	3.91	33.42
Shell	2.50	2.90	28.97	1.85	3.03	38.91	1.52	2.75	38.21	0.76	3.22	40.17
Caltex	1.44	2.60	16.67	0.65	2.00	13.67	0.37	1.15	9.33	0.23	1.49	12.02
PTT	0.80	2.69	9.29	0.63	3.27	13.20	0.66	4.06	16.60	0.27	3.86	14.39
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	8.64	2.80	100.00	4.74	2.82	100.00	3.97	2.62	100.00	1.90	2.97	100.00
Northeast												
1984			1985			1986			1987*			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	8.71	6.49	31.79	6.83	13.12	30.60	6.10	13.90	33.12	2.14	13.18	27.08
Shell	12.22	14.14	44.63	9.62	15.80	43.13	7.83	14.23	42.47	3.94	16.65	49.89
Caltex	2.46	4.43	8.99	3.42	10.59	15.35	2.80	8.71	15.22	1.27	8.29	16.12
PTT	4.00	13.39	14.59	2.44	12.71	10.92	1.69	10.44	9.19	0.55	7.71	6.91
Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	27.39	8.89	100.00	22.31	13.28	100.00	18.43	12.19	100.00	7.89	12.37	100.00
Total												
1984			1985			1986			1987*			
VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	VOL.	% Total	M/S	
Esso	134.09	100.00	43.51	52.03	100.00	30.97	43.92	100.00	29.06	16.21	100.00	25.41
Shell	86.43	100.00	28.04	60.90	100.00	36.25	54.99	100.00	36.39	23.65	100.00	37.05
Caltex	55.51	100.00	18.01	32.33	100.00	19.24	32.21	100.00	21.31	15.35	100.00	24.05
PTT	29.85	100.00	9.69	19.17	100.00	11.41	16.22	100.00	10.73	7.07	100.00	11.07
Others	2.31	100.00	0.75	3.59	100.00	2.14	3.79	100.00	2.50	1.54	100.00	2.42
Total	308.19	100.00	100.00	168.02	100.00	100.00	151.12	100.00	100.00	63.82	100.00	100.00

Note : * For January to June.

Sources : Ministry of Commerce and National Economic and Social Development Board.

9.6 Response of Existing Companies to New Entrants, any Evidence of "Predatory" Pricing

It is difficult to predict how a company would react to new competition. In general new competition usually means reduced market share and higher unit costs for existing companies in a stagnant market. In such cases, new competitors could be seen as threats to existing companies and "actions" could be taken by these companies to protect their interests. The actions here usually take the forms of price cutting or other pricing measures.

However, there has been no evidence to suggesting that the major oil companies have attempted to "price out" new competitors which are the small independent companies. Statistics have shown that independent companies have been able to expand their market shares quite significantly for the two products in which they have chosen to trade, namely LPG and HSD. According to Table 9.28 independent companies entered LPG trading in 1980 with insignificant market shares. Four years later, their combined share rose to 40% of the total LPG market which was quite remarkable progress. Independent companies have now entered the HSD market and their share has shown significant increase recently.

Ironically, the main factors that have hindered the progress of independent companies have not been competition from major oil companies. Rather, the hinderances have come from various government policies, and some other rules and regulations.

Independent companies in Thailand have depended on imports as their main source of supply since they have not been able to obtain secured sources of oil products domestically. Independents also need trading gains from imports to survive since unlike major companies, they do not have other sources of revenue.

When the government imposed an import ban on LPG in 1985, independent companies who had only traded LPG were severely affected, especially on the import trading gains. LPG market shares of independents fell in 1985 and continued to fall in 1986.

Independent companies have also imported HSD under quotas allocated by the Ministry of Commerce. This is also another constraint on the expansion of independent business. However, it is arguable, at least from the government's point of view, that independent companies can meet the minimum quotas that have been allocated to them.

Other government rules and regulations affecting independents oil company expansion have already been discussed in Chapter 7.

Table 9.28

Market Shares of Independent Companies

Unit : Percent

Year	LPG	High Speed Diesel
1980	-	1.36
1981	15.70	1.37
1982	36.96	1.02
1983	39.62	0.55
1984	41.30	0.48
1985	38.17	3.77
1986	24.59	10.45
1987	38.07	10.73

Note : * January to June

PART VI

CONCLUSIONS AND POLICY RECOMMENDATIONS

Chapter 10

Conclusions and Policy Recommendations

This Chapter provides conclusions on the structure and competitiveness of the downstream petroleum business in Thailand and is intended to pinpoint specific areas of the oil industry that are not sufficiently competitive. Further, the study team has provided policy recommendations as to how the level of competition can be increased in various petroleum sub-sectors. Finally, the Chapter highlights areas of the oil business that require further study in order to provide concerned government planners with a better understanding regarding the "when" and "how" of oil industry deregulation.

10.1 Conclusions on the Structure of the Downstream Oil Industry

The results of the study indicate quite clearly that Thailand has a complex and efficient oil industry. The industry has grown in order to support Thailand's continuously rising domestic oil consumption rate and there are concrete plans to soon expand our domestic refining capacity. Further, a significant amount of capital will be invested in technological improvements of the industry's refining and distribution/marketing sectors. Most of this investment will come from the private sector which has a strong interest in Thailand's oil business.

