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Market Study on the Refined Petroleum Industry

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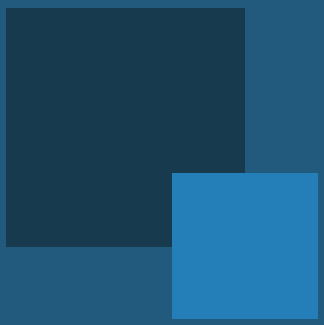

Market Study on the Refined Petroleum Industry

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EXECUTIVE SUMMARY

The pricing of retail petroleum remains a prominent public issue. Price adjustments evolved to a weekly practice wherein firms announce on Mondays the price adjustments that take effect the next day. The adjustment is based on the change of the average Mean of Platts Singapore (MOPS) price of the week, as of the end of the previous week. Thus, oil companies have practically the same price adjustments because the basis for the computations are the same. This has led to perceptions of collusion, but the practice seems to have grown out of meetings that industry representatives have had with former Department of Energy (DOE) Secretary Angelo Reyes, seeking a way to implement more frequent, but smaller price adjustments.

One disadvantage of this method of computation is that firms who procure their products below MOPS may not have an incentive to price lower since it has some assurance that the others will stick to the computed price. On the other hand, a player who procured at higher than MOPS may be forced to adjust to the lower computed price or face sales losses. Competition authorities may consider discussing with the DOE officials the feasibility of oil companies staggering their price adjustments, although it would be difficult to break the accumulated inertia of the current practice.

Though price adjustments are the same, there is leeway for prices to vary in a locality even among retail stations belonging to the same brand. Some oil companies say that their dealers may freely set prices, e.g., to match nearby competitor's lower prices. However, one dealer reported that it still needed to coordinate with their oil company's account sales executive to deviate in price. Other oil players state that their company's price announcements are only recommendations to the dealers; ensuring the freedom of dealers to set pump prices may allow greater price competition.

Another aid to the price competition is encouraging the DOE to complete its project to rollout an application that would allow users to key in their location and find out the lowest pump prices in their vicinity. Thus, it would not only help consumers get the lowest price, but it could also help the dealer find out who sells at a lower price. The application may enable pump prices to converge faster.

Nevertheless, it was noted that despite the similar price adjustments by companies, there are also various discounts and promotions (e.g., loyalty or fleet cards) being offered by the oil companies. This can be viewed as a strategy to differentiate the otherwise homogenous petroleum products and compete along a different dimension other than price. Such loyalty programs may be allowed, but the government can monitor their mechanics for consumer protection.

Republic Act No. 9367, or the Biofuels Act of 2006, mandates bioethanol and biodiesel blending; it also requires oil companies to purchase all biofuels from domestic producers and import only when domestic supply is insufficient. This may accord domestic biofuel producers market power in negotiating with the oil companies. Domestic capacity for biodiesel is adequate, but insufficient for bioethanol. Prices are not regulated, but players

deal with reference prices based on sugar prices (for bioethanol) and coconut prices (for biodiesel).

The Philippine Competition Commission (PCC) may consider discussing with the appropriate agencies a more liberal biofuel procurement policy. If imported biofuels are allowed, the government could impose a tax on imports (ideally calibrated to approximate the cost of motor vehicle air pollution); the revenue collected could be a source for direct transfers to farmers.

Nevertheless, the industry's deregulation through Republic Act No. 8479, or the Downstream Oil Deregulation Act of 1998, has brought some measure of competition. Before deregulation, the Philippine downstream petroleum industry was dominated by three major firms, or "majors," namely: Petron, Shell, and Caltex. After deregulation, the industry saw the entry of new players in all parts of the supply chain. In 2003 though, Caltex closed its refinery to turn it into an import terminal. On 13 August 2020, Shell announced that it would also do the same. The market shares of the new players grew over the years since deregulation. The proportion of imports also increased, as all the new players are importers. For 2019, the share of imports to total demand in thousand barrels (MB) was 65.5%.

The new players, combined, had garnered 43% of the total product market in 2019, versus the 50.6% of the three majors, with the balance going to end-users who directly source their petroleum product requirements. Moreover, one of the new players, Phoenix Petroleum, had a 7.1% share, which was very close to the 7.6% of Caltex.

DOE data on oil storage capacities and the number of retail stations also show the growing share of the new market players. Together with the trends as mentioned earlier, this suggests that it has been easy for the new players to get into the downstream petroleum sector. Nevertheless, the DOE can still increase awareness on investment incentives, especially on storage capacity in isolated markets.

The industry has indeed become less concentrated. Using the Herfindahl-Hirschman Index (HHI) in a preliminary screening exercise reveals that the HHI (and as proxy) market concentration has been falling over the years in most regions, from total petroleum products, gasoline, and diesel. A notable exception is the Bicol region, in which the HHI rose between 2012 and 2019. Kerosene merits some further study as well, as its HHI has not significantly declined. A monopoly exists in two regions for kerosene.

Because it is expected that competition would push prices of highly substitutable products to a typical level, wide price differentials between adjacent or nearby markets are not expected. Yet, this seems to have been the case for liquid fuel prices in Baguio City when compared to prices in the lowlands, such as in La Union. In the past, news reports announced pump prices in Baguio City reaching over five pesos higher than in the lowlands.

The DOE estimated that the cost of transporting fuel between Rosario and Baguio is Php 0.50 per liter, much less than the observed price differential. The DOE-Oil Industry Management Bureau (DOE-OIMB) hypothesized that the following factors could be at work: the smaller fuel market of Baguio (and the Cordillera Administrative Region where Baguio is), the fewer number of retail stations relative to its neighbors, and the lack of storage facilities in Baguio City. These factors could lead to less competition. Another possible explanation could be the higher cost of business operations in Baguio City. Finally, fuel demand in Baguio might also be less price sensitive. An industry association hypothesized smuggling as a possible explanation. In its view, prices in Rosario could be lower because of the sale of smuggled fuels, forcing lower average price.

Ironically, legislation (specifically the Biofuels Act of 2006) represents a barrier to entry for imported biofuels, which is cheaper than domestic bioethanol in the case of bioethanol. The law could be reviewed, but admittedly, there remain economic, social, and political interests behind the legislation.

Lastly, government bureaucracy can be an inhibiting factor in expansion. One example involved import processes, while another had to do with Local Government Unit (LGU) obstacles in obtaining permits. While these issues do not pertain to industry competition *per se*, they can constitute barriers that can discourage or slow down investments in the various sectors of the industry. Thus, there should be a renewed drive to streamline these bureaucracies.

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LIST OF ABBREVIATIONS

AFF	Agriculture, Fishery and Forestry
BBL	Barrel
BP	Batas Pambansa
CAR	Cordillera Autonomous Region
CME	Coconut Methyl Ester
DA	Department of Agriculture
DOE	Department of Energy
DOJ	Department of Justice
ERC	Energy Regulatory Commission
FAME	Fatty Acid Methyl Ester
GDP	Gross Domestic Product
HHI	Herfindahl Hirschman Index
IFO	Industrial Fuel Oil
LPG	Liquefied Petroleum Gas
LFRO	Liquid Fuel Retail Outlet
MB	Thousand Barrels
MBSD	Thousand Barrels Per Stream Day
MOPS	Mean of Platts Singapore
NCR	National Capital Region
OIMB	Oil Industry Management Bureau
OPSF	Oil Price Stabilization Fund
PBR	Petron Bataan Refinery
PCA	Philippine Coconut Authority
PCC	Philippine Competition Commission
PD	Presidential Decree
PIP	Petroleum Institute of the Philippines
PME	Palm Methyl Ester
PNOC	Philippine National Oil Company
PRA	Price Reporting Agencies
RA	Republic Act
SIP	Singapore Import Parity
SRA	Sugar Regulatory Administration
TRAIN	Tax Reform for Acceleration and Inclusion
UAE	United Arab Emirates
UA&P	University of Asia and the Pacific
VAT	Value-Added Tax

INTRODUCTION

This market study aims to analyze dynamics within the Philippine downstream industry, specifically gasoline, diesel, and kerosene markets, and issues impacting competition. It describes the industry's demand and supply structures, including pricing, costs, market preferences, using the Structure-Conduct-Performance paradigm to identify actual and potential competition issues. This study also includes a case study on the Benguet market.

To gain a deeper understanding and assessment of the structure, technical and operational practices, and consumer preferences of the industry, the team conducted interviews and disseminated questionnaires to key industry players along the industry supply chain (refiners, importers, haulers/shippers, dealers), demand (consumer and transport groups), as well as to regulators (DOE).

The onset of the various community quarantine modes starting 16 March 2020 prevented much of the initially planned field missions. Field missions were originally scheduled to Benguet province, specifically, Baguio City. Due to travel restrictions, the team has had to rely on remote interviews, the proceedings of a Committee on Energy hearing (which included a presentation by DOE-OIMB on the issue), and desk research. Instead of a refinery visit, an interview with an engineer working at one of the refineries was arranged.

Economic Framework

The Structure-Conduct-Performance framework is used to organize the information and data gathered from the stakeholders to help readers understand the industry. These form part of the data needed to establish the structure of the various sub-sectors of the supply chain, describe the behavior of buyers and sellers, and assess the industry's performance.

A standard model of competition in economics is a "perfect competition market." In such a model, there is a multitude of firms selling a homogenous product. The implication is that firms will be price-takers. Since consumers can easily purchase a similar product from the many competitors, an individual firm cannot set its price too far from the others.

The fuel being sold by the various firms in the Philippine downstream oil industry is sufficiently similar that the perfect competition model is deemed applicable. This can result in price-taking behavior by industry players, especially if consumers have information on alternatives and prices.

This theoretical market model concludes that firms set price equal to marginal cost in pursuit of profit maximization. The long-run equilibrium further concludes that firms are forced to set prices towards the point of lowest average cost and earn zero economic profit or regular rates of profit commensurate to that earned on average in other sectors of the economy.

Thus, prior independent reviews[1] of both oil deregulation and oil prices examined the profitability rates of oil companies to assess whether they were out of line with other industries and assess the benchmarks of profitability. Those reviews did not find that oil company profits were unreasonable.

A reasonable approximation of marginal cost could be the imported cost of refined products. One empirical implication would be that pump prices will tend to approach marginal cost as proxied by costs of imports. Another approach is to examine the industry players' profitability ratios and gauge the deviation from the profit rates in other industries. The reports of the DOE's independent committees over the years have found evidence for this that will be further explained in this paper.

The team reviewed, extended, and continued the PCC computations and analysis of the oil companies' price adjustments posted on the DOE website as deemed appropriate. In this process, the team may suggest some indicators to help evaluate the anti-competitive behavior of firms.

Limitations of the Study

As Key Informant Interviews were primary sources of data, the accuracy of the study's findings hinges on the participants' honesty and willingness to share data. It had been anticipated that individual firm data and information will be limited due to data privacy requirements (except for publicly available documents like financial statements filed with the Securities and Exchange Commission). Some firms have not responded to the questionnaire or the study team's requests for meetings, limiting analysis and limitations to a macro level.

INDUSTRY BACKGROUND

Brief History of the Philippine Petroleum Industry

The downstream oil industry refers to the business of importing, exporting, re-exporting, shipping, transporting, processing, refining, storing, distributing, marketing, and selling of crude oil, gasoline, liquefied petroleum gas (LPG), kerosene, and other petroleum products.[2] Meanwhile, petroleum products shall refer to products formed to refining crude petroleum through distillation, cracking, solvent refining, and chemical treatment coming out as primary stocks from the refinery such as, but not limited to LPG, naphtha, types of gasoline, solvents, kerosene, aviation fuels, diesel oils, fuel oils, waxes and petrolatums, asphalt, bitumens, coke and refinery sludges, or other such refinery petroleum fractions which have not undergone any process or treatment as to produce separate chemically-

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1 *Please see section VI A. Policies and Regulations below for a brief description of these independent reviews and their citations.*

2 *As defined by Republic Act (R.A.) No. 8749, otherwise known as "An Act Deregulating the Downstream Oil Industry and For Other Purposes."*

defined compounds in a pure or commercially pure state, and to which various substances may have been added to render them suitable for particular uses provided that the resultant product contains not less than 50% by weight of such petroleum products.

Before the implementation of the oil deregulation law, only three oil companies were operating in the Philippines – Pilipinas Shell Petroleum Corporation, Caltex Philippines, and Petron Corporation. Caltex started operations in the country in 1954 with an initial capacity of 13,000 barrels per day. Seven years later, the country's second refinery was built by Pilipinas Shell with an initial capacity of 25,000 barrels per day.

The Philippine National Oil Company (PNOC), a government-owned and controlled corporation, used to own Petron Corporation. In the aftermath of the first oil price shock, the PNOC was created to take a direct, intermediate and significant participation in the domestic oil industry. In 1994, the PNOC forged a strategic partnership with Saudi Aramco, the world's largest oil producer, through the sale of 40% of equity holdings. Another 20% of Petron's shares were sold to the public through an initial public offering.

In 2008, both the PNOC and Saudi Aramco opted to sell all their shares in Petron Corporation to the Ashmore Group, a British investment management company. Two years later, Ashmore Group sold all its equity holdings in the Petron Group to San Miguel Corporation.[3]

Since the initial deregulation of the industry, a significant number of players have entered the industry. **Table 1** below lists the number of players by activity.

Note that the number of refiners in the table has decreased by one since deregulation with the closure in 2003 by Chevron (Caltex) of its Batangas refinery, leaving only Petron and Shell. The relatively large capital requirements of a refinery may have served as a barrier or deterrent to new entrants. Last 13 August 2020, Shell has announced that it was closing its refinery, citing losses incurred in the COVID-19 pandemic lockdown as well as regional 'supply-demand' trends.[4]

Before Shell's announcement, the DOE reports the country's total crude refining capacity at 285.2 thousand barrels per stream day (MBSD). Petron's (180 MBSD) refinery is located in Limay, Bataan, while Shell's (105 MBSD) refinery is in Tabangao, Batangas.[5] As mentioned, Caltex had operated another refinery (72 MBSD), also in Batangas, until it closed the plant in 2003 and converted it into an import terminal.[6] The three had been traditionally referred to as the "Big Three" of the country's petroleum sector.

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[3] *Rosemarie Francisco, "San Miguel to buy $675 mln Petron stake from Ashmore" Reuters, Dec 8, 2008.*

[4] *Adam Ang, "Shell to shut down Batangas refinery," BusinessWorld, Aug. 14, 2020. Downloaded at: https://www.bworldonline.com/shell-to-shut-down-batangas-refinery/.*

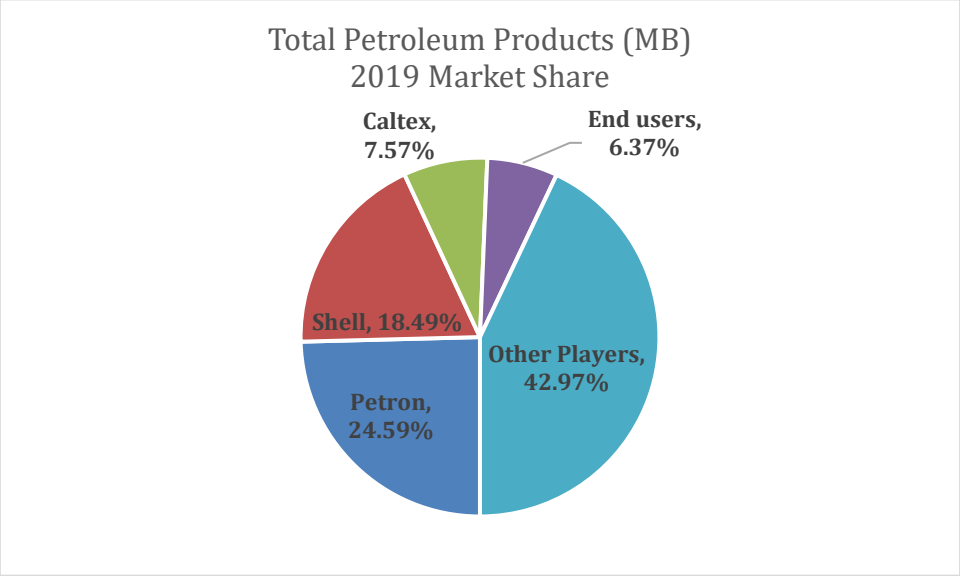
[5] *Ronnel Domingo, "Petron, Shell Refineries Output up 14%" Philippine Daily Inquirer, Sept 24, 2018. https://business.inquirer.net/257773/petron-shell-refineries-output-14.*

[6] *Donnabelle Gatdula. "Caltex Closes Refinery", Philippine Star, Sept 24, 2003. https://www.philstar.com/business/2003/09/24/221794/caltex-closes-refinery.*

Brief Profile of Players in the Downstream Oil Industry

Twenty-two years after the implementation of the oil deregulation law, there are now more than 50 firms (refiners and direct importers) operating in the downstream oil industry. The combined market share of the three oil majors: Petron, Shell, and Caltex (in terms of volume) for total petroleum products was 50.65% in 2019, while the independent players controlled 42.97% of the market. The remaining 6.37% went to end-users who directly imported their petroleum product requirements[7] (see figure below). Of the Other Players, the three largest market shares went to Phoenix Petroleum (7.06%), Seaoil (5.13%), and Unioil (4.85%).

Figure 1. Total Petroleum Products Market Share (2019)



Source: DOE, OIMB's Year-End Comprehensive Report (FY 2019), p. 13.

The following are brief profiles of some of the players of the industry. The information is mostly culled from the websites of the companies.

Petron Corporation

Petron Corporation is considered the largest oil refining and marketing company in the Philippines, and is a leading player in the Malaysian market. It is part of the San Miguel Corporation group – one of the largest and most diversified conglomerates in the Philippines. The company claims to have a combined refining capacity of 268 MBSD (180 MBSD in the Philippines plus 88MBSD in Malaysia), producing a wide range of fuels and petrochemicals serving the Philippine and Malaysian markets.[8]

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[7] *The market share figures were taken from Table 6 on p. 10 and Fig. 3 on p. 13 of OIMB Year-End Comprehensive Report (FY2019).*

[8] *Petron 2015 Annual Report, p. 3. Downloaded from: https://www.petron.com/wp-content/uploads/2018/10/Petron_-_Annual_Report_2015.pdf.*

Based on the OIMB's 2019 year-end report, Petron supplies 24.59% of the country's fuel requirements through their oil refinery operations in Bataan. Their refinery processes crude oil into a full range of petroleum products, including gasoline, diesel, LPG, jet fuel, kerosene, and petrochemicals. These products are moved mainly by sea to close to 30 terminals located all over the Philippines.

Through its service station network, it retails their gasoline, diesel, and auto LPG products under the brands Blaze 100 Euro 6, XCS, Xtra Advance, Turbo Diesel, and Diesel Max. Petron sells LPG brands Gasul and Fiesta Gas to households and commercial consumers through their LPG retail network. The company also fuels strategic industries such as power generation, manufacturing, mining, agribusiness, and the domestic and international airline industry.

They have expanded their business to Malaysia with their integrated refining, distribution, and marketing. In Malaysia, they operate an 88 MBSD refinery in their Port Dickson, Lumut Palm Methyl Ester (PME) Plant, ten terminals, including four affiliates, and a retail network of around 700 service stations.

Pilipinas Shell Petroleum Corporation

Pilipinas Shell Petroleum Corporation is part of the Shell Global company that operates various businesses in the Philippines. Pilipinas Shell traces its roots to Asiatic Petroleum Company (Philippine Islands, Ltd), which started as an importer and seller of motor gasoline and kerosene in 1914. They own and operate one of two crude oil refineries in the Philippines in Tabangao, Batangas, but have recently announced plans to close the refinery and convert it to an import terminal.[9] They also own the North Mindanao Import Facility, which commenced operations in 2016. Based on its 2019 Annual Report, Pilipinas Shell reported 1,126 retail stations in its retail network as of 31 December 2019. Pilipinas Shell has ownership in the following associates: (1) Bonifacio Gas Corporation, which is in the business of construction, establishment, ownership, maintenance, and operation of a centralized gas distribution system; and (2) Kamayan Realty Corporation, which is in the business of acquisition, development, and management of real estate properties.

Chevron/Caltex Philippines

Caltex Philippines was formed in 1936 and opened depots and service stations nationwide. In 1954, it built its Batangas refinery in San Pascual, but this was shut down in 2003. It has since been turned into an import storage facility. Their webpage lists the storage capacity at 2.7 million barrels. The company opened its first convenience store in its service stations, Star Mart, in 1995. In 2009, 7-Eleven convenience stores began replacing Star Mart outlets in its service stations. Caltex introduced its Techron line of fuel products in 2006. The

[9] *Adam Ang, "Shell to shut down Batangas refinery," BusinessWorld, Aug. 14, 2020. Downloaded at: https://www.bworldonline.com/shell-to-shut-down-batangas-refinery/.*

company has nearly 700 Caltex service stations and 20 supply facilities, including major terminals and depots.

TOTAL Philippines

TOTAL Philippines is the local subsidiary of the French global energy company TOTAL S.A., operating in 130 countries and headquartered in Paris, France. TOTAL reports that they have almost 500 retail stations nationwide, while their map lists only two sites in Mindanao. TOTAL fuels are sold under the Excellium brand. Their stations often have a Bonjour convenience store and cafe onsite.

Phoenix Petroleum

Established in 2002, Phoenix Petroleum's core business includes refined petroleum products (under the brands Biodiesel, Super Regular 91 Gasoline, Premium 95 Gasoline, and their flagship Premium 98 Gasoline), lubricants for automotive and industrial use, and bitumen (a joint venture with Thailand-based TIPCO Asphalt Public Co. Ltd and PhilAsphalt Development Corporation). Phoenix Petroleum is also involved in the operation of oil depots, storage and transport services/hauling of into-plane services of Jet-A1 fuels/refueling of aircraft in key cities. They are also into LPG, selling their brands Phoenix Super LPG, and Autogas. In its 2019 annual report, Phoenix Petroleum reported that as of 31 December 2019, it had 655 retail stations in operation, with 11 under construction.

SEAOIL Philippines Incorporated

SEAOIL is a Filipino-owned independent oil company that entered the industry in 1978. SEAOIL started as a service station franchise purchasing its products locally from other players like Unioil, PTT, Shell, and Petron. It opened its first depot in Mandaluyong in 1980 to serve industrial requirements to store petroleum and petroleum products. In 1987, it partnered with Paramins to develop lubricants for the Philippine market. Soon after the industry deregulation, it opened its first gasoline station in 1997. After four years, it had fifty gasoline stations and by 2005 it had 100 stations. The company website cites that they have over 350 stations as of 2019.

SEAOIL partnered with STP, an international additives brand, to enhance the quality of its fuel. In 2005, SEAOIL pioneered the blending of ethanol with gasoline. To add to its liquid fuel offerings, SEAOIL launched the RON 97 gasoline under the brand name Extreme 97a in 2009.

SEAOIL runs various loyalty and marketing programs for its consumers. This includes the 2003 Loyal Biyahero program for retail customers. In 2010, SEAOIL introduced the Fleet Care Card, which offers a post-paid option for customers with no interest, and added convenience of customizable restrictions. The company offered a price lock prepaid fuel card that shielded motorists from the continuously escalating oil prices in the year 2008.

Unioil Petroleum Philippines, Inc.

Unioil is in fuel retailing, lubricants blending and marketing, fuel and specialty oils trading, and bitumen distribution. Unioil started in 1966 as a lubricants blending facility in Valenzuela. In 1994, in partnership with Idemitsu of Japan, they became the exclusive and licensed distributor and blender of Idemitsu products in the Philippines. In 2002, Unioil ventured into the retail service station business. Its products include fuel (Euro 5 Gasoline and Diesel), lubricants for automotive and industrial use, and asphalt (Asphalt 60/70) used for road construction and maintenance. Based on the DOE list of retail fuel stations, Unioil has 79 stations as of March 2020.

Eastern Petroleum Corporation

Eastern Petroleum entered the market on 10 December 1996. Eastern initially imported fuel products directly but currently sources its fuels entirely from other industry importers. Eastern Petroleum is part of the Eastern Petroleum Group of companies specializing in Real Estate, Renewable Energy, and Agriculture. Its businesses include gasoline stations, industrial sales, franchising, and distribution of lubricants, liquid fuels, and LPG (EC Gas). Its founder and chairman, Mr. Fernando Martinez, frequently serves as president of the Independent Philippine Petroleum Companies Association (IPPCA).

