

PASCN Discussion Paper No. 2000-14

Competition Policy for the Philippine Downstream Oil Industry

Peter Lee U



The *PASCN Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions and review. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements.

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Downstream Oil Industry**

Peter Lee U

University of Asia and the Pacific

April 2000

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Abstract

The Philippine downstream petroleum industry underwent monumental change with the passage of RA 8180, the original Downstream Oil Industry Deregulation Act. Chapter 1 surveys the industry developments before and after deregulation. However the original deregulation law was struck down by the Supreme Court on November 5, 1997, because it “encouraged” anti-competitive behavior. Specifically, the following provisions were cited:

- a. 4% tariff differential between crude oil and refined products
- b. minimum inventory requirement
prohibition of predatory pricing

It is not clear that these provisions were actually “anti-competitive” from an economics point of view. Chapter 2 analyzes the consistency of the Supreme Court decision with economic theory. The report argues that tariff differentials are currently built into the country’s tariff code as a matter of policy, even in the context of the tariff reform program. Thus it is not unreasonable for the deregulation law to incorporate a tariff differential. The report also disagrees with the Supreme Court reasoning on minimum inventory requirements. As with the tariff differential issue, the report points out that whether this constitutes significant barriers to entry is an empirical question. The analysis of the decision, in contrast, treats it as if it were a “yes or no” type of question. Moreover, the paper argues that inventory decisions are best left to individual firm discretion. Thus the high court decision arguably effected the right thing (removal of the inventory requirement) for the wrong reason. Finally, the chapter argues that the decision on predatory pricing does not follow from the court’s premise. If anything, if the court believed that the tariff differential and inventory requirements posed significant barriers to entry, then a predatory pricing provision could be favorable to competition.

The oil companies are also often accused of price fixing because of their similar prices and timing of price hikes and price cuts. Chapter 3 uses a theoretical model (a simple extension of the Bertrand price fixing game) to analyze this question. It shows that similar prices and timing of price changes can be consistent with competition. Moreover, the model predicts an asymmetry in the timing of price changes; i.e. prices increase faster with crude oil price hikes than decrease when crude oil price falls.

Chapter 4 looks at the proposed national oil exchange. As put forward by Cong. Garcia, such an oil exchange would in effect be a monopoly. As such it would be susceptible to graft and corruption, as well as be inefficient. Furthermore, a simple welfare analysis is used to show that it would be economically inefficient as a measure to subsidize consumers.

Lastly, chapter 5 examines the experience of other countries’ regulation of the downstream petroleum industry. Thailand and New Zealand have both deregulated their downstream oil industries fairly recently. In the case of Thailand, which deregulated before the Philippines, the major oil companies still control a significant share of the market. However the new players are starting to eat into the market. The United States is a mature market but has experimented with various policies like divestiture and divorcement, in a bid to equalize market power.

Acknowledgements

The author is grateful for the financial and administrative assistance of the secretariat of the Philippine APEC Study Center Network and the Philippine Institute for Development Studies.

The author also wishes to thank the following industry and government resource persons who shared their knowledge of the industry:

Department of Energy

1. Ms. Zenaida Monsada – Chief, Energy Resource Supply Administration Division
2. Ms. Cory Mendoza-Boaquina – Energy Industry Administration Bureau

Chemoil Asia, Inc.

1. Mr. Juan Armando J. Patag – Director and General Manager

Eastern Petroleum Corporation

1. Fernando L. Martinez – Chairman and CEO

Petron Corporation

1. Mr. Joey Campos – Manager, Strategic Planning
2. Mr. Elinio Crisostomo – Process Technology Asst. Manager
3. Mr. Noel Ventigan
4. Mr. Raffy Ledesma – Corporate Communications Officer

Philippine Institute of Petroleum, Inc.

1. Rey G. Marquez – Executive Director
2. Ted Reyes - Assistant

Pilipinas Shell Petroleum Corporation

1. Mr. Benito A. Bernardo, Jr. - Manager
2. Mr. Sebastian C. Quiniones – VP Supply Division

Subic Bay Distribution (Coastal Corp. and PTT)

1. Mr. Rick Reyes – Marketing Manager

Lastly, the author is grateful for comments from the participants of workshops held by the PASCN, PIDS, UA&P, and the UP-Manchester International Conference on Competition Policy. However, the author remains solely responsible for all remaining errors.

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Executive Summary

In a sense, the Philippine downstream petroleum industry has come full circle. Prior to Martial Law and the first world oil crisis, the industry operated under a fairly free market. There had been as much as four refiners at one point and six marketing companies. During martial law, then Pres. Ferdinand Marcos partly nationalized the industry with the formation of the Philippine National Oil Company by acquiring Esso and Filoil. At the same time, the industry was put under heavy government regulation and price control. With the passage of the original Downstream Oil Industry Deregulation Act, RA 8180, in 1996, the industry finally completed the cycle from free to regulated and back to free market.

The deregulated setting attracted as much as 52 new players into the various lines of the industry (see Table 1.3 on page 7). The new players started to make inroads and within a year had improved their market share from 0.7% to 3.4%. Their rate of growth was especially fast in industrial or bulk sales and LPG. However, the unexpected onset of the Asian crisis brought with it depreciation of the peso and hence, soaring imported crude costs. The oil companies naturally raised their prices to recover costs. This caught the ire of some legislators who saw in the events, a failure of deregulation. They consequently filed suit with the Supreme Court seeking a repeal of RA 8180.

They ultimately won the case as the high court ruled RA 8180 unconstitutional. In a landmark decision for Philippine antitrust policy, the Supreme Court struck down RA 8180 on November 5, 1997, for purportedly “encouraging” anti-competitive behavior. Specifically, it took offense with the following provisions:

- a. 4% tariff differential between crude oil and refined products
- b. minimum inventory requirement
- c. prohibition of predatory pricing

RA 8479 was quickly passed into law after addressing the above “flaws” and the industry was rescued from deregulation limbo. Nevertheless, because of the significance of the Supreme Court decision, it is important to analyze it from an economics perspective and to assess the appropriateness of the economic arguments used in order to improve future antitrust policymaking and competition policy.

This report argues that tariff differentials are currently built into the country’s tariff code as a matter of policy, even within the context of the tariff reform program. Thus it sees nothing controversial about a tariff differential between imported refined products and crude oil.

Assuming it is acceptable to provide some protection for domestic industries, a tariff differential between imported raw materials (e.g. crude oil) and final products (e.g. refined petroleum products) is common practice. Uniform tariffs or higher tariffs on raw materials than on finished products reduce effective protection. In the first place, is a 4%

differential that unreasonable to begin with? In other words, whether or not the tariff differential poses a significant barrier to entry is more an empirical question rather than one of principle.

While providing storage to meet the minimum inventory requirement does involve added cost to a new entrant, it is not clear that this constitutes a significant barrier to entry either. Any business selling a tangible product needs to maintain a certain amount of inventory to meet fluctuations in demand. Thus inventory costs are unavoidable costs of doing business. Inventory costs of new entrants may also be proportionately smaller due to the smaller volumes involved.

The paper submits that ultimately, the inventory level decision is best left to the private sector rather than legislation as the various cost factors that influence the decision, e.g. exchange rate, interest rates etc., fluctuate in a free market. This implies that the optimal inventory level will not be constant, as RA 8180 implies. Thus, the Supreme Court may have actually improved the oil deregulation law without intending it.

The classic economic thinking on predatory pricing is that it may be practiced by dominant incumbent firms to deter or prevent entry by new firms. (This view is not uncontested either. On the other extreme, the Chicago School of thought would be that rational firms never practice it.) Ironically, the Supreme Court seems to be objecting to a provision at least sincerely meant to promote competition. The court correctly notes that an industry with high barriers to entry is likelier to see predatory pricing. However, since it views the tariff differential and inventory requirement as significant barriers to entry into the downstream oil industry, then it should welcome a predatory pricing provision rather than view it as anti-competition, which it did.

The oil firms are often accused also of colluding on prices. To the average person, this seems “obvious” because they charge similar prices and change their prices almost simultaneously. However, economic theory would suggest that since gasoline is a fairly homogenous product, firms’ prices cannot depart too much from each other. Since consumers can easily substitute one brand for another, a firm that prices too high will lose market share while one that prices too low forgoes revenue.

Moreover, even though firms may have different inventory cycles and so run down stocks at different times, they will still tend to change prices together. If crude costs have gone up, then the first firm to run out of older cheap inventory has no choice but to raise prices. Unless its competitors can supply the entire market, they do best by simply following along. Otherwise, if they continued at the old lower prices, they will simply sell more and run out of the old cheaper inventory faster anyway, putting themselves in the same position as the first. Might as well enjoy the windfall.

However, when crude costs fall, the first to run out of old inventory is in a happy situation. Again it would make sense for it to enjoy the “windfall” and keep prices at the old level. Only when everyone has moved to new cheaper inventory would prices move

down with price competition. Thus additionally, we expect an asymmetry in the response to changes in crude cost even when firms are not colluding.

In part due to a lack of understanding of this, public perception is that the oil companies are acting as a cartel and taking advantage of consumers. In 1997, that had led to some lawmakers filing a suit with the Supreme Court that eventually ended in the overturning of the original deregulation bill. Today the industry faces a bill filed in Congress and Senate proposing the establishment of a National Oil Exchange. Such an exchange would be a monopoly as it would purchase all refined products requirements from local and international suppliers and resell it to local companies for distribution.

Being a monopoly it would of course be susceptible to graft and corruption, on top of the usual inefficiencies that arise from complacency due to lack of competitors. If the local oil companies are really a cartel or monopoly, then erecting the oil exchange installs a bilateral monopoly industry structure. If the oil exchange behaves as a profit-maximizing monopolist, then this would raise prices to consumers. If it chooses to simply pass on to the oil companies savings in refined products purchases (a non-profit oil exchange), it will increase distribution surplus more than it would consumer surplus, suggesting that it would be an inefficient way of subsidizing consumers.

Lastly, there are lessons to be gained by examining the experience of other countries' regulation of the downstream petroleum industry. Thailand and New Zealand have both deregulated their downstream oil industries fairly recently. In the case of Thailand, which deregulated before the Philippines, the major oil companies still control a significant share of the market. However the new players are starting to eat into the market. This suggests that we really have to be patient in reaping the benefits of deregulation. On the other hand, the United States is a mature market but has experimented with various policies like divestiture and divorcement, in a bid to equalize market power.

Divorcement refers to limitations on oil refining companies' ownership of retail gas stations; i.e. restrictions on vertical integration. Studies in the U.S. show that this would not actually be beneficial to consumers. Vertical integration there has apparently occurred for efficiency reasons. Interestingly, New Zealand had divorcement laws prior to deregulation, but decided to scrap them with deregulation. In the case of the Philippines, further study will be required to see whether the same results hold true for the potential effects of divorcement.

The form of divestiture in the U.S. market of primary interest is the required sale of gasoline stations by British Petroleum-AMOCO and Mobil-Exxon before their respective mergers will be approved by U.S. antitrust enforcers. Otherwise, the merged companies would enjoy an unacceptably high concentration in retail and result in market power in certain urban markets. Given the huge lead of the big three here over the new players in terms of distribution outlets, this measure certainly deserves further study.

Chapter I Introduction

The Philippine oil industry had not always been a regulated one. It was a fairly competitive industry at one point with as much as four refiners: Bataan Refining, Filoil, Caltex, Shell and six marketing companies: Esso, Filoil, Caltex, Getty, Mobil, and Shell. This was before the era of the 1970s and the first world oil crisis. The government responded to the onset of the first oil crisis with the passage in April 1971 of RA No. 6173 or the Oil Industry Commission Act. This law created the Oil Industry Commission, which regulated most activities of the industry. Most importantly, price regulation was introduced. Whereas prior to this, industry players freely set their own prices, now the OIC would fix prices.

In 1973, government created the Philippine National Oil Company. It acquired Esso and Filoil. A further realignment in the industry occurred in 1983 with the acquisition by Caltex of Mobil while Shell acquired Basic Landoil (Getty). PNOC later acquired Bataan Refining and thus by 1985 the industry was reduced to just three companies: Caltex, Shell, and PNOC (later Petron).

In 1984, then President Ferdinand Marcos created the Oil Price Stabilization Fund as a buffer fund to stabilize the price of oil. When world oil prices were lower than the corresponding fixed pump prices, the firms contributed to the fund and the firms drew from the fund in the opposite event.

When Corazon Aquino took over as President, she created the Energy Regulatory Board with Executive Order 172. The ERB basically took over the functions of the OIC. Most importantly, the ERB was tasked with setting prices of petroleum products. It was also during her term that the Department of Energy was created with RA No. 7638. The Act was important for mandating the DOE to provide for an environment of free market and to institute, with the President's approval, the deregulation of the oil industry.

As part of its general thrust of opening up the Philippine economy to market forces, the Ramos administration passed into law on March 28, 1996, RA 8180 "An Act Deregulating the Downstream Oil Industry". It took effect on April 16, 1996. The major effect of this act was the allowing oil firms to set their own prices. Unfortunately, the Asian crisis soon took the region by surprise and this caused the peso to depreciate from Php 28/\$ to Php 40/\$. Naturally the oil companies adjusted their pump prices up, since the Philippines imports practically all of its crude oil requirements.

However, as the peso kept depreciating and the oil companies kept adjusting, public clamor broke out. This attracted the attention of a few lawmakers who proceeded to file a suit with the Supreme Court¹. Subsequently the Supreme Court decided in favor of the petitioners and it nullified RA 8180 on November 5, 1997. This decision is very important. Competition policy and antitrust laws are still at a very nascent stage in the

¹We shall henceforth refer to the Supreme Court as SC.

Philippines. Thus, this decision may fortunately or unfortunately set a precedent and shape future policy. A leading Philippine legal scholar has termed it a “landmark” case in local antitrust for it discusses the economic concepts of monopolization and cartelization, predatory pricing, and barriers to entry among others.²

Congress sought quickly to “repair” RA 8180. The result was RA 8479, which was approved on February 10, 1998

Now that over two years have passed, and a new oil deregulation act has replaced RA8180, we can perhaps look back more objectively on the events. This research paper seeks precisely to examine the reasonableness of the Supreme Court’s decision.

Philippine oil industry structure

The petroleum industry is usually classified into two sectors: the upstream and the downstream portion. The upstream portion refers to the exploration and drilling of oil whether such oil deposits are found under land surfaces or off-shore, e.g. under water. The downstream portion of the industry begins with the transportation of the output of the upstream portion, the crude oil, to refineries. Thus the downstream portion will generally include the following activities: importation and exportation of crude oil and petroleum products, refining, transportation (also referred to as transshipment and hauling), and marketing and retailing.

The Philippines is involved in both the upstream and downstream aspects. The Nido field was the first significant petroleum deposit discovered in 1976. Commercial production from Nido commenced in 1979. This was followed in the 1990s by the Malampaya and West Linapacan fields in Palawan. However, Philippine crude oil production is generally minimal and insignificant in relation to its energy requirements. (see table 1.1), especially when compared to some of our neighbors.

Table 1.1 Oil Production (in barrels, bbls) – Philippines

	1996	1997
Nido	174,821	124,450
Matinloc	91,490	123,280
Total	266,311	247,730

Source: DOE

Statistic	Philippines	India	Malaysia	Thailand
Proven Oil Reserves (Billion Barrels) 1/1/99	0.23	3.97	3.90	0.30

² Ma. Lourdes Sereno, “Law and Economics for the Judge”, in Perspectives on Law, Economics and Justice, Supreme Court of the Philippines, April 1999, p. 39.

Oil Production (1000 B/D)	0.85	764.00	797.00	123.00
Oil Consumption (1000 B/D)	350.00	1800.00	450.00	740.00
Production/Consumption (%)	0.24	42	177	17
Crude Refining Capacity (1000 B/D) 1/1/99	389.00	1141.51	474.40	712.75

Note: B/D = barrels per day

Source: U.S. Dept of Energy, URL <http://www.eia.doe.gov/emeu/phdex/contents.html>

Caltex established the first oil refinery in Bauan, Batangas in July 1954. Stanvac and Shell followed thereafter. At one point, there were even six refineries. Today, only the big three have refineries. Stanvac Refinery became the Bataan Refinery and its Limay, Bataan plant was completed in January 1961. The Shell Refinery started operations in July 1962 while a local player, Filoil Refinery began operations in September 1962.

Meanwhile, retail of petroleum products seemed to have been a vibrant business in the pre-martial law era. Total number of retail outlets in the industry grew to as much as 4860 but has suffered a decline since then. (see Table 2) Even today, the number of stations as of 1999 is only 3215, much less than the 1972 figure.

Table 1.2 Industry Retail Outlets

Company	1969	1972	1977	1981
Esso	802	771	0	0
Filoil	336	382	0	0
Caltex	995	1079	1103	1048
Getty	493	1086	582	433
Mobil	628	675	661	517
Shell	839	867	804	733
Petron	0	0	1058	1067
Totals	4093	4860	4208	3798

Source: Paderanga & Paderanga, "The Oil Industry in the Philippines", Philippine Economic Journal, Number 65, v27, nos. 1 & 2, 1988, p. 97.

Transportation of petroleum products is accomplished by a fleet of inter-island tankers, barges, tank trucks, and the Batangas-Manila pipeline.

Basic Technical Background

Petroleum is a hydrocarbon containing hundreds of compounds. Although compounds containing carbon and hydrogen only are the predominant ones (for example, octane). Other compounds containing some oxygen, sulfur and nitrogen are less

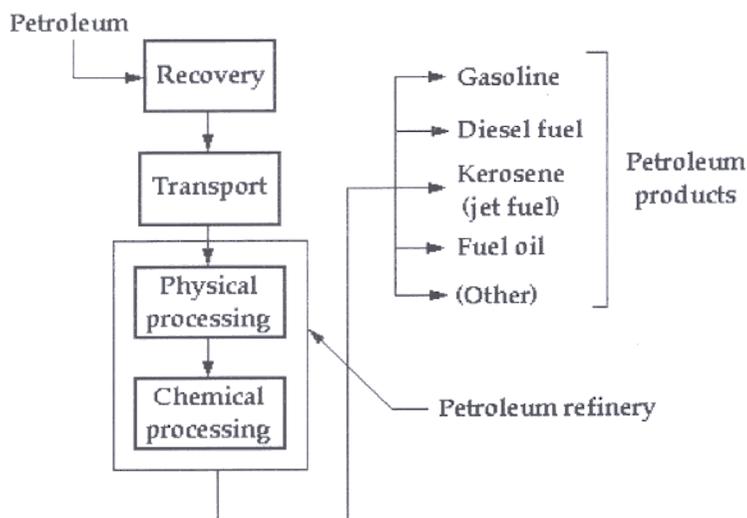
abundant. Typical compositions of crude oils are in the following range: 83-87% carbon, 11-16% hydrogen, 0-7% oxygen plus nitrogen, 0-4% sulfur.