Refining

The refining industry began in earnest when the Thai Oil refinery came onstream in 1964 with a 35,000 B/D capacity. It was followed by the Bangchak refinery and an asphalt manufacturing plant which came onstream in 1965. The latter was actually an oil refinery which was later bought by Esso. These refineries gradually expanded over the years and, at the present time, their combined distillation capacity is 193,000 B/D. These refineries use a relatively simple refining process. Only Thai Oil has a small cracking facility. There is also a small (1,000 B/D) refinery owned by DED. This topping plant runs on heavy crude produced from small oil fields nearby. Together, these refineries satisfied 73% of the country's petroleum consumption in 1987.

Despite the use of this simple refining process, the product yield of these refineries is quite impressive--especially for the Esso refinery whose yield of middle distillates and light ends were 53.6% and 19% in 1986, respectively. Other refineries also produced impressive yields of middle distillates. The main reason for this favorable yield pattern was their utilization of very light crude slates. Esso selected a mix of light Far Eastern, light Malaysian Tapis and light Middle Eastern crudes. Thai Oil, which is the most complex refinery, ran 55% light Far

East and 20% light Middle East crudes. It also refined indigenously produced Phet crude and condensate. Bangchak also procured Far East, Middle East and indigenously produced crudes.

Thai Oil and Esso procured their own crude; Bangchak, on the other hand, selected the crudes to be refined and let PTT arrange for crude purchasing.

In spite of the refineries' effort to increase middle distillate yields, their production was still far short of demand. In 1987, the production of middle distillates accounted for 60% of domestic consumption.

The shortage of middle distillate production will improve in the near future, however, as Thai Oil and Bangchak plan to significantly expand their refining capacities. Its two-stage expansion plan will enable Thai Oil to increase its capacity from 65,000 B/D to 183,500 B/D by the mid 1990s. It is also possible that Bangchak's capacity will reach 105,000 B/D during the same period. In addition, these two refineries will also install conversion facilities that will enable them to produce significantly higher proportions of middle distillates and lighter product yields. In addition, the private sector has also expressed a strong interest in building (as well as expanding) more refining capacity in the country.

It can be generally concluded from the above developments that refineries in Thailand have been efficiently run to satisfy the rapidly growing oil demand. Furthermore, in the foreseeable future, a significant amount of capital will be invested in expanding--as well as up-grading--the refining industry.

Marketing

Presently there are 11 licensed oil traders (excluding Thai Oil and Bangchak) in Thailand. Four of these traders are large companies (including three multinationals) and the rest are small, Thai-owned independent companies. The major companies trade in the full range of oil products while the independents only sell HSD and/or LPG (and lubricants).

The major companies built and own the 56 oil-storage depots throughout the country. They also have an extensive oil distribution network that supplies oil products to over two-thousand retail outlets as well as many major consumers located throughout the country.

Independents, on the other hand, own many fewer depots and oil outlets than the majors; however, they have relatively large outlets (many of which are not properly licensed) selling only LPG.

The production and distribution of LPG is dominated by PTT who owns a 350,000 ton/yr GSP as well as five large LPG distribution centers throughout the country.

In addition to the licensed oil traders, there are also 15 or so jobbers (or large wholesalers) whose business it is to buy large volume lots of fuels (HSD, gasoline and LPG) at heavily discounted prices from the traders and sell the products to various kinds of customers, also at discount prices. Jobbers play a very significant role in the wholesaling and product distribution business in Thailand.

Retailing

There are over two thousand properly licensed retail outlets in Thailand and countless numbers of unconventional dealers selling fuel from hand-operated drum-pumps. These pumps, located mainly in rural areas, sell their products (HSD and regular gasoline) to farmers and local patrons at prices higher than controlled retail levels. Their main sources of supply are usually proper outlets located in the area.

It may be concluded that oil products are efficiently distributed to practically all areas of the country through depots, outlets and a drum-pump network. Some links in the oil distribution chain are highly competitive, particularly the wholesale segment; however, there are also some other segments of the business where competition has not been strong. Conclusions concerning competitiveness of the oil business are described below.