Industry associations

There are two main industry associations. The Petroleum Institute of the Philippines counts as its members the 'majors' (often referred to as the Big Three) of Petron, Shell, and Caltex (Chevron). In addition to these three, the other members are PTT, Isla LPG, and TOTAL. The independents' association, IPPCA, accounts among its members Seaoil, Unioil, Eastern Petroleum, Flying V, and other independents. Both associations advocate their members' interests and views in various fora, including legislative venues.

Summary

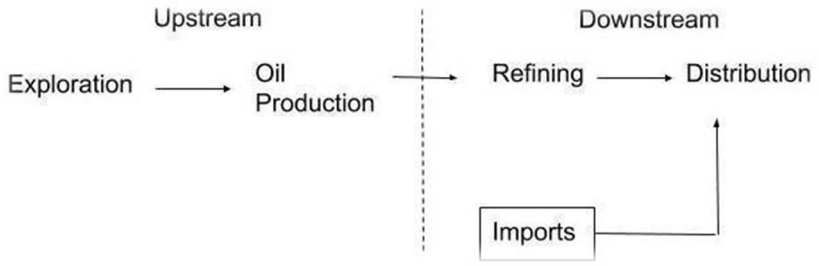
This section serves as a brief introduction to the downstream petroleum industry and some of the players. Before deregulation in 1998, the industry was dominated by Petron, Shell, and Caltex, referred to in the popular press as the 'Big Three' or the 'Majors'. Deregulation brought with it the new players or 'Independents,' who as a group are fast catching up with the Majors in market share. The new players were and remained importers. There has been no new refinery built since deregulation. Caltex shut down its refinery in 2003 and converted it into an import facility, while Shell announced in August 2020 that it would also follow the same route. In the next section, the paper presents some figures on the various segments of the industry.

SUPPLY CHAIN AND DEMAND

Supply Chain

The oil industry is often divided into upstream and downstream. Loosely speaking, the upstream portion refers to all activities involved in finding crude oil under the sea or land (exploration and drilling) and then extracting it and bringing it to the surface. Downstream then refers to the activities involved in turning the crude oil into refined products and distributing it to end-users.[10] (see **Figure 2** below) This issues paper focuses on the downstream sector.

Figure 2: Simple Oil Industry Flowchart



Source: Authors' own figure

A more detailed flowchart of the downstream is often depicted in DOE presentations, which gives an expanded list of activities in the Philippine downstream sector (see **Figure 3** below).

As the paper excludes LPG products, their branches on **Figure 3** will not be explored in detail. Initially, the LPG sub-sector seems to have been where the new players made the fastest inroads into the oil majors' market share. Thus, some basic understanding of the LPG sector may still be useful to shed light on the characteristics or structures of the LPG market, which enabled faster progress by the new players than gasoline and diesel markets.

This paper covers the following petroleum distillates: gasoline, diesel, and kerosene. Along with other products, these three are produced by distillation in the process of crude oil refining. Gas and diesel are the fuel used in internal combustion engines, the former in spark-ignition engines, and the latter in compression ignition engines. The bulk of this demand has historically been for transportation. Meanwhile, kerosene can be used as jet fuel, although it would need further refining. In the household, kerosene can be used for cooking or lighting. It is also used as an industrial chemical, particularly in the paint industry.

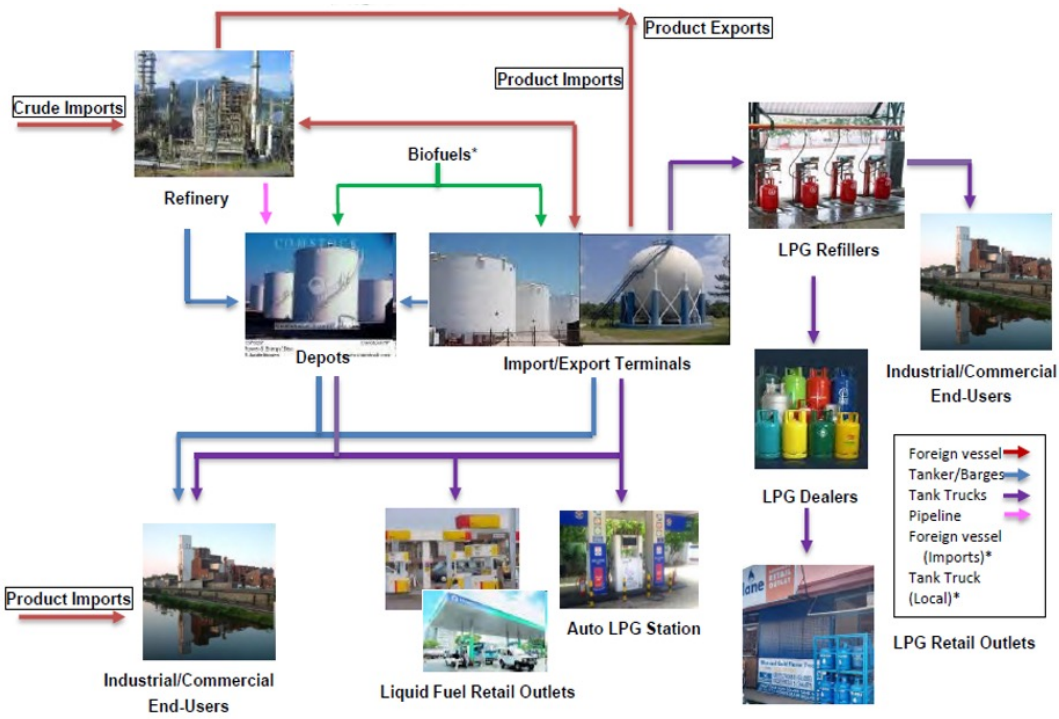
The DOE has established Philippine National Standards (PNS) for these fuels. Generally, if the fuel meets the minimum PNS, it can be interchanged with other fuel of the same type that also meets the standard. Fuels may vary in ignition quality, and a standard measure of

[10] *Some would further include a 'midstream' portion of the industry, which would typically include the processing, storing, transporting, and marketing of crude oil functions. These would be subsumed under upstream in our diagram above.*

this is the Octane Number for gasoline and Cetane number for diesel. The minimum PNS for Octane Number in the Philippines is 93, while the minimum Cetane number specified for diesel is 50. Generally, the higher the Octane or Cetane number, the more expensive the fuel. Some oil companies offer more variety in Octane and Cetane numbers than others, but all must meet the minimum standards of the PNS.

In addition, the Biofuels Act of 2006 has mandated the blending of ethanol with gasoline and coconut methyl ester (CME) with diesel. Changes in fuel specifications will mean added costs in refining and blending. In biofuels, bioethanol and biodiesel have usually been more expensive than the fuel they are blended with.

Figure 3: Philippine Downstream Oil Industry



Source: DOE

The following table summarizes the main sectors of the supply chain with the number of players and investments over the years. We also describe one by one the industry's activities in the following paragraphs.[11]

[11] *DOE-OIMB, "OIMB Year-End Comprehensive Report FY 2019, DOE, Mar. 27, 2020, p. 2.*

Table 1. Number of Players in the Downstream Oil Industry

Activity	Number of Players				Investment (Php billion)		
	In operation as of June 1999	FY2010	FY2018	FY2019	FY2010	FY2018	FY2019
Liquid Fuel Bulk Marketing	24	126	263	305	14.13	19.25	21.97
Fuel Retail Marketing	13	14	17	18	9.26	14.31	14.31
LPG Bulk Marketing	5	12	11	12	7.38	16.61	16.91
Bunkering	7	20	13	7	2.61	2.61	2.61
Terminalling	3	9	19	11	4.67	8.82	8.82
Refining	3	2	2	2	6.7	119.20	119.20
Total	**55**	**181**	**325**	**355**	**82.80***	**180.80**	**183.82**

Source: OIMB-DOE 2018 Report p. 3 for FY2018 and 2019.

*FY2010 figures from, Ludovice, H. "Introduction to Downstream Oil Industry", presentation slides, Presented in E-power Mo: Empowering Filipinos through Informed Energy Plans and Policies, Iloilo, Oct 9, 2018. These are also the same investment figures in the OIMB-DOE 2017 Final Report, p. 2. The individual investment figures do not sum to P82.80 billion because the latter is a cumulative figure.

"In operation as of June 1999 figures" from DOE as cited in U, P.L., "Competition Policy for the Philippine Downstream Oil Industry, PASCN Discussion Paper No. 2000-14, April 2000, p. 7. (Note that there was a typographical error in that the refiners were classified as "In Process of Entry".)

Refining

The start of the supply chain in the Philippine downstream petroleum industry is the refining activity. A refinery processes crude oil into the finished or refined products (e.g., gasoline, diesel, kerosene) that the final users consume.

Two petroleum refineries operating in the Philippines – the Petron Bataan Refinery (PBR) and Pilipinas Shell Oil Refinery. The PBR has a rated capacity of 180 MBSD and is located in Limay, Bataan. The refinery was shut down for three months in 2018 to implement an optimization plan to increase the production of more profitable products and fully maximize its capacity.[12] Petron is planning to expand its capacity by another 90 MBSD at an estimated cost of US$3.5 billion.[13] The expansion plan is expected to be completed by 2022. Considering the lingering effects of the pandemic on the domestic economy, Petron may

[12] *2019 Petron Annual Report.*

[13] *Petron Corp. announces plan to further expand Limay oil refinery in the Philippines. https://www.fuelsandlubes.com/petron-corp-announces-plan-to-further-expand-limay-oil-refinery-in-philippines/.*

decide to put on hold its expansion plans.

Pilipinas Shell operates a refinery with a rated capacity of approximately 110 MBSD in Tabangao, Batangas. In 2019, Pilipinas Shell invested Php 2.0 billion to allow the refinery to process lower-grade fuel. A hydrogen manufacturing unit was installed since the hydrogen availability enables the refinery to process more exotic crude oil.[14] On 13 August 2020, the company announced its plan to permanently close the refineries due to the impact of the COVID-19 pandemic. The refinery will reportedly be converted to an import terminal.[15]

Before 2003, there was a third refinery operating in the Philippines. This was the Batangas Refinery, owned and operated by Caltex Philippines and located in San Pascual, Batangas. The refinery had a rated capacity of about 70 MBSD. The refinery was closed down in 2003 after 49 years of operations in the country. The facility was converted into an import terminal for finished products with a storage capacity of 2.7 million barrels.

The Caltex refinery was not competitive. In a Philippine Star report at the time, then Caltex country chairman Timothy Leveille was quoted as saying, "*Our Batangas refinery was exposed to import competition from these larger and more efficient offshore refineries which significantly eroded our refinery's economic viability. Today, it costs us more to manufacture our products in Batangas than it costs our competitors to import theirs.*" He was further quoted in the article as saying that *"We need additional storage facilities. Our vision in the oil sector is to make it a regional oil storage hub like Singapore."*[16]

With the closure of the refinery, Caltex became an importer as well. **Annex 5** presents graphs comparing domestic production of gasoline and diesel with their imports. There is an increase in imports in 2004 after the Caltex refinery closed but fell in 2005. Noticeable in both graphs is the downward trend of refinery production of both products and the increasing trend in imports of both products, even before the Caltex refinery closure. By 2017, domestic production for gasoline had not returned to its 1999 peak, while domestic production for diesel has not returned to its 1997 peak.

While both kerosene and aviation imports also show the same increase in 2004 followed by a decline in 2005, both production and imports of aviation fuel display an upward trend. The upward trend for imported aviation fuel is noticeably steeper, though. This probably is due to the expansion of the airline industry. Kerosene production displays a dramatic downward trend while the kerosene import trend remains relatively constant.

During the 2013-2019 period, refinery production posted an average growth of 1.0% per annum (see **Table 2**). However, it should be pointed out that the average growth up to 2018 was 10.7%, before a severe 30.8% drop in production of marketable products in 2019. Diesel oil accounted for 39.2% of refinery production in 2019. The combined share of gasoline (premium unleaded and regular gasoline) was 24.5%, while fuel oil share stood at

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[14] *Philippine Daily Inquirer, May 8, 2019.*

[15] *Adam Ang, "Shell to shut down Batangas refinery," BusinessWorld, Aug. 14, 2020. Downloaded at: https://www.bworldonline.com/shell-to-shut-down-batangas-refinery/.*

[16] *Donnabelle Gatdula, "Caltex Closes Refinery", Philippine Star, Sept. 4, 2003. https://www.philstar.com/business/2003/09/24/221794/caltex-closes-refinery.*

7.8%. Refinery production of fuel oil has dropped from a high 11,364 MB in 2014 to 4,644 MB in 2019. This may be attributed to the implementation of measures to shift to cleaner fuels.

Refinery production at an estimated 168 MBSD in 2019 implies that the combined utilization rate of the two refineries was about 59% in 2019. Hence, additional capacity is still available to help meet the increased demand soon. The lower utilization rate was attributed to the emergency and successive maintenance shutdown/turnaround schedules of the country's two refineries. However, imports have been eating into the share of the refiners.

Table 2. Refinery Production (in MB)

Product	2013	2014	2015	2016	2017	2018	2019
Aviation Turbo	5,001	5,970	7,191	7,922	7,097	8,444	6,544
Kerosene	675	461	472	523	410		
Premium Unleaded	4,364	4,406	9,174	10,467	9,342	20,989	14,562
Regular Gasoline	6,306	6,668	7,915	8,474	9,215		
Diesel Oil	21,332	22,111	28,974	29,137	27,762	33,181	23,333
Fuel Oil	10,624	11,364	6,332	5,170	6,467	4,881	4,644
LPG	3,654	3,427	5,293	5,353	5,196	5,924	3,331
Naphtha	2,083	2,127	2,677	2,235	1,744	12,539	7,085
Mixed Xylene	638	841	974	1,007	959		
Sulphur	89	296	3,582	3,959	3,687		
Others	1,280	1,629	3,166	3,866	4,104		
Total Marketable Products	**56,047**	**59,301**	**75,751**	**78,113**	**75,982**	**85,958**	**59,500**
Add: Refinery Fuel and Loss	1,665	2,071	1,726	903	1,211	597	1,669
Total (Crude run)	**57,712**	**61,372**	**77,478**	**79,016**	**77,193**	**86,555**	**61,169**
MBBL per Calendar Day	158	168	212	216	211	237	168

Source: DOE
2018, 2019 figures taken from "OIMB's Year-End Comprehensive Report (FY2019)", tables 4 and 5, pp. 9-10.

It was mentioned above that Pilipinas Shell had announced in August 2020 that it would shut down its refinery in Tabangao and convert it instead into an import terminal. It said that it was no longer economically viable to run the refinery, citing weak refining margins 'due to the oil supply-demand imbalance in the region' and exacerbated by the weak demand due to the current pandemic.[17] Indeed, globally the Shell conglomerate has been reported to be shutting down several of its refineries abroad (including its largest US refinery) and

[17] *Adam Ang, "Shell to shut down Batangas refinery," BusinessWorld, Aug. 14,2020. Downloaded at: https://www.bworldonline.com/shell-to-shut-down-batangas-refinery/.*

even reducing capacities at its Pulau Bukom, Singapore refinery, its largest wholly-owned refinery in the world.[18]

Not long after, Petron also made indications that it was also considering shutting down its refinery. In news reports, Petron's Chief Executive Officer Mr. Ramon Ang cited unfair tax treatment (and supposedly referred to 'double taxation') as one challenge for refinery operation relative to importation.[19] In principle, the VAT should not be disadvantageous because input VAT is credited against the output VAT. However, the pandemic has created an unusual market where oil and refined product prices plunged drastically. If final or refined product prices fall far enough relative to the original input cost of crude oil, the final VAT may be too small to allow immediate recovery of the initial input VAT. Department of Finance (DOF) Secretary Carlos Dominguez was quoted saying that it may not be a tax issue but a supply chain issue.[20] The team has been unable to obtain a clarification from Petron on this issue. On the other hand, importers only pay the VAT once when the imported products leave the terminal.

We take note of a recent news report of a Court of Tax Appeals (CTA) ruling that denied Petron's petition to be refunded Php 55.7 million it paid in taxes in 2012 on its importation of alkylate, which Petron used as a blending component for its gasoline.[21] The news report cited the CTA explicitly saying it did not find the case to have been an instance of 'double taxation.'

The case is reminiscent of an older case that involved Pilipinas Shell.[22] A news article reported that the CTA ruled in 2015 that Shell's imports of Catalytic Cracked Gasoline and Light Catalytic Cracked were subject to an excise tax.[23] According to the article, Pilipinas Shell argued that these items were used as blending components for gasoline and were not final products, thus not subject to the excise tax. The news article reported that the court ruled that Pilipinas Shell should pay the Bureau of Internal Revenue more than Php 3.5 billion in excise tax from 2006 to 2009. A Pilipinas Shell source noted that the case had not been finally concluded yet and therefore, could not comment on it. However, it was stressed that the issue was not the reason for the decision to shut down the refinery in August 2020.

Interestingly, as recently as January 2017, Petron was reported in the press as planning to invite foreign partners to set up a new refinery in either Bicol or Cebu.[24] This suggests that Petron did not view refining as an unviable business at that time.

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[18] *Aradhana Aravindan and Florence Tan, "Shell to cut jobs and capacity at major Singapore refinery," Reuters, Nov. 10, 2020. Downloaded at https://www.reuters.com/article/us-shell-singapore-idUSKBN27Q1N5.*

[19] *Jordeene Lagare, "Petron: Bataan refinery to close 'very soon'," Manila Times, Oct. 28, 2020. Downloaded at: https://www.manilatimes.net/2020/10/28/business/companies/petron-bataan-refinery-to-close-very-soon/787440/.*

[20] *Joann Villanueva, "No need to change PH's oil tax system: DOF Chief," Philippine News Agency, Oct. 27, 2020. Downloaded at: https://www.pna.gov.ph/articles/1119915.*

[21] *Benjamin Pulta, "CTA juns Petron's P56-M tax refund claim," Philippine News Agency, Oct. 22, 2020. Downloaded at: https://www.pna.gov.ph/articles/1119372.*

[22] *Court of Appeals En Banc Nos. 1007 & 1003 (CTA Case No. 8004).*

[23] *Janvic Mateo, "Shell loses P3-B tax case," Philippine Star, Oct 29, 2015. Downloaded from: https://www.philstar.com/headlines/2015/10/29/1516344/shell-loses-p3-b-tax-case.*

[24] *Daxim Lucas, "Petron wants new $10B refinery in Bicol or Cebu," Inquire.net, January 12, 2017. downloaded at: https://business.inquirer.net/222852/petron-wants-new-10-b-refinery-bicol-cebu.*

There are genuine concerns on the implications for supply security should the refineries be shut down. Without any refineries in the Philippines, all petroleum products would have to be imported. But the country has always been reliant on imported oil, either in the form of imported crude oil or imported refined products, since the Philippines has minimal oil production of its own. With the new players' growth over the past two decades, the volume and share of imported petroleum products have also increased significantly (see **Annex 5**).

How will this affect retail prices? It was noted above that when Caltex closed its refinery, its former country chairman remarked that it was costlier to refine their product than to import. Whether imported refined products are more expensive or cheaper than locally refined products depends on the spread between crude oil prices and refined product prices. These are determined by global demand and supply that have historically been affected by geopolitical factors, making predictions difficult.

Thus, soon after liberalization, Caltex shut down its refinery. Of the remaining two, Shell announced in August 2020 that it was shutting down its refinery. There has been news that Petron might also shut its refinery, which would leave the country reliant on imported petroleum products.

Importation

The Middle East region remains the primary source of crude oil imports (see Table 3). In 2018, the region accounted for 87% of the country's crude oil import requirements. The leading sources of crude oil imports are Saudi Arabia and Kuwait. The country's oil import bill grew by 29% to US$4.28 billion in 2017, even with the 1.4% drop in volume. The higher oil import bill is due to the surge in crude oil prices in 2017. The average price of crude oil was US$55.58 per barrel in 2017, compared to US$42.16 per barrel the previous year. Crude oil importation has been growing at an average rate of 10.5% per annum since 2013.

The country's oil import bill grew by 41.8% in 2018. The hefty growth rate is attributed to the 28.4% increase in crude oil prices, coupled with a 10.4% expansion in import volume. The average price of crude oil was US$71.59 per barrel in 2018, compared to US$55.77 per barrel the previous year.

However, crude oil imports dropped by 27.1% to 62,430 MB in 2019. The downtick in imports is consistent with the lower combined capacity utilization and crude run of the two refineries in the country.

Table 3. Crude Oil Importation by Country of Source (in MB)

Country	2013	2014	2015	2016	2017	2018
Middle East	42,726	49,085	67,133	68,535	69,345	74,554
Saudi Arabia	23,500	37,103	34,427	28,438	27,097	28,880
Kuwait	0	0	16,877	26,448	24,475	22,589
UAE	9,717	6,403	8,365	10,507	13,549	17,759
Qatar	8,459	5,579	7,464	2,618	2,999	4,235

Country	2013	2014	2015	2016	2017	2018
Oman	0	0	0	524	1,225	1,091
Yemen	1,050	0	0	0	0	0
Indonesia	162	0	0	396	0	221
Malaysia	1,023	3,583	5,747	4,160	916	3,215
Others*	12,273	12,194	5,031	5,544	7,255	7,669
Total	**56,184**	**64,862**	**77,911**	**78,635**	**77,516**	**85,659**

Source: DOE *UAE = United Arab Emirates*

** Includes Singapore, Brunei, Russia, United Kingdom, Vietnam, South Korea and Australia*

The importation of petroleum products has been growing at an average rate of 10.2% per annum in the past five years (see **Table 4**). The growth of petroleum product imports is faster than those of consumption and crude oil importation. Diesel fuel accounts for more than 40% of total product imports in the past five years. The shares of gasoline and LPG to total imports were 18.9% and 14.0%, respectively. Diesel imports have been growing at an average rate of 11.2%, thus, its total imports had increased from 36.4% in 2015 to 44.0% in 2019. Conversely, fuel oil share fell from 13.0% in 2015 to 7.7% in 2019.

Table 4. Petroleum Product Importation by Fuel Type (in MB)

Fuel Type	2015	2016	2017	2018	2019
Diesel	28,375	35,345	40,105	38,784	49,462
Gasoline	15,148	15,705	17,627	19,004	22,261
LPG	9,691	11,613	13,910	15,224	15,957
Kerosene/Avturbo	5,887	7,061	9,205	9,560	11,737
Fuel Oil	10,129	7,162	6,921	5,244	5,061
Others*	8,704	9,222	10,111	9,758	7,994
Total	**77,934**	**86,108**	**97,414**	**97,574**	**112,472**

Source: DOE *IFO = Intermediate Fuel Oil*

** Includes asphalts, solvents, naphtha/reformate and condensate*

As a share of total demand, imports accounted for 65.5% of total demand. (see table below) The most import-dependent product (outside of Others) was LPG, followed by diesel and kerosene/AvTurbo. Gasoline demand was almost evenly split between imports and locally sourced.

Table 5. Percent Share in Total Demand (2019)

	Volume (MB)		
Fuel Type	Import	Demand	% share in demand
Diesel	49,462	72,538	68.2
Gasoline	22,261	43,853	50.8
LPG	15,957	20,782	76.8
Kerosene/Avturbo	11,737	18,218	64.4

	Volume (MB)		
Fuel Type	**Import**	**Demand**	**% share in demand**
Fuel Oil	5,061	8,530	59.3
Others	7,994	7,894	101.3*
Total	**112,472**	**171,817**	**65.5**

Source: DOE, OIMB's Year-End Comprehensive Report (FY 2019), p. 8
** Share in demand of other fuel types exceeds 100% because the volume of imports exceeds the demand, implying a building up of inventory*

The Petroleum product imports of oil majors surged by 88.1% to 42,102 MB in 2019, while imports of direct importers and end-users declined by 6.4% to 70,370 MB. Hence, the share of oil majors to total petroleum product imports expanded to 37.4% in 2019 from 22.9% the previous year. The oil majors had the highest shares for kerosene / Avturbo and diesel fuel in 2019 with 63.0% and 41.8%, respectively. Direct importers and end-users cornered the markets for fuel oil, LPG, and gasoline with shares of 82.9%, 80.3%, and 60.6%, respectively.