Petroleum Hydrocarbons are desirable because they are responsible for the high heating value of petroleum. (Keep in mind the primary use of petroleum involves the conversion of its chemical energy to heat, with carbon and hydrogen in the various compounds being converted during combustion to carbon dioxide and water.) At the other extreme, compounds containing sulfur and nitrogen are undesirable because during combustion they are converted to sulfur dioxide and nitrogen oxides, which are the precursors to acid rain.

The vast majority of petroleum is refined into various fuel products (gasoline, kerosene, diesel fuel, fuel oils). (See the flowchart below) A very small remaining fraction is used to produce chemicals, which are the basis for the so-called petrochemical industry; they include products that are synonymous with modern society (pharmaceuticals, cosmetics, plastics, detergents and textiles, to name just a few).

Most of the petroleum seems to be concentrated in the Middle East. Millions of years ago, as it was formed from decaying plant and animal material, particularly rich deposits were accumulated in the Persian Gulf area. (A typical oil well in Saudi Arabia produces 10,000 barrels per day. In comparison, the average production of oil wells in the U.S. is about 15 barrels per day.)

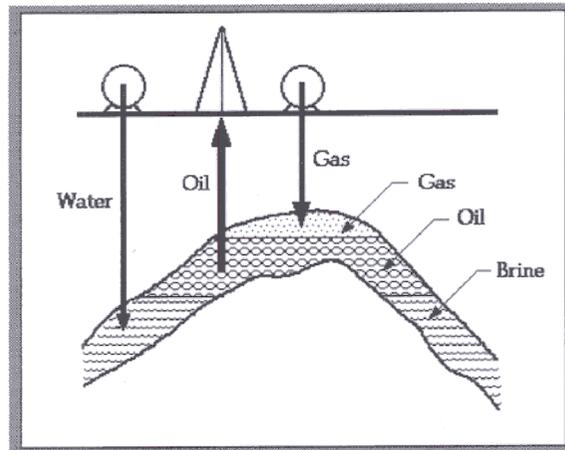
Figure 1.1. Flowchart of Petroleum Industry Production



In primary recovery of oil, which relies on the natural reservoir pressure to squeeze out the oil from the porous rock, approximately 30% of the oil known to be in the reservoir is brought to the surface. Enhanced recovery methods must be used to

recover more than that. Water or gas injection (secondary recovery) is used to increase the reservoir pressure. Steam injection (tertiary recovery) is typically used to reduce the viscosity of the remaining oil and thus further increase the amount that can be pumped out of the reservoir. These methods are not used routinely because they are expensive. When the price of oil increases, there is greater incentive to use them and thus increase, to some degree, the proven reserves of oil.

Figure 1.2 Schematic Diagram of Oil Recovery



Progress Report on the Effects of Deregulation

International crude oil prices have continued to rise in recent months as OPEC members implemented production cutbacks. Inevitably, domestic pump prices for gasoline and diesel have had to be adjusted accordingly upwards. Unfortunately, this has raised a howl among the various oil product consuming sectors as well as the opponents of oil deregulation. The latter have used this occasion to ask for a repeal of oil deregulation. Congressman Enrique Garcia, who had been one of those who successfully petitioned for the repeal of the first oil deregulation role, filed yet another motion to dismiss this second oil deregulation law.¹ The media, and particularly some newspaper editorials, have been railing once again against the oil companies, and ultimately, against the idea of deregulation as well.

Not suprisingly, most of those pushing for a repeal or at least a review of the law rest their arguments on the following price issues:

1. fuel prices have not dropped but conversely have been rising
2. alleged evidence of price-fixing; i.e. cartelization and collusion on price
3. overpricing by oil firms

Essentially, their opinion is that the oil deregulation law had failed to establish an environment of competition in the industry.

But is it fair to expect the law to bring intense competition in the span of merely two years? Or that it must bring lower prices? Deregulation of an industry sometimes does bring with it lower prices. However, in this case, international crude oil prices have been rising in recent months and therefore, it is not surprising that gasoline prices also had to be raised. From the low teens in the first quarter of 1999, international prices have since doubled to the mid \$20s per barrel. We must remember after all, the Philippines has very limited crude oil production. Since the products that we use; e.g. gasoline, diesel, etc. are refined from crude oil, we must import practically all of it.

Price reduction per se is not the objective of deregulation. The rationale for deregulating in this case is to open up the market to subject it more closely to market forces and let in more competitors. The increased competition in turn should serve as an incentive to firms to be more efficient, which may lead to lower prices in some cases. Attracting more investments was another objective of deregulation. Decontrolling prices also did away with the government (specifically the ERB's) function of computing and setting prices, freeing government resources for other functions, regulatory or otherwise. These objectives remain valid.

The deregulation has so far brought in quite a number of new players, as statistics from the Department of Energy show. (see table 1.3) Even allowing for double counting (because some of the firms may be engaged in more than one activity), the numbers are not insignificant, considering the short span of time in which the industry has been deregulated. For example, there are now 24 new players engaged in bulk marketing, and 13 in retail marketing.

¹ The Supreme Court recently rejected that motion in a ruling last December 1999.

Table 1.3 New Players in the Downstream Oil Industry
(As of June 1999)

Activity	Number of Players			Total
	In Operation	Under Construction	In Process of Entry	
Fuels Bulk Marketing	24	--	4	28
Retail Marketing	13	1	3	17
LPG Bulk Marketing	5	1	4	10
Terminalling	3	1	--	4
Bunkering	7	--	2	9
Refining	--	--	3	3
Total	52	3	16	71

Source: Department of Energy

The charge of cartelization or collusion on price misses the point on deregulation of the oil industry. It is unfair to blame RA 8479 (the Oil Industry Deregulation Act) for the price-fixing and/or coercive practices of the oil companies. The Act precisely outlaws such activities. What should be decried is not that we have deregulated the industry, but that we are slow in prosecuting anti-competitive practices, if in fact they exist.

If Shell, Caltex, or Petron are in fact colluding and talking with each other on what prices to set then by all means let us gather the evidence and prosecute them. But often, it seems that the only "evidence" put forth that the majors are colluding on prices is that they have similar or identical prices and change prices at roughly the same time. As this paper will argue later², this is not conclusive proof of collusion. Similar or even identical prices and coincident price changes are consistent with either collusion or competition.

RA 8479 does not condone price fixing. Neither was it the intended result. Unfortunately, price fixing can occur in any free market, and perhaps they do occur in many markets in our country, except that they go unnoticed. The act of colluding on prices or coercing other sellers to follow is in fact a violation of RA 8479. Sec. 11a of the act specifically prohibits acts of *cartelization*, which the act defines as "...any agreement, combination or concerted action by refiners, importers and/or dealers, or their representatives, to fix prices... in restraint of trade or free competition."

² See Chapter III.

Spatial Competition and Retail Gasoline Markets

A common observation of many motorists is that there seems to be more serious competition along Sucat Road south of Metro Manila, where some new players have stations competing with those of the majors. Prices reportedly have been lower here in the past by as much as sixty to seventy cents as compared with other gasoline stations in Metro Manila. This actually argues for deregulation and a free market.

We must remember that spatial (i.e. location) competition is the key in retail gasoline marketing. A gasoline station's market is essentially geographic; i.e. its market is determined by its location because it determines who and how many motorists are normally in the area. In this aspect the gap between the big three and the new players is truly huge. At last count, there is a total of 3,426 gasoline stations in the country. Of these, as of February 2000, the new players account for only 145 of these. See tables 1.4 and 1.5 for a breakdown by region and by new player. Moreover, putting up a new gasoline station requires substantial investment. (Estimates range from about P5 to P10 million for a modest size station.) That it would be difficult for the new players to catch up overnight is therefore an understatement. We will certainly have to be patient.

Furthermore, since location is critical for the success of a gasoline station and given all the years when entry into the industry was regulated and there were only the three majors, they had their run of the field and choice of the best locations, especially in the urban areas. Until fairly recently, Sucat was not as densely populated and we surmise was thus left relatively uncontested. It will therefore be in relatively newly populated areas where the new players can find locations more easily. Unfortunately for Metro Manilans, this means the benefit of increased competition may be slower in coming for them.

Table 1.4 Total Number of Gasoline Stations

	1996	1997	1999	2000†
Luzon	1870	2023	2067	2190
Visayas	614	584	576	1236*
Mindanao	576	577	577	
Total	3060	3184	3220	3426

*includes Mindanao.

Source: Department of Energy,

†Petron

Table 1.5 New Player Gasoline Stations (in operation as of February 2000)

New Players	Number
Flying V	34
Seaoil	20
Unioil	10
Total	19
Jetti	18
PTT	4
Gas Asia	4
Energex	6
Others	30
Total	145
1999	
December	112
June	65

Source: Department of Energy

This suggests it is important not to discourage new entrants into the industry. We have seen what benefits they bring when they can come in, e.g. the Sucat Road example. But to do an about face on oil deregulation and either nullify it or impose price controls would precisely scare away potential future competitors of the three oil majors.

Not surprisingly, the new players have yet to make a significant dent in market share on the retail side. Nevertheless, the new players have a market share of 8% out of the total oil products market. See figure 1.3. This is quite an improvement from their 0.7% share in 1996. (As of the first semester, Shell has overtaken Petron in market share.)

One area where the new players have made inroads faster is in bulk sales. See table 1.6. Perhaps this is understandable, given our observations on retail marketing. Unlike retail marketing, bulk selling does not require the huge investment needed to have a network of gasoline stations. A new player needs only have hauling and storage facilities, both of which would be needed anyway for retail marketing.

Recent Oil Price Behavior

Let us investigate the issue of overpricing. Figure 1.4 presents the price and cost movements of international crude oil prices and a few select refined products (unleaded and premium gasoline, and diesel) based on DOE data. For ease of comparability, the

original data³ have been transformed into indexes with the first data point, Jan 1998, as the base; i.e. all the indexes equal 100 at this point. Thus, for example, a crude oil index of 120 would signify that costs were 20% higher than in January 1998. January 1998 is a convenient starting point because oil prices were back under ERB control then.

Figure 1.3



Source: Department of Energy

Table 1.6 Market Share By Sector

	Majors			Others		
	FY 1998	FY 1999	2000 Q1	FY 1998	FY 1999	2000 Q1
Reseller	97.7%	96.1%	94.7%	2.3%	3.9%	5.3%
Industrial	93.4%	84.2%	86.9%	6.6%	15.8%	13.1%
Sales to NPC	98.4%	94.5%	99.1%	1.6%	5.5%	0.9%
LPG	90.1%	81.1%	76.1%	9.9%	18.9%	23.9%

Source: Department of Energy

A casual visual inspection reveals that prices dipped slightly after RA 8479 was passed in Feb. 1998 and the industry was “re-deregulated”. (Recall that the Supreme Court had struck down RA 8180, the original oil deregulation law in November of 1997

³ The Crude Oil Cost Index is a peso cost index obtained by indexing the product of the foreign exchange rate (PhP/\$) and the Dubai cost of crude oil (\$/bbl). The price indexes of premium and unleaded gasoline and diesel are indexes of the average pump prices at selected gasoline stations (PhP/liter)

and the industry went back briefly to price control.) One may of course argue that it was in the oil companies' interest to lower prices after RA 8479 took effect, if only to appease the public and link deregulation to lower prices in their minds. Intention is very difficult to prove however and we will not waste time attempting to do so. Nevertheless, the timing of RA 8479 was very propitious as the peso cost of oil was dropping in the first quarter of 1998. (Although the peso depreciated during that time, international dollar prices of crude oil dropped faster.)

A second point to notice about figure 1.4 is that by around the third quarter of 1999, the peso cost of crude oil was up more than were fuel prices (of premium, unleaded, and diesel) relative to January 1998 levels. In fact, the pace of growth of imported peso crude cost continued to outstrip growth in pump prices. In other words, while gasoline and diesel prices are higher on the average than they were in January 1998, they had not risen as fast as the oil companies' cost of imported crude. This suggests that the oil companies' margins on the three products have actually narrowed.

Third, in between January 1998 and the first quarter of 1999, gasoline and diesel prices did not go down relatively by as much as the crude oil cost index did. Crude oil is not the only cost of production of course, but if the other costs of production have been constant, then figure 1.4 suggests that the full benefits of lower crude oil costs were not passed on. However, before we jump on the oil companies' case for this, we must remember that our analysis depends a lot on what the state of things were in the base period. If prices in January 1998 corresponded to a fair rate of return, and if the other costs of production have remained fairly constant, then figure 2 does suggest that profit margins did widen. In any case, we must also remember that the oil companies incurred sizable losses in 1997 as a result of the SC's TRO that prevented them from adjusting prices to match the peso depreciation. If the profit margins did widen in 1998, it may only have reflected an attempt to recoup the losses suffered in 1997. And in any case, figure 1.4 suggests that those margins have shrunk further since then and may even be negative by now.

Summary

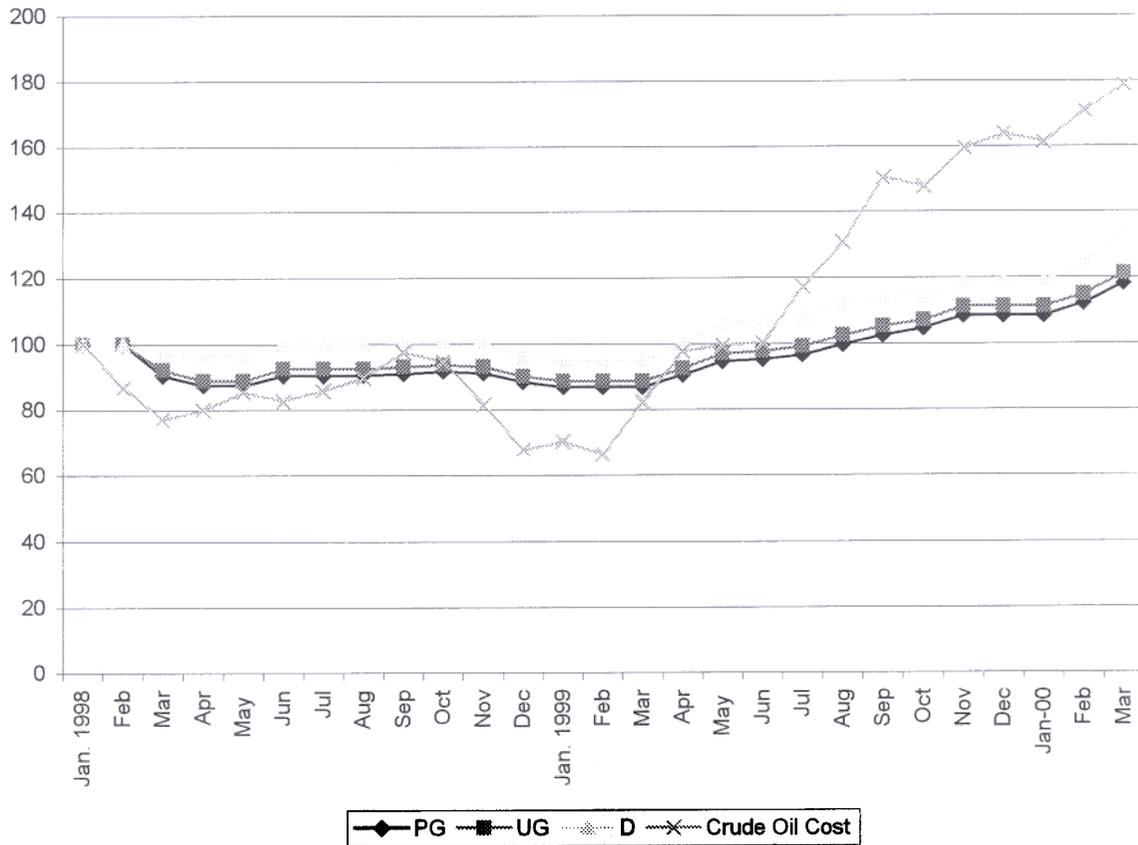
To conclude this chapter, the country is once again having second thoughts about oil deregulation. Perhaps we forget too easily that the oil industry wasn't always regulated. The problem is, most of the population is not old enough to recall that. Most have lived all their adult lives in a regulated environment. So for them, deregulation has had the added psychological barrier of being a step into the unknown.

Unfortunately, recent indications from OPEC members are that the production restraints will remain in place and worldwide inventories of oil will stay tight. This suggests that we should not expect a respite from rising crude oil prices anytime soon, and likewise for domestic pump prices. In turn, this would certainly lend further fuel to the present clamor for abandoning oil deregulation. As we have argued however, this is an inevitable result over which we have little control. With or without price control,

prices simply have to rise if crude oil prices continue to rise. It would be a pity to throw away the achievements of the oil deregulation for naught.

Figure 1.4

Historical Prices



Legend:
 PG = Premium gasoline
 UG = Unleaded gasoline
 D = Diesel

Source of Raw Data: Department of Energy

Chapter 2 RA 8180 and Tatad vs. Viray

There were actually two petitions filed before the Supreme Court that led to the high court's decision overturning RA 8180 in 1997. In one the petitioner was Sen. Francisco Tatad with the Secretaries of the Department of Energy and the Department of Finance as respondents. The other petition involved Congressmen Joker Arroyo, Edcel Lagman, Wigberto Tanada, and Enrique Garcia with FLAG, Human Rights Foundation Inc., Freedom from Debt Coalition, and Sanlakas as co-petitioners and Executive Secretary Ruben Torres, Secretary of Energy Hon. Francisco Viray, and the oil companies Caltex, Shell, and Petron as respondents. The decision has come to be known as the Tatad versus Sec. Viray case. We will refer to it as the Tatad case.

The Supreme Court decision on the Tatad case is a landmark one on the horizon of the nascent Philippine antitrust scene. In perhaps no other decision has economic concepts played such a central role. In this chapter we examine the decision to see how economic theory (or the lack of or misinterpretation of it) contributed to the said decision.