10.2 Conclusions Regarding the Competitiveness of the Oil Industry

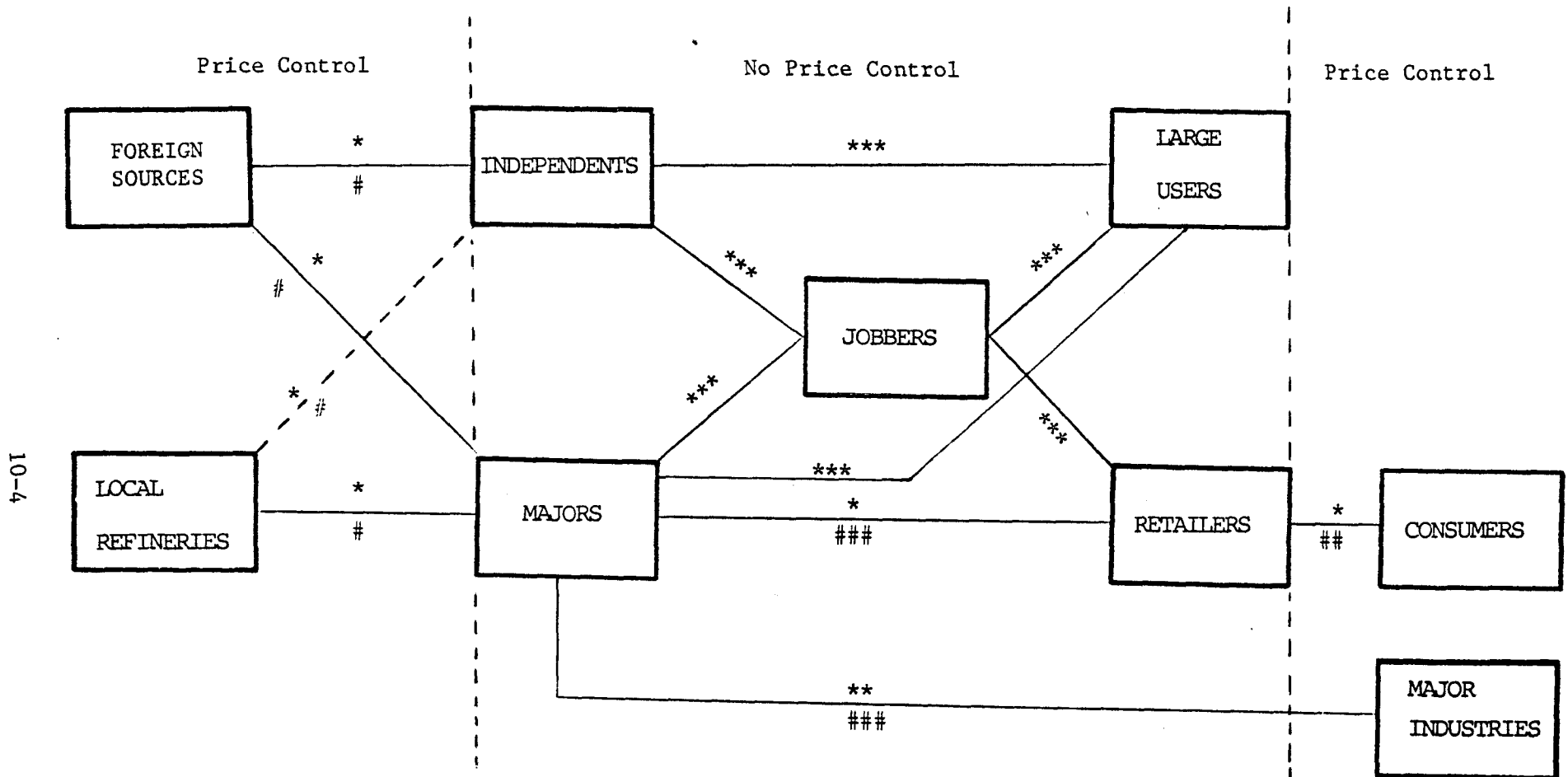
As noted in Chapter 3, with only three major refiners in the country, it may be concluded that there is a high degree of concentration in the country's domestic product supply capability. These three refineries supply about 75% of the demand (the rest is imported) which, when compared to the United States (where the top four account for about 35 to 40% of the market) seems high. Further, local refineries mainly supply their products mainly to a restricted group of customers. Thai Oil mainly supplies Shell, Caltex and PTT while Esso mainly supplies its own network (with some small sales made to Shell and Caltex). Bangchak sells most of its products to PTT and the rest to any buyer--including independents. The selling price is generally that the ex-refinery price set by the government.

As indicated above, local refineries do not have to directly compete for business under the current offtake arrangement system. These refineries do not strongly compete with refineries in Singapore either, since the importing of main products is allowed only when there is a supply shortage at local refineries.

Figure 10.1 shows that there is low competition (price/non-price) for oil product sales from refineries (or from imports) to oil traders.

Figure 10.1

Competition Intensity in the Thai Oil Industry



LEGEND:

Price Competition (*)

- * not competitive
- ** competitive
- *** very competitive

Non-price Competition (#)

- # not competitive
- ## competitive
- ### very competitive

However, the intensity of competition (from oil traders to consumers) is relatively strong when compared to the above trading. The level of price competition is probably most intense for sales of HSD (and perhaps gasoline and LPG) to jobbers (see Figure 10.1). As discussed, jobbers who buy large quantities of fuel usually receive large price discounts from majors as well as independents. Jobbers need heavy discounts since they have to compete with other jobbers for sales to large users and retailers. There is no non-price competition for oil trader sales to jobbers, however.

Oil traders also make direct sales to large users (like fishing, bus and truck fleets). Here, price competition is usually very strong, since traders have to compete, not only among themselves, but with jobbers. There is no non-price competition in this business.

Only the majors sell to major industrial customers and there is some price competition among majors in terms of discounts and long credit terms. However, non-price competition is usually more intense. Good services, high product quality and supply reliabilities are significant factors determining sales in this business.

Retail outlets usually buy from majors or from jobbers. There is very small sale competition within a major company's own network (especially to company-owned outlets). However, major companies often give price discounts to retailers who also do wholesale trade. There is also price competition for sales from jobbers to retail stations (mostly dealer-owned outlets).

Despite strong price competition in other segments of the business, retailers tend to sell at controlled retail prices to consumers and prefer to use non-price measures to increase their sales.