South Korea and China are the leading sources of imported petroleum products (see **Table 6**). These two countries have a combined share of 45.7% of imports in the past five years. Other significant sources of petroleum products are Singapore and Taiwan. The country's imports from China increased from only 8,117 MB in 2013 to 32,535 MB in 2017. This represents an annual average growth of 48.1%. Conversely, imports from Taiwan have declined from 19,145 MB in 2013 to only 2,371 MB in 2017. China's total oil refinery capacity was estimated at around 17.2 million barrels per day in 2019.

Table 6. Petroleum Product Importation by Country of Source (in MB)

Country	2013	2014	2015	2016	2017
Middle East	**2,449**	**1,966**	**1,679**	**6,280**	**5,271**
of which:					
Saudi Arabia	843	551	1,085	1,402	1,081
Qatar	276	450	0	1,490	1,263
UAE	489	559	231	2,695	1,684
ASEAN	**17,312**	**16,523**	**19,979**	**19,557**	**19,757**
of which:					
Malaysia	1,835	1,758	7,523	4,572	7,585
Singapore	7,547	9,982	10,323	12,147	10,269
Thailand	3,148	2,473	1,272	36	377
Other Asia	**42,531**	**50,336**	**53,160**	**58,342**	**67,745**
of which:					
China	8,117	10,504	10,938	24,997	32,535
Japan	299	368	1,824	4,701	4,320
South Korea	14,875	21,229	17,886	16,233	22,673
Taiwan	19,145	16,993	17,674	9,204	2,371

Country	2013	2014	2015	2016	2017
Others	**224**	**833**	**3,116**	**1,928**	**5,107**
TOTAL	**62,516**	**69,658**	**77,934**	**86,107**	**97,880**

Source: DOE

The DOE-OIMB Comprehensive Year-End Reports present some data on the shares between refiners and importers of the petroleum product imports. In 2018, the Philippines imported 97,573 MB of petroleum products. The refiners accounted for 11% of these imports in 2018, down from 14.5% in 2017 and 26.2% in 2016. This may partly be due to a 12.1% increase in refinery production to 86,532 MB in 2018. However, in 2019, the refiners almost tripled their product imports to 29,985 MB or 26.7% of total petroleum product imports. This shows refiners still import refined products in order to balance their refinery production output mix.

Table 7. Petroleum Product Imports (in MB)

	FY 2016		FY 2017		FY 2018		FY2019	
	Volume	%	Volume	%	Volume	%	Volume	%
Oil Refiners	22,856	26.2	14,155	14.5	10,780	11.0	29,985	26.7
Direct Importers	64,385	73.8	83,260	85.5	86,793	89.0	82,487	73.3
Total	**87,240**	**100**	**97,415**	**100**	**97,573**	**100**	**112,472**	**100**

Source: DOE- OIMB 2018 and 2019 Year-end Reports, p. 7

Terminalling

Terminalling refers to the leasing of storage tanks or depots to industry players. Direct importers also have import terminals. The oil companies generally own storage facilities but may share or lease their depot capacity to and from other players.

For storage capacity, the bulk of it is in the hands of the majors (see **Table 8**). The refinery storage capacities alone comprise 39.4% (14,380 MB) of the country's total storage capacity (36,506 MB). When it comes to import terminals though, the non-majors or new players dominate. This is to be expected since they are all importers. There are 58 import terminals with a capacity of 16,654 MB for receiving imported finished petroleum products, and the remaining 5,472 MB of capacity are accounted for by 127 depots used as distribution facilities.

Table 8: Storage Capacities (2018, 2019)

DEPOTS	2019 Number	2019 Capacities (in MB)	2018 Number	2018 Capacities (in MB)
Majors	37	3,086	35	1,665
Others	90	2,386	80	2,706
TOTAL DEPOTS	127	5,472	115	4,371
IMPORT TERMINALS				
Majors	8	2,713	16	3,421
Others	50	13,941	38	11,547
TOTAL IMPORT TERMINALS	58	16,654	54	14,968
REFINERY (crudes and products)				
Petron	1	9,783		9,536
Shell	1	4,597		5,068
TOTAL REFINERY*	2	14,380		14,604
TOTAL	187	36,506		33,944

Source: DOE- OIMB Year End Comprehensive Report FY 2019, and Year End Comprehensive Report FY2018, p. 4.
**The Reports cite Crude Oil storage capacities of 7,683 MB in 2019 and 7,827 MB in 2018.*

One interviewee had mentioned that some oil companies shared terminals and depots. For example, the 2019 SEC Form 17-A of the Pilipinas Shell Petroleum Corporation, cited on page 17, shared a joint storage facility with Petron and Chevron at the Ninoy Aquino International Airport. One respondent to the study team's questionnaire remarked that depot sharing arrangements have evolved from an 'exchange' arrangement. In this set-up, one party to the depot sharing could lift products from one depot and return an equivalent amount of product either at the same depot or elsewhere. Today, the arrangement is one of 'buy and sell'; i.e., the one who lifts or withdraws product pays for the product instead of returning the lifted volume.

Meanwhile, another storage player, Philippine Coastal Storage and Pipeline Corporation, reported on its website that it had added 540 MB of storage and two tank truck loading racks last July 2017, increasing its total capacity to 5.2 million barrels or 827 million liters. The company operates the petroleum storage and pipeline facilities of the former U.S. military bases, namely, Clark Air Base and Subic Bay Naval Base.[25]

The oil players have also been expanding storage capacity. In a media release, Shell commenced operations of its 54 million liter terminal in Subic in October 2020; this terminal serves the North Luzon market.[26] Another news article reported that Shell had signed a long term lease agreement with Philippine Coastal Storage and Pipeline Corporation for the Subic facility.[27] Once converted to an import terminal, the Tabangao refinery will have 263

[25] *https://www.philcoastal.com/index.php?module=home.*
[26] *https://pilipinas.shell.com.ph/media/current-year-press-releases-news/pilipinas-shell-stays-resilient-in-covid-hit-q3-amidst-tabangao-refinery-transformation.html.*
[27] *Myrna Velasco, "Shell boosts retail portfolio, adds Subic Terminal," Manila Bulletin, Nov. 30, 2020. Downloaded at: https://mb.com.ph/2020/11/30/shell-boosts-retail-portfolio-adds-subic-terminal/.*

million liters and will serve Luzon and the northern Visayas.[28] Shell had inaugurated its 90-million liter capacity North Mindanao Import Facility import terminal in Cagayan de Oro on 19 July 2016 and this serves the rest of Visayas and Mindanao. It is now its largest facility in the Philippines outside its Tabangao facility in Batangas;[29] the facility reportedly cost Php 6 billion.[30]

In 2017, Phoenix Petroleum inaugurated a 15-million-liter terminal in Consolacion, Cebu, the largest in Visayas.[31] Seaoil availed of the Board of Investments (BOI) investment incentives for its Php 287 million Davao depot project that increased its 41.05-million-liter storage capacity in Southern Mindanao by an additional 36.9 million liters.[32]

End-user markets

At the end of the supply chain are liquid fuel bulk marketing, bunkering, and retail fuel marketing.

Liquid fuel bulk marketing refers to selling petroleum products wholesale through tank trucks, lorries, tankers, barges, or pipelines. The fuel itself may be imported or domestically produced. The buyers here are bulk buyers or large industrial and commercial consumers who buy directly from the oil companies in large volumes. The wholesalers also buy from the oil companies for resale to their customers, who may be large volume users or final consumers. For example, one of the independent oil companies no longer imports directly, but buys from other importers and sells both to bulk users and final users in their retail stations.

The availability of alternative suppliers (competitors) is, of course, vital to have competition. Interviewees noted that oil buyers could now shop around for the best prices. A procurement manager for a major bus company cited how they would get offers from six oil companies every week and select the lowest priced fuel. He noted that some oil companies would call up after noticing that the bus line had not ordered from them for some time to inquire on how they could entice the bus line to order from them again.

It was noted that price was not the only dimension of competition. The procurement manager mentioned how the reliability of supply was also an essential factor in choosing a supplier. This included priority access to the oil company's depot in receiving their fuel allocation. Another example was the fuel supplier's technical and maintenance support for equipment that the fuel supplier could provide. In these cases, though, it was noted that

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[28] *Danessa Rivera, "Shell opens new terminal in Subic," Philippine Star, November 28, 2020. Downloaded at: https://www.philstar.com/business/2020/11/28/2059888/shell-opens-new-import-terminal-subic.*

[29] *https://www.shell.com.ph/about-us/projects-and-sites/north-mindanao-import-facility.html.*

[30] *https://www.fuelsandlubes.com/pilipinas-shell-soon-to-open-new-petroleum-depot-in-mindanao/.*

[31] *https://www.phoenixfuels.ph/phoenix-petroleum-inaugurates-new-terminal-in-cebu/.*

[32] *BOI, "BOI approves additional Davao depot facility seen to further reduce gas prices", posted on December 12, 2018. Downloaded from: https://boi.gov.ph/boi-approves-additional-davao-depot-facility-seen-to-further-reduce-gas-prices-in-mindanao-and-batangas-oleochemicals-project-to-lessen-importation-of-home-care-products/.*

the bus line would have to commit to buying a specific volume of fuel in return for the equipment.

Bunkering refers to the selling of fuels for direct use by a marine vessel. The fuel may be delivered by a barge or smaller transport vessel. Initially, the part of a ship where fuel (e.g., coal, oil) is stored was called a 'bunker,' hence the term.

Fuel retail marketing is the selling of petroleum products in retail, usually directly to end-users. This is done mainly through service or retail stations through dispensing pumps for gasoline, diesel, and auto-LPG. Non-automotive LPG is typically sold in metal cylinders or tanks. Consumers typically either buy these at service stations or LPG retail outlets or have them delivered to their residence.

Fuel retail marketing takes place through the retail outlets or gasoline stations where end-users buy their liquid fuels. From 2010 to 2019, the number of retail outlets in the country more than doubled. Based on DOE data as of March 2020, the number of retail outlets in the entire country increased to 9,530.

The oil majors accounted for 40.2%, and all the other oil companies had the remainder of 59.8%. The oil majors held on to a slim lead in the NCR region with 52.8% of stations but even counting NCR, the majors only had 37.3% of the Luzon retail outlets. The majors have 50.4% of the stations in Visayas, and 38.4% of the retail outlets in Mindanao.

Table 9: Number of Retail Outlets

REGIONS	NUMBER OF RETAIL OUTLETS			
	2010	2017	2018	2019
NCR	664	1,144	1,144	1,102
Luzon	2,645	5,215	5,215	5,236
Visayas	669	1,694	1,740	1,897
Mindanao	800	1,675	1,675	2,248
Total	4,114	8,584	8,630	9,381

Source: OIMB's Year End Comprehensive Report, 2017, 2018, 2019

It would be expected that to support a network of retail stations, the oil companies would require storage capacity to supply the stations. While time-series data on the number of stations and storage capacity was not available, the team performed a simple regression on cross-section data by regions from the DOE of storage capacity (2019) and the number of liquid fuel retail outlets (as of March 2020). The obtained equation follows with the usual statistics reflected below the corresponding coefficients.

No. of LFRO = 468.162 + 0.000351 Storage Capacity

s.e.	122,582	0.000152
t	3.819	2.304
p value	0.0019	0.037

R^2 = 0.275 F = 5.31

where LFRO is number of liquid fuel retail outlets
Storage Capacity is in kilo liters
s.e. is the standard error of the estimated coefficient.

The positive relationship between the two variables was significant, implying that regions with more retail fuel stations tended to have a higher storage capacity level. The relationship could be two-way as it is challenging to conclude causality based on this.

The three most common configurations of ownership-operating arrangements for retail stations are: Company Owned–Company Operated (COCO), Company Owned–Dealer Operated (CODO), Dealer Owned–Dealer Operated (DODO). In Company Owned stations, the oil company owns the service station structures and equipment, and either buys or leases the land. In a Dealer Owned station, it is a third-party entity or person that buys or leases the land, and then builds and builds the station structures following the oil company's specifications and leases the equipment from the oil company. As the names suggest, Company Operated means that the oil company manages and runs the station while a third-party dealer operates a Dealer Operated station.

In a 12 October 2016 Prospectus released in connection with its offering of fixed-rate bonds, Petron reported that as of 30 June 2016, approximately 28% of its retail service stations were CODO's while the remaining 72% were DODO's.[33] Meanwhile, in its Annual and Sustainability Report 2016, Shell also reported that it only uses the CODO and DODO models. The report stated that 45% of its stations were CODO's, and 55% were DODO's.[34] In its 2019 Annual Report, Phoenix Petroleum cited that it used all three configurations of COCO, CODO, and DODO.[35]

On its webpage, Shell estimates that a person interested in becoming a CODO dealer would need an initial capital of Php 5 to 6 million. At the same time, a DODO dealership would require Php 10 to 12 million initial capital. There are no franchise fees in either case. Additionally, in DODO's, prospective DODO dealers ideally should also have a 600 to 1,000 square meter commercial lot.[36] For comparison, TOTAL Philippines estimates that the capital requirements would be a minimum of Php 3.5 million for a CODO and about Php 5 million for a DODO. For a DODO, the prospective dealer should either own or have a lease on the land for the station.[37]

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[33] *Petron Corporation, "Final Prospectus", Mandaluyong City, October 12, 2016, p. 56. Downloaded at: https://www.petron.com/wp-content/uploads/2018/09/Final_Prospectus_dated_October_12_20161.pdf.*

[34] *Pilipinas Shell Petroleum Corporation, "Fueling Progress for the Filipino: Annual and Sustainability Report 2016", p. 27. Downloaded at: https://pilipinas.shell.com.ph/investors/financial-reports/_jcr_content/par/textimage.stream/1494911936968/a6fa632ddcc6e7ce97a8cb766e2bec527f88b634/pspc-asr-2016.pdf.*

[35] *Phoenix Petroleum, "2019 Annual Report", 2019, p. 11. Downloaded at: https://www.phoenixfuels.ph/wp-content/uploads/2020/05/2019-SEC-Form-17-A-Annual-Report.pdf.*

[36] *https://www.shell.com.ph/motorists/inside-our-stations/retail-station-dealership.html.*

[37] *https://www.totaloil.com.ph/be-partner/become-total-service-station-dealer.*

Demand for Petroleum Products

Due to the sustained growth in the domestic economy, consumption of petroleum products grew by an average rate of 7.7% per annum from 2013 to 2019 (see **Table 10**). Diesel fuel accounted for 42.2% of the country's total petroleum product consumption in 2019. Diesel fuel is primarily used by the mass transportation system such as public buses and jeepneys. It is likewise used to fuel some of the country's peak load generating plants. At a distant second was gasoline, with a 25.5% share of total consumption in 2019. LPG was the fastest-growing fuel type, with consumption expanding by an annual average of 10.6% per annum.

Additionally, LPG is mainly used as fuel in heating appliances, cooking equipment, and motor vehicles, such as some taxi cabs. Consumption of kerosene and fuel oil has been declining. The decline in kerosene consumption may be attributed to increased electrification and cleaner cooking gas, while the drop in fuel oil consumption may be due to a shift to cleaner fuels.

Table 10. Petroleum Products Consumption (in MB)

Fuel Type	2013	2014	2015	2016	2017	2018	2019
Gasoline	24,957	25,833	29,667	32,630	35,509	40,510	43,853
Diesel	48,518	51,595	57,545	63,622	66,939	70,482	72,538
Fuel Oil	12,475	13,364	14,568	12,862	11,719	9,335	8,530
Aviation Fuel	12,049	12,463	13,086	14,879	16,474	17,390	17,674
LPG	12,714	13,073	14,842	16,926	18,552	20,486	20,782
Kerosene	947	860	811	777	767	638	587
Biodiesel	987	1,049	1,171	1,289	1,364	**	**
Bioethanol	2,496	2,765	3,168	3,477	3,818	***	***
Others*	2,345	3,501	8,368	8,954	11,397	9,964	7,851
Total	**117,488**	**124,503**	**143,226**	**155,416**	**166,539**	**168,805**	**171,817**

Source: Department of Energy (DOE)
** Includes asphalts, solvents, naphtha/reformate and condensate*
*** Included in figure for diesel*
****Included in figure for gasoline*

The transport sector accounted for more than 64% of the country's petroleum product consumption from 2013 to 2017 (See **Table 11**). The road transport subsector alone consumed up to 81,050 thousand barrels of petroleum products in 2017. About 78% of the transport sector's consumption consisted of diesel fuel and gasoline. In the commercial industry, wholesale trade was the most fuel-intensive subsector, and the sector's

consumption consisted mostly of diesel fuel. For the power generation sector, the most commonly used petroleum product was fuel oil, which accounted for close to 70% of the sector's consumption.

Table 11. Petroleum Product Consumption by Sector (in thousand barrels)

Fuel Type	2013	2014	2015	2016	2017	2018
Transport	77,985	79,996	91,891	99,456	105,148	108,811
Industry	9,727	9,224	10,528	11,046	11,129	11,392
Residential	9,233	9,074	10,301	11,938	12,342	13,373
Commercial	9,163	11,641	10,692	13,456	17,357	18,393
Power Generation	1,429	1,306	1,471	1,731	2,202	1,579
AFF	7,608	9,762	9,976	8,833	6,965	5,293
Non-Energy Use	2,345	3,501	8,368	8,954	11,397	9,964
Total	**117,490**	**124,504**	**1f,227**	**155,414**	**166,540**	**168,805**

Source: DOE *AFF = Agriculture, Fishery and Forestry*

Regional Markets

Annex 1 breaks down total industry demand by trade and region. Not surprisingly, the National Capital Region (NCR) accounts for the largest petroleum product demand share at 30%. Region III comes in a far second at 16.3%, closely followed by Region IV-A at 15%. The wholesale (industrial/commercial) market is larger than the retail (reseller) market by about 35%, though there are a few regions where the retail market is larger.

In terms of product, diesel garnered the largest share (at least 41.9%), while gasoline is second (at least 25%). The volume of diesel in the industrial/commercial market is double that of gasoline. This is likely due to the greater use of diesel by transport and public utility vehicles (jeepneys, AUVs). It is also expected that the lower price of diesel (due to lower taxes) over the years has encouraged a shift in vehicle preference toward diesel-engine vehicles.

In the retail market, kerosene accounts for a minimal share. Retail kerosene is used for lighting and cooking in some households. In the industrial/commercial market, Avturbo or jetkero is a fuel derived from kerosene and used to fuel aircraft. It accounts for 2.8% of the total market, with NCR consuming the most considerable portion.

Table 12. Petroleum Product Demand (in thousand barrels)

	FY 2018		FY 2019	
	Volume	%	Volume	%
Oil Majors	89,152	52.8	87,037	50.7
Petron	44,565	26.4	42,250	24.59
Shell	31,229	18.5	31,769	18.49
Chevron	13,336	7.9	13,007	7.57
Other players/End users	79,653	47.2	84,780	49.3
Phoenix	11,648	6.9	12,130	7.06
Seaoil	7,934	4.7	8,814	5.13
Unioil	5,739	3.4	8,333	4.85
Others*	40,682	24.0	44,569	25.94
End users	13,673	8.1	10,945	6.37
Total	**168,805**	**100.0**	**117,817**	**100.0**

Source: DOE-OIMB Year End Comprehensive Report (FY2018,2019), p. 10, 13.
**Among firms listed by DOE included here under 'Others' are: Liquigaz, Insular, JETTI, SL Harbor, TPC, South Pacific, Micro Dragon, ISLA LPG, Pryce Gas, PTT, High Glory, FLC, TWA, RK3, Warbucks, Marubeni, Petrotrade, Rockoil, Era1, Eastern, Perdido*

The industry relies on the trucking, shipping, depot, and terminal subsectors of the industry to deliver products to the end-users. The activities would include all the other activities besides refining in **Table 1** above.

Petroleum Demand Consumption Forecasts

Double log-linear regression models were estimated to forecast consumption of gasoline, diesel fuel, LPG, and kerosene in the next five years. Real gross domestic product (GDP) was the sole regressor in the regression model. A summary of the regression results is presented in **Table 13**.

Table 13. Summary of Regression Results

Items	Gasoline	Diesel	LPG	Kerosene
Intercept	0.6025 (1.2466)	1.1561 (1.032)	1.9282 (1.4073)	38.9884 (2.1751)
Real GDP	0.5922 (0.0768)	0.5932 (0.0636)	0.4675 (0.0867)	-1.9550 (0.1340)
R-squared	0.7676	0.8286	0.6176	0.9220

The values in parentheses are the standard errors of the estimators.

The coefficients of real GDP for the four petroleum products are all significantly different from zero using a two-tailed test with a level of confidence of 0.05. The income elasticities from the regression models were used to estimate demand in the next five years. Real GDP is assumed to decrease by 3.4% in 2020, increase by 8% in 2021, 6% in 2022-2023 and 6.5% in 2024-2025. The demand forecasts are shown in **Table 14**.

Table 14. Forecasts for Petroleum Products Consumption (in thousand barrels)

Year	Gasoline	Diesel	LPG	Kerosene
2020	42,970	71,075	20,452	626
2021	45,006	74,449	21,217	528
2022	46,606	77,098	21,812	466
2023	48,262	79,843	22,424	412
2024	50,119	82,922	23,105	359
2025	52,049	86,119	23,807	314

Market Concentration

The HHI is probably the most popular measure of concentration among economists. It is commonly thought that a more concentrated market could (though not necessarily) allow greater scope for benefiting from (if not abusing) market power. Conversely, a lower HHI indicates a less concentrated market, which is thought to enable greater competition. The US Department of Justice generally considers an HHI below 1,500 to be unconcentrated. It considers a range of 1,500 to 2,500 to be moderately concentrated, and markets with HHI excess of 2,500 are highly concentrated.[38] In this section, the study team reports some preliminary findings using HHI for the different regional and product markets.

[38] https://www.justice.gov/atr/herfindahl-hirschman-index.

Using market shares computed from volume data provided by the DOE, the study team calculated the HHI from 2012 to 2019 for the categories: all products, gasoline, diesel, kerosene, and LPG. The following table presents the HHI for the start and end years and the percent change over the period. It is interesting to see that overall (all products), the HHI had gone down for all regions except Region 5 (Bicol region). This is discussed further below at the end of this section immediately before the Summary.

Looking at HHI by product, the HHI for gasoline and diesel also fell across all regions except for Region 5. When it comes to LPG, the HHI declined across all regions except Cordillera Autonomous Region (CAR) and Regions 1, 6, and 8. Kerosene poses an enigma because its HHI increased between 2012 to 2019 for almost all regions except for NCR (where it was flat) and Region 6. There are two regions (Region II and CAR) where the HHI for kerosene reaches 10,000, i.e., there is only one seller or a monopoly. By overall HHI, both kerosene and LPG increased since 2012, and may indicate some consolidation of market power.

A DOE North Luzon official offered the hypothesis that other players have not been keen to enter the kerosene market because it is a smaller market. In Region II and CAR, wood is still relatively abundantly used as fuel for cooking, which competes with kerosene.