It should be stressed that the Supreme Court itself was not against deregulation. This was amply repeated in the decision to a subsequent petition that Cong. Garcia filed questioning the timing of deregulation and seeking the declaring of Section 19 of RA 8479 unconstitutional.¹ For example, in the decision on this case written by Associate Justice Consuelo Ynares-Santiago:

Be that as it may, we are not concerned with whether or not there should be deregulation. This is outside our jurisdiction.²

The Court respects the legislative finding that deregulation is the policy answer to the problems. It bears stressing that R.A. 8180 was declared invalid not because deregulation is unconstitutional. The law was struck down because, as crafted, three key provisions plainly encouraged the continued existence if not the proliferation of the constitutionally proscribed evils of monopoly and restraint of trade.³

While Justice Ynares-Santiago was not a member of the Supreme Court in 1997 that overturned RA 8180, those concurring with her decision included Justice Puno (who penned the majority decision in *Tatad v. Viray*), Chief Justice Davide, Justices Belosillo, Kapunan, Panganiban, Mendoza, and Vitug. Justice Melo also concurred in this decision but had dissented in the original *Tatad v. Viray* decision.

Neither is the Court anti-free market nor skeptical of the power of the market to serve consumers:

¹ The case referred to is that of G.R. 132451 Rep. Enrique T. Garcia v. Hon. Renato C. Corona, et al.

² *Ibid.*

³ *Ibid.*

Our ruling in *Tatad* is categorical that the Constitution's Article XII, Section 19, is anti-trust in history and spirit. It espouses competition. We have stated that only competition which is fair can release the creative forces of the market.⁴

Judge Ynares-Santiago at this juncture quotes from the *Tatad* decision the following:

Section 19, Article XII of our Constitution is anti-trust in history and in spirit. It espouses competition. The desirability of competition is the reason for the prohibition against restraint of trade, the reason for the interdiction of unfair competition, and the reason for regulation on unmitigated monopolies. Competition is thus the underlying principle of section 19, Article XII of our Constitution which cannot be violated by R.A. No. 8180. We subscribe to the observation of Prof. Gellhorn that the objective of anti-trust law is "to assure a competitive economy, based upon the belief that through competition producers will strive to satisfy consumer wants at the lowest price with the sacrifice of the fewest resources. Competition among producers allows consumers to bid for goods and services, and thus matches their desires with society's opportunity costs." He adds with appropriateness that there is a reliance upon "the operation of the 'market' system (free enterprise) to decide what shall be produced, how resources shall be allocated in the production process, and to whom the various products will be distributed. The market system relies on the consumer to decide what and how much shall be produced, and on competition, among producers to determine who will manufacture it."

Again, we underline in scarlet that the fundamental principle espoused by section 19, Article XII of the Constitution is competition for it alone can release the creative forces of the market.⁵

This section is important for it underscores the recognition by the high court of competition's role in achieving consumer welfare in a market economy. It is quite clear that we did not have a Supreme Court that was socialist or liberal (in the sense of favoring big government and government intervention) in attitude. And even if they were, it was a court cognizant of its limits. More than one Justice has stressed that it is not their role to second guess the wisdom of legislators' choice of deregulation as the best course of action towards improving consumer welfare. Once again, in the above-cited decision (*Garcia v. Corona*) authored by Judge Ynares-Santiago:

It bears reiterating at the outset that the deregulation of the oil industry is a policy determination of the highest order. It is unquestionably a priority program of Government. ...

Be that as it may, we are not concerned with whether or not there should be deregulation. This is outside our jurisdiction. The judgment on the issue is a settled matter and only Congress can reverse it.

In a separate concurring opinion, Justice Quisumbing states and cites another precedent:

....As the Court said in *Tanada v. Tuvera*, "[T]his Court is not called upon to rule upon the wisdom of the law or to repeal it or modify it if we find it impractical. That is not our function. That function belongs to the legislator. Our task is merely to interpret and apply the law as conceived and approved by the political departments of the government in accordance with the prescribed procedure."

⁴ *Ibid.*

⁵ Supreme Court, *Tatad vs. Viray et al*, 1997 citing Gellhorn, *Anti Trust Law and Economics in a Nutshell*, 1986 ed., p. 45.

Why then did the Court strike down RA 8180? We can find a succinct summary yet again in the above-cited decision of Judge Ynares-Santiago:

...., the High Court found that certain provision of R.A. No. 8180 were violative of Section 19 of Article XII of the Constitution which states that “the State shall regulate or prohibit monopolies when the public interest so requires. No combinations in restraint of trade or unfair competition shall be allowed.” In particular, the provision of R.S. No. 8180 on (1) tariff differential, (2) minimum inventory and (3) predatory pricing were found to “inhibit fair competition, encourage monopolistic power and interfere with the free interaction of market forces.” RA No. 8180 was declared unconstitutional in its entirety since “the three (3) offending provisions,” the Court noted, “so permeated the law that they were so intimately the *esse* of the law.”

Let us now examine the reasoning of the Court on each of these three points in the Tatad decision overturning RA 8180.

The Tariff Differential Issue

RA 8180 provided for tariff rates of 7% on imports of refined petroleum products as compared with 3% tariff on crude oil. The section dealing with this is Section 5(b) which states:

Any law to the contrary notwithstanding and starting with the effectivity of this Act, tariff duty shall be imposed and collected on imported crude oil at the rate of three percent (3%) and imported refined petroleum products at the rate of seven percent (7%) except fuel oil and LPG, the rate for which shall be the same as that for imported crude oil. Provided, that beginning on January 1, 2004 the tariff rate on imported crude oil and refined petroleum products shall be the same. Provided, further, that this provision may be amended only by an Act of Congress.

With regards this particular provision, Justice Puno contends that it is anti-competitive because:

In the cases at bar, it cannot be denied that our downstream oil industry is operated and controlled by an oligopoly, a foreign oligopoly at that. As the dominant players, Petron, Shell, and Caltex boast of existing refineries of various capacities. The tariff differential of 4% therefore works to their immense benefit. Yet, this is only one edge of the tariff differential. The other edge cuts and cuts deep in the heart of their competitors. It erects a high barrier to the entry of new players. New players that intend to equalize the market power of Petron, Shell and Caltex by building refineries of their own will have to spend billions of pesos. Those who will not build refineries but compete with them will suffer the huge disadvantage on increasing their product cost by 4%. They will be competing on an uneven field. The argument that the 4% tariff differential is desirable because it will induce prospective players to invest in refineries puts the cart before the horse. The first need is to attract new players and they cannot be attracted by burdening them with heavy disincentives. Without new players belonging to the league of Petron, Shell and Caltex, competition in our downstream oil industry is an idle dream.

It may be stretching things a bit to characterize the 4% differential as a “significant” barrier that works to the “immense benefit” of the oil companies. After all, the tariff differential was even more substantial at 10% (tariff rates of 10% for crude oil and 20% for refined products) before RA 8180. Even now, the Tariff Reform Program of the Philippines targets that in 2003 we will have only two tariff rates of 3% for raw

materials and intermediate goods and 10% for finished products⁶ *or a tariff differential of 7% as a matter of general tariff policy*. This would be the penultimate stage before reaching a rate structure with a uniform 5% tariff in 2004. It would seem incongruent to find Sec 5(b) of RA 8180 unconstitutional because of a 4% differential but remain silent about the Tariff Reform Program that builds in a 7% tariff differential by design.

While economists generally spurn the idea of protection, they regard tariffs as a second best arrangement at best and a necessary evil at worst. Governments require revenue to operate and tariffs at least augment government revenue. Tariffs are also considered as more transparent than other methods of protection like quotas, licenses etc. Economists recognize also that protection is politically expedient and very difficult to remove. One can be labeled unpatriotic and a puppet of multinationals and foreign interests to espouse removal of protection.

The effective protection rate is a well-known concept in economics that measures protection. It is defined thus:

$$e = \frac{v' - v}{v}$$

where e is the effective rate of protection and v' and v are respectively, the value added in an industry after and before imposition of a tariff. Intuitively, protection that is effective ought to raise the domestic value added of the industry being protected.

Putting higher tariff rates on finished or final goods than on raw materials or intermediate goods raises the effective rate of protection on the finished good above its nominal rate of tariff. Likewise, if the situation were reversed then we will have lower effective protection on the final good, even below the nominal rate of tariff. If a uniform tariff is applied on all goods throughout the production chain then the effective rate of protection for each good in the chain is the same as the uniform nominal rate of tariff. (see appendix to this chapter)

The analysis of the decision also stumbles into the common myopic view that “huge” required capital investments pose an absolute barrier to entry. First of all, barriers to entry are not black and white absolutes but involve also the question of degree. Undoubtedly establishing a refinery will require an initial outlay way beyond what the average businessman, and even most Filipino businesses would dream of investing. It is certainly true that the capital requirements for a refinery will rule out most domestic firms being able to participate in the local oil industry. In this sense the high capital requirement does pose a greater barrier to entry than say, the capital requirements of starting out in many other businesses.

However, potential investors are not just limited to our shores. Firms like British Petroleum-AMOCO, Mobil-Exxon, or even Total-Fina-Elf (a new player) own and operate refineries around the world and compete with Shell, Texaco and Chevron on a

⁶ Tariff Commission, “Tariff Reform Program”, 1998. Downloadable at: www.tarcm.gov.ph/tar-tp.htm

global scale. To them the so-called “huge” capital investment may not pose that significant a barrier to entry. They can certainly put up a refinery here, *if they choose to*. The problem is that the Philippine market may not be large enough to justify an additional refinery. As it is, our refineries are on average smaller already than the ones say, in Singapore. As a result, we suffer in competitiveness, since refining is an operation with extensive economies of scale.

Admittedly, it may be very difficult if not impossible to define a metric on barriers to entry the same way you might be able to, for example, in theaters: “no one admitted under the age of 18” etc. Barriers to entry is not simply about capital requirements. It can involve non-monetary issues like proprietary technology, size of market, scarcity of human or natural resources etc. It can even be the result of strategic action by incumbent firms; e.g. capacity expansion as a threat against entry by new players.

Justice Puno seems to accept implicitly that only “small” firms (will not build a refinery but just import and distribute) can be new players and enter the market. Ironically, removal of the tariff differential precisely steers the incentives in that direction. A tariff differential of 4% probably isn’t that sizable to clearly make putting up a refinery uncompetitive, but it certainly does reduce the attractiveness of one. Moreover, it may also discourage the existing refineries from expanding, since it is cheaper to just import the refined final product. As we shall see in the discussion on minimum inventory requirements, merely setting up storage facilities requires significant investment also and so only a handful of the new players are actually engaged in the importation of petroleum products. Most of them are focused only on distribution.

However, in his dissenting opinion, Justice Melo did recognize the importance of offering some incentive to refiners:

...Said adequate and continuous supply of petroleum products will be achieved if new investors or players are enticed to engage in the business of refining crude oil in the country. All of this can be made possible in view of the lower tariff duty on imported crude oil than that levied on imported refined petroleum products. In effect, the lower tariff rates will enable the refiners to recoup their investments considering that they will be investing billions of pesos in putting up their refineries in the Philippines. That incidentally the existing refineries will be benefited by the tariff differential does not negate the fact that the intended effect of the law is really to encourage the construction of new refineries whether by existing players or by new players.

There is a further forgotten issue that none of the justices pointed out. The big three are often painted as a “foreign” oligopoly but it must be remembered that Filipino jobs are also at stake here. The refineries and corporate offices of the big three are run mostly by Filipinos. Petron itself is still 40% owned by the Philippine government. About another 20% of Petron shares have been sold on the stock market and are held by private individuals, probably mostly Filipinos too. It might nevertheless be true that Saudi Aramco, which holds the remaining 40% stake of Petron, calls the shots in the day to day operations of Petron. Of course there will also be some expats, but the point is that the oil companies are not entirely “foreign”. Filipino stakeholders are involved too.

Now, the fact that there are Filipino stakeholders in the big three does not of course justify protecting it. Neither are Filipino jobs a sufficient justification. The problem with protectionism often precisely is that the price imposed on a majority to “save” jobs is much more than the wages those workers receive.⁷ But how often do we hear the clamor to protect a certain industry otherwise local firms will not be able to compete, close shop, and thereby increase unemployment? Why should those industries be more deserving of protection? There seems to be at least a double standard here when it comes to the willingness to afford protection in the case of the big three oil companies.

In the end, the tariff differential is at least partly an empirical question. Again, Justice Melo seems to have appreciated this:

The tariff differential provided in the assailed law does not necessarily make the business of importing refined petroleum products a losing proposition for new players: First, the decision of a prospective trader/importer (subjected to the 7% tariff rate) to compete in the downstream oil industry as a new player is based solely on whether he can, based on his computations, generate the desired internal rate of return (IRR) and net present value (NPV) notwithstanding the imposition of a higher tariff rate. Second, such a difference in tax treatment does not necessarily provide refiners of imported crude oil with a significant level of economic advantage considering the huge amount of investments required in putting up refinery plants which will then have to be added to said refiners production cost. It is not unreasonable to suppose that the additional cost imputed by higher tariff can anyway be overcome by a new player in the business of importation due to lower operating costs, lower capital infusion, and lower capital carrying costs. Consequently, the resultant cost of imported finished petroleum and that of locally refined petroleum products may turn out to be approximately the same.

It should be possible to make some rough estimates of how much of a wedge between costs of imported and domestically refined products a 4% differential translates into. It will of course put importers and distributors at a disadvantage. But is it an unreasonable disadvantage? No estimates were mentioned so it is not clear from the majority decision that such estimates had been made or were presented.

This is not to deny however, that the consumer benefits from the equalization of tariffs. Competing refined products can now be imported at lower cost. What is being questioned is the economic soundness of the argument that ascending tariffs is anti-competitive and constitute a barrier to entry.

Inventory Requirements

With regards inventory, Section 6 of RA 8180 required the following:

⁷ Unfortunately I am unable at the moment to find empirical studies for the Philippines. However, Alan Blinder’s “Hard Heads Soft Hearts”, 1987 p.116 cites results from a study by Hufbauer for the U.S.. Hufbauer estimated protection cost American consumers in 1984 an average of \$42,000 for each textile job saved; \$105,000 for each automotive worker; \$420,000 for each television manufacturing job; and \$750,000 for each steel industry job. The average wage in each sector (not to mention per capita GNP in the US) was lower.

Sec 6 Security of Supply -To ensure the security and continuity of petroleum crude and products supply, the DOE shall require the refiners and importers to maintain a minimum inventory equivalent to ten percent (10%) of their respective annual sales volume or forty (40) days of supply, whichever is lower.

Clearly the intention of the legislators behind the inventory requirement seems to have been the deterrence of “fly by night” operations and to assure supply. From an economist’s viewpoint though, it is market forces, rather than legislation, which best provides such deterrence.

First of all, any business establishment has to make provisions for inventory. Businessmen naturally want to avoid running out of inventory because it means foregone revenue and possibly lost customer goodwill. The larger the inventory, the less likely this will happen. However, carrying inventory entails carrying costs, not just storage costs but also the cost of goods tied up in the inventory (unless suppliers are particularly generous with their terms). The larger the inventory, the larger also will be carrying costs.

The standard inventory models in economics would have firms weigh the tradeoffs between the cost of lost customer goodwill and revenue in the event of a stockout situation with the carrying cost of inventory. Among other variables, interest rates, exchange rate, sales volume, forecasts of market size etc. could be determinants of the optimum level of inventory to maintain. Since these factors may change over time, the optimal level of inventory can too. The author has been unable to determine the source or rationale of the rule of thumb of 10% or 40 days decided on by the legislators who crafted RA 8180. In any case, the upshot is that this provision is arguably unnecessary and possibly obtrusive.

Nevertheless, the question which confronts us is why did the high court rule this provision as being also anti-competitive, and therefore, unconstitutional?

The reason seems basically the belief that this stipulation will be more onerous to the new entrants than to the big three, and thus discourages the entry of new players. In other words, the Court seems to view it as erecting another barrier to entry. To cite once again from Justice Puno’s decision:

The provision on inventory widens the balance of advantage of Petron, Shell, and Caltex against prospective new players. Petron, Shell and Caltex can easily comply with the inventory requirement of RA No. 8180 in view of their existing compliance with this requirement difficult as it will entail a prohibitive cost. The construction of storage facilities and the cost of inventory can thus scare prospective players. Their net effect is to further occlude the entry points of new players, dampen competition and enhance the control of the market by the three (3) existing oil companies.

Once again there arises the question of to what degree does this represent a barrier to entry? True the big three will require no new action to comply with this requirement while the new players will. However, as it has been explained above, the new players will presumably want to install some storage capacity and maintain some inventory as normal business practice anyway. The question is whether 10% or 40 days equivalent is

unreasonably above this level or not. It may even be the case that the new players would have voluntarily maintained more than the minimum specified in Sec. 6 of RA 8180 anyway.

Furthermore, even before RA 8180 was repealed, around thirty new players had already expressed their intent to do business here. Many like Coastal, PTT, Total, SeaOil, Flying V etc. had even gone ahead and started operations already. This would seem to belie the claim that the overall effect of the 4% tariff differential and the minimum inventory requirement is to be a significant barrier to entry. Admittedly, one could speculate that perhaps in the absence of these alleged anti-competitive provisions, there would have been more new players. But thirty hardly seems an insignificant number of new entrants (certainly when compared to three: Shell, Caltex, and Petron) and would seem to cast some doubt on the barriers to entry that these alleged offending provisions erected. Justice Francisco makes precisely this point in his dissenting opinion:

...Whether or not the requirement is advantageous, disadvantageous or conducive for new oil companies hinges on presumptions and speculations which is not within the realm of judicial adjudication. It may not be amiss to mention here that according to the Office of the Solicitor General “ there are about thirty (30) new entrants in the downstream activities x x x , fourteen (14) of which have started operation x x x , eight (8) having commenced operation last March 1997, and the rest to operate between the second quarter of 1997 and the year 2000.” Petitioners did not controvert this averment which thereby cast serious doubt over their claim of “hostile” environment.

Predatory Pricing

From inventory requirements we now move to the issue of predatory pricing. Predatory pricing has had a long history in the annals of antitrust literature. The most famous antitrust case involving predatory pricing is perhaps that of Nelson Rockefeller’s Standard Oil case of 1911 at the turn of the century (the previous one). This is the very same Standard Oil that arguably inspired the Sherman Act, the grandfather of American antitrust law.