As shown in Figure 10.1, price competition tends to be strong in wholesale areas where there is no price control. On the other hand, in the area of retail sales (where there is price control), retailers tend to fix the price at controlled levels. It is conceivable that by deregulating retail oil prices, consumers will gain from intensified price competition in this activity--in the same way that large users and some retailers now benefit.

The same conclusion might also be reached regarding sales from majors to large industrial customers where prices are controlled. At present, price competition in this business is less intense when compared to non-price measures.

Further, at present, the business is not competitive at present between sales from refineries to major oil companies where prices are controlled. The deregulation of ex-refinery prices, coupled with oil import decontrol, will significantly improve the level of price competition in this part of the

business and will greatly benefit major oil companies as well as independents.

10.3 Some Policy Recommendations

It is evident from Figure 10.1 that the oil industry in Thailand is less competitive at the two ends of the business--at one end, in sales from refineries (or importers) to oil companies and, at the other, in retail sales to consumers. Thus, policy measures should be adopted to promote competition in these activities. Some of these measures are as follows:

10.3.1 Refining

- o The government should encourage more direct competition among local refineries. One of the ways is to encourage more participation from the private sector, particularly from newcomers or from companies operating in the downstream, in investing in future refinery capacity expansion. However, this will need clear, government long-term policy and procedures for future refinery expansion. The government should make the timing and the magnitude of possible new capacity requirements clear (that is to study market size and proper size of a refinery). It should also clearly specify the criteria and procedures for selecting investors for this new capacity.
- o Further, the government should have a policy that promotes petroleum refining efficiency. This is one of the most important policies (other than pricing and taxation stated below) that must be considered if the industry intends to compete directly with refineries in Singapore in the future. Investment in high technology should be encouraged by providing investors with BOI privileges. The government should also allow a refinery to operate at its maximum capacity and capacity expansion through low cost debottlenecking should be encouraged.
- o A policy to allow Bangchak to make direct sales to any oil company should be encouraged as this will promote competition in the product supply business.
- o A refinery should procure its own crude. The government should also have a clear G-to-G policy (on procurement of G-to-G crude, who should refine it, and at what price). G-to-G crude, including Phet, to a certain extent, has had an impact on crude optimization and, thus, product yields of TOC and Bangchak.

10.3.2 Oil Imports

- o Oil imports should be deregulated, i.e. the quota system should be abolished. Licensed oil traders, as well as

refiners, should be free to import oil products. This means that rules and regulations concerning entry into the oil business should be reexamined. Further, license application procedures should be revised so approval is less dependent on the "judgment" of government officials. Further, entry rules (such as required tankage construction and oil reserves) should be revised and strictly enforced in order to weed out irresponsible traders.

- o As stated above, the government should review its G-to-G product-import and barter-trade policies, especially in the light of future import deregulation.

10.3.3 Other Rules and Regulations

In addition to the above policy recommendations, the government should also examine other oil business rules and regulations in order to promote competition--before it proceeds to deregulate oil prices. Some of these regulations are as follows.

- o The rule requiring a refinery to hold mandatory crude oil reserves should be reexamined. The reserve requirement has added an extra cost to refiners and, if the industry is deregulated, will hamper their ability to compete.
- o The rules concerning reserved oil products should also be reexamined--in particular, government-imposed taxes and oil fund levies on the oil held as legal reserve. This practice has severely affected the profitability of small oil companies and, consequently, their competitiveness. Further, the law has created an unfair advantage for an integrated oil company, like Esso, which can avoid tax payments by holding legal reserves at its refinery.
- o The rules concerning retail-business entry conditions should be revised. This includes the revision of retail outlet size and location restrictions. Fire and safety standards should be revised to conform to modern business practices. Further, the procedures for obtaining licenses should be streamlined in order to speed up the licensing process.

10.3.4 Pricing and Taxation

- o Eventually, the oil price should be deregulated in order to promote industry-wide price competition. As shown in Figure 10.1, there is very little price competition for sales from refineries (and imports) to oil companies--and from retailers to consumers. These are the areas on which the government imposes price controls. However, before proceeding to decontrol prices, various measures have to be implemented to ensure oil industry

competition. Some of these measures have been discussed above (Sections 10.3.1-10.3.3). During the period of time required to implement these measures, the government should also proceed to improve the efficiency of the existing pricing structure, and try to eliminate consumption distortions. This can be done by imposing equal tax and oil fund levies on substitute oil products. In the past, the significantly different tax and oil fund levies that were imposed on these oil products caused much consumption distortion.

- o Further, the government should also equalize import and ex-refinery prices (excluding taxes and the oil fund). This would help promote efficiency in oil product procurement. The option of relating ex-refinery prices to Singapore spot prices (instead of posting) should also be considered.
- o Finally, retail prices and ex-refinery prices should be deregulated. However, this should happen only when the various measures that promote competition have been implemented. Further, there is also a need for a study that will help determine proper implementation stages and timing of price deregulation-- before it can be launched. The focus of the study is highlighted in the section that follows.

10.4 Future Study

Before implementing the deregulation policy measures as suggested above, a study should be conducted to identify the possible impact on the oil/non-oil sectors of the country that could result from deregulation. It is expected that price decontrol will have wide repercussions for most economic sectors and it is important that we have at least some idea about how these sectors will be affected. The study should broadly examine the impact of deregulation on the following sectors.