Table 15. Herfindahl Hirschman Index for Petroleum Products by Region

	All Products			Gasoline			Diesel		
Year	2012	2019	% change	2012	2019	% change	2012	2019	% change
NCR	2,156	1,577	(26.9)	2,065	1,613	(21.9)	1,666	1,579	(5.2)
REGION 1	2,676	1,400	(47.7)	2,698	1,383	(48.7)	2,944	1,698	(42.3)
REGION 2	2,624	1,515	(42.3)	3,315	1,624	(51.0)	3,021	1,803	(40.3)
REGION 3	1,989	930	(53.2)	1,789	1,086	(39.3)	1,865	1,238	(33.6)
CAR	2,926	2,558	(12.6)	2,863	2,475	(13.5)	3,316	2,825	(14.8)
REGION 4A	2,263	1,476	(34.8)	2,047	1,544	(24.6)	2,334	1,737	(25.6)
REGION 4B	4,155	2,003	(51.8)	2,357	1,534	(34.9)	3,577	2,028	(43.3)
REGION 5	2,821	2,881	2.1	2,621	2,753	5.0	3,110	3,233	3.9
REGION 6	2,448	1,429	(41.6)	2,227	1,550	(30.4)	2,395	1,918	(19.9)
REGION 7	2,683	1,516	(43.5)	2,085	1,492	(28.4)	2,527	1,538	(39.1)
REGION 8	3,653	1,936	(47.0)	3,409	2,140	(37.2)	4,303	2,356	(45.2)
REGION 9	3,185	2,398	(24.7)	2,691	2,317	(13.9)	3,064	2,827	(7.7)

	All Products			Gasoline			Diesel		
Year	2012	2019	% change	2012	2019	% change	2012	2019	% change
REGION 10	2,495	1,354	(45.7)	1,890	1,750	(7.4)	2,276	1,575	(30.8)
REGION 11	2,175	1,417	(34.9)	1,979	1,461	(26.2)	2,173	1,601	(26.3)
REGION 12	2,940	1,993	(32.2)	2,464	2,349	(4.7)	3,077	2,139	(30.5)
ARMM	2,613	2,128	(18.6)	2,887	2,876	(0.4)	2,929	1,996	(31.9)
CARAGA	2,667	1,897	(28.9)	2,688	1,739	(35.3)	2,932	2,505	(14.6)
Average	2,734	1,789	(34.6)	2,475	1,864	(24.7)	2,795	2,035	(27.2)

		Kerosene			LPG	
Year	2012	2019	% change	2012	2019	% change
NCR	3,217	3,218	0.0	3,198	2,610	(18.4)
REGION 1	3,497	8,191	134.2	3,907	4,420	13.1
REGION 2	3,780	10,000	164.5	4,564	3,643	(20.2)
REGION 3	3,467	7,849	126.4	3,652	2,583	(29.3)
CAR	7,004	10,000	42.8	3,719	3,985	7.2
REGION 4A	3,421	3,891	13.7	3,017	2,644	(12.4)
REGION 4B	5,037	8,976	78.2	8,185	5,271	(35.6)
REGION 5	6,133	6,521	6.3	4,478	3,742	(16.4)
REGION 6	4,023	3,528	(12.3)	2,855	3,058	7.1
REGION 7	3,475	4,121	18.6	2,997	2,706	(9.7)
REGION 8	3,747	6,880	83.6	2,888	3,972	37.5
REGION 9	3,336	3,475	4.2	4,440	3,706	(16.5)
REGION 10	3,812	5,518	44.8	2,755	2,545	(7.6)
REGION 11	3,619	3,661	1.2	2,882	2,568	(10.9)
REGION 12	3,396	5,828	71.6	4,022	3,032	(24.6)

		Kerosene			LPG	
ARMM	2,635	7,866	198.5	9,935	6,760	(32.0)
CARAGA	3,261	9,836	201.6	3,841	2,536	(34.0)
Average	3,933	6,433	63.6	4,196	3,516	(16.2)

To compare, using market shares data from the OIMB's 2019 Comprehensive Year-End Report (Figure 3 on page 13 and Figure 4 on page 14 of the OIMB report), the computed HHI are 1,201.5 (unconcentrated) for the total petroleum market, while the LPG market is at 1,916.7 (moderately concentrated). The discrepancy is because the list of market shares published in the OIMB report is not as disaggregated as in the excel data that the DOE provided.

Table 16. HHI for Total Petroleum Market and for LPG (2019)

Total Petroleum Market	% Share (s)	s^2		LPG Market	% Share (s)	s^2
Petron	24.59	604.67		Petron	28.21	795.80
Shell	18.49	341.88		Shell	0.25	0.06
Chevron	7.57	57.30		Phoenix	5.61	31.47
Phoenix	7.06	49.84		South Pacific	17.87	319.33
Seaoil	5.13	26.31		Liquigaz	21.96	482.24
Unioil	4.85	23.52		ISLA	12.85	165.12
Insular	2.66	7.08		Pryce Gas	10.81	116.86
Liquigaz	2.16	4.67		Others	2.42	5.86
South Pacific	2.05	4.20		**Sum**	99.98	1916.75
Jetti	1.99	3.96				
Microdragon	1.98	3.92				
TPC	1.61	2.59				
PTT	1.58	2.50				
SL Harbor	1.55	2.40				
ISLA	1.31	1.72				
Pryce Gas	1.06	1.12				

Total Petroleum Market	% Share (s)	s^2		LPG Market	% Share (s)	s^2
Others	7.99	63.84				
Sum	**93.63**	**1201.531***				

Based on raw data from DOE-OIMB Year End Comprehensive Report (FY 2019) pp. 13-14.
**Note that there is a remainder of 6.37% share accounted for by End-users who imported their requirements directly. If the market shares are adjusted upwards so that total market share sums to 100, the HHI rises to 1370.618.*

Data on retail market shares are confidential, and thus, as a proxy, the HHI was computed using the share by several retail stations.

In the raw data on the number of retail outlets, the category 'Independent' is used by the DOE to aggregate brands with four retail fuel stations or less.[39] The business names of these 'Independent' companies were nevertheless provided in the data. The team assumed that stations with the same business name had the same owner and proceeded to compute the HHI for the various regions of the country using each company's share of the total number of retail stations (see table below).

Table 17. Number of Liquid Fuel Retail Outlets and HHI by Region

	Total	Majors	% of Total	Others	% of Total	HHI
NCR	1,121	592	52.8	529	47.2	1069.8
CAR	52	25	48.1	27	51.9	1242.6
Region I	474	150	31.6	324	68.4	700.6
Region II	256	97	37.9	159	62.1	958.1
Region III	821	280	34.1	541	65.9	678.0
Region IV	2,063	692	33.5	1,371	66.5	554.0
Region V	552	158	28.6	394	71.4	339.8
Region VI	747	391	48.9	382	51.1	1,194.4
Region VII	802	384	46.3	431	53.7	1,081.1
Region VIII	348	182	55.2	156	44.8	1,598.6
Region IX	201	123	61.2	78	38.8	1,651.4
Region X	552	235	42.6	317	57.4	886.9
Region XI	810	268	33.1	542	66.9	677.6
Region XII	424	135	32.5	286	67.5	1,065.3
Region XIII	293	116	39.6	177	60.4	832.5
BARMM	14	5	35.7	9	64.3	2,040.8
Total	9,530	3,807	39.9	5,723	60.1	

** Brands with four or less stations.*
Source of raw data: DOE (as of March 2020)

[39] *The 'Independent' category seems to be not consistently enforced. It was noticed that many brands were still listed separately from Independent though they had less than four stations in a region.*

The regional HHIs suggest the retail sector is generally unconcentrated and likely to be competitive as they are below 1,500 for all regions except Regions VIII (marginally above), IX, and BARMM. It is highest in BARMM, where there are only 14 retail fuel stations in all. In Regions VIII and IX, where the HHI is relatively higher, the majors have the most stations.

The majors' share of the stations is also less than 50% in all regions except NCR, Regions VIII, and IX. The majors hold a slim majority in NCR, which has the second-highest retail fuel outlet. Overall, the new players or 'Others' have overtaken the majors in thirteen regions and holds a 60.1% to 39.9% lead in the share of retail outlets nationally.

It was noted that Region V, Bicol, had the highest percentage share of retail outlets by the non-majors, despite the persistently high market shares of the majors and high HHI for the region across all products, including gasoline, diesel, and kerosene. This would suggest that the majors still dominate the bulk and the wholesale market, at least. One new player official agrees with this hypothesis and further thought that the majors are supplying many non-major retail liquid fuel outlets. This may be due to a lack of infrastructure (storage capacity) among the non-majors according to the same industry source. The team also made inquiries with the DOE about this seeming paradox and the DOE responded that they had also recognized it but have not completed their study on the matter.

Summary

This section presented statistics on various facets of the downstream industry. The growing share of the new or independent players (non-majors) is evident. From 55 in 1999, shortly after deregulation, their numbers reached 355 by 2019. Their share of the number of retail fuel outlets has surpassed those of the majors in many regions of the country. Nevertheless, the majors are still a prominent market force. As indicated by the HHI, Region V (Bicol) is one region where the majors remain dominant, despite having the largest percentage of independent retail stations.

POLICIES AND REGULATION

Laws and Regulations

The downstream oil industry in the Philippines started as a fairly free market but had been regulated in the 1970's with the onset of the global oil shocks. Oil prices were regulated by the Energy Regulatory Board, the forerunner of today's Energy Regulatory Commission (ERC).

The oil industry was initially deregulated in March 1996 with the passage of R.A. No. 8180, the Downstream Oil Industry Deregulation Act of 1996. Due to some protests when pump prices rose in 1997 in the wake of the Asian crisis and the resulting peso depreciation, a case was filed with the Supreme Court and the deregulation was interrupted.

The Supreme Court struck down R.A. No. 8180 in the landmark case of *Tatad v. Sec. of Department of Energy* (G.R. No. 124360, 3 December 1997) because the following provisions contained therein were anti-competitive:

a. Tariff differential between crude oil and refined products;
b. Minimum inventory requirement; and
c. Predatory pricing.

In February 1998, the situation was quickly remedied by the passage of a revised oil industry deregulation law, R.A. No. 8479, otherwise known as the Downstream Oil Industry Deregulation Act of 1988.

Another law that has impacted oil pricing is R.A. No. 9367, the Biofuels Act of 2006, which was signed into law in January 2007 and mandated the blending of ethanol in gasoline and fatty acid methyl ester (FAME) in diesel.

Public complaints about oil prices would recur through the years, usually when prices rise. The DOE called for three independent reviews of oil deregulation and prices. The first committee was formed by the former DOE Secretary Vincent Perez in 2005 to review the oil industry deregulation law which was chaired by former ERC Commissioner Carlos Alindada.[40] In 2008, Peter U of the University of Asia and the Pacific (UA&P) School of Economics, who was also a member of the 2005 panel, was tasked by DOE Secretary Angelo Reyes to assess the reasonability of oil prices with Sycip, Gorres and Velayo & Co. providing data verification support.[41] Lastly, a third panel was formed in 2012, headed by Dr. Benjamin Diokno of the UP School of Economics and Dr. Victor Abola of the UA&P to review oil prices.[42]

This section briefly discusses critical laws and regulations affecting the downstream petroleum industry. For the purposes of this study, this review focuses on the respective provision of rules, laws and policies likely to impact competition.

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[40] *Independent Review Committee, "The Report of the Independent Committee Reviewing the Downstream Oil Industry Deregulation Act of 1998", Report submitted to the DOE, Feb. 28, 2005.* https://www.doe.gov.ph/sites/default/files/pdf/downstream_oil/irc-report-2005.pdf.

[41] *SGV-UA&P, "The Report of the SGV-UA&P Independent Study on Oil Prices", Report Submitted to the DOE May 2008.* https://www.doe.gov.ph/sites/default/files/pdf/downloads/sgv-ua_and_p_study_on_oil_prices.pdf.

[42] *Independent Oil Price Review Committee, "The Report of the Independent Oil Price Review Committee (2012)", Report Submitted to the DOE, August 2012.* https://www.doe.gov.ph/sites/default/files/pdf/price_watch/ioprc_report_09-10-2012.pdf.

1. *Batas Pambansa (B.P.) No. 33, An Act Defining and Penalizing Certain Prohibited Acts Inimical to the Public Interest and National Security Involving Petroleum and/or Petroleum Products, Prescribing Penalties Therefor and for Other Purposes*

This Act dates back to 6 June 1979 and contains a list of prohibited acts.[43] From a competition perspective, the main provisions of possible interest relate to the banning in Section 2 of the following practices:

- Illegal trading in petroleum and/or petroleum products. Illegal trading is defined as the selling or distribution of petroleum products for profit without a license or authorization from the government; non-issuance of receipt by licensed traders; misrepresentation of quality and/or quantity; and sale by oil companies, distributors and/or dealers violative of other government rules and regulations.
- Hoarding of petroleum and/or petroleum products. Hoarding is defined as the undue accumulation by a trader of petroleum and/or petroleum products beyond his or its normal inventory levels and/or the unjustified refusal to dispose of, sell or distribute the same to consumers; or the unreasonable accumulation by a person other than a trader of petroleum and/or petroleum products. Since prices were regulated at the time, there would seem to be no benefit to hoarding unless the products were to be sold in a 'black market' or to deprive competitors of supply.
- Overpricing in the sale of petroleum and/or petroleum products. It should be recalled here that at the time of the Act, petroleum product prices were fixed by the government. Thus, determination of what constitutes overpricing would have been straightforward.

This B.P. No. 33 was later amended by Presidential Decree (P.D.) No. 1865, which specifically added the adulteration of products and underfilling or under-delivery of petroleum products, especially LPG, to the list of prohibited acts in Section 2.

Thus, B.P. No. 33 and P.D. No. 1865 have consumer protection flavor and proscribe unethical and unfair practices that can pose unfair competition to those who follow fair business practices.

2. *Republic Act No. 8180, Downstream Oil Industry Deregulation Act of 1996*

This was the first law deregulating the Philippine petroleum industry in March 1996. Due to protests when pump prices rose in 1997 in the wake of the Asian crisis, and the resulting peso depreciation, a case was filed with the Supreme Court and R.A. No. 8180 was declared unconstitutional. Nevertheless, it is useful to be familiar with R.A. No. 8180 for a fuller appreciation of R.A. No. 8479.

[43] *A historical curiosity is that it bans racing with cars, motorcycles, airplanes, and other machines using petroleum fuels, betraying its 1970s date, when the world was in the grips of the first two global oil crises. Consequently, Section 1 of the Act also speaks of energy conservation as a policy imperative.*

The law deregulated entry into the industry and allowed new players into the market, provided that they notified the DOE.

Section 5(b) of the Act imposed a tariff differential between crude oil and refined products. Imports of crude oil would be levied a 3% tariff, while imported refined products at 7%. This differential would only be until 1 January 2004, after which, a uniform tariff rate would prevail. However, imports of fuel oil and LPG were exceptions and enjoyed the same tariff as crude oil right from deregulation. The Supreme Court would later rule that this tariff differential gave the existing refiners an advantage and as a result, is considered unconstitutional.

To maintain a secure supply of crude oil and fuel products, Section 6 required refiners and importers to maintain a minimum inventory of 10% of annual sales volume or 40-day supply, whichever was lower. This requirement would later be found anti-competitive by the Supreme Court.

Section 7 tasked the DOE (with the Department of Trade and Industry) to promote fair trade practices and prevent cartelization, monopolies, and combinations of trade restraint.

Section 8 tasked the DOE to monitor prices as well as quality and standards. It also created the DOE-Department of Justice (DOJ) task force to look into unreasonable price reports.

Section 9 reinforced Section 7 to safeguard competition and prohibited the following acts:

a. Cartelization – defined as "any agreement, combination or concerted action by refiners and/or importers or their representatives to fix prices, restrict outputs or divide markets, either by products or by areas, or allocating markets, either by products or by areas, in restraint of trade or free competition."
b. Predatory pricing – defined as "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."

Deregulation was to proceed in two phases. Under Chapter II - Transition Phase, Section 14 of R.A. No. 8180 provided an Automatic Oil Pricing Mechanism during the transition phase. While a specific formula was not presented, it did suggest that wholesale posted prices could follow "Singapore posting of refined petroleum products."

The Supreme Court would subsequently nullify R.A. No. 8180 because the provisions on tariff differential between crude oil and refined products, minimum inventory requirement, and predatory pricing were anti-competitive for the following reasons:

a. Tariff differential between crude oil and refined products - that the tariff differential favored the refiners since it made imported petroleum products more expensive.

b. Minimum inventory requirement - that this favored the incumbent 'Big Three' because they already had existing storage, and so it would be easier for them to comply with the requirement.

c. Predatory pricing - that due to barriers to entry, the incumbents could be tempted to practice predatory pricing. The Court found that this prohibition inhibited fair competition.

Nevertheless, the situation was quickly remedied by the passage of a revised oil industry deregulation law, R.A. No. 8479.

3. *Republic Act No. 8479, Downstream Oil Industry Deregulation Act of 1998*

R.A. No. 8479 stated anew the government's policy objective to deregulate and liberalize the industry, allowing the entry of new participants into the market. Section 6 of the new law now imposed a uniform 3% tariff on crude oil and refined petroleum products. The provision on minimum inventory in R.A. No. 8180 was removed.

There continued to be a section on anti-trust safeguards (Chapter III), which prohibited the following acts:

a. Cartelization (Chapter III Sec. 11a) - defined essentially as in RA 8180[44]
b. Predatory pricing (Chapter III Sec. 11b) - The prohibition on predatory pricing was made more specific, qualified to refer to pricing below industry *average* variable cost for the purpose of destroying competition, eliminating a competitor, or discouraging a potential competitor from entering the market. The word 'variable' had not been present in the RA 8180 version. Furthermore, an exception was added, allowing a seller to price below average variable cost to match a competitor's lower price, as long as such lowering is not for the purpose of destroying competition. R.A. No. 8479 also made a brief distinction between 'variable' (cost varies as output changes) and 'fixed' costs. The term 'average variable cost' was also defined.

Chapter IV delineates the DOE functions, which continues to monitor the industry's operations, especially on prices, compliance with product quality and standards. The Act still provides for the creation of a DOE-DOJ Task Force to look into reports of unreasonable price increases. Section 15 under the same chapter gives additional

[44] *Sec. 11 of RA 8479 defined cartelization as "any agreement, combination or concerted action by refiners, importers and/or dealers, or their representatives, to fix prices, restrict outputs or divide markets, either by products or by areas, or allocate markets, either by products or by areas, in restraint of trade or free competition, including any contractual stipulation which prescribes pricing levels and profit margins."*

powers to the DOE Secretary to request additional information from industry participants.

R.A. No. 8479 also provided for a transition phase (Chapter V) towards full deregulation of the industry. In R.A. No. 8081 and R.A. No. 8479, there were provisions related to the winding down of the Oil Price Stabilization Fund (OPSF), the former buffer fund used to stabilize oil prices. This is immaterial, though, for the analysis of the current state of competition.

Also retained in the transition phase is the provision for an Automatic Oil Pricing Mechanism. Again, no specific formula was specified, but Wholesale Posted Prices of petroleum products were to be set based on the Singapore Posting of refined petroleum products, the Singapore Import Parity (SIP), or the crude landed cost. These are defined in R.A. No. 8479 as follows:

- Singapore Import Parity (SIP) - shall refer to the deemed landed cost of a petroleum product imported from Singapore at a free-on-board price equal to the average Singapore posting for that product at the time of loading.
- Singapore Posting- shall refer to the price of petroleum products periodically posted by oil refineries in Singapore and reported by independent international publications.

4. *Memorandum Circular No. 2001-05-002, To: All Oil Companies, Subject: Prior notice on price adjustments (see Compendium of Energy Laws Vol. 3, p. 210)*

This short circular requested oil companies to notify the DOE on the details of oil price adjustments (both upward and downward) at least one day prior to the price adjustment effectively. This was dated 25 May 2001 and signed by then DOE Sec. Jose Isidro N. Camacho.

The next Department Circular on oil price adjustment notification came four years later and further specified more requirements in the notification content and form.

5. *Department Circular No. 2005-08-007, Implementing Guidelines for the Requirement of Prior Notice on Price Adjustments of Industry Players, pursuant to Memorandum Circular No. 2001-05-002. Dated Aug. 11, 2005 and signed by DOE Sec. Raphael P.M. Lotilla (see Compendium of Energy Laws Vol. 3, p. 210)*

Article II, Section 1(a) on price increases specifies that oil companies must notify the DOE within one day, but not less than six hours before implementing any price increase. Interestingly, Section 1(b) on price reductions sets no deadlines for notifying the DOE in the case of price reductions.

Under Article III, an SMS message sent within the above timeframe qualifies as notification if it lists the products subject to a price increase, the amount of the price

adjustment, the cause of adjustment, and "why such magnitude and timing are reasonable." The DOE official must acknowledge the SMS message.

Section 2 of Article III still requires a formal notice after the SMS message. This notice may be in the form of either a letter, fax, or email and should contain the contents specified for the SMS message.

The requirement to notify the DOE of price changes may have occasioned the observed seeming coordination of price adjustments by the oil firms. Many interviewees point to the time of DOE Secretary Angelo Reyes as the start; a time when frequent meetings were held together with industry players to tackle the public outcry over large pump price adjustments, replacing these with more frequent, but smaller price adjustments. This will be discussed in the next section on Competition.

6. *Executive Order No. 134 S. 2002, Requiring Oil Companies and Bulk Suppliers to Maintain a Sufficient Minimum Inventory of Petroleum, for Purposes of Ensuring Continuity, Adequacy and Stability of Crude and Fuel Supply*

This Executive Order was signed on 14 October 2002 by President Gloria Macapagal-Arroyo through then Executive Secretary, Alberto G. Romulo, to give the DOE Secretary the power to determine if prevailing circumstances (both domestic and global) warranted setting minimum inventory levels to be maintained by oil industry players to assure security of supply. The EO did not set specific minimum inventory levels, but left it to the Secretary of Energy to promulgate issuances to implement this order.

7. *Department Circular No. 2003-01-001, Guidelines Implementing the Minimum Inventory Requirements of Oil Companies and Bulk Suppliers as provided under Executive Order No. 134*

This Department Circular was signed on 20 January 2003 by then DOE Secretary Vincent Perez. It sets the minimum inventory levels at fifteen days supply of petroleum products (except LPG) for non-refiners. The minimum LPG level was set at seven days supply. Refiners were to maintain a minimum inventory of thirty days supply of both crude oil and refined petroleum product. Days supply was defined as the equivalent number of days of in-country stocks of petroleum crude oil and products based on the average daily sales or liftings for the past six months.

However, these levels were relaxed after two months by the following Department Circular.

8. *Department Circular No. 2003-03-002, Providing for the Relaxation of the Minimum Inventory Requirements of All Oil Companies and Bulk Suppliers Operating in the Country*

This circular was signed on 21 March 2003 by then DOE Secretary Vincent Perez. While it reduces the minimum inventory of petroleum products for non-refiners to seven days

supply, it maintained the minimum LPG inventory levels at seven days supply. It further reduces the minimum inventory level for refiners to just fifteen days supply.

Over the years, minimum inventory levels could be adjusted by the incumbent DOE Secretary, depending on prevailing circumstances. For example, DOE Secretary Rene Almendras raised the levels in March 2011 due to tensions in the Middle East.

It may be recalled that the minimum inventory provision in R.A. No. 8180 had been one of the provisions deemed anti-competitive by the Supreme Court in its repeal of R.A. No. 8180; an equivalent provision is not present in the successor law, R.A. No. 8487.

9. *Republic Act No. 9367, Biofuels Act of 2006 (see Compendium of Energy Laws p. 295)*

R.A. No. 9367 is entitled "An Act Directing the Use of Biofuels, Establishing for this Purpose the Biofuel Program, Appropriating Funds Therefor, and for Other Purposes."

This was passed into law on 12 January 2007. The stated policy objective was to reduce dependence on imported fuels while protecting the environment. Another objective was sustainable economic growth through the stimulation of rural employment and incomes.

It mandated that all fuels for motors and engines contain locally sourced biofuels (bioethanol for gasoline and biodiesel for diesel). The law defines bioethanol as ethanol (C_2H_5OH) produced from feedstock and other biomass. Biodiesel is defined as "Fatty Acid Methyl Esters or mono-alkyl esters derived from vegetable oils or animal fats and other biomass-derived oils." Both bioethanol and biofuels must comply with the specifications of the PNS.

The initial blend set for bioethanol was 5% and for biodiesel was 1%. These blends would be further raised to 10% for bioethanol and 2% for biodiesel.

As incentives, the law granted zero specific tax for the biofuel component of fuels while the sale of raw materials used in biofuels production were exempted from the VAT. Government financial institutions were directed to prioritize financing to Filipino entities producing biofuels.

The law also created the National Biofuel Board to monitor and implement the law, wherein the DOE Secretary serves as the chair. The Department of Agriculture (DA), Sugar Regulatory Administration (SRA), and Philippine Coconut Authority (PCA) were tasked to ensure an adequate supply of sugar and crops needed as feedstock for biofuel production.

The Implementing Rules and Regulations for the Biofuels Act of 2006 (Department Circular No. DC 2007-05-006) was signed on 17 May 2007 by then DOE Secretary

Raphael Lotilla. (see Compendium of Energy Laws vol 3, p. 328). Note that Section 22.1 of this Department Circular provides that:

> Section 22.1 **Blending of Biofuels** Blending of biodiesel and bioethanol with diesel and gasoline fuels, respectively, shall be undertaken by the oil companies using appropriate blending methodologies at their respective refineries, depots, or blending facilities prior to the sale of biofuel blends to consumers/end-users: *Provided*, that blending methodologies shall be in accordance with duly accepted international standards, as well as, guidelines issued by the DOE for this purpose. *Provided further*, that oil companies shall ensure compliance of the biofuel blends with the PNS.