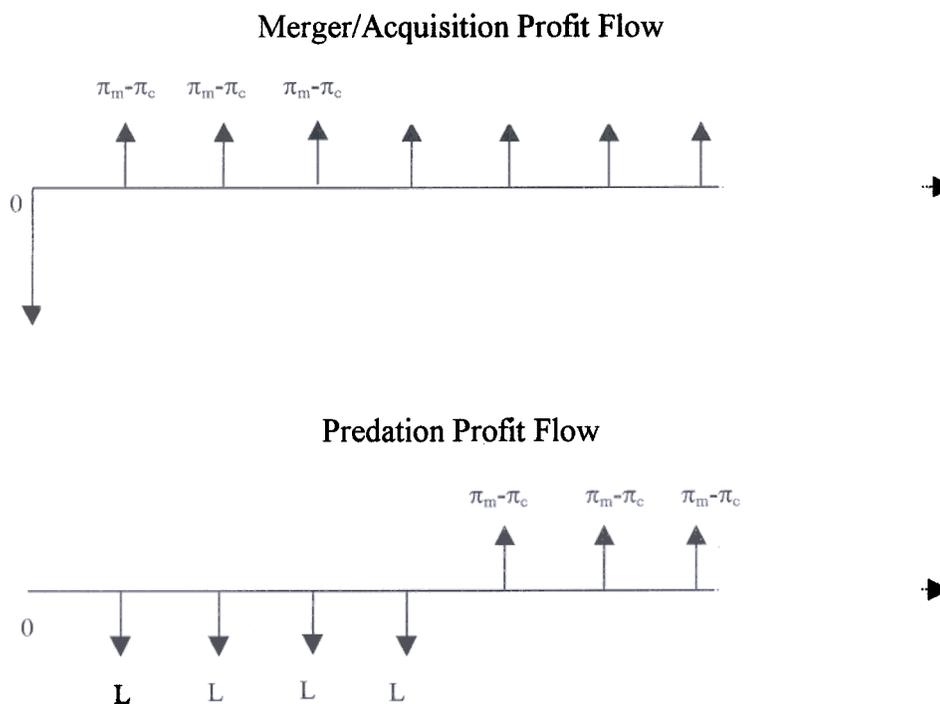
On the surface, the concept of predatory pricing sounds plausible and even obvious. The idea is that a firm might “prey” on a competitor (or many competitors) by setting very low prices to capture as much of the market as possible and drive the competitor(s) out of business. In extreme arguments, it is argued that the predator might even be willing to incur temporary losses in the process. Thus, as the usual story goes, the predator is normally characterized as a firm with deep pockets, since it must be able to suffer losses initially in its bid to drive the competition out of business. Once the competition has been put out of commission, the “predator” is now a monopoly and can set monopoly price and enjoy monopoly profits.

McGee (1958) argued however that Standard Oil did not practice predatory pricing and presented evidence for his view. More importantly, he advanced sound economic arguments for his belief that predatory pricing should be a rare occurrence.

The gist of his argument is that predatory pricing is irrational and that it is cheaper for a predator to buy out the prey than to engage in a price cutting war:

Assume that Standard has an absolute monopoly in some important markets, and was earning substantial profits there. Assume that in another market there are several competitors, all of whom Standard wants to get out of the way. Standard cuts the price below cost. Everyone suffers losses. Standard would, of course, suffer losses even though it has other profitable markets: it could have been earning at least competitive returns and is not. The war could go on until after average variable costs are not covered and are not expected to be covered; and the competitors drop out. In the meanwhile, the predator would have been pouring money in to crush them. If, instead of fighting, the would-be monopolist bought out his competitors directly, he could afford to pay them up to the discounted value of the expected monopoly profits to be gotten as a result of their extinction. Anything above the competitive value of their firms should be enough to buy them. In the purchase case, monopoly profits could begin at once; in the predatory case, large losses would first have to be incurred. Losses would have to be set off against the prospective monopoly profits, discounted appropriately. Even supposing that the competitors would not sell for competitive value, it is difficult to see why the predator would be unwilling to take the amount that he would otherwise spend in price wars and pay it as a bonus.

Let us try to illustrate the issues involved in McGee's argument below with the following simple diagram comparing the two income flows:



We will let π_m denote the monopoly profits per period that would accrue to the predator once the competition is out of the way. π_c will be the competition profit that the predator earns when it has to compete with the prey. Let L represent the lost profits per period to the predator from predatory pricing. Finally, let I represent the “investment” or purchase price the predator pays for the prey in the case of a merger/acquisition. Then the first line

represents the income or profit flow to the predator if it were to buy out or merge with the prey at the starting point, 0. In this case monopoly profits begin at once. If we assume that barriers to entry are high enough to rule out future new entrants, then the discounted value of the flow of monopoly profits would be given by π_m / r , where r is the discount rate. This is also the maximum price the predator would pay for the prey. Presumably it should be greater than the discounted value of the competitive profits (profits with the prey in the market) earned forever, otherwise the predator would not be interested in buying out the prey. On the other hand, π_c / r is the discounted value of the flow of income to the prey, and this is also the minimum price it would require to sell out. Here we have assumed that both predator and prey earn the same amount of profit π_c if both are in the market. Normally, the story in predatory pricing has the predator being much larger than the prey and so this minimum price will be smaller in that case.

The second line represents the flow of profits under the scenario that the predator chooses to cut prices to drive the prey out of business. In this case, the predator will forgo some profits and perhaps even incur actual losses in order to convince the prey to leave. Clearly the discounted present value of the second line will be less than the first and it will be even less the larger L is or the longer the prey holds out before giving up the market.

The predator will presumably prefer the course of action that yields the highest net present value. For the above two strategies, let us consider the difference between the two NPVs defined as the:

$$\text{NPV of merger minus NPV of Predation} = \sum_{i=1}^n \frac{(\pi_m - \pi_c + L)}{(1+r)^i} - I$$

The simple comparison above assumes that the monopoly profits can be enjoyed forever. A further problem with predatory pricing surfaces when we consider barriers to entry, or rather, the lack of it. If entry barriers are low; i.e. it is easy for new players to enter the industry, then even if a predator could drive a prey out of the market, it could be easily confounded by the entry of other new firms. This would return the predator to square one, and worse, after having squandered foregone profits for naught.

At the very least, this brief survey of the literature on predatory pricing suggests it is by no means clear that we need to worry about predatory pricing. If we accept this premise, the implication is that a provision on predatory pricing is not needed in the oil deregulation law. However, the debate on whether or not predatory pricing is rational behavior and can possibly be observed in real market behavior is not a settled one in economics. One could say that legislators were at least prudent in incorporating such a provision. At the very least it would be a type of regulatory insurance. If predatory pricing never happens then the provision is innocuous. If it does occur, then we are covered.

However, let us allow for the sake of argument that predatory pricing could occur and that it is prudent to provide against it. RA 8180 has a very general definition of predatory pricing, one that allows quite a bit of freedom in interpretation:

RA 8180 Sec. 9 Prohibited Acts

b) *Predatory pricing* which means selling or offering to sell any product at a price unreasonably below the industry average cost so as to attract customers to the detriment of competitors.

It is quite silent on what industry average cost means. This is perhaps intentional because even the literature is not unanimous on what should be the benchmark for a 'predatory' price. Perhaps the most famous is the so-called Areeda-Turner test. Areeda and Turner originally proposed that marginal cost should be the boundary below which a price is judged predatory. After all, economic theory claims that in a competitive market, prices would tend towards marginal cost.

The obvious problem however, with using marginal cost is that it is difficult to measure. Thus Areeda-Turner proposed that average variable costs (AVC) could also be used as a proxy for marginal cost. Variable costs (and hence average variable costs) are arguably easier to measure. Moreover, the minimum average variable cost has a special place in the economic theory of the firm. It is known as the 'shutdown point' because when prices fall below this level, it is argued that a firm is better off shutting down because it cannot even recover variable costs, let alone fixed costs. If it were to shut down, then at least it loses only the fixed costs and is therefore, better off. Thus it would not make sense to set a price below this. Indeed, Areeda and Turner propose that a price lower than average variable should *conclusively* be presumed to be predatory.

In contrast, RA8479 seems to have been written to make the definition of predatory pricing much more precise:

RA 8479 Sec. 11 b) *Predatory pricing* which means selling or offering to sell any oil product at a price below the seller's or offeror's average variable cost for the purpose of destroying competition, eliminating a competitor or discouraging a potential competitor from entering the market: *Provided, however,* That pricing below average variable cost in order to match the lower price of the competitor and not for the purpose of destroying competition shall not be deemed predatory pricing. For purposes of this prohibition, "variable cost" as distinguished from "fixed cost", refers to costs such as utilities or raw materials, which vary as the output increases or decreases and "average variable cost" refers to the sum of all variable costs divided by the number of units of outputs.

What is curious about the *Tatad* decision however, is that it did not call for a more precise redefining of predatory pricing.⁸ Why then did Justice Puno rule the original provision as tending also to "inhibit fair competition encourage monopolistic power and interfere with the free interaction of market forces", and therefore unconstitutional? He

⁸ Although it seems the petitioners had apparently complained about the imprecision in the definition of predatory pricing. Justice Francisco mentions this in his separate dissenting opinion: "...On predatory pricing: What petitioners bewail the most in Section 9(b) is "the definition of 'predatory pricing' [which] is too broad in scope and indefinite in meaning..."

correctly saw the earlier point made above that predatory pricing is futile without significant barriers to entry.⁹

...The ban on predatory pricing cannot be analyzed in isolation. Its validity is interlocked with the barriers imposed by R.A. No. 8180 on the entry of new players. The inquiry should be to determine whether predatory pricing on the part of the dominant oil companies is encouraged by the provisions in the law blocking the entry of new players.

However, the implication he draws from this economic point in his analysis seems to be faulty.

As aforesaid, the 4% tariff differential and the inventory requirement are significant barriers which discourage new players to enter the market. Considering these significant barriers established by R.A. No. 8180 and the lack of players with the comparable clout of PETRON, SHELL and CALTEX, the temptation for a dominant player to engage in predatory pricing and succeed is a chilling reality. Petitioners' charge that this provision on predatory pricing is anti-competitive is not without reason.

If in fact the barriers to entry are high, then the immediately preceding discussion above on barriers to entry and predatory pricing implies that if predation was to be rational behavior at all, it would precisely be under a regime of high barriers to entry! And therefore, a provision banning predatory pricing should precisely be welcomed in the interest of promoting competition, rather than removed, as Justice Puno would seem to have it.

⁹ In fact, Justice Puno cites an American legal author, Hovenkamp on this point:

“The rationale for predatory pricing is the sustaining of losses today that will give a firm monopoly profits in the future. The monopoly profits will never materialize, however, if the market is flooded with new entrants as soon as the successful predator attempts to raise its price. Predatory pricing will be profitable only if the market contains significant barriers to new entry.” (Hovenkamp, *Economics and Federal Anti-Trust Law*, Hornbook Series, Student ed., 1985 ed., p. 181.)

Appendix: Effective Rate of Protection

Consider the case of a final good with a price F and an intermediate good with price I . Suppose a tariff t_F is applied to the final good and a tariff t_I on the intermediate good. We make the simplifying assumption that the tariff can be passed on to the consumer. Then v' and v , respectively the value added in an industry after and before imposition of a tariff can be represented as:

$$v' = F(1 + t_F) - I(1 + t_I)$$

$$v = F - I$$

Denote e as the effective rate of protection and define it thus:

$$e = \frac{v' - v}{v}$$

It can be shown that

$$e < t_F \text{ if } t_F < t_I$$

$$e = t_F \text{ if } t_F = t_I$$

$$e > t_F \text{ if } t_F > t_I$$

First note that

$$v' - v = F(1 + t_F) - I(1 + t_I) - F + I = Ft_F - It_I$$

$$e = \frac{Ft_F - It_I}{F - I}$$

If $t_F > t_I$, then certainly $v' - v > 0$

Substituting the above expression in the definition of e :

Thus, if $t_F = t_I = t$, then $e = t$

Subtracting t_F to both sides of the above expression yields:

$$e - t_F = \frac{Ft_F - It_I}{F - I} - t_F = \frac{Ft_F - It_I - Ft_F + It_I}{F - I} = \frac{I(t_F - t_I)}{F - I}$$

And thus,

if t_p

if t_w

if

Chapter 3

Price Setting in Philippine Gasoline: Law of One Price or Collusion?

Introduction

Rising international crude oil prices in recent months have forced local oil firms to raise prices anew. This has provoked another round of accusations of cartelization and price collusion. The most common 'evidence' put forward is that the oil companies have very similar prices (differing only by a few centavos in the case of the big three) and that they change prices in quick succession of each other. The following lists some quotes from legislators and even supreme court justices that illustrate this bias.

Some quotes:

"There seems to be a tacit agreement between the firms on oil pricing. What is happening now is that when one (firm) raises its price, the two other companies would only match the price."

"I can't see how logic would support the view that stiff competition is the reason the firms' prices are identical."

"Do you mean to say, even if there were 40 oil firms in the market now, prices would still be the same?"

"The fact that they have identical prices...indicate that there is collusion, connivance and conspiracy amounting to cartelization among Petron, Caltex, and Shell."

Senator: "...shows that in many instances, the three oil companies had the same price for the same product, and whenever there was a change, that change will take place almost simultaneously. Now these three oil companies do not have the same buying prices for crude. They do not have the same production costs (or) the same marketing costs, so how come they have the same selling prices? This is something." (as quoted in Philippine Daily Inquirer Aug. 28, 1999)

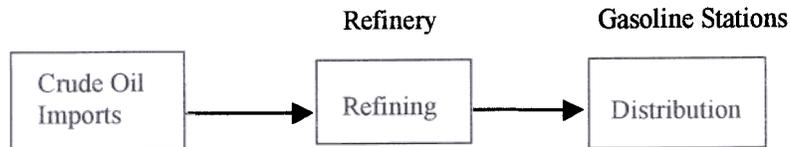
"These oil companies have inventories that would last up to three months so they should not immediately raise prices even if prices in the international market go up," (as quoted in Philippine Daily Inquirer Aug. 31, 1999)

Is this the law of one price working? Because gasoline is gasoline; i.e. a homogenous product, one company's price cannot diverge too much from another one's or else everyone will just purchase the lower priced gasoline. Or is the pricing behavior of the big three oil firms actually the outcome of collusion? These are good questions and their answer is not altogether obvious. The man on the street cannot be faulted if his natural intuition is that because the costs of production have not changed yet, there is no justification for raising prices. This chapter will present a theoretical model that attempts to explain the uniformity of prices as well as the timing of price changes.

In this chapter we will refer to the products of the oil firms collectively as gasoline even though they refine and sell other types of fuel as well; e.g. diesel, kerosene, aviation fuel etc. The basic production flow of fuel is simplified as follows: Crude oil is imported and then passed through a refinery, where it is processed into the various types

of fuel. In the case of the Philippines, crude oil production is negligible so the country imports all its crude oil requirements.

Fig. 3.1. Simple Product Flow of the Philippine Petroleum Industry (downstream only and for retail)



The Model

We start with a review of the standard Bertrand duopoly model. Assume that there are two firms in a market. The common assumption in such models is that the lower priced firm gets as much customers as it can supply. If both firms charge the same price, they split the market evenly. Let us also assume that each firm is identical and so they have the same costs. For further simplification, we will assume that there are no fixed costs and that marginal costs, c are constant. Let us assume a linear demand function:

$$P = a - bQ$$

Under these assumptions there are two classical duopoly models of competitive behavior, Cournot and Bertrand. Specifically, there are two Nash equilibria, the Cournot equilibrium in quantity and the Bertrand equilibrium in prices.

Since we are investigating price setting behavior, we will concentrate on duopoly equilibria in prices and briefly review the Bertrand model. Given identical marginal costs, the Bertrand equilibrium has both firms pricing at the same level $P = c$, and each earning zero economic profit¹. Each firm will have an output of $q = (a-c)/2b$. In the standard Bertrand model, each firm is assumed to be able to meet the entire market demand; i.e. no capacity constraints.

Furthermore, the story in the Bertrand model is that buyers are perfectly informed of prices so that a firm that charges a higher price will not sell anything. All the buyers simply purchase from the other lower priced firm. In the event that both firms charge the same price, it is assumed that they split the market equally.

It is easy to see that we cannot have different prices in a Nash equilibrium. If prices were different, then the high priced firm sells nothing and so will lower prices. If both firms charge a common price above c , it can be shown that either firm can always increase profits by undercutting the rival's price by just a bit in order to gain the entire

¹ Students of economics are often thrown off by the idea of zero profits in equilibrium because of their confusion with the common (accounting) sense of the word profit. The economics usage of economic profit includes all opportunity costs. Thus a 'normal' return on capital is already included as a cost when computing for economic profit and therefore zero economic profits is not as bad as it sounds.

market.² Finally, no firm will price below c , because even if they gain the entire market as a result, they will lose $(c - p)$ on each unit and will therefore be better off not selling anything. Thus the only Nash equilibrium possible in prices is to have $p_1 = p_2 = c$.

One drawback of this standard Bertrand model is that it is a static model. However, it is easy to extend it to a repeated setting. Obviously, in an infinite repeated setting, one Nash equilibrium is for each firm to set $p_i = c$ in each stage, just like the static case. The same reasons establishing a common price equal to marginal cost as Nash equilibrium in the static case apply as well to establish a similar equilibrium in each stage.

Thus the Bertrand duopoly model is often cited as an example of a market with a small number of firms, yet achieves the competitive result, price equals marginal cost, in equilibrium.

What drives this result? Intuitively, it is the assumption that switching is costless, a buyer can just as well consume either firm's product; i.e. the good is a homogenous one. If a buyer does not prefer one firm's product over the other, when one firm charges a higher price, the buyer simply does not buy from that seller and switches to the other. This is arguably the case with gasoline. Thus the Bertrand model in fact predicts similar prices is an equilibrium outcome. It is not the outcome of collusive activity but of competition. This is often referred to as the law of one price.

A Simple Model of Asymmetric Price Behavior

This suggests that it should not be surprising that firms will have the same price. However, the standard Bertrand story ignores considerations of inventory. It is as if everything sold is produced in that same period. In reality that is often not the case. Specifically, one firm may still have stock of cheaper gasoline produced in an earlier period when crude oil prices were lower. Moreover, even if firms had the same inventory capacities, it is likely that, for whatever reason, their purchases of crude oil stock will not be synchronized. In practice, this may occur for various reasons: different rates of sale, production delays etc. Thus, when there is a crude oil price shock, one firm may run out of cheaper inventory sooner.