10.4.1 Oil Supply/Refining Sector

Future study on deregulation of the refining business should focus on the following issues.

- o Whether the present system (of establishing ex-refinery and import prices) truly reflects actual acquisition costs or traded prices in Singapore. The study would examine and analyze the process of establishing ex-refinery prices in Singapore and their relationship to spot prices and the demand/supply balance. Discounts, credit and other forms of preferential treatment given by Singapore refineries to their customers should be explored.

- o The study should try to compare the structure of the oil refining industry in Thailand and in Singapore. There should be an analysis of the transport costs from Singapore to various receiving ports in Thailand. Further, there should be a study comparing the operating costs of Singapore's refineries and Thailand's--including such factors as government regulations (taxes, reserve requirement etc.) and other physical configurations. The study should also compare the financial structure of the three local refineries. Finally, the study should try to assess the impact of deregulation on ex-refinery prices and refinery operations. Recommendations as to how ex-refinery price deregulation might be carried out should then be made.

10.4.2 The Downstream Oil Industry Sector

The study of the deregulation of retail oil prices should focus on the following issues and should:

- o Examine the existing forms of price and non-price competition in the downstream oil industry, focusing on price competition in the wholesale business as well as the non-price competition in the retail and industrial sales segments.
- o Compare data on the physical infrastructure of the industry.
- o Analyze the cost structure of oil marketing at wholesale as well as retail levels, and should try to assess oil traders' profitability.
- o Assess the possible impact of price deregulation on wholesale as well as retail prices.
- o Examine the current oil supply and distribution systems. This is to ensure that there will be a sufficient level of competition, particularly in remote areas.
- o Provide recommendations as to how competition may be assured in a decontrolled environment.

10.4.3 Oil Users

This study should examine the possible impact of price deregulation on the consumers of oil products and should focus on the:

- o Impact on supply security and investment in the oil business; and
- o Impact on the sales of bunker oil as well as on other non-oil substitutes.

The study should also look at the experience of other countries (such as Singapore and New Zealand) with deregulation.

Finally, the study should appraise the overall impact of oil price deregulation and provide recommendations on whether oil prices should be deregulated and in what form. It is also very

important that the study provide the steps to be taken for oil price deregulation, in particular taxation and the oil fund levy, government import and retail business regulations, institutional issues, and, finally, the responsibilities and duties of various government agencies. Measures to prevent oil shortages and collusion among oil traders should also be recommended.

APPENDICES

Appendix 1

Mesures of Concentration

There are alternative means of measuring the degree of monopoly power or industry concentration.* There are performance oriented approaches such as the deviation of each firm's net profits from the competitive norms and the deviation of price from marginal costs. In this study we are mainly concerned with structural measures. Such measures, as have been used in different studies, generally relate to the total number of firms in the industry combined with some measure as to the market control of each firm.

The simplest measures stress the position of the largest firm (or firms) in the industry by summarizing the market share of the top 2, 4, 8 firms and so on. This is referred to as the market concentration ratio C - the percentage of total industry sales (or capacity, or employment, or value added, or physical output) contributed by the largest few firms, ranked in order of market shares.

Another measure which is commonly used is the Herfindahl - Hirschman Index, H. This is defined as the sum of the squares of the percentage market shares of all the firms in the industry. By way of illustration we see that an industry controlled by one firm (monopoly) would have the maximum H of 10,000. While increasing numbers of firms cause the index to decline towards zero.

	<u>Value of H</u>
1 firm 100%	10,000
4 firms 25% each	2,500
10 firms 10% each	1,000
100 firms 1% each	100

By squaring the market shares the H index weights more heavily the values for large firms than for small. Any deviation from even shares for a given number of firms in the industry tends to increase the H index, indicating that one or more firms have higher market shares than the others and might be able to exert some damper on competition versus the case with all equal shares. For example an industry with 4 firms of which one firm has 40% and the others 20% each would have an H value of 2800 versus 2500 for the equal-shares case shown above.

* Reference - Industrial Market Structure and Economic Performance by F.M. Scherer, Houghton Mifflin, 1980

None of these structural measures of degree of concentration can be used to pass final judgment in an absolute sense as to whether an industry is competitive or not. They may be used in conjunction with other information to examine the competitiveness relative to industry situations elsewhere. There are situations where 2 firms in control of a supply (indicating high concentration by any measure) may be opposed by one very strong buying firm with product substitution - switching alternatives. This might be the case with fuel oil suppliers to a cement firm with many fuel - switching options. Quite often the countervailing power of a strong purchaser (or group of purchasers) may impart a degree of competition to the supply industry which is not obvious from the market concentration indices.