Thus, the burden of blending, together with the associated costs, is on the oil companies. This is in addition to the bioethanol and biodiesel cost, which can be more expensive than the corresponding gasoline or diesel fuel. Divergences between bioethanol prices and MOPS can also cause the actual price adjustments of the oil companies to deviate from the price adjustment 'formula' that the industry currently follows.

Because the Biofuels Act of 2006 bans imported bioethanol and biodiesel, it creates a barrier to entry to the competition in the local biofuels market. It does not affect the competition among the oil players, but it gives market power to the local biofuel producers, since the oil companies are required to buy from them first before importing.

Biofuel prices are not regulated, but there is a bi-monthly bioethanol reference price by the National Biofuel Board regularly posted on the SRA website. It is an average of estimated costs (including profit margin) for ethanol produced from sugar and molasses. For biodiesel, there is a reference price based on the Unitec Coconut Association of the Philippines (UCAP). These reference prices start as the starting point from which the parties negotiate on the actual price, taking into account other factors like volume and delivery distance. Thus, expenses paid by the oil companies for biofuels may vary.

10. *Department Circular No. 2019-05-0008, Revised Guidelines for the Monitoring of Prices in the Sale of Petroleum Products by the Downstream Oil Industry in the Philippines*

This circular was signed on 28 May 2019, by DOE Secretary Alfonso Cusi and would have been initially implemented on 28 June 2019, however, implementation has been temporarily stopped by a regional trial court preliminary injunction in response to several oil companies' petitions. [45]

[45] *Danessa Rivera, "Court Issues TRO vs DOE's oil unbundling" Philstar Global, August 6, 2019.*

The circular stipulated that oil companies must notify price changes no later than 3:00 PM on the day before the price change. It would also require the oil companies to reveal their cost components, including their profit margins in the format below:

I. International Content
   a. Import cost (crude or finished product);
   b. Freight cost
   c. Insurance
   d. Foreign Exchange Rate
II. Taxes and Duties
   a. Duties
   b. Excise Tax
   c. Value added tax
   d. Other imposts
III. Biofuel cost
IV. Oil Company Take Component
   a. Port charges
   b. Other imposts
   c. Refining cost (for crude)
   d. Storage cost
   e. Handling cost
   f. Marketing cost
   g. Transshipment cost
   h. Other costs
   i. Oil Company Profit Margin
   j. Total Oil Company price

There is some ambiguity on the required frequency of the submission of the above items. It seems that the above statement would have to be submitted with every notice of price adjustment (and even if there is no price adjustment) to justify and rationalize the adjustment. Under the current weekly price adjustment practice followed in the industry, this would be every week. This would undoubtedly introduce transaction costs to adjusting prices or what economists call "menu costs."

Meanwhile, it would have also required retail outlets and dealers to report the following cost components:

1. Oil company price
2. Hauler's fee
3. Taxes
4. Fixed cost
5. Variable cost
6. Profit margin
7. Total Liquid Fuel Retail Price or LPG Refiller's/Dealer's Pick-up Price.

The oil companies, both the majors and the new players or independents, objected to this circular. The common objection raised was that this price unbundling requirement would return the industry to regulation. In fairness to the DOE, the circular does not mention nor contemplate fixing prices. More reasonable objections of the industry were that much of the requested information is confidential. In contrast others were publicly available (e.g., MOPS, foreign exchange rates) and there was no need to ask the oil companies for them. Several oil companies filed petitions with the courts for a preliminary injunction on the implementation of this Department Circular, which was granted.

The question remains—even if the DOE had the above information—how would it use them to determine whether price adjustments were reasonable or unreasonable? For example, what would be a reasonable profit margin? If benchmarks were to be established on profit margins or cost recovery, it would be contrary to deregulation to impose it. Perhaps this is what the oil companies are wary of, a return to a spirit of regulation.

While weekly preparation and submission of such reports may be time-consuming, the DOE should nevertheless have the authority to demand the above-mentioned information in official fact-finding investigations. We think there are sufficient provisions already in current laws, such as R.A. No. 8479, that empower the DOE to do this, but we defer to more competent legal minds on this matter.

Government Bureaucracy

Lastly, one interviewee expressed his frustration with government bureaucracy. Early on in the deregulation of the industry, the interviewee's company had ventured into direct importation of petroleum products for distribution in the country. He cited the 'challenges' their company encountered in importation (the Bureau of Customs was one agency hinted at) as one factor for not importing anymore, and instead, purchasing their supply from other importers.

Another issue brought up is the bureaucracy that their company has also faced in getting permits from local governments to set up service stations. Although anecdotal, the person cited instances wherein he thought that LGUs did not want to issue permits or other documents because there may be local government officials who had interests in the liquid fuel retail business themselves. Again, this is more of a graft and corruption issue rather than a competition issue, but it nonetheless poses a barrier to entry and an uneven playing field.

Tax Regime

Excise taxes have historically been levied on petroleum products. Diesel and kerosene have been regarded as 'socialized products' and levied lower excise taxes because they were thought to be consumed more by the poor (public transportation, lighting, cooking).

Meanwhile, gasoline has borne a higher excise tax rate. Consequently, pump prices for gasoline have been higher over the years. This has likely caused a shift in motor vehicle purchases towards diesel engine vehicles. Ironically, even luxury car brands have introduced diesel engine versions of their models locally. The table below summarizes data from a National Tax Research Center (NTRC) Tax Research Journal to show excise tax rate trends.

Table 18. Historical Excise Taxes on Petroleum Products

Period	Unleaded Gasoline	Regular Gasoline	Diesel Oil	Kerosene
	Under RA 6965 (Effective September 19, 1990)			
1991 to 1996	26.5	23.1	6.3	7.0
	Under RA 8184 (Effective July 26, 1996)			
1997 to 2005	26.7	31.8	13.3	5.3
	Under RA 9337 (Effective Nov 5, 2005)			
2006 to 2015	9.5	9.6	0	0

Revisions in tax rates would, of course, impact prices. However, since tax rates impact all oil (compliant) firms, they are not likely to have significant intra-industry competition issues. The industry has pushed the government in the past to go after oil smuggling more diligently. The effectiveness of the current fuel marking program is now being monitored.

The passage of R.A. No. 10963 or the Tax Reform for Acceleration and Inclusion (TRAIN) Law adjusted excise taxes further in 2019, with the second round of adjustments taking effect at the start of 2020.

Smuggling and Fuel Marking

The TRAIN law also mandated fuel marking, which is hoped to solve the long-standing problem of fuel smuggling.

There are three types of smuggling: technical smuggling, outright smuggling, and smuggling through the economic zones. Technical smuggling occurs when there is a misdeclaration of the imported cargo regarding the quantity, quality, valuation, and other information about the cargo. Outright smuggling occurs on the high seas when small vessels approach and draw oil from a mother vessel bringing the oil from the source. This is sometimes called the "paihi" system. Lastly, imported fuel has also been smuggled through economic zones in the past, where imports can enter tax-free but are then smuggled out of the zone using fake documents and other means.

The fuel marking program was included in the TRAIN law. The TRAIN law requires all fuel, whether refined in the country or imported, to undergo fuel marking; fuel marking is where a chemical is added to the fuel to "mark" and identify it as having paid the appropriate taxes.

A news report quoted the cost of the marker as Php 0.06884 per liter of fuel.[46] SGS Philippines has partnered with a Swiss company, SICPA, SA, to supply the chemical marker for gasoline, diesel, and kerosene.

The DOF estimated that the government lost about Php 26.87 billion in tax revenue in 2016 from oil smuggling.[47] Aside from the lost government income, there is also lost revenue of the legitimate oil players. Since the smugglers do not pay taxes on the smuggled fuel, they can be sold cheaper and pose unfair competition with the legitimate oil firms. It is hoped that fuel marking can deter smuggling by enabling authorities to identify whether the fuel is smuggled.

Summary

The most important law affecting the industry is R.A. No. 8479 or the Oil Industry Deregulation Law of 1998. Deregulation did not have a smooth start, as the original deregulation law R.A. No. 8180 was invalidated by the Supreme Court a year earlier. Part and parcel of the law would be the rules on maintaining a minimum inventory and reporting price adjustments to the DOE by the oil players.

Since then, arguably the most significant law impacting the industry may be the Biofuels Act of 2006, which mandated the blending of bioethanol with gasoline and biodiesel or CME, with diesel. The law also banned biofuels imports, requiring oil companies to buy up all domestic production before resorting to importing. This likely accords domestic biofuel producers some market power in pricing their products.

Taxation on oil products has evolved over the decades, with diesel and kerosene historically regarded as socially sensitive products and taxed less, being used in public transportation or by the poor for cooking and lighting. Administratively, the latest fuel marking requirement as proof of having paid taxes holds promise as a means to reduce, if not eliminate smuggling, significantly. Smuggled products have posed unfair competition to products that have been levied legal duties.

COMPETITION ISSUES

Components of Oil Pricing/Cost Structure

To be profitable, prices must cover costs and provide a reasonable rate of return. As discussed above in the section on the industry supply chain, since the Philippines does not produce significant oil, the majority of our crude oil and petroleum products supply is imported. An informational bulletin published by the Consumer Welfare and Promotion

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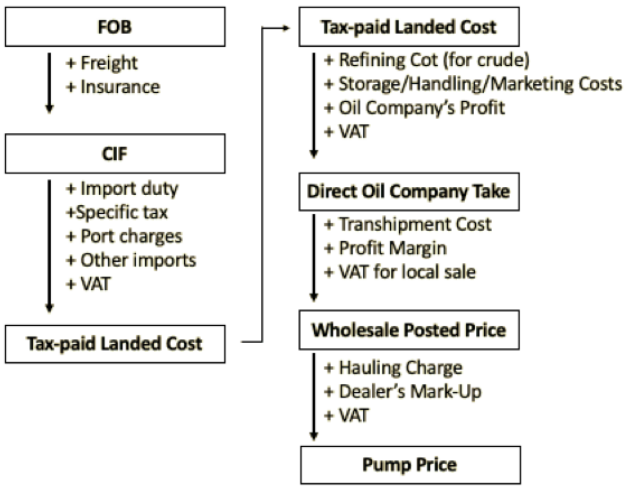
[46] *Ben O. de Vera, "Nationwide fuel marking starts in March,", Inquirer.net, posted January 17, 2019. https://business.inquirer.net/263718/nationwide-fuel-marking-starts-in-march.*

[47] *Department of Finance, "Fuel marking to plug P27 B annual losses from oil smuggling says DOF exec," posted May 28, 2017. https://taxreform.dof.gov.ph/news_and_updates/fuel-marking-to-plug-p27-b-annual-losses-from-oil-smuggling-says-dof-exec/.*

Office of the DOE, "Understanding oil pricing," describes the different cost components of crude oil and refined products (**Figure 4**). Importing refined petroleum products would not incur the refining cost.

Figure 4. Oil Pricing - Cost Components



Source: "Understanding Oil Pricing", Consumer Welfare and Promotion Office, Department of Energy, undated. Downloaded at: https://www.doe.gov.ph/sites/default/files/pdf/consumer_connect/understanding_oil_pricing.pdf

The tables below are from a DOE presentation, although not as detailed as the figure above, it gives some relative magnitude to the main cost components.

Table 19. Gasoline Price Build-up for Iloilo City

DETAILS	July 2018		Jan 2016		
FOB MOPS, $/bbl	81.12		47.10		
FREIGHT PLUS, $/bbl	2.82		2.17		
OCEAN LOSS (0.5% of CIF)	0.42		0.25		
Total Import Cost	84.36		49.51		
Exchange Rate	53.42		47.54		
Peso Landed Cost, PhP/bbl	4,506.83		2,353.76		
		% of Pump Price		% of Pump Price	% change
Peso Landed Cost, PhP/liter	25.51	48.53	13.32	34.20	91.52
EXCISE TAX	7.00	13.32	4.35	11.17	60.92

VAT	5.38	10.23	3.58	9.19	50.28
ETHANOL	3.88	7.38	4.82	12.37	(19.5)
Total Cost before Industry Take	41.76	79.44	26.07	66.93	60.18
Industry Take	10.81	20.56	12.88	33.07	(16.07)
PUMP PRICE	52.57	100.00	38.95	100.00	34.97

Table 20. Diesel Price Build-up for Iloilo City

DETAILS	July 2018		Jan 2016		
FOB MOPS, $/bbl	86.41		37.47		
FREIGHT PLUS, $/bbl	1.47		2.05		
OCEAN LOSS (0.5% of CIF)	0.44		0.20		
Total Import Cost	88.33		39.71		
Exchange Rate	53.42		47.54		
Peso Landed Cost, PhP/bbl	4,718.63		1,888.02		
		% of Pump Price		% of Pump Price	% change
Peso Landed Cost, PhP/liter	29.08	69.09	11.64	55.30	149.83
EXCISE TAX	2.50	5.94	0.00	0.00	Na
VAT	4.51	10.72	2.26	10.74	99.56
ETHANOL	1.30	3.09	1.03	4.89	26.21
Total Cost before Industry Take	37.39	88.83	14.93	70.93	150.44
Industry Take	4.70	11.17	6.12	29.07	(23.20)
PUMP PRICE	42.09	100.00	21.05	100.00	99.95

Source: Source: Hideliza Ludovice presentation slides "Introduction to Downstream Oil Industry", presented at E-Power Mo: Empowering Filipinos through Informed Energy Plans and Policies", Iloilo City, October 9, 2018.

Judging from these tables, the cost of the product (gasoline and diesel) accounts for the largest share of the pump price. This share went up in July 2018 when the peso cost of imported products almost doubled for gasoline, and more than doubled for diesel. The depreciation of the peso between the two points in time also contributed to the increased import cost.

In the tables, the Industry Take would approximate the accounting concept of gross margin, i.e., it still includes overhead, marketing, hauling costs, etc. needed to bring the product to the station. Of course, the margin of the dealers or retail stations would also be included. Thus, the Industry Take is not all profit. The reduction in the share of the pump price of the Industry Take suggests that the oil companies/dealers absorbed some of the burdens of the increased cost between the two points in time.

The Industry Take likely varies across the different companies since they have other cost structures (e.g., refiner versus importer or a dealer-owned as compared with a company-owned outlet). The team could not obtain copies of the agreements between oil companies and franchisees, which could have helped in understanding the gross margin. The oil companies objected to the proposed DOE Department Circular DC 2019-05-0008 on price monitoring discussed in the previous section because it would have required revealing detailed cost information.

For example, while the Total Cost Before Industry Take rose by Php 15.69 for gasoline, its pump price went up by Php 13.62 or about 87% of the increased cost. In diesel, the Total Cost Before Industry Take went up by Php 22.46 while the diesel pump price rose by Php 21.04 or 94% of the increase in cost. At least for these two points in time in Iloilo, the oil companies were able to pass on relatively more of the increased cost of diesel than they could for gasoline. This could be because public utility vehicles like jeeps, FXs, and buses tend to use diesel, and their demand is probably more inelastic. Also, diesel is cheaper because of lower taxes, which may also have made their users' demand more price inelastic.

Current Price Adjustment Practice

Under R.A. No. 8479 Chapter 4 Section 14, the DOE is charged with monitoring the movements of domestic oil prices. DOE Memorandum Circular 2001-05-002 provides for this. Then DOE Memorandum Circular 2005-08-007 provides further guidelines for the notification process.

There has arisen a practice among the local players of changing prices on Tuesdays. While they do not announce their price changes simultaneously, practically all notify the DOE on Monday, with their price changes taking effect either at midnight (start of Tuesday) or 6AM Tuesday. The reported price changes are also practically the same across the various companies.

The practice has raised many eyebrows, not just because of the seeming near simultaneity of the timing of price changes, but also because the amount by which prices are adjusted is almost always the same across companies for the same product.

The simultaneity of the price change (weekly on Tuesday) is a practice that the industry seems to have arrived at with the DOE. One news article reported that the practice dates

back to the time of Secretary Angelo Reyes.[48] The article does not give the formula, but suggests that the change in MOPS prices this week from the previous week will be reflected in the following week. The motivation seems to have been to avoid large price 'shocks' in favor of more frequent, but smaller price changes.

This would also explain why the price changes are similar, or even the same. Since all parties would have to use the same MOPS and exchange rates, the computed price changes will be the same.

Could there be leader-follower behavior in these price changes? It is our understanding that the DOE does not share with other firms a particular firm's notification. Thus, a firm could not find out from the DOE if a particular firm has made an announcement. However, a 'leader' firm might announce their price adjustments in the media so that others may know (and follow). Media reports could feasibly be a facilitating platform if or when a company has made a press release through media establishments. Additionally, a leader firm could also theoretically contact other firms to let them know that they were announcing their price adjustment and notifying the DOE or the media.

The team examined the prior notices of price adjustments for the full year of 2018 to see which oil companies usually notified the DOE first about their price adjustments. For that year, Shell was the first to report for 23 weeks, and the second for ten weeks. Seaoil was first to notify for nine weeks, meanwhile, Flying V was first for only five weeks, but it was second for 15 weeks (see table below).

Table 21. Order of Price Notification in the Year 2018

	Order of Notification (1 = first)					
Company	1	2	3	4	5	6
Caltex	4	5	8	10	9	4
CityOil	3	1	5	3	2	9
CleanFuel	3	1	1	1	1	0
Eastern Petroleum	1	3	7	6	8	5
Flying V	5	15	7	5	4	4
Jetti	1	1	1	1	0	4
Petron	0	0	0	1	2	2
Phoenix	1	5	2	8	4	7
PTT	4	4	5	4	6	6
Seaoil	9	3	9	7	5	3
Shell	23	10	6	3	2	1
Total	0	2	1	0	8	2
Unioil	0	2	1	4	2	6

Based on price notification data provided by PCC.

[48] *Alvin Elchico, "How Pump Prices are Determined," ABS CBN News, Feb 15, 2016. Downloaded Apr. 8, 2020 at: https://news.abs-cbn.com/business/02/15/16/how-pump-prices-are-computed.*

A comparison between the prior notice of price adjustment by the oil firms to the DOE[49] and announcements made through media[50] for the period of June 29 to December 28, 2020 showed a consistent pattern, with Shell notifying the DOE first in all but the same two weeks of September 12 and November 16. For the week of September 12, Unioil was the first to notify both the DOE and an established oil industry journalist. For the week of November 16, it was Phoenix who notified first. The players who were posted afterward usually had the same or very close price adjustments for gasoline and diesel.

While the announced price changes may be similar for most oil companies, there can be varying prices among stations within a locality. Several of the respondent companies say that their dealers are free to change their pump prices to match neighboring competitors. One dealer of a CODO station said in its response that it would need to clear the matter with its Area Sales Executive before it could adjust prices. Another oil company responded that its announced price adjustment was only a recommendation to its dealers. They could deviate if they had to respond to competitors in their vicinity.

Thus, the formula or adjustment mechanism described above serves to compute a "delta," or change in pump prices from one week to the next. Depending on the company, individual dealers may deviate from these prices to respond to competition in their area.

In some of the interviews, it was recalled that during the time of Secretary Reyes, the DOE conducted many meetings with industry players. The current pricing practice seemed to have evolved out of these meetings. Before this, the price adjustments were less frequent, perhaps as much as monthly. Consequently, when oil prices were rising fast, the adjustment after a month could be quite significant. This would cause public consternation and outcry, so the DOE and the industry gravitated towards more frequent, but smaller price changes.

The DOE has a subscription to Platts to monitor the MOPS prices and validate the oil companies' announced price adjustments. It seems that generally, the announced price adjustments are consistent with the DOE's calculations as one news story quoted Assistant Secretary Leonid Pulido III, who remarked that the adjustments by the oil companies for a particular week before 2 October 2019 was the first time in three years that their computations had not matched.[51]

Note that an oil importer may not necessarily have imported at the MOPS price. For example, a multinational oil major may have a foreign-affiliated purchasing company doing the sourcing of imports for the company and thus, can negotiate different MOPS prices. It is also conceivable that a particular player may not have imported for a specific week, but if it follows the MOPS based pricing adjustment practiced above, then the computed price adjustment will not reflect the actual change in import cost for that player.

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[49] *These notifications may be downloaded from the DOE website: https://www.doe.gov.ph/downstream-oil/advisory?q=price-adjustment-fuels.*

[50] *Journalists and news outlets regularly announce adjustments. The team referred to journalist Alvin Elchico's Twitter account. Retrieved from: https://twitter.com/alvinelchico.*

[51] *Alexis Romero, "DOE to oil firms: Explain rollback calculations" Philippine Star, Oct. 2, 2019. Downloaded at: https://www.philstar.com/headlines/2019/10/03/1957050/doe-oil-firms-explain-rollback-calculations.*

For example, it may happen that a company which did not purchase in a week that the MOPS fell would still adjust its prices downward to reflect the drop even though it did not benefit from it. Conversely, had MOPS risen in that week, the firm would gain by following the adjustment mechanism and raising prices. Over a given period, the two possibilities may or may not cancel out depending on the MOPS movement.

MOPS or Dubai?

Platts is a global price assessment agency (such firms are also referred to as a Price Reporting Agency or PRA). There are other agencies like Argus, OPIS, Bloomberg, among others. MOPS refers to the average prices for a wide variety of refined petroleum products, including crude oil, that Platts monitors from trades done in the region (not just Singapore).[52] In the Asia Pacific region, Platts has historically been a dominant benchmark. Australia has used MOPS as Import Parity Price to serve as the basis for its fuel prices in the past.[53]

On the other hand, "Dubai" is a benchmark price for crude oil from the Dubai market and is a basket that also includes oil from Oman and Upper Zakum in Abu Dhabi. It is an essential benchmark for crude oil coming from that region, and even Saudi Aramco has used Dubai to price its crude oil products.

However, crude oil still needs to be processed into the final product (gasoline, diesel, kerosene, etc.). Thus, Dubai may not be a comparative benchmark for refined products. The widening divergence between Dubai (or any other crude oil benchmark) with progressive product benchmarks (e.g., MOPS gasoline, diesel, etc.) would indicate increasing profit margins for a refiner (and the opposite if the two were to converge).

As noted in the review of policies and regulation, even the original oil deregulation law, R.A. No. 8180, had suggested using Singapore refined petroleum prices as the basis for setting Wholesale Posted Prices in the Automatic Pricing Mechanism. This may partly explain the move towards using MOPS in the current practice of price adjustments.

The DOE once used Dubai oil prices as a benchmark. Before deregulation, this made sense; back then, all of the 'Big Three' still operated their refineries, and the products sold in the country were locally refined. Moreover, most of our crude oil came from the Middle East. Since deregulation, we have seen the new players slowly increase their market share. Since they are all importers, imported petroleum products slowly ate up market share. Chevron/Caltex itself shut down its refinery and converted it into an import facility, increasing the share of imports.

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[52] *Patts lists the different petroleum products together with their specifications in a guide that can be downloaded from: https://www.spglobal.com/platts/plattscontent/_assets/_files/en/our-methodology/methodology-specifications/asia-refined-oil-products-methodology.pdf.*

[53] *Michael Goldman et al, "The Method and Basis of the Setting of the Import Parity Price (IPP) for Unleaded Petrol and Diesel in Australia", MacLennan Magasanik and Associates, October 2009. Downloaded from: https://www.accc.gov.au/system/files/The%20method%20and%20basis%20of%20the%20setting%20of%20the%20import%20parity%20-%20October%202009.pdf.*

The informational bulletin of the DOE also takes the view that it would make more sense now to use MOPS as a price benchmark, since we were importing a significant volume of refined products from the Asian market. The bulletin pointed out that there would be a time lag of about three weeks travel time for the crude oil plus another week or two to refine the oil and get the refined product to the pump. In comparison, the bulletin estimated that it would only take five days for importation and transfer to the pumps of refined products from the Asian region. Thus, MOPS prices would also respond more quickly to international price movements.

Price Monitoring

The DOE now posts on its website the pump prices at many major municipalities in the country. The DOE currently calls or visits a sample of stations to get their prices, though it is not yet universal in coverage.