It is precisely this that some of the quotes cited above seem to intuitively be grasping at. Why should a firm that still has inventory of cheaper oil raise prices? As cited above, some questions had been raised (even by lawmakers) as to why the big three change prices at about the same time when they purchase oil stocks at different times and presumably at different prices. Their implicit assumption seemed to be that only those who had run out of the cheaper oil and had to purchase more expensive oil (in case of rising crude oil prices) should raise their price, while the others that still had inventory of cheaper crude, would not. It seemed to them that some oil firms might be taking advantage by raising prices even though they had not run out of their cheaper inventory.

See Appendix 1 of this chapter.

To the average man on the street it smacks of opportunism. While this issue was raised in the context of oil prices, it is an issue that applies to any commodity experiencing a price shock, or a sudden unexpected movement of the exchange rate. Indeed, in the past when the peso depreciated sharply for example, consumers have been heard to make the same complaints about traders of other goods that had been imported under a lower exchange rate.

Moreover, some have “noticed”³ that upward price adjustments seem to occur faster than downward adjustments. In fairness to our policymakers, they are not alone in their questioning. Even US politicians have fallen to the same line of thinking, and not without basis. (See Karrenbrock, 1991) Some work has been done (for example, Borenstein et al, 1997 and Karrenbrock, 1991 for the US, Reilly and Witt 1998 for the UK) investigating asymmetric price behavior, but no similar work seems to have been done yet for the Philippine case. The three studies cited above have all, in fact, found evidence for asymmetric price behavior.

However, these studies tend to approach the phenomenon from an empirical side. In general their objective is measurement of the price asymmetry. Borenstein et al do propose three hypotheses to explain the price asymmetry (see Borenstein et al pp. 324n) based on inventory adjustment costs, production lags, search cost theory, and focal pricing points. For our purposes, their first hypothesis is perhaps the closest in spirit to the model we will present shortly:

1. Prices are sticky downward when input prices fall because the old prices act as a focal point for pricing.

We offer a theoretical explanation of price asymmetry that is based on the simple Bertrand price setting game. It can serve as one analytical explication of the above hypothesis. The model will consider two cases: a one time positive shock (increase), and a one time negative shock (decrease) in crude oil prices.

First Scenario: Positive crude oil price shock

First, let’s lay down the time line of the “game”. For simplicity, we assume that the demand for gasoline is perfectly inelastic; i.e. fixed in each period. At the start of the period firms set their respective price and the distribution of the market results afterwards. The total amount of gasoline available for sale or supply in a particular period is the sum of the finished goods inventory and gasoline refined in the period.

We assume that we have a simultaneous game. However, the results do not change if the game were a sequential one instead since the game matrices remain unchanged. In keeping with our identical firms world, both firms are assumed to have the same inventory capacity. This makes it more plausible to assume that they both have the same reorder point or minimum inventory level to be maintained. Each firm is assumed to have the same fixed costs, F .

³ This hypothesis seems to be inspired more by casual observation than empirical investigation in the Philippine case. I have not been able to find a study that investigates this question with Philippine data.

Consider the case of a positive shock in crude oil prices. Let us consider that point in time when one firm (say firm B) has “run out” of the cheaper gasoline and must now sell gasoline refined from the more expensive crude oil. Suppose firm A still has inventory of gasoline refined from cheaper crude. Let c_h denote the marginal cost of the higher priced gasoline, and c_l the lower cost gasoline, both of which we will assume to be constant within the same time period.

The question that the firms are confronted with now is whether or not to raise price and to what level. We assume that there is complete information; i.e. both firms are aware of their and each other’s inventory situation as well as the costs of imported crude. We are interested in the Nash equilibria, if any. To solve for these, we will construct the two firms’ reaction functions in price space. Before we do this let us rule out some price ranges where there will obviously not be Nash equilibria. Clearly prices at or greater than c_h will not allow Nash equilibria. If either firm sets a price in this region, the other firm can undercut and gain the entire market and therefore be better off. Since marginal costs are constant, marginal cost equals variable cost. Therefore a firm will keep producing and selling so long as price is above the marginal cost; i.e. there is positive contribution margin, in order to cover partly or entirely the fixed cost.

Another technical detail that we must take care of is that with infinitely divisible prices; i.e. continuous, then Nash equilibria may not exist since the lower cost firm can always increase profits slightly by approaching the higher cost firm’s price infinitesimally from below. We get around that by assuming that prices and costs can only be set at integral values; e.g. one cent, two cents etc., i.e. no fractions of cents possible. We will let ϵ here represent one cent.

In general, it is easy to see that for a perfectly inelastic market demand quantity of Q , a firm can increase profits by undercutting its rival as long as prices are at least three cents above marginal cost. A slight complication arises when prices are just one or two cents above marginal cost. In this case it can be easily shown that both $c + \epsilon$ and $c + 2\epsilon$ are equally good responses to a price of $c + 2\epsilon$ set by the competitor. (see Appendix 2 of this chapter)

We start first with firm A’s reaction function. (see figure 3.2) Firm A does best by always undercutting whatever Firm B’s price is, down to its marginal cost c_l . Below c_l A does not recover even variable (marginal) cost so it makes no sense to price lower than c_l even if B does. B has a similar strategy, whenever possible it will prefer to undercut except when prices are below c_h , since B will not cover even variable costs below that point.

One should also keep in mind that the reaction functions are really discrete and hence, discontinuous. They have been drawn as continuous lines however, to facilitate visual reading. The intersection of the reaction curves represents a Nash equilibrium. In this case we have a unique solution where B sets a price of c_h and A undercuts at $c_h - \epsilon$.

The normal form also allows us to gain an additional intuitive understanding of the competing strategies. It allows us to see that B actually has a weakly dominant strategy, which is to raise its price immediately.

If a firm elects to raise its price, there are three possible price levels in a Nash equilibrium: c_h , c_l , or some intermediate price c_i where $c_h > c_i > c_l$. At the risk of complicating the notation, let us define another parameter $\delta = c_h - c_i$. Thus δ represents the amount by which a firm undercuts c_h . Note that we can rule out the possibility of prices above c_h and below c_l in a Nash equilibrium. First if prices are above c_h then the higher priced firm can do better by undercutting the low price a little to gain the entire market. Second, if prices are below c_l then losses are incurred and either or both firms are better off not selling anything.

Without loss of generality, let us normalize units so that $c_h - c_l = 1$ and the market volume, Q , is also 1. This makes reading the game matrix easier. Then the above game matrix becomes figure 3.4:

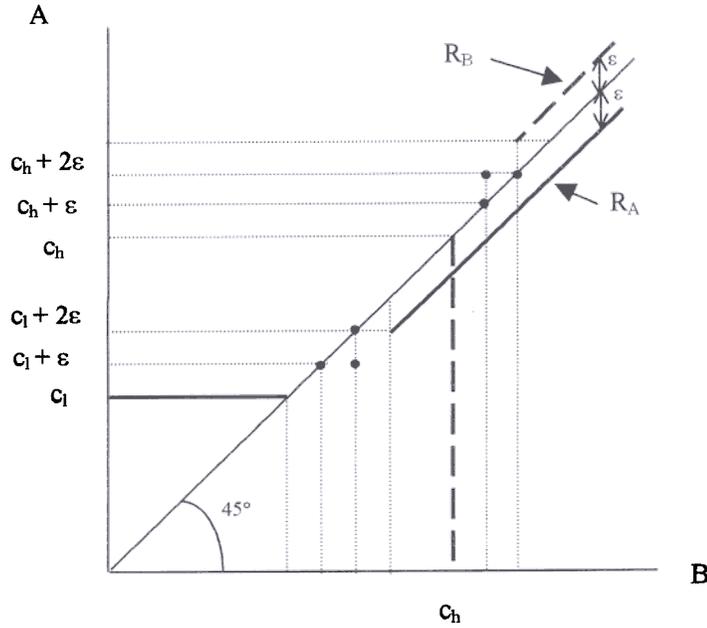
Figure 3.4
Firm B

		c_h	c_i	c_l
Firm A	c_h	$\frac{1}{2}, 0$	$0, -1$	$0, -\delta$
	c_l	$0, 0$	$0, -\frac{1}{2}$	$0, 0$
	c_i	$1 - \delta, 0$	$0, -1$	$\frac{1 - \delta}{2}, \frac{-\delta}{2}$

An inspection of the game matrix reveals that not raising price for firm B (staying at $p = c_l$) is strictly dominated by raising price to either c_h or c_i . Furthermore, among the strategies involving raising price, raising the price to c_h weakly dominates raising to an intermediate level c_i . Intuitively, with the higher cost gasoline, if firm B continues selling at any price below the new higher cost, then it loses some amount per unit. It would have been better off not selling anything. Thus firm B is better off raising prices regardless of what its rival does. If A maintains its old (and lower) price then, B simply sells nothing but suffers no loss. If A matches B's new higher price, then they split the market and firm B will make zero economic profits (and thus some amount of accounting profit) at least. If A undercuts B by just a little (say ϵ) to gain the entire market then B sells nothing but at least won't lose any money.

Firm A, on the other hand, sees the same game matrix and if it believes B is rational, can rule out the possibility that B will not raise prices since it is a dominated

Figure 3.2 Upward Price Shock Case



We may also represent the above game in the normal form using a game matrix (see figure 3.3). Having analyzed the reaction functions allows us to pinpoint the key prices. The following game matrix presents payoffs in terms of income before fixed costs; i.e. revenues less variable costs only. Since we assume a common fixed cost F , incorporating fixed costs would merely add a minus F to every element of the matrix and not change the analysis of a Nash equilibrium. The total market volume Q has also been normalized to equal one.

Figure 3.3

		Firm B		
		c_h	c_l	c_i
Firm A	c_h	$\frac{c_h - c_l}{2}, 0$	$0, -(c_h - c_l)$	$0, -\delta$
	c_l	$0, 0$	$0, -\frac{c_h - c_l}{2}$	$0, 0$
	c_i	$(c_h - \delta - c_l), 0$	$0, -(c_h - c_l)$	$\frac{c_h - \delta - c_l}{2}, -\frac{\delta}{2}$

strategy. In other words, it can safely assume B will play its weakly dominant strategy and raise prices to c_h . But given that Firm B will raise its price, then the best strategy for A now is to raise prices also to an intermediate price $c_i = 1 - \delta$. If firm A can actually supply the entire market then it sets δ as small as possible; e.g. one cent, so that it gets the entire market.

However, if A cannot supply the entire market then there is some critical fraction of the market it can supply below which it does best by simply setting $p = c_h$. Setting $p = c_h - \delta$ would merely forgo some revenue. This critical fraction is where:

$$(1 - \delta)f \geq \frac{1}{2}$$

The left hand side is the economic profit from selling at $c_h - \delta$ to a fraction f of the market (recall that the market size has been normalized to one) while the right hand side is the profit from matching the price but selling to only half the market $(c_h - c_i) * 1/2$.

Thus, the critical fraction of the market that can be supplied such that A prefers to undercut is:

$$f \geq \frac{1}{2(1 - \delta)}$$

As δ approaches zero, this fraction approaches $1/2$. In other words, if A cannot supply at least half of the market then it is better off matching prices and splitting the market.

In either case, the equilibrium suggests price will be either at c_h immediately and both firms split the market, or at some price $c_h - \delta$ that is close to it. Here firm A enjoys a temporary windfall.

Of course, consumers in an actual market are not likely to discriminate between prices that differ only by a few cents⁴ and the firms may thus nevertheless end up splitting the market. In other words, the higher priced firm (as long as not by too much in the perception of buyers) may not necessarily sell nothing.

Even theoretically though, one can offer a plausible explanation why firm A may nevertheless simply match prices and not attempt to undercut B. If both firms are in this business for the long haul, and neither one is likelier to anticipate a positive price shock, then either firm is just as likely as the other to find itself in firm B's situation. In the long run, this could naturally give rise to a 'you scratch my back and I'll scratch yours' kind of strategy. That is, A will not play hardball too much and just match B's price with the tacit assumption that when A finds itself in a similar disadvantaged situation, B will return the favor. Indeed, some studies in game theory have found that in a repeated setting, even the prisoners' dilemma could start to yield cooperative outcomes.

⁴ The industrial organization literature offers various explanations for this: search costs, transportation costs etc.

Second Scenario: Negative crude oil price shock

Let us consider the second case where there is an unexpected drop in crude oil prices. Suppose firm B is now the first to run out of the old inventory of more expensive gasoline. We maintain the same market allocation rule as above: low priced firm gets all the market and they split the market in the event of identical prices. Following the same notation as above, we obtain the following corresponding reaction curves in figure 3.5 (analogous to figure 3.2) game matrices figure 3.6 (analogous to figure 3.3) and figure 3.7 (analogous to figure 3.4). The corresponding game matrices show a remarkable asymmetry in the off diagonal elements (although with reversed payoffs). Meanwhile, the payoffs are reversed on the main diagonal.

Figure 3.5 Downward Price Shock Case

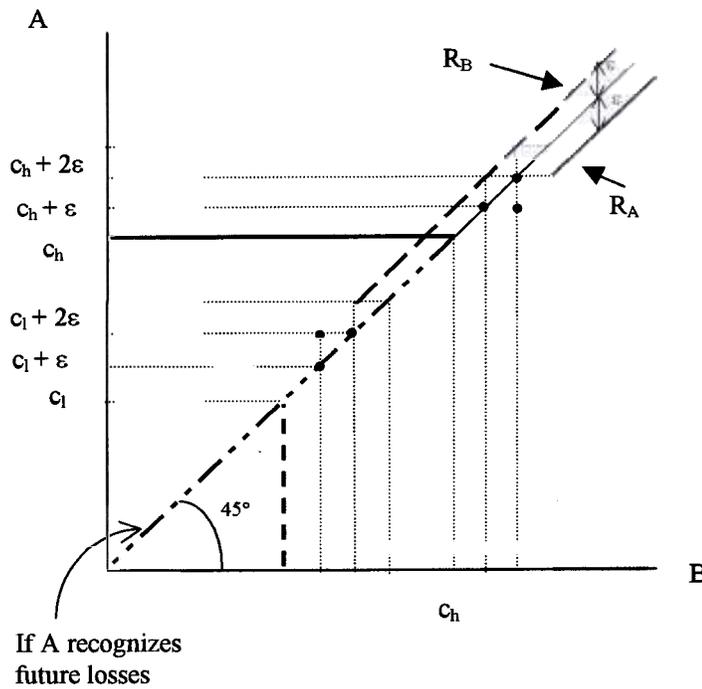


Figure 3.6

		Firm B		
		c_h	c_l	c_i
Firm A	c_h	$0, \frac{c_h - c_l}{2}$	$0, 0$	$0, (c_h - \delta - c_l)$
	c_l	$-(c_h - c_l), 0$	$-\frac{c_h - c_l}{2}, 0$	$-(c_h - c_l), 0$
	c_i	$-\delta, 0$	$0, 0$	$\frac{-\delta}{2}, \frac{c_h - \delta - c_l}{2}$

Figure 3.7

		Firm B		
		c_h	c_l	c_i
Firm A	c_h	$0, \frac{1}{2}$	$0, 0$	$0, 1 - \delta$
	c_l	$-1, 0$	$-\frac{1}{2}, 0$	$-1, 0$
	c_i	$-\delta, 0$	$0, 0$	$\frac{-\delta}{2}, \frac{1-\delta}{2}$

Now, continuing to charge the old high price of c_h is the weakly dominant strategy for firm A. Firm B, recognizing this will therefore choose the intermediate price, $c_h - \delta$. A similar discussion as above regarding the fraction of the market that B can supply thus ensues. But whatever the case (whether or not B can supply at least a critical fraction of the market), the Nash equilibrium has B either simply matching the old price of c_h , or getting as close as possible to it with $c_h - \delta$. The important point here though, is that B does not immediately go to the lower price dictated by the lower cost, but rather waits for A to finish off its old inventory. In the meantime, B enjoys a temporary “windfall”. *Thus there is an asymmetry in the price change in response to a negative crude oil price shock as compared to a positive one.*

There is however a theoretical quirk that arises and needs to be addressed in this second scenario in order for the model to be logically consistent. Technically, if B undercuts A, then A sells nothing and will forever have the costlier inventory. Meanwhile B will then enjoy positive economic profits period after period. One could imagine that A might then be willing to match any price just to get rid of the costly inventory and move on to new cheaper inventory that would put it on equal footing with B. This could be the case especially if there are fixed costs for A. (This is the explanation for the alternative dashed line branch of A’s reaction function, collinear with the 45-degree ray in figure 5.) If the loss from selling the inventory below cost this period were less than the discounted stream of fixed costs in the future then this will be the case.

There are two ways how a real market may depart from the above extreme theoretical result. Both have already been mentioned above in the first scenario. The first is that in real markets buyers may ignore price differences of a few cents. Second is that in a repeated setting, B may think it wiser to ‘cooperate’ and not lower prices until later when A is ‘ready’; with the unspoken understanding that A will return the favor in the future when the shoe is on the other foot.

Obviously, once A has also consumed its old higher cost inventory and has the same lower cost c_1 as B, both can go back to a Bertrand equilibrium with price c_1 .

Conclusion

In an ideal unchanging world with identical duopolists and a fixed market with perfectly inelastic demand, it is reasonable to argue that in the long run, the market would evolve in such a way that both firms invest enough capacity to split the market. In this case, we expect the classic Bertrand result of identical prices and price equals marginal cost (occasionally, at least of the higher cost firm) still holds.

We implicitly assumed a simultaneous move game here but it is easy to see that even if the firms moved alternately, the same outcome would result for so long as both firms have the same information and costs because the game matrices remain the same. In a sequential setting, the firm that runs out of old inventory presumably (firm B) will move first, since the other firm will still be in a status quo situation.

This suggests that even without explicit collusion, the two firms would change prices anyway and do so at about the same time, because it is a Nash equilibrium for both of them to do so. (I am not suggesting of course that Nash equilibria necessarily must be played. Game theory implies no such thing. Nevertheless, if an outcome is Nash equilibrium, then that fact can help explain why that outcome is plausible.)