An illustration of market concentration indicators for the gasoline market in Canada is provided as follows:

**HERFINDAHL - HIRCHMAN INDICES AND MARKET CONCENTRATION RATIOS
FOR RETAIL GASOLINE SALES IN 16 URBAN AREAS OF CANADA: 1980**

	H Index	Top Four-Firm Concentration Ratio %
St. John's, Nfld.	2360	89
Halifax/Dartmouth	1780	76
Saint John, N.B.	3470	88
Montreal	1090	58
Hull	1040	55
Ottawa	880	52
Oshawa/Whiby	1100	58
Ajax/Pickering	1250	63
Vaughan/Markham	1280	64
Brampton/Bramalea	1270	63
Mississauga	1350	67
Metro Toronto	1330	65
Winnipeg	1330	66
Regina	1300	64
Edmonton	1260	62
Vancouver	1530	74

The indicators for market concentration in Thailand are as follows:

2nd Quarter, 1986

	H Index	TOP			
		1	2	4	8
Premium gasoline	2685	35.3	61.3	100	100
Regular gasoline	2569	30.2	57.5	99.7	100
HSD	2133	26	50.6	90.7	99.6
Kerosene	2675	35.1	64.2	97.2	100
Fuel oil	3429	45.4	78.7	100	100
Jet	3953	44.6	87	100	100
LPG	1505	19.1	37.7	65.9	100

Source : Ministry of Commerce.

Appendix 2

Official Transport Allowances

Effective : July 1, 1986
Unit : Baht per Litre

	Controlled Retail Prices					Transport Charges				
	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD
Bangkok/Nonthaburi/ Pak kled/Bangbuatong	8.90	8.20	6.12	6.30	6.10					
<hr/>										
Bast/North East										
<hr/>										
Sai Noi	8.92	8.22	6.15	6.32	6.12	0.02	0.02	0.03	0.02	0.02
Samutprakarn	8.91	8.21	6.13	6.31	6.11	0.01	0.01	0.01	0.01	0.01
Prathumthani	8.95	8.25	6.17	6.35	6.15	0.05	0.05	0.05	0.05	0.05
Chonburi	8.94	8.24	6.16	6.34	6.14	0.04	0.04	0.04	0.04	0.04
Chachoengsao	8.97	8.27	6.23	6.37	6.17	0.07	0.07	0.11	0.07	0.07
Prachinburi	9.02	8.32	6.24	6.42	6.22	0.12	0.12	0.12	0.12	0.12
Rayong	8.98	8.28	6.20	6.38	6.18	0.08	0.08	0.08	0.08	0.08
Chantaburi	9.05	8.35	6.27	6.45	6.25	0.15	0.15	0.15	0.15	0.15
Trat	9.09	8.39	6.31	6.49	6.29	0.19	0.19	0.19	0.19	0.19
Ubonratchathani	9.24	8.54	6.46	6.64	6.44	0.34	0.34	0.34	0.34	0.34
Mukdahan	9.40	8.70	6.64	6.80	6.60	0.50	0.50	0.52	0.50	0.50
Sisaket	9.28	8.58	6.52	6.68	6.48	0.38	0.38	0.40	0.38	0.38
Nakhonphanom	9.41	8.71	6.63	6.81	6.61	0.51	0.51	0.51	0.51	0.51
Yasothon	9.32	8.62	6.54	6.72	6.52	0.42	0.42	0.42	0.42	0.42
Nongkai	9.27	8.57	6.49	6.67	6.47	0.37	0.37	0.37	0.37	0.37
Udonthani	9.24	8.54	6.46	6.64	6.44	0.34	0.34	0.34	0.34	0.34
Khonkaen	9.19	8.49	6.41	6.59	6.39	0.29	0.29	0.29	0.29	0.29
Loei	9.34	8.64	6.56	6.74	6.54	0.44	0.44	0.44	0.44	0.44
Chiengkarn	9.35	8.65	6.57	6.75	6.55	0.45	0.45	0.45	0.45	0.45
Roiet	9.27	8.57	6.50	6.67	6.47	0.37	0.37	0.38	0.37	0.37
Mahasarakham	9.23	8.53	6.47	6.63	6.43	0.33	0.33	0.35	0.33	0.33
Kalasin	9.25	8.55	6.47	6.65	6.45	0.35	0.35	0.35	0.35	0.35
Nakhonratchasima	9.10	8.40	6.32	6.50	6.30	0.20	0.20	0.20	0.20	0.20
Chaiyaphum	9.15	8.45	6.37	6.55	6.35	0.25	0.25	0.25	0.25	0.25
Surin	9.21	8.51	6.43	6.61	6.41	0.31	0.31	0.31	0.31	0.31
Buriram	9.19	8.49	6.41	6.59	6.39	0.29	0.29	0.29	0.29	0.29
Nang Rong	9.16	8.46	6.30	6.56	6.36	0.26	0.26	0.18	0.26	0.26
Pak Chong	9.04	8.34	6.26	6.44	6.24	0.14	0.14	0.14	0.14	0.14
Prachantakam	9.03	8.33	6.25	6.43	6.23	0.13	0.13	0.13	0.13	0.13
Sakhonnakhon	9.34	8.64	6.56	6.74	6.54	0.44	0.44	0.44	0.44	0.44
Sikiew	9.06	8.36	6.28	6.46	6.26	0.16	0.16	0.16	0.16	0.16

Appendix 2 (Contd.)