Director Abad revealed that the DOE had contracted multinational software developer SAP to build an application that would allow retail stations to input their pump prices. The objective is to require all retail stations to enroll in the system. The application would then let users know the pump prices by locality, product, and brand. This would give the consumers the freedom of choice and find the station with the lowest price. In microeconomic theory, one implicit assumption of competitive markets is free and complete information: buyers know who and where the sellers are and their prices. This plan, once completed, would bring the market closer to the ideal along that dimension.

The advantage of the application is that dealers would also be able to use the application and find out who has lower pump prices. They could then adjust their prices to be closer to, match, or even undercut that competitor's low cost (assuming they can freely adjust their pump prices). Thus, the application could speed up price convergence.

But will the prices necessarily be pro-competition in that case?

There may be a concern that such an application would make it easier for dealers to coordinate on prices such as adopting a 'follow the leader' practice. While the application would make it easier for dealers to know each other's prices, if it does not have a facility for users to communicate, it may not facilitate coordination. If some dealers are already coordinating or colluding, they are probably communicating with each other already, e.g., through messaging, phone, etc. They could presumably continue doing so even with the application.

In a relatively isolated market with well-defined boundaries, a price leader could conceivably arise. Motorists' choice of where to fuel up is likely to be determined by location (of the station or the motorist's home or office and the travel route spanned).[54] Thus, in a

[54] *Virtually all the oil companies that responded to the team's questionnaire mentioned location as an important factor determining whether motorists will fuel up at their station.*

market where the stations are dense (e.g., Metro Manila), if a dealer will follow a 'leader,' that 'leader' may have to look to another competitor a block or two away, and so on. Thus, it may be challenging to identify an exact price 'leader.'

The 'synchronized' weekly price adjustment described above acts as a coordination mechanism for changing prices. The synchronized part (most if not all players notifying on Monday) of the current practice could be benign. It is akin to holding a weekly auction where sellers call out their bids. If the bidders in the weekly auctions were calling out prices independently, the oil consumers could buy first from the low-price bidders. The high price sellers would soon learn (in future weeks' auctions) to lower their bids if they wanted to sell more.

The potential problem now is that if there is an implicit formula or mechanism (e.g., this week's change in bid price will be computed from the change of last week's average MOPS from the previous week's average MOPS converted to Philippine pesos using foreign exchange rates), then the individual price bids in this hypothetical weekly auction may not technically be independent. This is not to say there is explicit collusion because, as pointed out above, since data on MOPS and foreign exchange rates are known and common to all, the computed price adjustment will be the same.

Since the industry has been deregulated, the oil companies have been free to set their price. If they have been following the price adjustment mechanism above, it is not because the government has been imposing it on them. It is conceivable that a firm may be tempted to take market share from the others by pricing below the price resulting from the formula or adjustment mechanism. Nevertheless, it may still not do so for fear of provoking retaliation from the rival and starting a price war. Since firms can predict the (common) price adjustment following the formula; it might be tempting for a firm to follow that price, rather than risk a price war.

Over time, the formula can acquire the stature of what is referred to in game theory literature as a "focal point" equilibrium. Because of the acquired inertia, it is a point that participants will tend to return to because they have found that over time, the other participants have continued to use it. It is analogous to a college group of friends or 'barkada' who have gravitated to meeting at a specific campus landmark after classes because initially, (even possibly by chance) they had bumped into each other there in the past.

Perhaps it could help if each dealer could be free to adjust prices as it sees fit, e.g., to match a neighboring station's posted prices. While several oil firms claim that they already give their dealers freedom to do so, some seem to require clearance at some level in the oil company. It is also possible that some dealers may not be aware that they have the freedom to adjust prices or fear incurring 'demerits' from their oil company. A clearly stated policy affirming the dealers' right to set prices may help in this regard.

Loyalty Programs and Price Discounts

While the announced price adjustments by oil companies are typically very similar, if not identical, the oil companies have also introduced different promotions like fleet cards, membership cards, and discounts for other clientele. For example, Shell has tied up with SM (Shoemart). Fuelling up with Shell can also earn customers points on their SM Advantage Card, which can later be used for purchases at SM stores. Petron has its Petron Value Card, where customers can also earn points when fuelling up, which can be used later for purchases at Petron stations. Meanwhile, Caltex has tied up with the Landers Stores so that customers can get coupons for fuel rebates after purchasing a set amount of groceries at Landers.

Among the new players, Seaoil had introduced a Price Lock Fuel Prepaid Card that allowed customers to lock in the price of fuel. Phoenix Petroleum introduced in 2018 its Phoenix Tsuper Club - Grab card that offered discounts and other benefits to Grab drivers who join. Some oil companies have also tied up with banks to provide credit cards that allow users to earn points when they fuel up or even use the credit card in non-fuel establishments. Note that these programs are not mutually exclusive, i.e., one company may use more than one of these programs.

The proliferation of such loyalty programs and other marketing promotions may be viewed as an alternative dimension of competition besides price. However, it admittedly and ultimately affects the net price paid by the consumer.

These loyalty programs are reminiscent of frequent flyer programs that were popularized by airlines. Intuitively, they raise the costs for customers to switch to another supplier. Customers will now be reluctant to change because they would 'waste' their accumulated points with their existing program. They would have to wait until they earned enough points to redeem or 'cash out' of their current loyalty program before joining another company's program. Meanwhile, joining multiple loyalty programs would make it take longer for a consumer to reach the required number of points to redeem rewards.

Of course, the consumers can benefit from the price discounts. However, it is conceivable that the buyers, in effect, suffer from a Prisoners' dilemma where each of the oil competitors has 'squealed' on each other by embarking on a loyalty program or some other promotion to lure customers from competitors. They are incurring additional costs, which are recovered by raising prices before the discount.

Lastly, it should be mentioned that there are other dimensions by which the oil companies compete. It may be seen that many gasoline stations now feature convenience stores and other retail outlets like fast-food restaurants and cafes. Some companies have even featured clean restrooms on their website[55] as part of their campaign to attract motorists to their

[55] *https://www.shell.com.ph/motorists/inside-our-stations/top-notch-toilets.html.*

stations. Of course, traditional automotive maintenance and repair services continue to be offered in many stations.

Storage Capacity

In the discussion on Terminalling above, oil companies had sharing arrangements for depots or storage capacities. While at first blush, this appears as a form of cooperation by a few players, there may be some economic reasons. For another player to construct a separate depot in far-flung areas could mean duplication of resources and higher costs than just leasing storage capacity from an existing player. This cost would likely be passed on to consumers.

A respondent from the industry shared that oil players might cooperate and share storage capacity or sell their products for resale by another player. These arrangements can be seen as a win-win situation as both parties can increase their revenues. This is likelier to happen if the depot owner or operator does not have an extensive retail station network in the markets that the other oil company operates in.

A depot owner could refuse to lease storage capacity to a new entrant or demand a very high lease rate. In the short run, this could give it a natural monopoly-like position (if it was the only depot in the area). However, barriers to entry into building storage facilities are perhaps not insurmountable, as indicated by the greater number of depots (though smaller in size on average) of the new players ('Others') in **Table 8**. The disparity in capacities and numbers of non-major players' Import Terminals is perhaps even more striking. Thus, an incumbent player foreclosing storage capacity to new entrants or charging excessive lease rates may only incentivize a new entrant to invest in its depot, thus increasing its capacity, even potentially into excess.

Refusal to deal could conceivably occur in a relatively isolated location. Until a rival storage facility is constructed, their control over a depot can lend a player market power. Each location and market would have to be evaluated on a case-to-case basis. Such areas may require close monitoring and possibly, time-bound regulation that would require sharing the monopoly storage facility in the short term. Improving the connectivity of the country with increasing roads and bridges over time should connect more areas and markets and make this less likely to exist.

CAR and Region II might not be thought of as isolated locations, but DOE data reveals no storage capacity in these regions (as of 2019). Thus, these regions are likely getting supplies from Region I or Region III. One industry source explained that the eastern coast of Region II faces turbulent waves and frequent typhoons, making it an undesirable location for an import terminal. Moreover, the eastern coastal area of Region II is not very accessible.

Weekly price monitoring data from the DOE North Luzon Field Office presented the low and high pump prices for Regions I, II, III, and CAR for the first half of 2018. Using the midpoint of the low and high costs as a proxy for the average price for the regions, the

study team found that CAR consistently had the highest prices (usually from Baguio and La Trinidad stations). Meanwhile, the lowest prices were generally found in Region III. Despite having no storage capacity, the average prices in Region II were usually lower than those in Region I, even if the latter is home to supply sources (storage facilities).

Some might consider storage capacity as an essential facility, since free access to storage could make it easier for new retail players to set up and supply their stations. The 2012 Independent Oil Price Review Committee report brought up consideration incentivizing the setting up of standard terminals or depots. Since this is probably a problem mainly for isolated markets, careful cost-benefit analysis is necessary to determine if the benefits of a particular market warrant the incentives.

R.A. No. 8479, the downstream oil industry deregulation law, provided incentives for the industry. The BOI has included bulk marketing of petroleum products in its Investment Priorities Plan. It was cited above that the BOI had approved the Php 287 million Davao depot project of Seaoil, increasing its 41.05 million liters storage capacity in Southern Mindanao by an additional 36.9 million liters.[56]

This approach of incentives is preferable to the government directly entering the business of providing storage. The latter may open the government to complaints of unfair competition, which is reminiscent of pre-deregulation days when the other oil players complained of unfair competition from Petron, which was partly government-owned. Indeed, isolated areas in need of storage facility could receive more generous special incentives if cost-benefit economic analysis warrants it.

Common depot regulations to mandate depot operators to lease storage capacity needs more careful study. The challenge will be to formulate standard depot regulations without being overhanded and inconsistent with industry deregulation, potentially discouraging further investments. As mentioned above, the industry players already buy and sell products to each other.

To deter 'Refusal to Deal' practices, an education campaign, especially for the small independent players, may help them recognize when they are unreasonably refused storage service or product. The regulations must be careful not to force oil players with storage to aid their competitors.

The government can also continue accelerating infrastructure investments, especially in roads and bridges. This will lessen the costs of reaching isolated markets and break down the natural monopoly.

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[56] *BOI, "BOI approves additional Davao depot facility seen to further reduce gas prices", posted on December 12, 2018. Downloaded from: https://boi.gov.ph/boi-approves-additional-davao-depot-facility-seen-to-further-reduce-gas-prices-in-mindanao-and-batangas-oleochemicals-project-to-lessen-importation-of-home-care-products/.*

Summary

Pricing remains the most prominent competition issue, probably because it is most visible to the public. The current pricing practice of reflecting the average change in MOPS of the previous two weeks seems to have evolved from around the latter part of 2000. The seemingly synchronized and very similar adjustment amounts naturally raises possible collusion questions in the public's eyes.

Besides price, competition in the industry also takes on other forms. The oil companies have likewise introduced various customer loyalty programs, many featuring tie-ups with prominent retailers that allow their patrons to earn points in exchange for discounts or other benefits on future fuel purchases and retailers. The oil companies have also been known to offer various promotions, e.g., giveaways, raffles etc. Lastly, oil companies are also trying to attract motorists to their gasoline stations through the offer of better facilities and amenities.

Storage capacity opens the door for the setting up of retail fuel outlets. They can also generate efficiencies by reducing logistical costs of supplying these gasoline stations. As mentioned above, companies have shared storage capacities, and from "exchange" agreements, the practice has evolved to "buy and sell" arrangements. Rather than directly providing common depot facilities, the government can push or market existing investment incentives for the oil industry, especially in bulk storage for areas deemed lacking in storage facilities.

RECOMMENDATIONS

By allowing the entrance of new companies, the deregulation of the oil industry has given buyers a choice of various players. The key to entry by new players is that there are low barriers to entry.

It has been pointed out above that there have been many new players who have entered the industry after the deregulation of the industry in 1998. There has been an increase in import and storage facilities as well as service stations since deregulation. This has enabled the new players and independents to garner 44% of the diesel market and even 52% of the gasoline market (versus the traditional oil majors or Big Three of Petron, Shell, and Caltex). This suggests whatever barriers to entry in these subsectors have not been insurmountable.

Refining

One sector of the industry that has seen a reduction in the number of players is refining. Before deregulation, the country had three refiners (Petron, Shell, and Caltex). Caltex exited soon after deregulation, converting its refinery instead into an import facility. The oil refining industry is a capital intensive one, with a new medium-sized refinery costing as much as $7 to $10 billion.[57] This may well have been a deterrent to the entry of a new

[57] *Canadian Fuels Association, The Economics of Petroleum Refining, Ottawa, Canada, December 2013, page 3.*

refinery. Shell has also announced in August 2020 that it is closing down its refinery permanently after over five decades of operation. [58]

On the other hand, we note that in 2011, San Miguel Corporation, the parent company of Petron, acquired controlling equity in an Exxon-Mobil refinery in Port Dickson, Malaysia, with a 45,000 barrels per day capacity for $600 million,[59] smaller even than the old Caltex refinery in Batangas. The Malaysian petroleum market is larger than the Philippines, though, which may have attracted Petron. It was subsequently reported that Petron invested $100 million to upgrade the refinery to meet Malaysian environmental standards and planned to double its capacity to 88,000 barrels per day.[60]

The team does not contemplate recommending industrial policy to 'promote' refining as an industry in the Philippines. The availability of oil and refined products in the global markets has allowed us to import beyond our refinery capacities. As the Petron example above illustrates, this can be left as a business decision by individual companies.

Pricing and the DOE Price Monitoring Application

The DOE should be encouraged in their plans to launch and maintain an application that can tell consumers which service stations have the lowest-priced fuel in their area. Availability of information is a critical condition in the classic economic model of competitive markets. Its importance is intuitive: buyers can then go to the lowest priced seller. This initiative should be completed and rolled out. The DOE may also incorporate provisions (e.g., audit, penalties, etc.) to ensure accurate revelation by dealers of their pump prices.

On the other hand, sellers can also see the prices of nearby stations in the application and coupled with the freedom to adjust prices without constraint, may allow a faster adjustment to 'equilibrium' price. As mentioned in the previous section, we may consider an explicit policy enshrining the freedom of dealers (at least in DODO's) to set their pump prices freely.

But the increased availability of price information made possible by information technology and social media also makes pronounced the seeming coordinated price changes of the oil industry players. As suggested in the previous section, basing the current price adjustment practice on the change in MOPS prices could take away the urge by competitors to undercut prices. Since you can predict what the others will price at, you also feel relatively safe that you will not be undercut.

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[58] *Adam Ang, "Shell to shut down Batangas refinery," BusinessWorld, Aug. 14, 2020. Downloaded at: https://www.bworldonline.com/shell-to-shut-down-batangas-refinery/.*

[59] *Doris Dumlao, "SMC buys Exxon's Malaysia units", Philippine Daily Inquirer, Aug. 12, 2011. Accessed at: https://business.inquirer.net/13493/smc-buys-exxon%E2%80%99s-malaysia-units.*

[60] *Unnamed author, "Petron spending US$100 mil to upgrade PD refinery", The Star, June 5, 2019. Accessed at: https://www.thestar.com.my/business/business-news/2019/06/05/petron-spending-us100mil-to-upgrade-pd-refinery.*

Perhaps protecting dealers' prerogative to set their pump price independently of their mother company can help make this kind of coordination more difficult. It would be akin to the situation in many industries where there can be a 'manufacturers' suggested retail price' where retailers may deviate from it. From having a dozen or so players implement a price change, there can now be potentially many more individual dealers who can further deviate from the price implied by the change in MOPS and announced by the oil firms.

Storage Capacity in Isolated Markets

There should be a renewed information campaign to increase awareness of investment incentives for the industry, including bulk storage. Lack of storage capacity in a market could deter or delay the entry of new players. It was noted above that hypothetically, there could be isolated markets where existing storage or depot facility operators might withhold their services to potential entrants to preserve a natural monopoly situation. Where such isolated markets are identified, investment incentives may help attract additional storage capacity to locate there.

More players, even small ones, can enter a market if they can purchase supplies from wholesalers, but they may be prevented from entering if their suppliers refuse to sell to them. The PCC may consider a campaign to educate industry players, especially the small new players, on recognizing 'Refusal to Deal' as an anti-competitive practice. The latter may notify competition authorities if they have been on the receiving end.

Loyalty Programs

The team recommends continued monitoring of the various customer loyalty programs (discount cards, fleet cards, etc.) and promotions offered by oil companies. They are another dimension of competition noted in the previous section.

These offerings may be a concern that may lock-in customers and lessen competition by increasing their switching costs to patronize other competitors. However, each oil company is free to introduce its customer loyalty program or promotions to attract customers. In rolling out their respective competing programs or advertisements, the customer may benefit from the various program offerings. Consumer protection authorities can monitor these programs for unreasonable conditions imposed on consumers in these offerings.

We could consider studying extending the validity period of points earned in these card offerings of the oil companies to make it easier for customers to switch from one company's program to another, like how telecoms extended the validity of pre-paid load.

Biofuels Procurement

One barrier to entry exists not in the petroleum industry, but in biofuel procurement (bioethanol and biodiesel). The Biofuels Act of 2006 requires that all bioethanol and biodiesel blended with gasoline and diesel be sourced from local materials, thus barring

imported competition. Because bioethanol production capacity is insufficient to meet the bioethanol demand for gas, imported bioethanol (which is cheaper) is allowed, but only to meet the shortfall. This means that our E10 gasoline is a bit more expensive. In the DOE price breakdown in the section above on pricing, bioethanol ranged from 7% to 10% of the pump price. While there is more than enough domestic production capacity for biodiesel, the prohibition on imports makes the oil companies a captive market for the local biodiesel industry. This gives bargaining power to the domestic biofuel producers, as the oil companies must first purchase from them.

It might be tempting to use this experience as an argument to repeal the Biofuels Act of 2006. Still, we recognize that there were other policy objectives (preserving the environment and agricultural employment and development, especially for the sugar and coconut sectors) behind the law. Advances in fuel technology may soon achieve the same emissions reductions as by using biofuels. Regulators should monitor technological developments to monitor if biofuels will become obsolete one day.

Nevertheless, some provisions could be reviewed, especially the requirement to procure bioethanol only from local producers. An option that can be studied could be to allow bioethanol imports, but subject imports to a tariff or tax on the imported bioethanol.

The tax amount could be related to the estimated benefit of reducing harmful emissions due to the bioethanol blend to be determined by the appropriate agency (perhaps the Department of Environment and Natural Resources). The tax would also serve to afford some protection to domestic producers. The collected tax revenue could then be directed to environmental programs, or given directly to farmers, and no longer depend on the local bioethanol producers to distribute.

CASE STUDY: BAGUIO CITY

Baguio City Retail Prices Issue

Since gasoline and diesel are homogenous products, it is expected that prices should gravitate towards a standard price, or close enough to it. Significant price differences would cause the higher price seller to adjust prices to match or get close to the lower price. The possibility of arbitrage between markets with free movement between them would also keep prices close except transportation costs. Thus, eyebrows are raised when prices diverge between markets close to each other.

One case of contrasting pump prices has been the price differential between retail stations in Baguio City, with those in neighboring La Union (e.g., Rosario). Petron and Chevron both have depots in Poro Point, San Fernando, La Union, and presumably, both supply their Poro Point depot stations. A review of past news articles reveals that it has been the subject of recurring questioning and complaints from consumers and local government officials of Baguio City. In 2017, Baguio City Congressman Marquez Go had filed a bill in Congress seeking an investigation into the price disparity of Php 5 to 6 with pump prices in Rosario, La Union.[61]

There were allegations of collusion, but in the above-cited news story, retailers of Caltex, Petron, and Shell claimed that their mother companies set suggested retail prices. In the previously cited news story, one of the retailers said that they do not have the right to change the prices of their products. Their main office decides, and they merely follow.

As late as October 2019, there were still news stories reporting relatively high prices in Baguio. Another news article cited the cost of transporting fuel up to Baguio might only be 18 cents per liter, yet the price differential could be as much as Php 9 per liter.[62]

On 4 June 2020, the House Committee on Energy discussed House Resolution No. 44 of Congressman Go seeking an inquiry into the disparate prices between Baguio City and the low-lying areas. Rosario, La Union, was often referred to as a point of comparison. [63]

Congressman Go stated that the price increase in Baguio had been Php 13/liter higher from 2016 to 2017. It has come down to around Php 3/liter differential after some consultations with the stakeholders, including the oil companies.

At several points in the hearing, lawmakers pointed that the similar or standard prices of many gas stations indicate collusion. This issue is discussed in this paper under Section V Competition Issues - Pricing.

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[61] *Dionisio Denis Jr., "Big 3 rolls back oil prices in Baguio City", June 16,2018 https://www.pna.gov.ph/articles/1038420.*

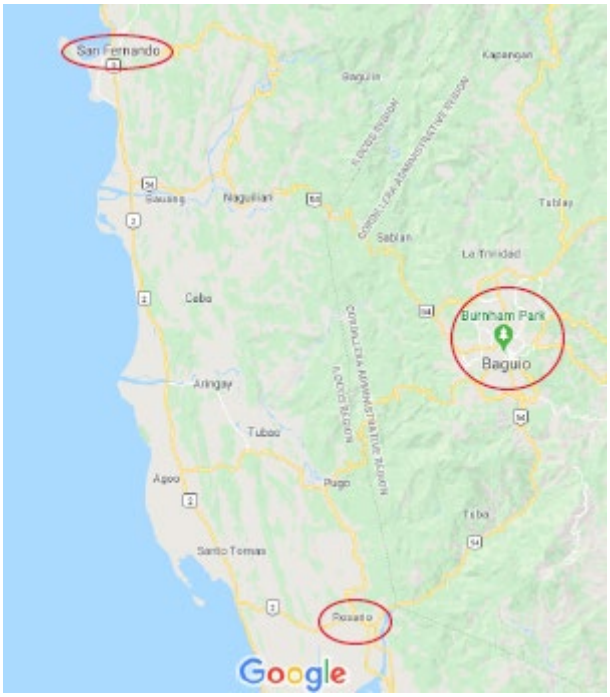
[62] *Vincent Cabreza, "Baguio's 'sky high' fuel prices slashed", Philippine Daily Inquirer, Oct. 25, 2019. https://newsinfo.inquirer.net/1181504/baguios-sky-high-fuel-prices-slashed#ixzz6LYKMywBN.*

[63] *House of Representatives (June 4, 2020) House Energy Committee meeting on House Resolution 44. Video available.*

OIMB Director Rino Abad presented that there are no bulk storage facilities in Baguio. The nearest supply source is San Fernando, La Union, where several players like Petron, Chevron, Shell, and Insular have depots, while SEAOIL has an import terminal.[64]

There are also a relatively small number of retail fuel outlets for the Cordillera Region. Director Abad also cited the relatively low number of 48 retail stations in the CAR, which includes Benguet and Baguio in comparison with neighboring regions: Region I (495), Region II (254), Region III (794). The relatively fewer number of stations could mean less competition.[65]

Figure 5. Baguio City and Vicinity



Source: Google Maps

In the OIMB presentation slides, there were 23 stations listed for Baguio City as of 16 October 2019. Of these, Petron had the most number with six stations (26%), while Total, Shell, Caltex had three stations each (13% each), Clean Fuel had two (8.7%), and OIMB labeled six stations as 'Independent.' Note that of these six 'Independent' stations, though, three were listed with the same station name of JCQ Gas Station, with another two having the same name of DG Pelayo Gas Station. The stations with the same name may have a joint owner. If so, the Baguio City retail fuel market is more concentrated than it appears. [66]

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[64] *Abad, R. (June 4, 2020). Update on the Baguio Fuels Situation – Supply Demand and Price House Committee on Energy [Powerpoint Slides].*

[65] *Id.*

[66] *House of Representatives (June 4, 2020) House Energy Committee meeting on House Resolution 44. Video available.*

Furthermore, retail fuel station density in Baguio is significantly lower than in NCR. The DPWH reports total national road lengths in 2018 of 1,167.18 km for NCR[67] and 112.19 km for Baguio City[68]. Using the 1,102 figure for the number of retail fuel outlets in 2019 for NCR (see **Table 9** above) and the 23 stations for Baguio City, we obtained a density of 0.944 stations/km in NCR and 0.205 stations/km in Baguio City. That means that one has to travel 1.059 km to find another gas station in NCR while one would travel on average 4.878 km to the next station in Baguio.