Here some firm (A in the first case and B in the second) enjoys a temporary "windfall". This windfall is akin to what some retailers enjoy when the foreign exchange rate depreciates/appreciates and/or they have old stock bought at the old and cheaper price/exchange rate. It may precisely be this intuition that the average man on the street has about the oil companies that leads them to feel they are being taken advantage of and consequently, to march in protest in front of these oil companies' offices.

We are not exonerating the oil companies here of collusion. It may well be that their executives do actually get together and agree on what price to charge next and when to change prices. What the results here merely point out is that similar prices and simultaneous price changes is consistent with independent competitive price setting behavior. In other words, simply having the same prices and changing prices at the same time are not sufficient conditions for the existence of collusion. And therefore, they are not sufficient evidence for regulators to conclude there is collusion. In this regard, it would be a pity to abrogate or amend the oil deregulation law based on reasoning that rests solely on this misconception.

Appendix 1

Profit for firm if it splits the market:

$$\pi_s = (P - MC) \left[\frac{a - P}{2b} \right]$$

Profit for firm if it undercuts by ε and gains the entire market:

$$\pi_u = (P - MC - \varepsilon) \left[\frac{a - P + \varepsilon}{2b} \right]$$

Therefore, the change in profits is:

$$\begin{aligned} \Delta\pi &= \pi_s - \pi_u = (P - MC) \left[\frac{a - P}{2b} \right] - (P - MC - \varepsilon) \left[\frac{a - P + \varepsilon}{2b} \right] \\ &= -(P - MC) \left[\frac{a - P}{2b} \right] + \frac{\varepsilon}{b} [a - 2P + MC] + \frac{\varepsilon^2}{b} \end{aligned}$$

Thus, if $\varepsilon \rightarrow 0$ then, $\Delta\pi \rightarrow -(P - MC) \left[\frac{a - P}{2b} \right] < 0$; i.e. a firm can increase profits by undercutting the rival's price to obtain the entire market.

Appendix 2

When the price of a firm's competitor is $c + 2\varepsilon$, the firm is indifferent between undercutting to gain the entire market Q , and just matching price and splitting the market since total contribution to profits will be the same: (Note that ε and 2ε are the unit contribution margins.)

$$\varepsilon Q = 2\varepsilon Q/2$$

However, if the competitor's price is $c + 3\varepsilon$, then undercutting to gain the entire market will increase total contribution to profits since:

$$2\varepsilon > 3\varepsilon Q/2$$

It is easy to see that for as long as the competitor's price p is such that $p > c + 2\varepsilon$, where c is the firm's constant marginal cost, then undercutting will increase total contribution to profits:

$$\begin{aligned} p &> c + 2\varepsilon \\ (p - 2\varepsilon) Q &> cQ \\ pQ - 2\varepsilon Q &> cQ \\ \text{adding } pQ - 2cQ &\text{ to both sides,} \\ 2pQ - 2\varepsilon Q - 2cQ &> pQ - cQ \\ 2Q(p - \varepsilon - c) &> (p - c) Q \\ Q(p - \varepsilon - c) &> (p - c) Q/2 \end{aligned}$$

The last equation states that the total contribution margin serving the entire market at price $p - \varepsilon$ is greater than when splitting the market at price p .

Chapter 4 To Exchange or Not To: A National Oil Exchange?

In recent months, the idea of a national oil exchange has been much discussed in the media and among the general public. The idea was originally proposed by Congressman Enrique Garcia (the same congressman who had been one of the petitioners in *Tatad vs. Viray*). He authored House Bill No. 8710¹ which describes his proposed exchange system. Apparently, an almost identical version was filed in the Senate by Sen. Juan Ponce Enrile, SB No. 1855. In essence, the original idea had been to nationalize all oil storage facilities² in the country and have the resulting government corporation (to be called National Oil Exchange Corporation, NOEC) trade on the world oil market. The proposed NOEC will buy, store, and distribute refined petroleum products. The rationale was basically that such a ‘big’ national entity could obtain better prices for the refined products.

The oil companies, new players and the big three, will now purchase their refined products from the NOEC and be allowed to distribute them through their usual channels; e.g. their gasoline stations.

This almost certainly implies that the local refineries will be shut down since these refineries need storage facilities for their raw materials (crude oil). One can also ask what happens to Coastal, which currently leases the storage depots left behind by the Americans in their former bases.

Needless to say this will scare away foreign investors. For if the investments of the foreign oil companies in their refineries can be nationalized just like that, then what guarantee would a foreign investor in any industry have that once their investments were sunk in the Philippines, the government will not take policy actions that render those investments useless?³

Second, it erects a government monopoly plain and simple. Once again, it would put government in business and in direct competition with private business. In this case it makes government an importer of refined petroleum products.

Too easily we forget that even though these oil companies may be foreign owned (one of them is even partly Philippine owned – the Philippine government owns 40% of Petron). We are still talking of local jobs here. In principle, one may ask why not do the same to other industries as well; i.e. just have the government import cheaper goods and close down the local manufacturers?

¹ See Appendix to this chapter for selected provisions of HB 8710 and HB 12052.

² Including those owned by the big three as well as the Subic-Clark facilities which are currently being leased by Coastal Petroleum.

³ Presumably the government will purchase or lease whatever private storage facilities the NOEC will take over. This of course raises the practical question of whether the government can afford to spend that much money to get into the oil business.

Third, assuming that the big three are allowed to name a price or rental rate for their facilities, what guarantee is there that the price or rent will not negate whatever scale economies the NOEC could have been able to gain from the purchase of the refined products?

Then there is always the “x” factor: the tendency for publicly run corporations to be less efficient. Witness NASUTRA and other government monopolies of the past. When a monopoly is created, there is always the temptation to extract rent from such a situation. The government is not an exception to such temptations.

A Philippine Star columnist, Federico Pascual, has advanced a compromise measure. He proposes that the NOEC merely take over the Subic and Clark storage facilities left by the Americans. Under his scheme, all other private facilities will be left in private hands. The oil companies can then go ahead refining and/or importing as usual. Of course, they may also purchase from the NOEC if they so desire. Essentially, the NOEC would simply be supplanting Coastal in this revised compromise formula. He rationalizes that the Subic and Clark facilities would be equivalent to 25% of total storage capacity, thereby giving the NOEC a sufficient initial market share to compete with the big three.

This “Pascual” formula is certainly less extreme than the original Garcia proposal.⁴ However, there remains some problems with it.

Firstly, this still requires taking over the Clark-Subic facilities currently leased under contract to Coastal Petroleum already. To rescind this contractual arrangement would again cast grave doubts in the minds of foreign investors on the stability of Philippine laws, and more importantly, whether a contract in the Philippines means anything at all.

Second, is there any reason to believe that a government entity can do much better than Coastal, a private firm following the profit motive, in sourcing refined products? Coastal presumably attempts to source the same volume of products at the lowest possible price in order to maximize its profits. Moreover, Coastal is a company with much experience already in the business. It is their expertise or comparative advantage. Should we believe that the government can do better at trading on world oil markets when that is not their expertise? Of course, some might say that the government ran Petron for many years and that experience will be helpful. Certainly that experience counts, but that experience presumably has been left behind with Petron.

Then there are other logistical problems. The Subic-Clark facilities will accommodate only about a fourth, or 25% of the total Philippine market demand. Moreover, it has no LPG storage facilities. Thus an oil exchange would still either have to build storage for the remainder, a very costly proposition, or lease it from the current

⁴ In the latest version of his oil exchange idea, House Bill No. 12052, Cong. Garcia has also toned down his original proposal by reducing the scope of control from industry wide facilities to just those at Subic and Clark. See Appendix to this chapter.

private companies. Also, refining is a continuous process. It cannot be shut down and started up easily like a light bulb. The oil exchange would create a highly risky business environment for refineries. If a refining company cannot be assured that it will win next month's (or even the next few months' bidding for that matter) what would it do with its output? The incentives would be stacked heavily in favor of simply trading and abandoning refining. This would not bode well for our security of supply.

Finally, both the Garcia and the Pascual formulas fail to take into consideration the spatial nature of retail gasoline competition. As has been pointed out in Chapter I, the market of a retail gasoline station is a geographic one. Given that the big three still hold a huge lead over the new players in terms of gasoline stations (about 3,000 vs. 165), that still represents an overwhelming market share dominance. More importantly, that market dominance still translates into price setting power. You can have 25% of the storage capacity, but if you don't have the gasoline stations to sell them, the inventory will just sit in storage.

Will a National Oil Exchange Reduce Oil Prices?

The concept of a national Oil Exchange *seems* to make sense intuitively. Anyone who has haggled in a *palengke* has experienced getting a discount when he buys in bulk or in greater volume. And this is precisely what makes it a dangerous idea. The mistake is to extrapolate from this experience and conclude that the same thing will happen with the oil exchange. The mistake lies in forgetting the relative sizes of the Philippine market and the total international market for oil. Oftentimes, our day to day haggling experience is limited to encounters with small individual merchants in the market or *tiangge*. Imagine however, what sort of results you could expect haggling over the price of a couple of shirts with say, Shoemart. You would probably be asked to take it or leave it. The total Philippine consumption for oil is estimated at 350,000 barrels per day. In contrast, the world market is estimated to be more than 70 million barrels a day. It is very difficult to imagine that we could get any significant price discount, given our very small demand relative to the total market, and even with the volumes that major oil traders transact.

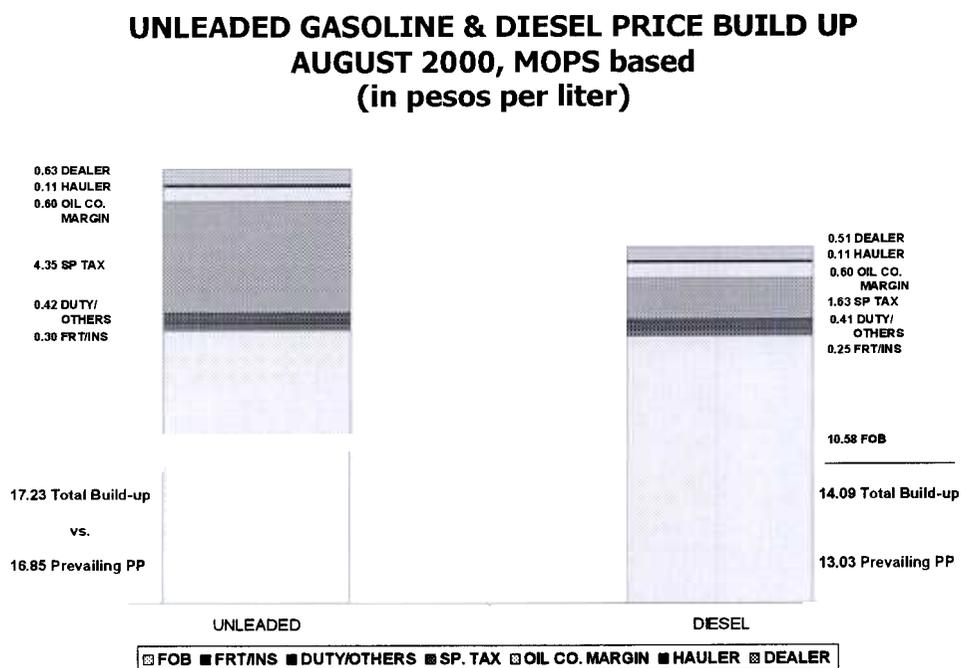
At the root of the exchange idea seems to be the belief that the major oil companies are abusing the practice of transfer pricing. The mother companies of the big three have been accused of overpricing inputs (in this case, crude oil) sold by the mother company to its local subsidiary, which would inflate the mother company profits while reducing the subsidiary's.

However, actual practices between mother company and subsidiary vary. For example, Petron has a supply agreement with its parent ARAMCO, though not an exclusive one since Petron also buys from other sources. Shell reports that it sources most of its crude oil from non-Shell crude oil fields like those of the National Iran Oil Company (NIOC), which is owned by the Iranian government. The global Royal Dutch Shell conglomerate actually has a separate subsidiary that purchases and delivers crude oil to the various Shell refineries around the world, including the Philippines. This

arrangement arguably reduces costs by exploiting economies of scale in global distribution.

But if transfer pricing is really excessive, it should show up in the bottomline, the price. It should be the case then that you could import final refined products from a major oil trading market like Singapore at significant savings. The DOE has estimated a cost "build-up" based on the Mean of Platt's Singapore (MOPS) price for refined unleaded and diesel final products in August (see figure 4.1). This is the average price for those products prevailing in Singapore, a free and unfettered market, and so the prices should be competitive. Their computations in fact show that the completely built up price would have been higher than the then prevailing local prices; P17.23 vs. P16.85 per liter for unleaded and P14.09 vs. P13.03 per liter for diesel. This suggests that whatever transfer prices were charged the local refiners by their respective mother companies were reasonable. In other words, an Oil Exchange would not have succeeded in reducing prices and may even have resulted, ironically, in higher prices.

Figure 4.1



Source: Department of Energy

Moreover, economists recognize that transfer pricing is a valid management practice to optimize resource allocation among a firm's various divisions when the transfer prices are set at their proper levels, the opportunity costs of the transferred resources. Transfer prices allow the various divisions of a conglomerate to balance the

flow of resources among themselves to optimize conglomerate wide profits. If a transfer price was set too high, then the “buying” subsidiary would get the signal that its operations are costlier and less profitable than it actually is and thus curtail its output. Moreover, it would have a more difficult time competing because of its “inflated” internal costs. In the context of this paper, an oil major could not maintain excessively “high” transfer prices in the long run because the other majors’ subsidiaries with the correct transfer price built in would be able to undercut its subsidiary in price.

On the other hand, an excessive transfer price would mislead the “selling” division into thinking its operations were more profitable than it actually is and overproduce its output. Then when it tries to sell the excess outside the conglomerate, it discovers that it can’t sell any because the market price is lower than the transfer price. Overall profits of the conglomerate might suffer in the end. Thus, the conglomerate has an incentive to transfer price among its subsidiaries at the economically “proper” transfer prices.

But the most important objection to the oil exchange is perhaps the fact that it would be a monopoly. All distributors would have to purchase their stocks from it. This raises the question of whether the oil exchange will operate as a nonprofit, or a profit making enterprise. If it operates for profit, then it will lead to a case of what economists call “double marginalization”. It will charge a margin for profit, and then on top of that, the distributors will also charge another margin for themselves. Thus prices may even end up higher than without an oil exchange.

Suppose it operates as a nonprofit and simply passes on whatever savings in purchase discounts it enjoys to the distributors.⁵ What guarantee is there that the distributors will pass on the savings to the consumers? In fact, if the distributors are a cartel or a monopoly themselves, they will tend to keep some of this saving for themselves. Thus it would be an economically inefficient way of helping the consumer. This possibility is analyzed and dealt with more extensively in the next section.

Also monopolies tend to be inefficient precisely because they have no competition. The government has not had a particularly good track record in operating monopolies. While the oil exchange will not engage in manufacturing, it may be inefficient in its administration of the exchange; e.g. purchasing, allocation and distribution of the refined products. Problems of graft and corruption also loom large in the bidding and allocating of the product, as well as the bidding out of ancillary contractual functions like hauling, shipping etc. A government-run oil exchange would probably also be susceptible to political pressure to subsidize the prices of products to keep them artificially low. This is why the Oil Price Stabilization Fund (OPSF) ended up in a deficit when the industry was regulated and why the National Power Corporation is not profitable.

Lastly, if the big three are in fact a monopolistic cartel and collude to overprice their products, they are able to do so because they control most of the retail outlets. The

⁵This seems to be what HB No. 12052 Sec. 8 contemplates. See appendix of this chapter.

oil exchange does nothing to address this. In fact, the oil exchange would simply deliver cheaper goods to this cartel to sell, assuming again that in fact it will be able to obtain the refined products at a substantial discount. Besides, if the big three really were colluding, couldn't they also collude and rig the submission of bids to the oil exchange? If this were the case, the solution is really enforcement of antitrust laws and empowering of the concerned government agencies with the resources to detect, prevent, and prosecute, if need be, such anti-competitive behavior.

Welfare Analysis

Presumably the objective in setting up the NOEC is to lower the pump price of gasoline. Reading through the NOEC proposal as embodied in House Bill 8710 and Senate Bill 1858, it seems the assumption is that the NOEC can buy refined products abroad from the lowest bidders at the lowest prices and then count on the oil companies to pass these savings to the consumers.

As was argued above however, the big three still has substantial market power on the retail end. Let us, in order to give the greatest justification for an NOEC, assume that the big three act as a monopolistic cartel⁶. Assume further that the NOEC in fact is able to source finished products at lower costs than from the refineries here. Suppose the NOEC elects simply to pass on the savings. Then we might consider modeling this situation as a reduction in the marginal cost of the big three monopoly (see figure 4.2 below). In this case, it can be shown that if the big three monopoly maximize profits and set $MR = MC$, then the increase in their producer surplus will be greater than the increase in consumer surplus.

In this simple model we assume the total market demand by consumers for gasoline is linear and given by $P = a - bQ$. Let P_1 and Q_1 represent an initial condition where the marginal cost is c_1 . Then suppose the NOEC is able to reduce prices to distributors (including the big three) from c_1 to c_2 . Then a profit maximizing distributing monopoly will set marginal revenue equal to the lower marginal cost c_2 and charge P_2 and supply Q_2 . Evidently both consumer and producer surplus will increase as a result. However, we will now show that the increase in producer surplus will be greater than the increase in consumer surplus in this simple model.