Effective : July 1, 1986
Unit : Baht per Litre

	Controlled Retail Prices					Transport Charges				
	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD
Central/North/West										
Ayutthaya	8.97	8.27	6.23	6.37	6.17	0.07	0.07	0.11	0.07	0.07
Angthong	9.00	8.30	6.22	6.40	6.20	0.10	0.10	0.10	0.10	0.10
Chainat	9.05	8.35	6.27	6.45	6.25	0.15	0.15	0.15	0.15	0.15
Chiengmai/Sanpatong/Mae Rim	9.31	8.61	6.53	6.71	6.51	0.41	0.41	0.41	0.41	0.41
Chiengrai	9.43	8.73	6.65	6.83	6.63	0.53	0.53	0.53	0.53	0.53
Kamphaengphet	9.19	8.49	6.41	6.59	6.39	0.29	0.29	0.29	0.29	0.29
Kanchanaburi	9.04	8.34	6.27	6.44	6.24	0.14	0.14	0.15	0.14	0.14
Lampang	9.28	8.58	6.50	6.68	6.48	0.38	0.38	0.38	0.38	0.38
Lopburi	9.03	8.33	6.25	6.43	6.23	0.13	0.13	0.13	0.13	0.13
Lamphun	9.32	8.62	6.55	6.72	6.52	0.42	0.42	0.43	0.42	0.42
Maehongson	9.70	9.00	7.11	7.10	6.90	0.80	0.80	0.99	0.80	0.80
Nakhonphatom/Nakhonchaisri	8.99	8.29	6.21	6.39	6.19	0.09	0.09	0.09	0.09	0.09
Nakhonnayok	9.00	8.30	6.22	6.40	6.20	0.10	0.10	0.10	0.10	0.10
Nakhonsawan	9.11	8.41	6.33	6.51	6.31	0.21	0.21	0.21	0.21	0.21
Nan	9.34	8.64	6.56	6.74	6.54	0.44	0.44	0.44	0.44	0.44
Phetchaburi	9.02	8.32	6.24	6.42	6.22	0.12	0.12	0.12	0.12	0.12
Phetchabun	9.14	8.44	6.39	6.54	6.34	0.24	0.24	0.27	0.24	0.24
Phitsanulok	9.18	8.48	6.40	6.58	6.38	0.28	0.28	0.28	0.28	0.28
Hua Hin	9.05	8.35	6.27	6.45	6.25	0.15	0.15	0.15	0.15	0.15
Pranburi	9.06	8.36	6.28	6.46	6.26	0.16	0.16	0.16	0.16	0.16
Prachuapkririkhan	9.10	8.40	6.32	6.50	6.30	0.20	0.20	0.20	0.20	0.20
Tabsakae	9.12	8.42	6.34	6.52	6.32	0.22	0.22	0.22	0.22	0.22
Bangsapannoiprae	9.17	8.47	6.39	6.57	6.37	0.27	0.27	0.27	0.27	0.27
Phrae	9.24	8.54	6.47	6.64	6.44	0.34	0.34	0.35	0.34	0.34
Ratchaburi	9.02	8.32	6.27	6.42	6.22	0.12	0.12	0.15	0.12	0.12
Samutsongkhram	8.98	8.28	6.20	6.38	6.18	0.08	0.08	0.08	0.08	0.08
Samutsakhon	8.98	8.28	6.20	6.38	6.18	0.08	0.08	0.08	0.08	0.08
Saraburi	9.00	8.30	6.22	6.40	6.20	0.10	0.10	0.10	0.10	0.10
Singburi	9.01	8.31	6.23	6.41	6.21	0.11	0.11	0.11	0.11	0.11
Sukhothai	9.20	8.50	6.42	6.60	6.40	0.30	0.30	0.30	0.30	0.30
Tak-Pah	9.14	8.44	6.36	6.54	6.34	0.24	0.24	0.24	0.24	0.24
Suphanburi	9.01	8.31	6.23	6.41	6.21	0.11	0.11	0.11	0.11	0.11
Uthaithani	9.11	8.41	6.33	6.51	6.31	0.21	0.21	0.21	0.21	0.21
Uttaradit	9.23	8.53	6.45	6.63	6.43	0.33	0.33	0.33	0.33	0.33
Denchai	9.24	8.54	6.47	6.64	6.44	0.34	0.34	0.35	0.34	0.34
Phayao	9.36	8.66	6.59	6.76	6.56	0.46	0.46	0.47	0.46	0.46
Tak	9.24	8.54	6.46	6.64	6.44	0.34	0.34	0.34	0.34	0.34
Mae Sod	9.31	8.61	6.53	6.71	6.51	0.41	0.41	0.41	0.41	0.41
Taklee	9.14	8.44	6.36	6.54	6.34	0.24	0.24	0.24	0.24	0.24
Pichitr	9.20	8.50	6.42	6.60	6.40	0.30	0.30	0.30	0.30	0.30

Appendix 2 (Contd.)