Moreover, the vehicle density per station may be higher in Baguio City, i.e., relatively more buyers (motorists) than sellers (gasoline stations) compared to NCR. The number of registered private motor vehicles in 2017 for NCR is 2,405,240 (new and renewal),[69] while the 2018 Ecological Profile of Baguio city listed 64,326 vehicles registered in Baguio City.[70] Dividing each figure by the number of gasoline stations yields 2,182.6 vehicles per station for NCR and 2,796.8 vehicles per station for Baguio City. The latter might be higher if transient vehicles (e.g., of travelers) are included.

The distance from Poro Point, San Fernando La Union, to Rosario, La Union is estimated to be 56.7 km and an hour drive via the MacArthur highway. Meanwhile, the distance from Poro Point to Baguio is 61.3 km and an hour and a half drive via the Bauang-Baguio Road/Naguilian Road. Both estimates are from Google Maps. However, Baguio City is at a higher elevation of 1,400m compared to Rosario's elevation of 128.3m.[71] Consequently, it takes more energy to transport a given weight to Baguio than Rosario. The distance from Rosario to Baguio is about 35.8km via Kennon Road, which is about a 53-minute drive. Nevertheless, in OIMB Director Abad's presentation to the House Energy Committee last 4 June 2020, the estimated differential freight cost to Baguio is only about Php 0.50/liter, much smaller than the reported pump price differentials of Php 4.95/liter for gasoline and Php 2.32/liter for diesel between Baguio City and La Union on 2 June 2020.[72]

Besides the cost of transporting the fuel, the OIMB also hypothesized that another factor could be the higher costs of operating a station (or a business) in Baguio City, relative to Rosario, La Union. To pursue this, we compared the costs of electricity, minimum wage rates, and the zonal values of land among the municipalities.

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[67] *DPWH 2018 Road Data. Downloaded from: https://www.dpwh.gov.ph/dpwh/2018%20DPWH%20Road%20and%20Bridge%20Inventory/Road%20Data%202016/prod01.htm.*

[68] *DPWH 2018 Road Data. Downloaded from: https://www.dpwh.gov.ph/dpwh/2018%20DPWH%20Road%20and%20Bridge%20Inventory/Road%20Data%202016/prod02.htm.*

[69] *Philippine Statistics Authority, 2019 Philippine Statistical Yearbook, Table 13.4a, PSA, Quezon City.*

[70] *City Planning and Development Office of Baguio City, "2018 Ecological Profile of Baguio City", Chapter 5, p. 108. https://www.baguio.gov.ph/sites/default/files/city_planning_and_development_office/downloadable_forms/Ecological%20Profile%202018%20%28Chapter%205%29.pdf.*

[71] *World Elevation Map Finder. (n.d.) Retrieved from: https://elevation.maplogs.com/poi/philippines.2619.html.*

[72] *Abad, R. (June 4, 2020). Update on the Baguio Fuels Situation – Supply Demand and Price House Committee on Energy [Powerpoint Slides].*

Baguio City's Benguet Electric Cooperative Inc. (BENECO) provides lower electricity rates (Baguio City) than La Union Electric Company, Inc. (LUECOINC) for the Commercial category (see table below).

Table 22. Comparative Electricity Rates for Benguet and La Union

	July 2020 (PhP/kwh)	Aug 2020 (PhP/kwh)
La Union Electric Company, Inc. (LUECOINC)		
Gen. Services X1 (commercial customers with 0 to 5kW connected load)	9.5815	9.9094
Gen. Services X2 (commercial customers with more than 5kW connected load)	8.3026	8.6077
Benguet Electric Cooperative, Inc. (BENECO)		
LV Commercial	7.1871	6.6532
HV Commercial	5.7897	5.2720

Source: http://www.beneco.com.ph/index.php and www.luecoinc.com

However, the CAR, including Baguio, has a higher minimum wage rate than Region I, which includes La Union.

Table 23. Summary of Current Regional Daily Minimum Wage Rates (As of October 2020)

Region	Wo. No./Date of Issuance	Date of Effectivity	Non-Agriculture	Agriculture	
				Plantation	Non-Plantation
NCR	WO 22/Oct 30, 2018	Nov 22, 2018	P500-537.00	P500	P500
CAR	WO 20/Oct 1, 2019	Nov 18, 2019	340.00-350.00	340.00-350.00	340.00-350.00
I	WO 20/Mar 19, 2019	Apr 30, 2019	282.00-340.00	295.00	282.00

Source: https://nwpc.dole.gov.ph/stats/summary-of-current-regional-daily-minimum-wage-rates-by-region-non-agriculture-and-agriculture/

Bureau of Internal Revenue zonal values for commercial land in Baguio City are also significantly higher (Php 46,533.06/sq. m) than both San Fernando (Php 8,011.09/sq. m) and Rosario (Php 2,159.31/sq. m), La Union. Zonal values in Baguio can reach as high as Php 80,000 to Php 140,000/ sq. m for areas such as Engineer's Hill and Upper Session Road. The highest zonal value for San Fernando, La Union is around Php 35,000/sq. m. This means real estate prices and rentals will also be correspondingly higher in Baguio City.[73]

An industry association raised smuggling, and how this could accord the sellers of smuggled oil products an illegal and unfair cost advantage. This could explain the price differential if the sale of smuggled goods were more prevalent in the lowlands than in Baguio. For then, the legitimate players in the lowlands would have to try to match their lower prices.

Director Abad presented the estimated taxes were around Php 10/liter (excise) and Php 4.71/liter (VAT for Rosario) to Php 5.24/liter (VAT for Baguio) on 2 June 2020 and with

[73] *Zonal values of the BIR may be downloaded from: https://www.bir.gov.ph/index.php/zonal-values.html.*

gasoline pump prices of Php 43.97 (Rosario) and Php 48.92 (Baguio). Meanwhile, the taxes on diesel for the same date were estimated to be Php 6/liter (excise) and Php 3.32/liter (VAT for Rosario) and Php 3.57 (VAT for Baguio) for diesel pump prices of Php 31.03 (Rosario) and Php 33.35 (Baguio). Thus, using these total tax estimates of the DOE, a smuggler's possible total cost savings could be around Php 15/liter for gasoline and Php 9.30/liter for diesel.

This assumes the smugglers act as the price setters. However, suppose they account for the small size of the market, in that case, some theoretical pricing models suggest they are more likely to follow the higher price since they would not be able to supply the market anyway if they undercut prices. Another question that could be raised is why smuggled products are not sold in Baguio, thus exerting downward pressure on prices.

Using data provided by the PCC from a survey conducted in 2019, the study team arbitrarily chose the week of 13 August 2019, to compare pump prices between the three localities of Baguio City, Rosario, La Union, and San Fernando, La Union. (see **Table 24** below).

As expected, pump prices in Baguio were higher than in the other cities, as discussed above. For gasoline, the price difference between majors in Baguio and Rosario ranges from Php 4.38 to Php 6.7/liter for gasoline and Php 4.28 to Php 5.03/liter for diesel higher in Baguio. As observable in other areas in the country, the majors' pump prices are higher than those of the independents in a locality. More often than not, when the number of observed stations is more significant than one, the standard deviation of independent station prices tended to be larger, i.e., more variation.

Between Rosario and San Fernando, La Union, one would expect pump prices in San Fernando to be lower since several oil companies have depot and port facilities and are the supply source. This is indeed the case for the majors. Pump prices of oil majors in San Fernando range from Php 1.6 to Php 3.26/liter lower for gasoline and from Php 1.71 to Php 1.9/liter lower for diesel.

For the independents' pump prices, though, the situation is reversed. Despite being at a distance from the San Fernando, pump prices of the independents in Rosario are lower by about Php 2.28 to Php 5.06/liter for gasoline and Php 1.23 to Php 1.33/liter for diesel. The study team took a look at the prices for the middle week of September and October 2019 and also found that independents' stations in Rosario have lower prices than in San Fernando.

The lower prices of independents in Rosario are not necessarily proof of smuggling, and it is not the only explanation. For example, the independents may have an alternative, more proximate supply source for Rosario.

Table 24: Comparative Prices: Baguio, Rosario, and San Fernando, La Union
(Peso per liter) (Aug. 13, 2019)**

	Gasoline							**Diesel**			**LPG**
	100	*97*	*95*	*93*	*UNL 91*	*PREM 91*	*87*	*1*	*2*	*3*	
Baguio											
Majors											
Mean		61.29	59.35		57.48			48.01	46.09	45.98	800.00
Std. Dev.		0.05	0.32		0.13			1.30	0.27	0.00	0.00
Number		2	12		11			10	7	2	1
Independent											
Mean			54.48	52.40	53.92			43.06	45.56		28.60
Std. Dev.			3.02	0.00	2.67			2.68	0.24		0.00
Number			10	1	9			13	3		2
Rosario											
Majors											
Mean	53.29	54.59	54.63		53.10			43.09	41.06	41.70	
Std. Dev.	0.00	0.00	2.44		0.26			0.96	0.00	0.50	
Number	2	1	5		5			4	1	2	
Independent											
Mean			45.59	45.75	47.92	49.50	49.20	38.33	37.93		
Std. Dev.			3.34	0.50	2.90	0.00	0.00	1.16	0.03		
Number			7	2	7	1	1	9.00	2.00		
San Fernando											
Majors											
Mean		52.99	51.37		50.38			41.38	39.51	39.80	672.67
Std. Dev.		0.00	0.50		0.49			0.88	0.51	0.24	54.84
Number		2	12		12			9	6	4	6
Independent											
Mean			50.65	50.13	50.20			39.56	39.26		575.00
Std. Dev.			1.78	0.86	0.77			0.76	0.38		0.00
Number			10	3	7			10	3		1

**Data provided by PCC*
*** The team also checked for the corresponding second weeks of September and October and found the same patterns.*

Another interesting contrast is that of LPG. The majors' price for LPG in Baguio is Php 800 compared with Php 672.67 in San Fernando. This is relatively about the same increase in gasoline prices in Baguio over that in San Fernando. Yet, there does not seem to have been a similar public outcry over the LPG price difference. This might be because motorists are likelier to move from one city to another and notice differences in gasoline prices. After all, because they need to gas up but are not likely to be comparing LPG prices between the two cities.

Using the same 2019 survey data provided by the PCC, the study team used six reference dates[74] to compare the pump prices between oil majors and independent players in Baguio

[74] *August 13-14, September 10-12 and October 8-9, 2019.*

City and San Fernando, La Union.[75] On average, the differences in pump prices between oil majors and independent players in Baguio City are as follows:

- Unleaded premium gasoline: Php 4.79/liter
- Unleaded regular gasoline: Php 3.27/liter
- Diesel fuel: Php 3.79/liter

The higher pump prices for oil major are not unique to Baguio City but exist in most parts of the Philippines.

When the survey was conducted in 2019, 22 gasoline stations were operating in Baguio City – 12 from oil majors and ten from independent players. In the same survey, the gasoline stations were asked about the size of their fuel tanks. The survey results indicated that oil majors generally have larger fuel tanks.

There are no available sales figures specifically for Baguio City. Still, CAR's data may be used as a proxy since the former is the most progressive local government unit in the region. Based on 2019 figures provided by the DOE, the oil majors accounted for 65.6% of total sales volume – 43.7% for Petron, 20.7% for Shell, and 1.2% for Chevron. Despite the decreasing market share in the past 20 years, the oil majors remain the dominant firms in the downstream oil industry in Baguio City, and command a premium for their products. The price premium may be attributed, among others, to their well-known brand, good reputation of companies, and long experience in the industry.

The study team also observed that for oil majors, dealer-owned stations generally have higher prices than company-owned stations. However, the opposite is true for the independent players, except for unleaded premium gasoline.

In the case of gasoline stations operating in San Fernando, La Union, the differences in pump prices between oil majors and independent players much smaller.

- Unleaded premium gasoline: Php 0.56/liter
- Unleaded regular gasoline: Php 0.16/liter
- Diesel fuel: Php 2.07/liter

Fuel Demand Elasticity in Baguio City

Another possible factor could be the demand elasticity for fuel. Alfred Marshall's famous analogy of prices being determined by both demand and supply, like two blades of a pair of scissors cut paper (and not just one blade; i.e., not supply or demand alone) reminds us that costs alone may not explain prices. Given the same supply conditions, one market with a greater demand can result in higher prices for the same good.

[75] *The comparative prices are summarized in Annexes 3 and 4.*

Baguio City is a popular vacation and business meeting/convention venue. Thus, there may be a significant proportion of transient motor vehicles in the city at any given point in time. Since tourists or business travelers have already sunk their cost of going to Baguio, they may be less fuel price sensitive, especially if the trip may have been planned. Moreover, they only need to pay the higher Baguio pump prices for the duration of their stay in Baguio and expect to get back soon to the usual pump prices they face in their respective points of origin.

To provide another perspective, the website of the Toll Regulatory Board (TRB) (https://trb.gov.ph/) listed the Class 1 vehicles (cars and minivans) toll fees for the North Luzon Expressway and the Tarlac-Pangasinan-La Union Expressway from Manila going to Baguio as Php 382 from Balintawak/Mindanao Ave. to Tarlac and Php 311 from La Paz, Tarlac to Rosario, La Union. Thus, for a motorist going up to Baguio via the Marcos Highway, the total toll paid would be Php 693 one way.

Another example is the fuel tank of a minivan, which could be around 75 liters in capacity.[76] For the reported price difference between Baguio and La Union of approximately Php 5/liter for gasoline and Php 2.32/liter for diesel, the incremental cost of a full tank is Php 375 for a gasoline-powered van and Php 174 for a diesel van, less than the cost of tolls to Baguio one-way. Thus, the added cost of fuel from a price increase may not be a significant factor for a traveler, who may not be sensitive to fuel price changes.

If travelers to Baguio are more price inelastic (insensitive), it may give Baguio service stations some leeway to raise prices. It would be unfair to the Baguio residents, but it is an unavoidable consequence of the market working when there is an influx of additional consumers. See **Annex 4** for some background statistics on Baguio City tourism and travel.

Summary of Observations for Baguio City

The most natural explanation for the price differentials between the two markets would be transportation cost. However, the estimated transportation cost by the DOE of Php 0.50/liter for fuel cannot explain the Php 4.95/liter price differential for gasoline and Php 2.32/liter for diesel (allegedly even higher in the past).

The other possible explanation is higher business costs in Baguio City than fuel stations in the lowland, which the DOE offers. This would require inquiring from the stations in Baguio and the lowlands about their costs.

The industry put forward smuggling as another possible explanation. This will be even more difficult to investigate.

[76] *Toyota Commuter Deluxe Specifications. Retrieved from: https://toyota.com.ph/commuter-deluxe; Hyundai Grand Starex Specifications. Retrieved from: https://www.hyundai.ph/van/grand-starex.*

Finally, another possible factor could be the demand elasticity for fuels. Suppose the fuel demand of Baguio City visitors is relatively price-insensitive, and the volume of transient vehicles in Baguio city due to visitors is significantly high. In that case, this may serve to drive up pump prices in Baguio. This might be further accentuated by the relatively low density of gasoline stations for the given Baguio city road length, combined with a higher vehicle density per station.

The PCC can continue to monitor Baguio City pump prices and periodically, in cooperation with the local government and the DOE, disseminate bulletins and analysis of the price differences between Baguio City and neighboring areas. The awareness of being monitored continuously may serve as a form of 'moral suasion' on the oil companies and dealers to narrow the price differential.

Annex 1. 2019 Total Industry Demand by Region by Trade Classification (in MB)

TRADE	NCR	REGION 1	REGION 2	REGION 3	REGION 4A	REGION 4B
RESELLER	15,998	2,377	1,759	8,497	9,265	1,691
Gasoline	6,400	822	537	2,681	3,761	620
Diesel	8,102	1,206	1,008	4,180	5,018	861
Kerosene	72	2	2	10	17	3
LPG	1,423	347	212	1,626	470	207
INDUSTRIAL/ COMMERCIAL	20,573	1,634	1,609	17,497	14,463	1,452
Gasoline	2,933	644	586	5,433	1,401	252
Diesel	8,117	943	1,014	11,054	2,965	1,042
Kerosene	146	0		64	89	0
AVTURBO	3,846	2	2	166	0	39
Fuel Oil	3,607	31	0	399	1,502	108
LPG	1,447	9	6	294	1,461	11
Others	476	6	1	87	7,045	0
INDEPENDENT REFILLERS	3,531	861	348	1,573	1,857	137
LPG	3,531	861	348	1,573	1,857	137
PHILIPPINE GOVT	215	20	35	89	64	32
FOREIGN EMBASSIES				0		
INTERNATIONAL SALES	11,435	9		292	69	62
GRAND TOTAL	51,752	4,901	3,751	27,948	25,718	3,374
% Mix by Region	30.1	2.9	2.2	16.3	15.0	2.0

TRADE	REGION 5	CAR	REGION 6	REGION 7	REGION 8	REGION 9
RESELLER	1,937	579	4,354	4,542	1,579	1,624
Gasoline	666	112	1,623	2,059	640	773
Diesel	969	350	2,144	1,642	719	653
Kerosene	12	1	14	21	13	9
LPG	290	116	573	821	207	189
INDUSTRIAL/ COMMERCIAL	2,586	236	4,096	6,124	1,576	1,876
Gasoline	851	72	991	1,402	557	326
Diesel	1,518	139	2,529	2,623	710	1,326
Kerosene	24	0	7	26	0	0
AVTURBO	0	7	102	431	2	22
Fuel Oil	154	2	210	1,266	85	126
LPG	20	15	211	314	182	73
Others	19	0	47	61	40	2
INDEPENDENT REFILLERS	40	2		76		

LPG	40	2		76		
PHILIPPINE GOVT	15	7	15	56	13	78
FOREIGN EMBASSIES	0			1		1
INTERNATIONAL SALES	1		284	642	110	12
GRAND TOTAL	4,579	824	8,748	11,441	3,278	3,592
% Mix by Region	2.7	0.5	5.1	6.7	1.9	2.1

TRADE	REGION 10	REGION 11	REGION 12	ARMM	CARAGA	Grand Total	%Mix
RESELLER	2,848	3,425	1,999	206	1,029	63,708	37.1
Gasoline	1,163	1,268	826	92	428	24,468	14.2
Diesel	1,348	1,809	916	85	451	31,459	18.3
Kerosene	8	19	4	0	2	211	0.1
LPG	330	329	253	29	148	7,570	4.4
INDUSTRIAL/ COMMERCIAL	5,511	3,443	1,698	302	1,150	85,824	50.0
Gasoline	1,673	1,143	622	128	204	19,218	11.2
Diesel	2,984	1,726	961	153	733	40,536	23.6
Kerosene	4	12		3		376	0.2
AVTURBO	39	105	2	0	1	4,768	2.8
Fuel Oil	487	102	14	12	146	8,252	4.8
LPG	300	314	78	5	47	4,787	2.8
Others	24	40	20		19	7,887	4.6
INDEPENDENT REFILLERS						8,425	4.9
LPG						8,425	4.9
PHILIPPINE GOVT	28	47	11	5	7	735	0.4
FOREIGN EMBASSIES	0					2	0.0
INTERNATIONAL SALES	17	146	42			13,122	7.6
GRAND TOTAL	8,404	7,062	3,749	512	2,186	171,817	100.0
% Mix by Region	4.9	4.1	2.2	0.3	1.3	100.0	

Source: FY 2019 OIMB Comprehensive Year-end Comprehensive Report , p. 11.

Annex 2: Comparison of Prices of Different Types of Service Stations, Baguio City

(prices of gasoline and diesel are in pesos per liter)

Particulars	Unleaded Premium		Unleaded Regular		Diesel 1		Diesel 2	
	Average	Number	Average	Number	Average	Number	Average	Number
August 13, 2019								
Oil Majors								
Company Owned	59.28	5	57.49	5	47.70	5	46.04	2
Dealer Owned	59.24	5	57.46	5	48.21	4	45.96	4
Unclassified	59.77	2	57.50	1	48.73	1	46.73	1
Independents								
Company Owned	53.96	6	55.18	3	43.29	6	45.48	2
Dealer Owned	55.75	2	53.32	3	43.11	4	45.73	1
Unclassified	54.75	2	53.26	3	42.54	3	0.00	0
Price Difference								
Company Owned	5.32		2.31		4.41		0.56	
Dealer Owned	3.50		4.15		5.10		0.23	
Unclassified	5.02		4.24		6.19			
August 14, 2019								
Oil Majors								
Company Owned	59.17	5	57.38	5	47.48	5	46.04	2
Dealer Owned	59.24	5	57.46	5	48.21	4	45.96	4
Unclassified	59.77	2	57.50	1	48.73	1	46.73	1
Independents								
Company Owned	53.88	6	55.18	3	43.19	6	45.48	2
Dealer Owned	55.50	2	53.15	3	42.68	4	45.73	1
Unclassified	54.50	2	53.45	2	45.58	3	0.00	0
Price Difference								
Company Owned	5.29		2.20		4.29		0.56	
Dealer Owned	3.75		4.31		5.52		0.23	
Unclassified	5.27		4.06		3.15			
September 10, 2019								
Oil Majors								
Company Owned	58.91	7	57.27	4	47.80	7	46.34	1
Dealer Owned	58.91	4	57.15	5	48.53	6	46.27	2
Unclassified	51.90	1	51.05	2	41.45	2	0.00	0
Independents								
Company Owned	54.19	6	55.64	3	43.63	6	45.68	2
Dealer Owned	55.32	2	53.03	3	43.03	4	46.03	1
Unclassified	54.42	2	52.78	3	42.88	3	0.00	0
Price Difference								
Company Owned	4.71		1.62		4.17		0.66	
Dealer Owned	3.59		4.12		5.50		0.24	
Unclassified	-2.52		-1.73		-1.43			

Particulars	Unleaded Premium		Unleaded Regular		Diesel 1		Diesel 2	
	Average	Number	Average	Number	Average	Number	Average	Number
September 11, 2019								
Oil Majors								
Company Owned	58.91	5	57.15	5	47.80	5	46.34	2
Dealer Owned	58.91	5	57.15	5	48.28	4	46.27	4
Unclassified	59.42	2	57.15	1	49.03	1	47.03	1
Independents								
Company Owned	53.75	6	55.13	3	43.56	6	45.88	2
Dealer Owned	55.32	2	53.03	3	43.03	4	46.03	1
Unclassified	54.42	2	53.37	2	45.74	3	0.00	0
Price Difference								
Company Owned	5.15		2.02		4.24		0.46	
Dealer Owned	3.59		4.12		5.25		0.24	
Unclassified	5.00		3.78		3.29			
October 8, 2019								
Oil Majors								
Company Owned	60.07	5	58.13	5	48.44	5	47.02	2
Dealer Owned	60.21	5	58.45	5	49.39	4	47.13	4
Unclassified	60.87	2	58.60	1	0.00	0	48.08	1
Independents								
Company Owned	54.60	6	55.86	3	43.49	6	48.46	2
Dealer Owned	55.93	2	54.05	3	43.37	4	47.08	1
Unclassified	55.95	2	54.10	3	43.24	3	0.00	0
Price Difference								
Company Owned	5.47		2.27		4.95		-1.44	
Dealer Owned	4.29		4.40		6.02		0.05	
Unclassified	4.92		4.50					
October 9, 2019								
Oil Majors								
Company Owned	59.93	5	58.08	5	48.44	5	47.02	2
Dealer Owned	60.21	5	58.45	5	49.39	4	47.13	4
Unclassified	60.87	2	58.60	1	0.00	1	48.08	1
Independents								
Company Owned	54.60	6	55.86	3	43.49	6	48.46	2
Dealer Owned	55.93	2	53.95	3	43.62	4	47.08	1
Unclassified	55.70	2	54.68	2	46.24	3	0.00	0
Price Difference								
Company Owned	5.33		2.21		4.96		-1.44	
Dealer Owned	4.29		4.50		5.77		0.05	
Unclassified	5.17		3.93					

Source of basic data: Survey conducted by PCC

Annex 3: Comparison of Prices of Different Types of Service Stations, San Fernando, La Union

(prices of gasoline and diesel are in pesos per liter, LPG is in pesos per kilogram)