Fact $\Delta \text{Producer Surplus} > \Delta \text{Consumer Surplus}$

Proof:

The change in consumer surplus is given by ;

⁶ Otherwise, if the big three are competing vigorously with each other, one may question the need for an NOEC.

$$\begin{aligned}\Delta CS &= (P_1 - P_2)Q_1 + \frac{1}{2}(Q_2 - Q_1)(P_1 - P_2) \\ &= (P_1 - P_2)\left[Q_1 + \frac{1}{2}(Q_2 - Q_1)\right] = (P_1 - P_2)\frac{1}{2}(Q_2 + Q_1) \\ &= \frac{1}{2}[P_1Q_2 - P_2Q_2 + P_1Q_1 - P_2Q_1]\end{aligned}$$

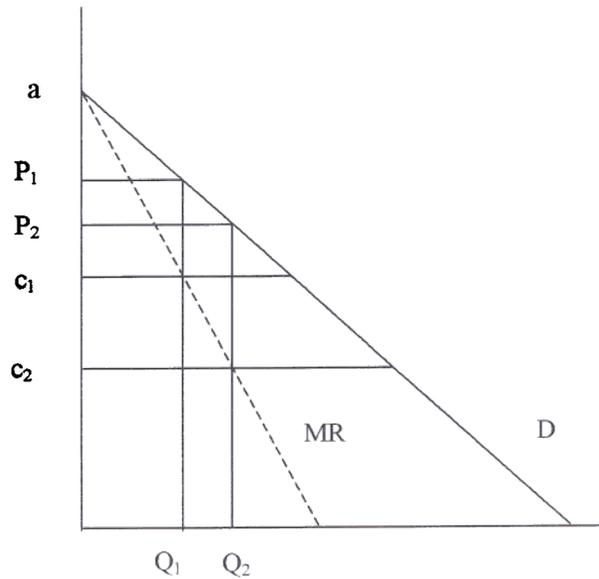


Figure 4.2

The change in producer surplus is given by:

$$\begin{aligned}\Delta PS &= (P_2 - c_2)Q_2 - (P_1 - c_1)Q_1 \\ &= (P_2 - a + 2bQ_2)Q_2 - (P_1 - a + 2bQ_1)Q_1 \\ &= Q_2a + Q_1a + P_2Q_2 + 2bQ_2^2 - P_1Q_1 - 2bQ_1^2 \\ &= a(Q_2 + Q_1) + P_2Q_2 - P_1Q_1 + 2b(Q_2^2 - Q_1^2)\end{aligned}$$

Then

$$\Delta PS - \Delta CS = Q_2(a - P_1) + aQ_1 + \frac{1}{2}P_2Q_1 + \frac{3}{2}P_2Q_2 - \frac{3}{2}P_1Q_1 + 2b(Q_2^2 - Q_1^2) > 0$$

To establish that the difference is positive in this case, we simply need to note the following:

1. Since a is the intercept of the demand curve, evidently $a > P_1$

2. A monopolist will always set price in the elastic range of the demand curve. This implies that: $P_2Q_2 > P_1Q_1$ ■

Thus, this fact implies that the NOEC, if successful in reducing costs, would actually increase the producer surplus of the big three as distributors more than it would increase the consumer surplus. Keep in mind that there **will** definitely be an increase in consumer surplus. The result merely suggests that a monopolistic distributor or a cartel, will benefit more from a successful NOEC, than will consumers. Graphically, this is represented by the relatively smaller drop in prices than the drop in marginal costs.

Of course, since the big three may not refine crude oil under Garcia's proposal, they will forgo some producer surplus from refining. This simple model is unable to tell us however, whether on balance, the monopolistic distributor/cartel will have higher or lower total surplus.

It seems ironic however, that even were the NOEC proposal to succeed, its primary beneficiary could be the distributor. If the consumer is the target of the benefit, it might be more efficient to effect a transfer to consumers of gasoline directly; e.g. a subsidy, rather than through this roundabout way.

Appendix

Selected Relevant Provisions of HB 8710 and HB 12052

HB 8710 An Act Restructuring the Oil Industry By Establishing a National Oil Exchange, And For Other Purposes

Sec. 3 *Coverage* – This Act shall apply to all persons or entities engaged in any and all activities of the oil industry in the Philippines.

Sec. 4 *Creation of National Oil Exchange Corporation (NOEC)* – Within three (3) months from the effectivity of this Act, a government-owned and controlled corporation to be named as the National Oil Exchange Corporation (NOEC) shall be established. The NOEC shall determine the country's total monthly requirements for refined petroleum products, and shall exclusively handle all the purchases, storages and distributions thereof to distributors, wholesalers, retailers and big bulk consumers throughout the country.

Sec. 5 *Bidding* – On a monthly basis, the NOEC shall bid out, to all interested oil refineries and trading companies in the world, the total monthly requirements for all refined petroleum products, in order to obtain the lowest price for said products. Only the products of the lowest complying and winning bidder/s may and shall be placed in commerce in the Philippines.

Sec. 6 *Storage Facilities* – The NOEC shall take over and operate all the commercial ocean receiving terminals and storage depots for refined petroleum products all over the country. For this purpose, the NOEC shall take control of the operation of said facilities by way of compulsory purchase or lease, at its option, subject to the requirements of the Constitution and existing laws. Such facilities shall be used exclusively by the NOEC for the storage and distribution of the products of the lowest complying and winning monthly bidder/s.

HB 12052 An Act Restructuring the Oil Industry By Establishing a National Oil Exchange, And For Other Purposes

Sec. 3 *Coverage* – This Act shall provide a framework for the following:

- (a) Establishment and operation of a National Oil Exchange which will exclusively handle the original acquisition/purchase of the country's total requirement for each and every refined petroleum product: gasoline, diesel, kerosene, fuel oil, liquified petroleum gas and other oil products; and
- (b) Definition of the participation and responsibility of the various government agencies and private entities.

Sec. 4 *Creation of National Oil Exchange Corporation* – Within three (3) months from the effectivity of this Act, a government-owned and controlled corporation to be named as the National Oil Exchange Corporation, hereinafter referred to as "OILEX", shall be

established. The OILEX shall determine the country's total monthly requirements for refined petroleum products, and shall exclusively handle their original acquisition/purchase, storage and eventual distribution to distributors and wholesalers, both the big three (3) oil companies and the new players alike.

Sec. 6 Bidding and Negotiation – The OILEX shall acquire/purchase the country's requirement of each and every refined petroleum through bidding and term contract negotiation open to all oil refineries and traders in the world, in order to obtain the lowest price for said products. Only the refined petroleum products of the lowest complying winning bidder/s and term contractor/s may and shall be placed in commerce in the Philippines.

Sec.7 Storage Facilities – The OILEX shall take over and operate the government-owned ocean receiving terminals and storage depots at Subic and Clark to receive and store all refined petroleum products. For this purpose, the OILEX shall take control of the operation of said facilities subject to the requirements of the Constitution and existing laws. Such facilities shall be used exclusively by the OILEX for the storage and distribution of the products of the lowest complying and winning bidder/s and term contractor/s. The refined petroleum products coming from the winning local oil refineries may be maintained in their respective storage facilities, subject to the exclusive control and disposition of the OILEX.

Sec. 8 Selling and Oil Pricing Mechanism – The OILEX shall sell, ex-plant and at cost, to all distributors and wholesalers all the refined petroleum products it will acquire. The cost, aside from the acquisition price, shall include recovery of expenses of the OILEX, etc.

Chapter 5

Deregulation Experiences and Lessons From Other Countries

The Philippines is not the first to deregulate its oil industry. Other countries have done so ahead of us. Among these have been some neighbors like Thailand and New Zealand. Other countries like the United States have experimented with policies to remedy perceived undesirable features of a deregulated or free oil market. This section will survey the experiences of some of these countries with the objective of drawing some lessons from their experiences.

New Zealand¹

New Zealand deregulated its oil market in May 1988 with the passing of its Petroleum Sector Reform Act. Prior to this, its oil industry had been regulated for fifty years, much longer than the Philippine experience.

New Zealand's regulation of its oil market consisted of:

1. price and margin control
2. entry exit regulation (licensing of retailers and wholesalers)
3. divorcement – Its Motor Spirits Distribution Act required a licence to operate either at the wholesale or retail level. In general, the Act proscribed vertical integration from either level to the other.

New Zealand's Commerce Act is its main antitrust legislation. Accompanying it are the Fair Trading Act and the Consumer Guarantees Act. Both of these are consumer protection legislation.

Most of the refined products come from the Marsden Point Refinery. Four companies dominate the wholesaling with the following approximate market shares as given by Clough et al (1989) An interesting set up in New Zealand is that these four companies together held 69% of the shares in the New Zealand Refining Company.

BP/ Europa	32%
Mobil	28%
Shell	24%
Caltex	16%

After deregulation, Clough et al reports the following experience:

- 1 The pace of structural change seemed fastest in the first six months, slowing down thereafter.

¹ Much of the material in this section for New Zealand was derived from "Issues in Oil Sector Deregulation" by Peter Clough et al., Research Monograph 43, New Zealand Institute of Economic Research, February 1989.

2. With the repeal of divorcement oil wholesalers and the oil companies quickly moved to acquire retail sites and stations. Clough estimates that the wholesalers may have acquired or secured long term supply contracts with around 15 to 20% of all outlets. British Petroleum(BP), an oil major, acquired in August the largest independent multiple outlet chain of stations. Not long afterwards, it also signed up the second largest chain on a long term contract.
3. Intense competition for some sites in some areas led to some stations changing brand. Oil companies reputedly dangled very generous offers to induce some retailers to sign long term contracts or to purchase sites.
4. Oil companies formalised the nature of supply contracts. Retailers that previously supplied on verbal agreements were asked to enter into formal written contracts. And where written contract were already being used, the oil companies sought to have new contracts with longer terms; e.g. from annual to three or five year basis.
5. Among the oil companies there is a split in their approach towards management of stations. Two have opted for a more “hands-on” approach, with manager-operation of a substantial number of their outlets, with the remaining franchised out. The other two companies seemed to favor franchising, preferring to franchise or lease out their sites.
6. Majority of retail stations remain independent businesses although likelier now to be “tied” by a contract to a particular supplier than was the case prior to deregulation.
7. Retail prices did fall after deregulation. A Ministry of Energy survey suggests that prices may have fallen by about 2.02 to 3.35 cents/liter for super grade and 1.39 to 2.44 for unleaded regular grade. Interestingly, the Minister of Energy had dropped both retail and wholesale prices by 6 cents/liter four days before the industry was deregulated. Their reason was to avoid the prices in the regulated regime from becoming a “benchmark” for deregulated price setting. Following deregulation prices did move up but not return to the previous high controlled levels.

Thailand

Fortuitously (or perhaps by design) Thailand took advantage of the fall in world oil prices after the end of the Iraq-Kuwait war to start its deregulation. Thailand implemented its deregulation in a staggered manner. “Semi deregulation” was implemented at the end of May 1991, while “full deregulation” was implemented less than three months later on August 19.

Prior to deregulation, the industry was subject to price control in a system very much similar to the way prices were set here in the pre-deregulation Philippines. The government determined ex-refinery and import prices based on Singapore posting and spot prices. Excise and municipal taxes on a specific basis (baht/liter) were yet another layer. The government also set the marketing margin and this rarely changed. Retail prices were set by the government and were basically built on top of the preceding components. The resulting retail prices were rarely changed. Since international crude of course fluctuated frequently, this implied that the Thais also had a buffer oil fund levy/subsidy analogous to our Oil Price Stabilization Fund (OPSF). Conceptually, the retail price was basically arrived thus,

$$\text{Retail Price} = \text{Ex-Refinery/Import Price} + \text{Oil fund} + \text{Taxes} + \text{Marketing Margin}$$

At the time of the deregulation there were two state owned oil companies PTT and Bangchak; and four major private oil companies: Shell, ESSO, Caltex, and Thailoil. Unlike the Philippines, there were a few independent oil companies involved in wholesale trade. Oil imports were controlled with a quota system. Entry into the oil business was closed by government policy (no license issued for article 6 oil trader)

Semi deregulation meant the following:

1. Service stations were required to display visible prices of their products.
2. Government reduced wholesale prices by reducing the oil fund levy.
3. When actual retail price was lower than the maximum price, it abolished the maximum retail price.
4. However, the government still fixed ex-refinery and import prices on a weekly basis.
5. The oil fund levy was fixed at a constant level and wholesale prices were allowed to change each week in line with ex-refinery prices.
6. The oil companies were responsible for setting prices at their service stations and closely monitoring them.
7. Oil companies were required to inform the National Energy Policy Office (NEPO) of changes in retail prices.
8. Service stations were required to report their pump prices every month.

Even after four years, Thailand's retail market was still dominated by four companies with a combined market share over 80% (as of September 1995). Perhaps the lesson here is we need to be more patient in reaping the benefits. We shouldn't expect a more competitive environment to spring up overnight.

The Thais were not without post deregulation problems either. There was consumer perception that the marketing margin was too high and indeed estimates of the average marketing margin rose from a little above 50 satang/liter at the start of 1991 (before deregulation) to above 120 satang/liter in October 1995. Not unlike our experience, there was public perception that the oil companies engaged in price collusion and that retail prices moved upwards faster than they did downward.

In stark contrast to the Philippines, the number of service stations grew quite rapidly after deregulation, as shown in the following table:

Table 5.1 Thailand Service Station Growth

TRADE	1992Q4	%	1995Q2	%	% growth
PTT	1025	27	1352	22	32
Shell	915	24	1008	16	10
ESSO	757	20	811	13	7
Caltex	547	15	585	10	7
BCP	41	1	777	13	1795
SUSCO	95	3	126	2	33

Mobil	50	1	68	1	36
BP	25	1	39	1	56
Q8	23	1	63	1	174
PT	-	0	167	3	-
Jet	-	0	24	0	-
Cosmo	-	0	93	2	-
Sukhothai	-	0	45	1	-
MP	-	0	68	1	-
Independents	286	8	930	15	225
Total	3764	100	6156	100	64

There were quite a few new entrants and while their number of service stations is still far behind the pre-deregulation majors, nonetheless their growth is remarkable.

United States

Easily the biggest oil market in the world, the US market is also arguably the most competitive. This is because the huge market size easily makes possible the existence of a multitude of firms at all stages of the downstream oil industry. The structure of the US market offers many lessons for the Philippines. In addition, the various forms of regulation that have been tried like divorcement and divestiture are worth studying because they may be proposed here in the Philippines in the future too.

Over 100 refineries refine gasoline and together with imported fuel, constitutes the supply of gasoline in the US market. Retail distribution takes place through various channels (see Figure 5.2). Refiners often sell generic gasoline in bulk directly from the refinery to distributors or even other refiners. “Branded” refiners also haul their product to a distribution terminal in a city to be sold either as branded gasoline (that is, with company-specific additives and with the right to use the refiner’s name at resale) or as generic gasoline (not permitted to carry the refiner’s name).

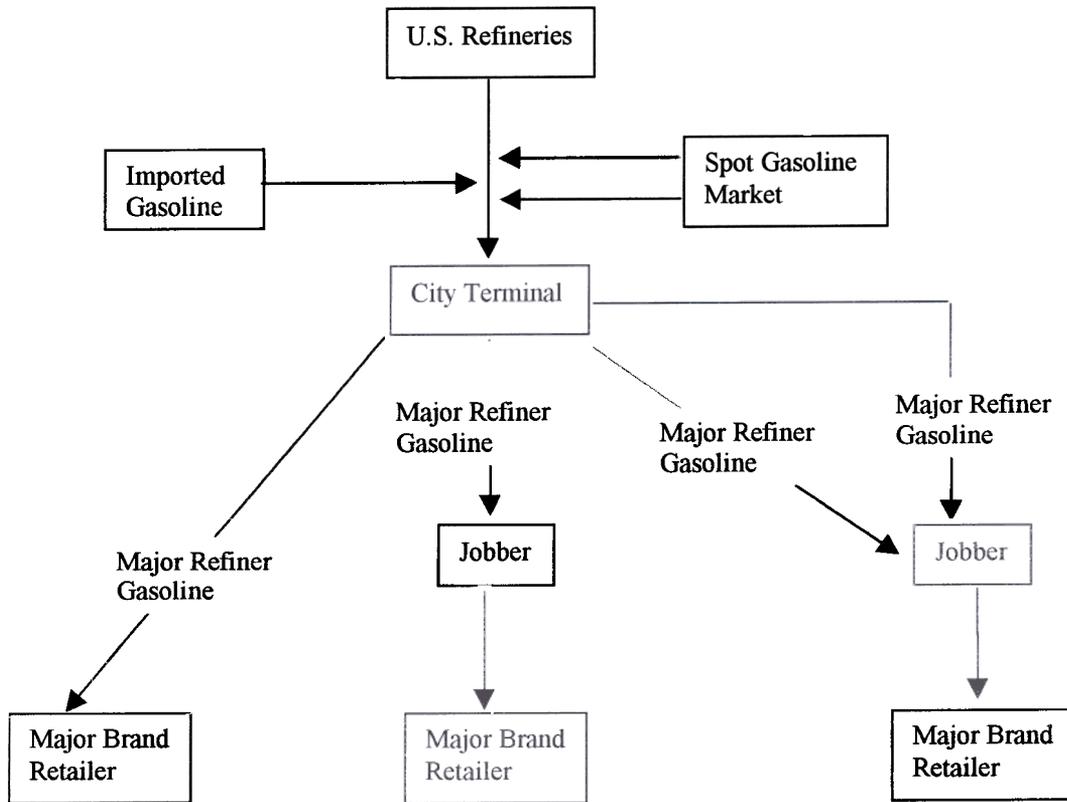
At the city terminal, the refiners can either directly supply service stations or work through middlemen known as “jobbers.” A typical jobber supplies many branded stations and often owns many of the stations it services. For instance, a jobber could supply two Exxon, three Chevron, and five “unbranded” stations some of which may be owned and operated by the jobber himself. The branded stations must get their products from their own terminals while the unbranded ones may source theirs from any terminal. Thus the gasoline bought at a generic or unbranded station may actually be Shell, Exxon, Chevron etc. gasoline (generally without the company-specific additives) or gasoline from an unbranded or lesser-known refiner.

The jobbers function as intermediaries. They can provide the refiner with information on local market conditions, as well as contacts with dealers and other business people. Such information and contacts may be more costly for the refiner to

acquire on its own under certain circumstances, for instance, if it is operating in a small town.

As of 1993, there were about 200,000 retail establishments selling gasoline in the United States. About 120,000 or 60% of them are major-brand stations (see Figure 5.3). The 15 largest refiners are integrated down to the retail level. Of all the service stations, though, only about 16.4% is owned by oil companies. This proportion is low when compared with some of our local players. Shell Philippines estimates that about half of their stations are company-owned. Petron owns 395 stations compared to 496 dealer owned stations.