Effective : July 1, 1986
Unit : Baht per Litre

	Controlled Retail Prices					Transport Charges				
	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD	Premium Gasoline	Regular Gasoline	Kerosene	HSD	LSD
South										
Chumphon	9.23	8.53	6.46	6.63	6.43	0.33	0.33	0.34	0.33	0.33
Banong	9.29	8.59	6.55	6.69	6.49	0.39	0.39	0.43	0.39	0.39
Suratthani	9.13	8.43	6.35	6.53	6.33	0.23	0.23	0.23	0.23	0.23
Pakpanang	9.14	8.44	6.41	6.54	6.34	0.24	0.24	0.29	0.24	0.24
Trang	9.27	8.57	6.58	6.67	6.47	0.37	0.37	0.46	0.37	0.37
Phatthalung	9.26	8.56	6.52	6.66	6.46	0.36	0.36	0.40	0.36	0.36
Satun	9.23	8.53	6.52	6.63	6.43	0.33	0.33	0.40	0.33	0.33
Phattani	9.28	8.58	6.52	6.68	6.48	0.38	0.38	0.40	0.38	0.38
Yala	9.30	8.60	6.52	6.70	6.50	0.40	0.40	0.40	0.40	0.40
Narathiwat	9.39	8.69	6.61	6.79	6.59	0.49	0.49	0.49	0.49	0.49
Phuket	9.27	8.57	6.49	6.67	6.47	0.37	0.37	0.37	0.37	0.37
Phangnga	9.36	8.66	6.58	6.76	6.56	0.46	0.46	0.46	0.46	0.46
Nakhonsithammarat	9.18	8.48	6.42	6.58	6.38	0.28	0.28	0.30	0.28	0.28
Krabi	9.42	8.72	6.56	6.82	6.62	0.52	0.52	0.54	0.52	0.52
Haadyai/Songkhla	9.17	8.47	6.42	6.57	6.37	0.27	0.27	0.30	0.27	0.27

Appendix 3

Article 6 Licensed Oil Traders

Date License Granted	Oil Traders	Oil Products Licensed	Remarks
25/7/1967	Shell Co. of Thailand	All	
	Caltex	All	
	Esso	All	
	Thai Oil	All	
	PTT	All	
	Thai Asphalt Manufacturing Co.	Bitumen	Business Discontinued (1967)
	Summit Industrial	All	Business Discontinued (1981)
11/12/1975	Summit Oil	All	Business Discountinued (1982)
11/5/1982	Petrolane Gas	LPG }	
	Cosmo Petro.	LPG }	License Revoked 16/7/1984
	Siamraj Industrial	LPG }	
17/9/1982	Northeastern Oil	LPG Diesel	License Revoked 1/6/1987
	Unique Gas	LPG	
	World Gas	LPG	

(contd.)

Date License Granted	Oil Traders	Oil Products Licensed	Remarks
23/4/1984	Palang Siam	Diesel	* License Revoked 4/5/1985
22/8/1984	Siam Gas Industrial	LPG Diesel	
10/1/1985	Korn Phet Import Export	Diesel }	
	Siam United Service	Diesel }	** License Revoked 14/7/1985
	Thai Comercial Service	Diesel }	
	Siam Minerals and Oil	Diesel }	
5/9/1985	Bangchak Petroleum Co.	All	
23/9/1985	Cosmo Oil	Diesel Fuel Oil	
	Hart Oil	Diesel	** License Revoked 12/6/1987
	World Oil	Diesel	
	Boston Oil	Diesel	** License Revoked 10/3/1986
25/9/1985	Siam United Services	Diesel	
30/10/1985	Chareon Mankong	Diesel	

Note : * Failed to hold required reserves.

** Failed to build storage facilities.

Source : Ministry of Commerce.

Appendix 4

List of the Oil Companies Interviewed

The oil companies and the industrial companies interviewed by the study team are as follows.

1. Bangchak Petroleum Company Ltd.
(represented by Mr. Sophon Suphapon, Managing Director)
2. Thai Oil Company Ltd.
(represented by Mr. Yiern Chandprasit, Supply and Trading Manager).
3. ESSO Standard Thailand Ltd.
(represented by Mr. Smit Hansa, Reseller and Wholesaler Manager).
4. The Shell Company of Thailand.
(represented by Mr. Anuchin Supol, Marketing Director, and Mr. Siritas Prasert-Manukitch, Supply and Trading Director).
5. Caltex Oil (Thailand) Ltd.
(represented by Mr. Sant Laohavanichskul, Supply and Planning Director).
6. Petroleum Authority of Thailand.
(represented by Dr. Chitrapongse Kwangsukstith, Operation Planning Director).
7. Siam Gas Industries Ltd.
(represented by Mr. Somyos Suwanmanon, Managing Director).
8. Northeastern Oil Co. Ltd.
(represented by Mr. Anuthep Thanomkuldeetr, Marketing Manager).
9. Mobil Oil Thailand Ltd.
(represented by Mr. Lloyd A. Houghton, Sales Manager)
10. Cosmo Oil Co. Ltd.
(represented by Mr. Suchai Ubolvivat, Managing Director).
11. Unique Gas and Petrochemicals Co. Ltd.
(represented by Mr. Phaibul Chalermasaphayakorn, Chairman).
12. Siam United Services Co. Ltd.
(represented by Mr. Mongkol Simaroj, Chairman).
13. Oil Trader Association.
(represented by Mr. Aram Krabuanrat, President).
14. Kit Monkol Transport Co. Ltd.
(represented by Mr. Swat Tilamonkol, Manager).
15. The Siam Cement Co. Ltd.
(represented by Mr. Paron Israsena, President)
16. Thai Asahi Glass Co. Ltd.
(represented by Mr. Veerasak Lekakul, General Administration Division Manager).

17. Ajinomoto Co.(Thailand) Ltd.
(represented by Mr. Visith Pongvivatchai, Purchasing Manager).
18. Union Textile Industries.
(represented by Mr. Monkorn Tangsucharitpan)
19. Retail stations and drum-pump operators.

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