Figure 5.2 US Gasoline Distribution Structure

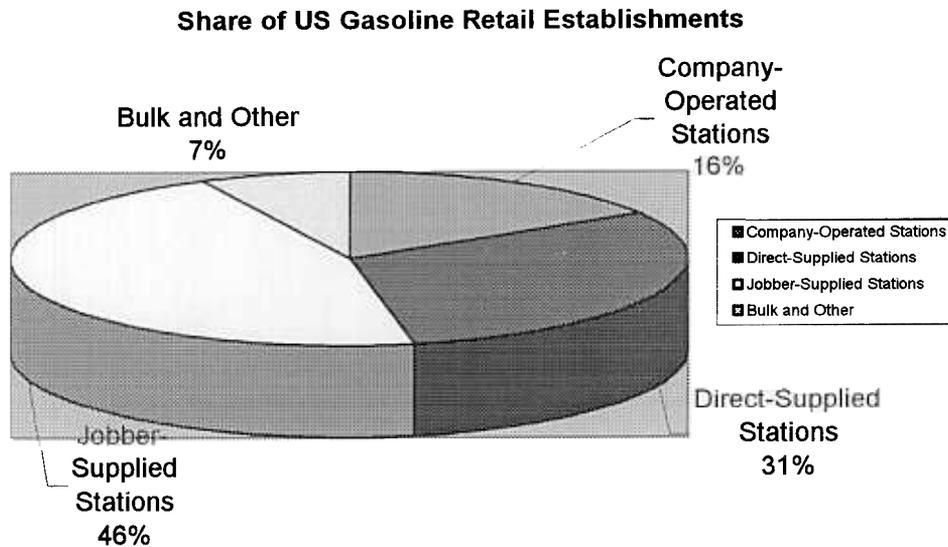


Source: Borenstein and Gilbert (1993)

Gasoline retailing in the US may thus be characterized as a mixed distribution system. Many major firms are vertically integrated: they operate a refinery as well as their own service depots. Some companies even franchise out the operation of some stations to third parties. Most companies practice both. Then there are jobbers or wholesalers who do not have a refinery but maintain a network of retail service stations under a common brand name. There is even one refinery, Tosco Corp., which has no stations bearing its name and instead sells all its output to jobbers.

The oil industry's activities involve a three-step process: refining, transporting, and dispensing. The first step refers to the transformation of crude oil into the final product, such as gasoline. The product is then transported from the refinery to the city terminals and on to the retail outlets. Finally, it is dispensed to the fuel tanks of automobiles.

Figure 5.3



Source: Borenstein and Gilbert (1993)

Although many firms are vertically integrated from the refinery all the way down to the retailer, they need not be so, as evident in the case of many US companies. Each stage could be considered a different subindustry altogether. Thus, there is no reason why competition should not prosper at each stage.

As of 1993, more than 100 refining companies were operating in the US, supplying about 95% of the total volume of gasoline consumed. The remaining 5% was imported. Although the 15 biggest companies account for 82% of domestic production, no single company has a market share over 9%. Nine firms have market shares ranging from 5% to 9%. The 15 biggest refiners are vertically integrated all the way down to the retail level, but none of them operate even half of their brand name stations directly – proof that the US oil refining industry is fairly competitive and by no means highly concentrated.

Theoretically, the transport stage can be subjected to competition as well. At this stage, barriers to entry are relatively lower since capital and technology requirements are not as critical. Since the US is a contiguous land mass, most gasoline is transported by truck, railway, and pipeline. Of these, trucking would probably have the lowest barriers to entry.

Except in the smallest town or in the most isolated place, there seems to be a fair amount of competition at the dispensing stage. It would not cost a consumer too much to drive to the gas station around the corner if he does not like the price at the one near his house.

The strength of the US structure is that it allows competition at two levels: interbrand and intrabrand. A dealer-owned Chevron station competes not only with the Exxon outlet across the street but with other dealer-owned Chevron stations and those that Chevron itself owns and operates. Price is not regulated (except under emergency situations such as the oil crises of the 1970s) thus a consumer can witness vigorous price rivalry. In fact, it is possible even for two stations in the same city to charge different prices for the same brand of gasoline.

The US market is so huge it can easily accommodate 100 refiners. Given economies of scale in refinery operation, however, a small market like the Philippines can only hold so many industry players. Too many refiners would cause some to fall by the wayside as they would not be operating at a capacity sufficient to bring down costs. (Still, entry and exit decisions of industry players are best left to market forces rather than to legislation.)

The Philippine gasoline retail structure, in contrast, has several weak areas.

First there is not enough competition at the ex-refinery stage. Domestically, this is dominated by the big three. This has been remedied by the oil deregulation law by allowing imported petroleum products to compete with those of the big three.

Second, the Philippines has not yet demonstrated much intrabrand rivalry at the retail stage. The three oil companies may charge different prices for the same type of gasoline or diesel, but most stations under the same firm, at least in Metro Manila, charge the same exact price – no wonder the big three are being accused of colluding on prices. (Prices in the provinces are different from those here but, within the same city, they are the same for stations under the same oil company.)

But perhaps just as important as intrabrand rivalry could be the rivalry between branded and unbranded gasoline stations. This could be akin to the competition between branded and generic medicines. Chemically gasoline is gasoline and the only difference in the product from one oil company to another is in their respective additive. The network of unbranded stations is already quite developed in the US. Meanwhile, unbranded stations have yet to take off here. In a sense, many of our new players are the analogue of the unbranded stations in the US. Most of the new players actually do not have the storage facilities to import and therefore, actually get their gasoline from the big three. But again, the number of their retail stations are too few compared to those of the big three to have an impact on prices and volumes.

Is There a Case for Divorcement?

It is not only in the Philippines that people complain about gasoline prices and suspect the big oil companies of keeping prices high by restricting competition. Even in the United States similar public sentiment has been vented against the oil companies. Oil companies there have been accused as well of cartelization and wielding too much market power, which allows them to overcharge. Consequently, legislators there have been searching for “solutions” as well to increase the level of competition.

One such measure is divorcement legislation. A divorcement bill requires refiners to “divorce” themselves from owning and running retail gasoline stations. They would be restricted to franchising stations and supplying independent dealer owned stations. In other words, divorcement is concerned with prohibiting or restricting the extent that oil refining companies vertically integrate into distribution. Typically, an oil company owned station would be operated by salaried employees of the oil company/refiner. The company sets prices and retains profits. By contrast, franchise dealers lease the station and equipment, set retail prices, and keep the profits. In return they may pay the oil company a rent which may be fixed or tied to the amount of gasoline sold.

Last year, as international crude oil prices started to climb, California legislators started entertaining the idea of introducing a divorcement bill. As early as 1974, the state of Maryland already had passed such a law. Barron and Umbeck (1983) examines precisely the Maryland experience.² Blass and Carlton (1999) report that divorcement has been legislated in six states: Connecticut, the District of Columbia, Delaware, Maryland, Nevada, and Virginia.³

Very often, the proponents of such divorcement measures have been the franchised station operators. It should be noted that in the United States, there has been a trend since the 1970s towards increased (oil) company-owned stations and fewer franchised stations. Barron and Umbeck note also that prices at company-operated stations tend to be lower than those at the franchised stations. This has led the latter to accuse the oil companies of predatory pricing.

There have been several studies that have looked at the economic consequences of divorcement legislation in the US. Most of them conclude that divorcement is actually an unadvisable policy decision as it leads to higher prices. Barron and Umbeck (1983,1984) argue that the trend towards more company owned stations is actually an efficient response to market changes. In the US there has been a shift away from full service stations; i.e. stations offering oil change, muffler replacement, tune up, repair etc. as consumers go elsewhere for these services. The rise of specialty shops that cater to these services; e.g. muffler shops, express oil change and lube shops etc. has accentuated that trend. Following franchising theory, they argue that when the nature of an activity makes

² John Barron and John Umbeck , “A Dubious Bill of Divorcement”, *Regulation*, Jan./Feb 1983 pp. 29-33.

³ Arthur Blass and Dennis W. Carlton, “The Choice of Organizational Form in Gasoline Retailing and the Costs of Laws Limiting that Choice”, Working Paper 7435, National Bureau of Economic Research, Cambridge, MA, December 1999.

it difficult or costly to monitor, a principal would prefer to franchise out the operation. Since it is more difficult to monitor and manage those auxiliary services like repair etc., stations had in the past tended to be franchisees. However, as stations become more specialized; i.e. only dispensing fuel, which is easily monitored and measured, the oil companies have found it less necessary to franchise, opting instead to own and/or operate more stations. A study by Shepard (1993)⁴ in fact finds evidence that stations with service bays tend to be lessee-dealers and those stations that mainly sell gasoline and convenience store products tend to be company operated.

Both Barron and Umbeck and Shepard find evidence that prices may be lower at company owned stations. A possible explanation of this is the so-called double marginalization problem. When a residual claimant such as a franchisee dealer sets price on top of the refiner's wholesale price, the dealer may set a second, super-competitive mark-up over the refiner's wholesale price. This second mark-up would be absent in a company operated station.

Hastings (2000) takes advantage of a unique market event in California, the purchase by the Atlantic Richfield Company (ARCO) of the Thrifty chain of stations, to investigate this. Thrifty is an independent chain of gasoline stations while ARCO is an oil major. Thus the long term lease by ARCO of over 260 independent Thrifty stations converts what used to be independent dealers into company (ARCO) operated stores of varying degrees of vertical integration. She finds that stations that competed with what used to be a Thrifty station enjoyed a significant increase in price after the latter was converted into an ARCO station. However, this increase was enjoyed regardless of the contractual arrangement of the ARCO station; i.e. whether company operated or franchise. She concludes that the loss of an independent unbranded station had an impact on prices (increase) but that the type of contraction at the branded station didn't.

In the Philippines, there seems to be a difference in the structure of retail distribution between the new players and the big three. Among the big three, the split between company owned and dealer owned stations is about half. New player stations on the other hand, tend to be dealer owned. (see table 5.2)

Table 5.2 Oil Industry Service Station by Contractual Arrangement (as of May 2000)

No. of Stations	Petron			Shell			Caltex			Others		
	CO	DO	Total	CO	DO	Total	CO	DO	Total	CO	DO	Total
Luzon	359	352	711	332	350	682	313	288	601	37	159	196
Vismin	160	279	439	146	262	408	162	210	372	0	17	17
Total	519	631	1156	478	612	1090	475	498	973	37	176	213

⁴ Andrea Shepard, "Contractual form, retail price, and asset characteristics in gasoline retailing", Rand Journal of Economics, vol 24 no. 1, Spring 1993.

No. of Stations	Industry		
	CO	DO	Total
Luzon	1041	1149	2190
Vismin	468	768	1236
Total	1509	1917	3426

CO = Company operated

DO = Dealer operated

Source: Petron

The gross margin of the franchise retail stations average only about sixty cents per liter. Out of this gross margin, the station owner will still have to cover his other costs of labor, overhead etc. When compared with the final selling prices which range from P12 to P17 for the various product lines, this constitutes only about 5% or less. Thus even if competition among retailers could be increased, there wouldn't be much scope for reduction of the margin.

Divorcement would not seem to promise lower prices, if wholesale prices are unaffected. In the deregulated Philippine setting, this could be effected through import competition. With importation of refined products liberalized, the local refineries will have to compete with refineries abroad, especially Singapore for example, up to at least a margin for transportation costs. However, even this is muted at the moment due to the lack of storage facilities by independent importers. At the moment only Coastal, Unioil, and Total have import facilities that are operational or will be onstream soon. Industry sources would place their combined capacity at about 25% of market. Over time however, this should grow and provide more competition for the big three.

Divestiture

It is well known that the Federal Trade Commission (FTC) and the Department of Justice (DOJ) in the US, their main government antitrust watchdogs, have rules of thumb on market concentration to which they subject proposed mergers. The recent Exxon-Mobil merger is a good example of one such case.⁵

Prior to the merger, Exxon and Mobil were respectively the second and fourth largest private oil companies in the world. Together their assets would reach \$80 billion, making it possibly the largest in the world. Ironically, both were key parts of the old Standard Oil Trust that had been broken up in the early part of the last century by antitrust legislation. In order for the merger to be allowed, the FTC ruled that assets in refining, terminal facilities, retail gas stations, and pipeline interests totaling \$2 billion of the merging companies had to be divested within nine months. The two companies competed head to head against each other in many states and the FTC ruled that in some markets, the merged Exxon-Mobil would wield too much market power. So meticulous

⁵ Most of the facts in the following section were obtained from FTC Docket No. C-3907 (Nov. 30, 1999).

was the FTC judgment for example, that for retail gasoline stations it actually enumerated specific cities where a merged Exxon-Merger would have too many stations and prescribed how many stations should be divested.

Nevertheless, the FTC allowed the merger to push through on the following grounds:

- 1 Except for regions and markets where they directly competed, the FTC judged the merger not harmful to competition.
Exxon-Mobil would control only 1% of the world's oil reserves and constitute less than 3% of world oil production.
- 3 Even after the merger, the top four firms would account for only 42% of refining capacity and gasoline sales, which does not normally warrant antitrust action.

In the Philippines by contrast, the big three account for 100% of refining production and 90% of the total market. This is highly concentrated by any definition of market concentration. Even though there isn't any merger forthcoming among or involving the big three, divestiture might be an option that could be studied. The huge lead of the big three in terms of stations might precisely be whittled down by such a policy. However, the margin of over 3000 to 165 is definitely too large to be overhauled by mere divestiture. Other measures to promote the growth of competitors will have to be pursued in tandem with divestiture.

Chapter 6

Summary and Conclusions

The road to deregulation for the Philippines has not been a straight one. The original Oil Deregulation Law, RA 8180 had been signed into law on March 28, 1996. Rising import costs due to the depreciating exchange rate brought on by the Asian crisis forced the oil companies to raise prices in 1997. This did not go unnoticed by some legislators, who filed a case with the Supreme Court seeking to revoke the Oil Deregulation Law. In a very important decision for Philippine antitrust history, the Supreme Court ruled that certain provisions of RA 8180 to be unconstitutional and struck it down. A new oil deregulation law, RA 8479, with the 'offending' provisions of the first either amended or omitted, was subsequently passed and implemented.

The experience with oil deregulation is thus important because it represents perhaps the first major test of the country's path down competition policy and antitrust legislation. The Supreme Court should be commended for its well-meaning defense of consumer welfare and sincere desire for the true forces of market competition to bear fruit. It should be commended as well for its efforts to apply economics concepts of competition, market behavior, etc. in its analysis of the case, the crux of which is really economic in nature.

However, the economic reasoning accompanying the decision was imperfect. Fortunately, the court erred (unconsciously) on the side of consumer welfare and the new players in the industry. The removal of the tariff differential benefits the new players, enabling them to bring in the products at a slightly lower cost. If they pass this saving on, then consumers will benefit. On the other hand, the inventory requirement was unnecessary to begin with anyway, so doing away with the inventory requirement will probably have no meaningful effect. The potential benefits though, if any at all, arguably come at the expense of the local refining industry.

The public outcry may ultimately be a natural resistance to rising prices and paying more, but it demonstrates the fact that competition policy is implicitly in the minds of the public. They are concerned that a few big firms may be manipulating the market to the detriment of the consuming public. For example, the public perceives the simultaneous price changing by the oil companies as a necessarily manifestation of price collusion of some sort. There is certainly a healthy suspicion of the oil industry which to be fair, is present also in other countries, even the United States.

As an outgrowth of such concern and sentiment, we have certain measures being entertained, such as the proposal to set up a centralized National Oil Exchange. Others have pointed to the pricing pattern of the big three as proof of a cartel and demand corresponding sanctions. However, closer scrutiny under the lens of economic analysis suggests that the economic grounds for these positions are weak.

It is clear that a marriage of economics, especially the theory of industrial organization, with law is requisite to intelligent competition policy formulation and jurisprudence. Legislators and judges have the moral duty to implement the constitutional vision of competition and protect the public from monopolies. However, oftentimes the actual effects of laws or policies that are proposed in pursuit of this objective requires economic tools and analysis for evaluation. Thus, it can only profit Philippine policymaking if more discussion between legal and economics scholars will be promoted.

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Appendix

Comparison of Offending Provisions in RA 8180 and Equivalent Provisions in RA 8479

The following is a tabulation of the “unconstitutional” provisions in the original oil deregulation law, RA 8180, and their revised equivalent in the new oil deregulation law, RA 8479.

On Tariff Differential

RA 8180

Sec 5(b) Any law to the contrary notwithstanding and starting with the effectivity of this Act, tariff duty shall be imposed and collected on imported crude oil at the rate of three percent (3%) and imported refined petroleum products at the rate of seven percent (7%) except fuel oil and LPG, the rate for which shall be the same as that for imported crude oil. Provided, that beginning on January 1, 2004 the tariff rate on imported crude oil and refined petroleum products shall be the same. Provided, further, that this provision may be amended only by an Act of Congress.

RA 8479

Sec. 6 *Tariff Treatment.* – a) Any law to the contrary notwithstanding and starting with the effectivity of this Act, a single and uniform tariff duty shall be imposed and collected both on imported crude oil and imported refined petroleum products at the rate of three percent (3%); *Provided, however,* That the President of the Philippines may, in the exercise of his powers, reduce such tariff rate when in his judgment such reduction is warranted, pursuant to Republic Act No. 1937, as amended, otherwise known as the “Tariff and Customs Code”: *Provided, further,* That beginning January 1, 2004 or upon implementation of the Uniform Tariff Program under the World Trade Organization and ASEAN Free Trade Area commitments, the tariff rate shall be automatically adjusted to the appropriate level notwithstanding the provisions under this Section.

On Minimum Inventory Requirement

Sec 6 Security of Supply -To ensure the security and continuity of petroleum crude and products supply, the DOE shall require the refiners and importers to maintain a minimum inventory equivalent to ten percent (10%) of their respective annual sales volume or forty (40) days of supply, whichever is lower.

No equivalent provision in RA 8479 exists.

On Predatory Pricing

RA 8180 Sec. 9 Prohibited Acts

b) *Predatory pricing* which means selling or offering to sell any product at a price unreasonably below the industry average cost so as to attract customers to the detriment of competitors.

RA 8479 Sec. 11 b) *Predatory pricing* which means selling or offering to sell any oil product at a price below the seller's or offeror's average variable cost for the purpose of destroying competition, eliminating a competitor or discouraging a potential competitor from entering the market: *Provided, however*, That pricing below average variable cost in order to match the lower price of the competitor and not for the purpose of destroying competition shall not be deemed predatory pricing. For purposes of this prohibition, "variable cost" as distinguished from "fixed cost", refers to costs such as utilities or raw materials, which vary as the output increases or decreases and "average variable cost" refers to the sum of all variable costs divided by the number of units of outputs.