Particulars	Unleaded Premium		Unleaded Regular		Diesel 1		Diesel 2		Diesel 3		LPG	
	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number
August 13, 2019												
Oil Majors												
Company Owned	51.75	5	50.75	5	40.47	3	39.94	1	39.67	2	693.33	3
Dealer Owned	51.29	1	50.29	1	41.94	1	0.00	0	39.94	1	626.00	1
Unclassified	51.08	6	50.09	6	41.82	5	39.42	5	39.94	1	665.00	2
Independents												
Company Owned	49.20	3	49.82	2	39.45	3	39.65	1	0.00	0	0.00	0
Dealer Owned	51.73	4	50.87	3	39.72	4	39.39	1	0.00	0	0.00	0
Unclassified	50.65	3	49.57	2	39.46	3	38.75	1	0.00	0	575.00	1
Price Difference												
Company Owned	2.55		0.93		1.03		0.29					
Dealer Owned	-0.44		-0.58		2.22							
Unclassified	0.43		0.52		2.36		0.67				90.00	
August 14, 2019												
Oil Majors												
Company Owned	51.88	5	50.75	5	40.47	3	39.94	1	39.94	2	693.33	3
Dealer Owned	51.29	1	50.29	1	41.94	1	0.00	0	39.94	1	626.00	1
Unclassified	51.09	6	50.09	6	41.82	5	39.42	5	39.94	1	665.00	2
Independents												
Company Owned	50.68	3	49.57	2	39.11	3	39.65	1	0.00	0	0.00	0
Dealer Owned	51.71	4	50.87	3	39.72	4	39.39	1	0.00	0	0.00	0
Unclassified	50.61	3	49.52	2	39.45	3	38.75	1	0.00	0	575.00	1
Price Difference												
Company Owned	1.20		1.18		1.36		0.29					
Dealer Owned	-0.41		-0.58		2.22							
Unclassified	0.48		0.57		2.37		0.67				90.00	

Particulars	Unleaded Premium		Unleaded Regular		Diesel 1		Diesel 2		Diesel 3		LPG	
	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number
September 10, 2019												
Oil Majors												
Company Owned	51.03	4	50.03	4	40.56	3	40.24	1	40.29	2	693.33	3
Dealer Owned	50.94	1	49.94	1	42.24	1	0.00	0	40.24	1	626.00	1
Unclassified	50.71	6	49.71	6	42.00	5	39.60	5	40.24	1	665.00	2
Independents												
Company Owned	49.15	3	49.50	2	39.15	3	39.95	1	0.00	0	0.00	0
Dealer Owned	51.40	4	50.56	3	40.04	4	39.79	1	0.00	0	0.00	0
Unclassified	50.33	3	49.10	2	36.66	3	39.00	1	0.00	0	575.00	1
Price Difference												
Company Owned	1.88		0.53		1.41		0.29					
Dealer Owned	-0.46		-0.62		2.20							
Unclassified	0.38		0.61		5.34		0.60				90.00	
September 11, 2019												
Oil Majors												
Company Owned	50.88	5	49.88	5	40.89	3	40.24	1	40.24	2	693.33	3
Dealer Owned	50.94	1	49.94	1	42.24	1	0.00	0	40.24	1	626.00	1
Unclassified	50.71	6	49.71	6	42.00	5	39.60	5	40.24	1	665.00	2
Independents												
Company Owned	49.15	3	49.50	2	39.15	3	39.95	1	0.00	0	0.00	0
Dealer Owned	51.40	4	50.56	3	40.04	4	39.79	1	0.00	0	0.00	0
Unclassified	50.13	3	49.10	2	39.63	3	38.90	1	0.00	0	575.00	1
Price Difference												
Company Owned	1.73		0.38		1.74		0.29					
Dealer Owned	-0.46		-0.62		2.20							
Unclassified	0.58		0.61		2.37		0.70				90.00	
October 8, 2019												
Oil Majors												
Company Owned	52.33	5	41.33	5	41.94	3	41.29	1	41.29	2	693.33	3
Dealer Owned	52.39	1	51.39	1	43.29	1	0.00	0	41.29	1	626.00	1
Unclassified	51.63	6	50.63	6	42.58	5	40.18	5	41.29	1	665.00	2
Independents												
Company Owned	50.33	3	50.60	2	39.77	2	41.00	1	0.00	0	0.00	0

Particulars	Unleaded Premium		Unleaded Regular		Diesel 1		Diesel 2		Diesel 3		LPG	
	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	Number
Dealer Owned	52.03	4	50.91	3	41.02	4	40.84	1	0.00	0	0.00	0
Unclassified	51.56	3	50.35	2	40.55	3	0.00	0	0.00	0	575.00	1
Price Difference												
Company Owned	2.00		-9.26		2.17		0.29					
Dealer Owned	0.36		0.48		2.27							
Unclassified	0.07		0.28		2.03						90.00	
October 9, 2019												
Oil Majors												
Company Owned	52.33	5	51.33	5	41.94	3	41.29	1	41.29	2	693.33	3
Dealer Owned	52.39	1	51.39	1	43.29	1	0.00	0	41.29	1	626.00	1
Unclassified	51.63	6	50.63	6	42.58	5	40.18	5	41.29	1	665.00	2
Independents												
Company Owned	50.33	3	50.60	2	39.77	3	41.00	1	0.00	0	0.00	0
Dealer Owned	51.92	4	50.76	3	40.96	4	40.84	1	0.00	0	0.00	0
Unclassified	51.25	3	50.35	2	40.46	3	39.50	1	0.00	0	575.00	1
Price Difference												
Company Owned	2.00		0.74				0.29					
Dealer Owned	0.48		0.63		2.33							
Unclassified	0.38		0.28		2.11		0.68				90.00	

Source of basic data: Survey conducted for PCC

Annex 4 Baguio City Travel Characteristics

Baguio City is traditionally known as the country's summer capital and ranks as one of the top cities for travelers, averaging 1.7 million travelers annually from 2017 to 2019 (see table below). In comparison, the 2018 Baguio City Ecological Profile[77] of the city government lists the 2015 population of the city to be 345,366 and projected it to reach 372,791 by the year 2020.

Table 25: Regional Travelers by City

	2017	2018	2019	Average
Cebu City	2,742,601	2,559,742	2,869,809	2,724,051
Davao City	2,012,629	2,393,395	2,574,895	2,326,973
Boracay	2,001,974	941,868	2,034,599	1,659,480
Lapu-Lapu City	1,344,831	1,716,938	1,833,055	1,631,608
Baguio City	1,521,748	1,760,729	1,536,458	1,606,312

Source of data: Regional Distribution of Overnight Travelers in Accommodation Establishments, Department of Tourism

A team of researchers reported a survey of 1,829 respondents conducted during the 2015 Panagbenga festival, the largest tourist attraction for Baguio City, which occurs in January every year.[78] In terms of transportation choice, 1,110 out of 1,820 responses indicated that they had brought their car. Another 222 used a privately rented vehicle while 297 rode a public utility bus, and 103 took a public utility van. If the Panagbenga festival visitors are an indicator of travel mode for Baguio tourists, it seems that most visitors resort to private vehicles.

According to the 2018 Ecological Profile of Baguio City by the city government, there were 64,326 vehicles registered in the city in 2018.[79] However, the influx of vehicles, especially during the holiday season, can be multiple. One news article cited a Department of Public Works and Highways road monitoring report that 70,077 vehicles entered Baguio City between 21-26

[77] *City Planning and Development Office of Baguio City, "2018 Ecological Profile of Baguio City", Chapter 3, p. 18. https://www.baguio.gov.ph/sites/default/files/city_planning_and_development_office/downloadable_forms/Ecological%20Profile%202018%20%28Chapter%203%29.pdf.*

[78] *Fajilan, Lee Majors and Manipon, Christine, "A Snap-Shot of the Market Niche of the Panagbenga Festival Tourists, paper presented at the 13th National Convention on Statistics, Oct 3-4, 2016 EDSA Shangrila Hotel, Mandaluyong City.*

[79] *Baguio City Ecological Profile (Chapter 5) p. 108. https://www.baguio.gov.ph/sites/default/files/city_planning_and_development_office/downloadable_forms/Ecological%20Profile%202018%20%28Chapter%205%29.pdf.*

December 2019.[80] This would correspond to an average of 11,680 vehicles entering Baguio city per day during the period.

Meanwhile, a Baguio city news source reported that DPWH-Baguio City Engineering Office (BCEO) personnel counted 355,749 private and public utility vehicles entered Baguio City. In comparison, 387,489 vehicles left the city from 20 December 2019 to 2 January 2020.[81] The count was carried out on the four main roads linking the city and the lowlands: Kennon Highway, Naguilian Road, Marcos Highway, and the newly opened Tubao-Nangalisan Road. The entry figure would correspond to an average of 25,411 vehicles entering Baguio City.

The average length of stay (nights) of visitors who stayed in hotels (accommodation establishments) was 2.77 in 2017 and 1.66 in 2018 or an average of 2.215. (2018 Ecological Profile (chapter 4) p. 106).[82] Thus, if we assume that each visiting vehicle stays two days (nights), there could be an additional 22,000 to 50,000 vehicles added to Baguio's vehicle population during this period.

Admittedly the Christmas season is probably the peak travel time for Baguio (and for the country as a whole) and is not likely to be maintained throughout the year. Nevertheless, it lends support to the possibility that the transient vehicle population could be sizable relative to the resident vehicle number.

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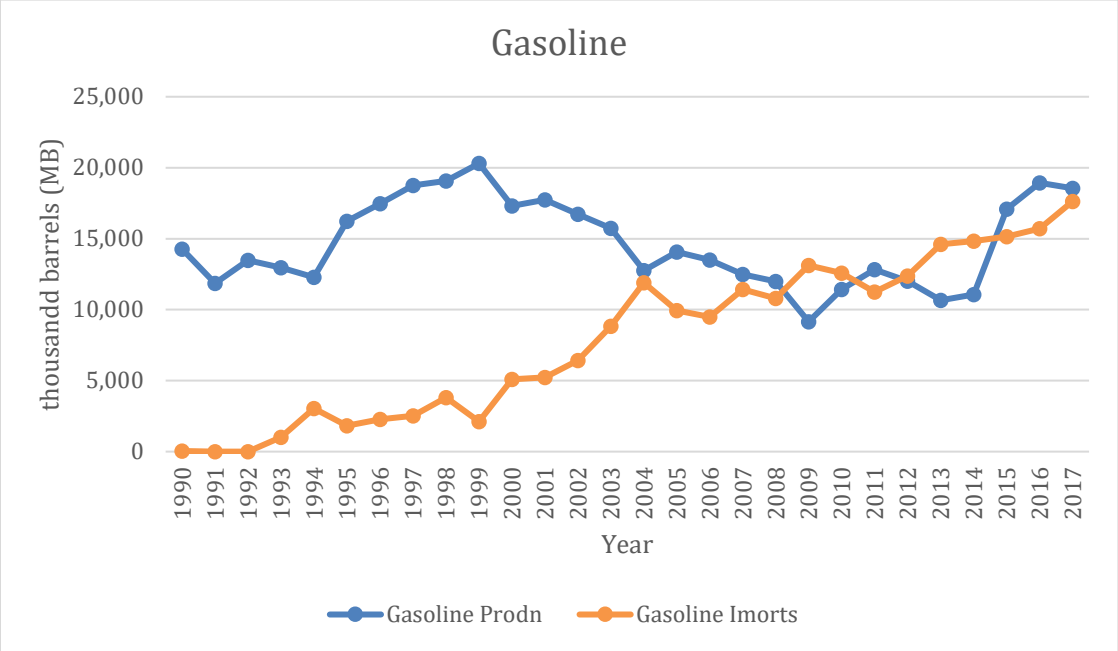
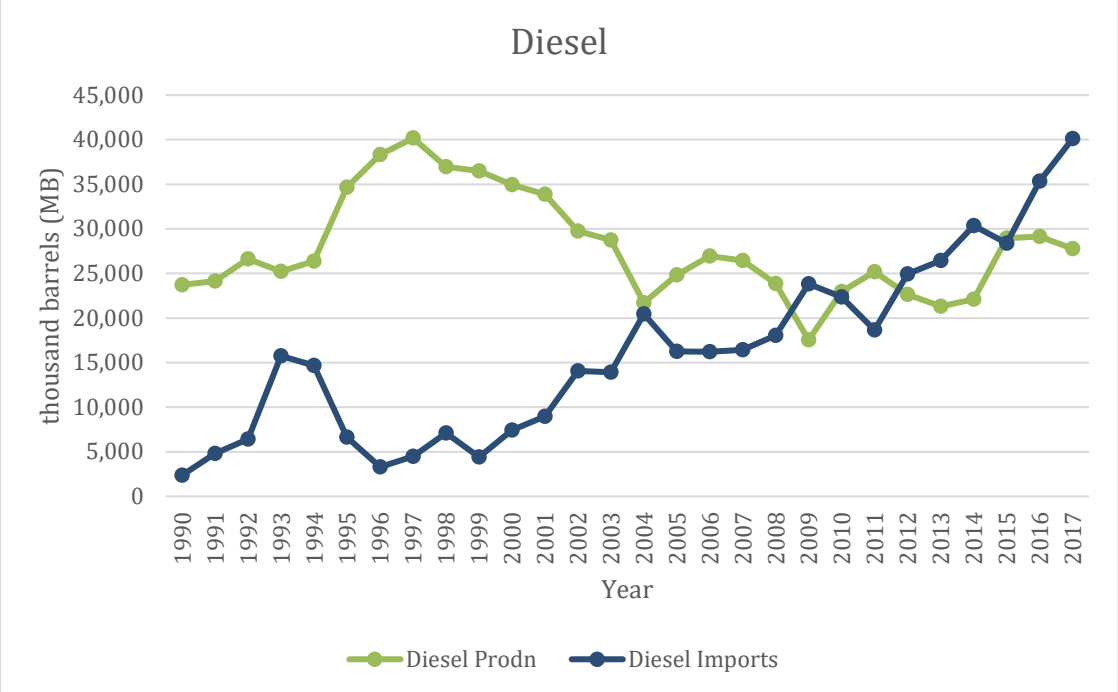
[80] *Drei Laurel, "DPWH records 70,000+ vehicles flocking to Baguio from December 21 to 26," Top Gear Motoring News, Dec 28, 2019. Downloaded from: https://www.topgear.com.ph/news/motoring-news/dpwh-private-cars-baguio-a962-20191228.*

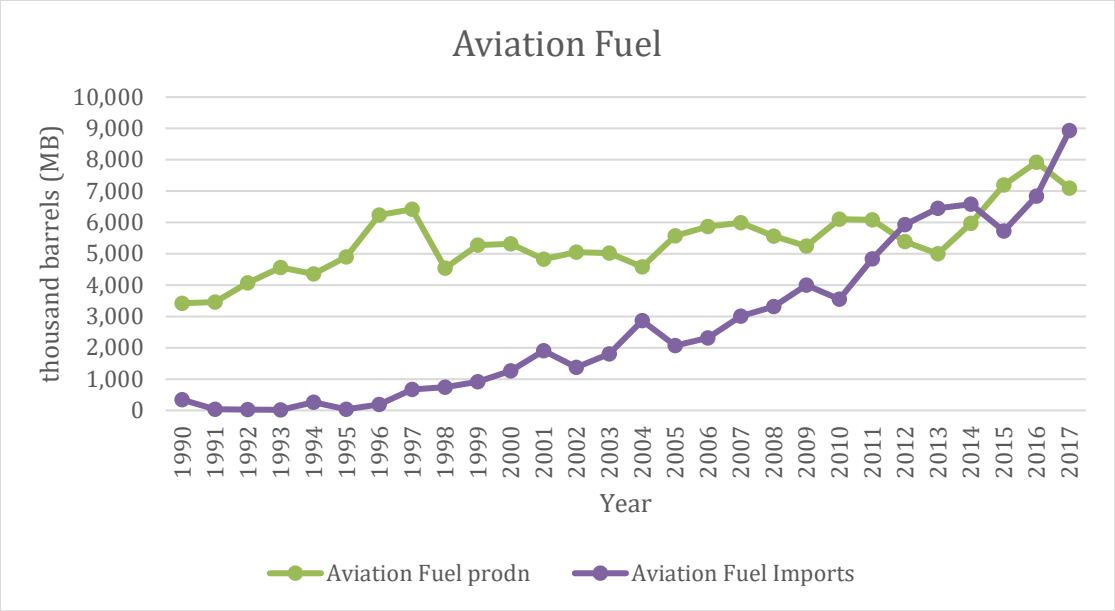
[81] *Anonymous, "743,238 vehicles came in and out of Baguio," Herald Express, January 6, 2020. Downloaded at: https://www.baguioheraldexpressonline.com/743238-vehicles-came-in-and-out-of-baguio/.*

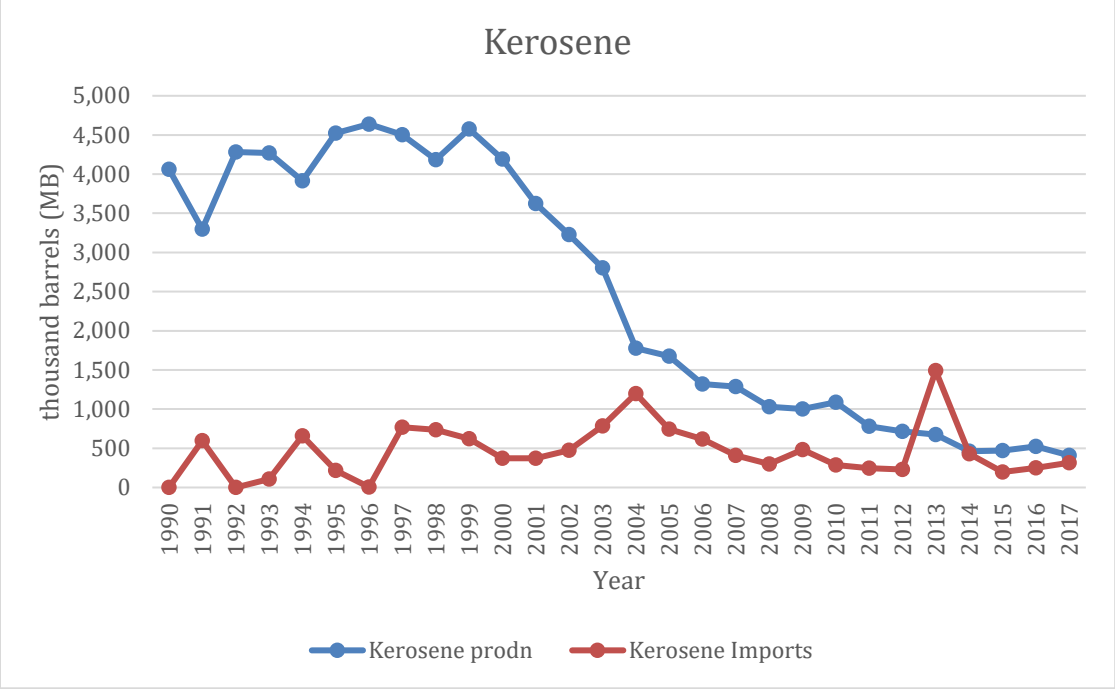
[82] *https://www.baguio.gov.ph/sites/default/files/city_planning_and_development_office/downloadable_forms/Ecological%20Profile%202018%20%28Chapter%204%29.pdf.*

Annex 5 Refinery Production and Imports of Gasoline and Diesel





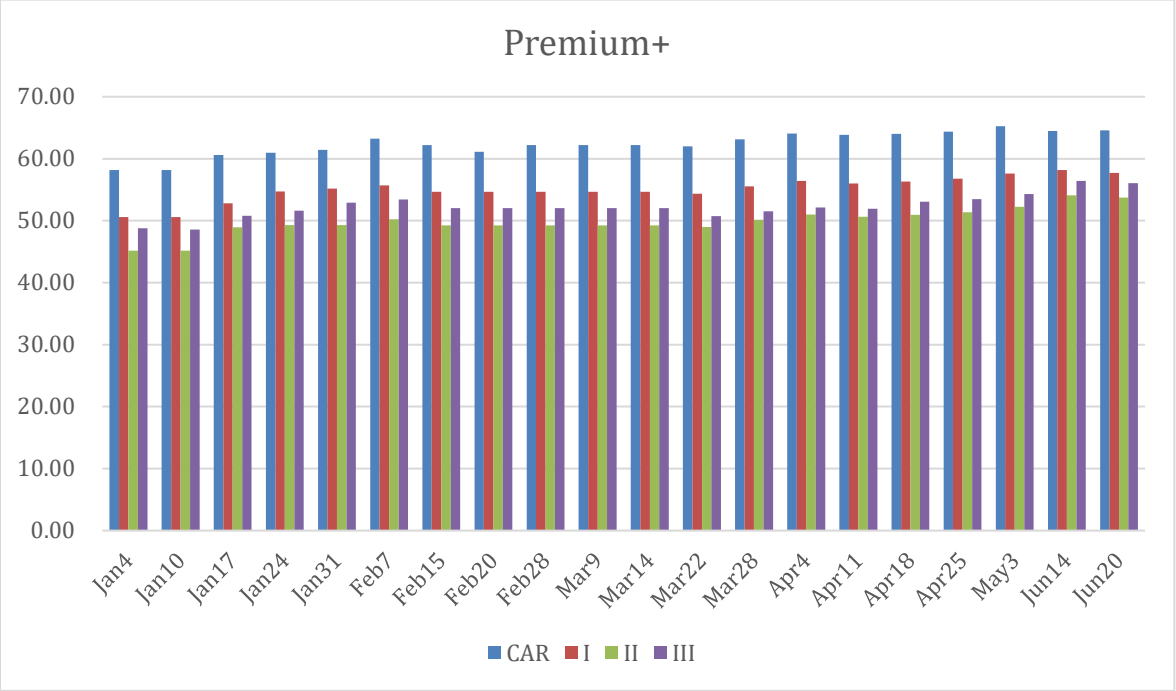


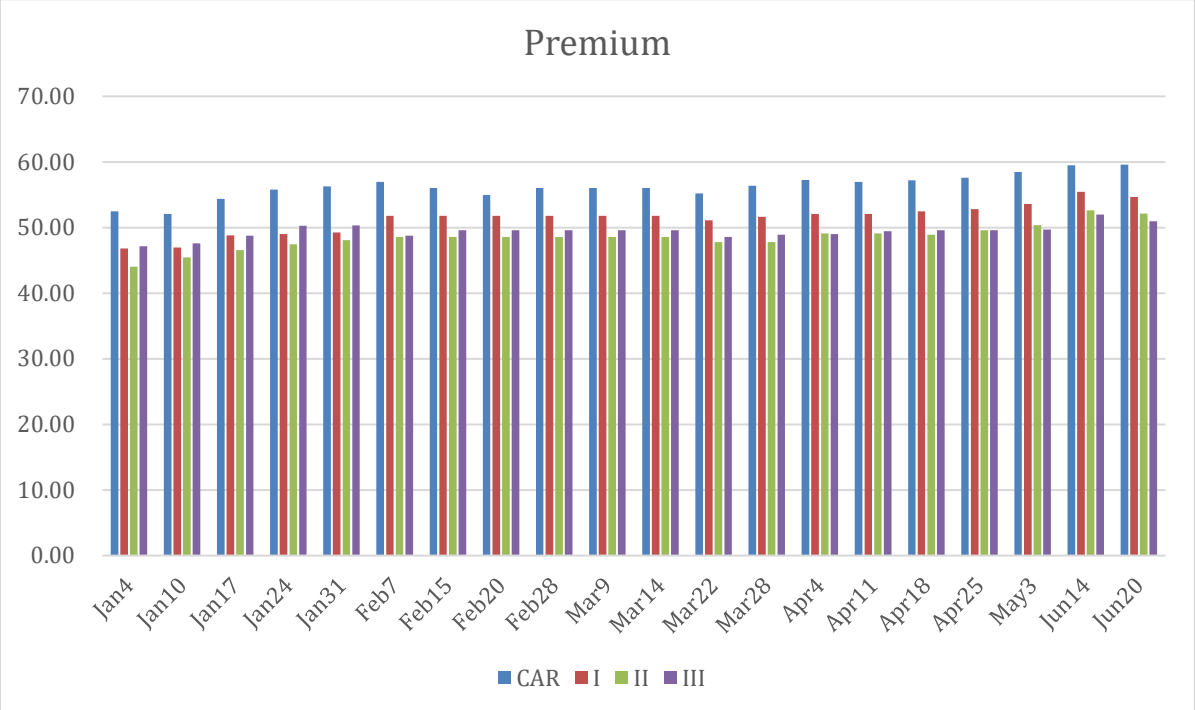


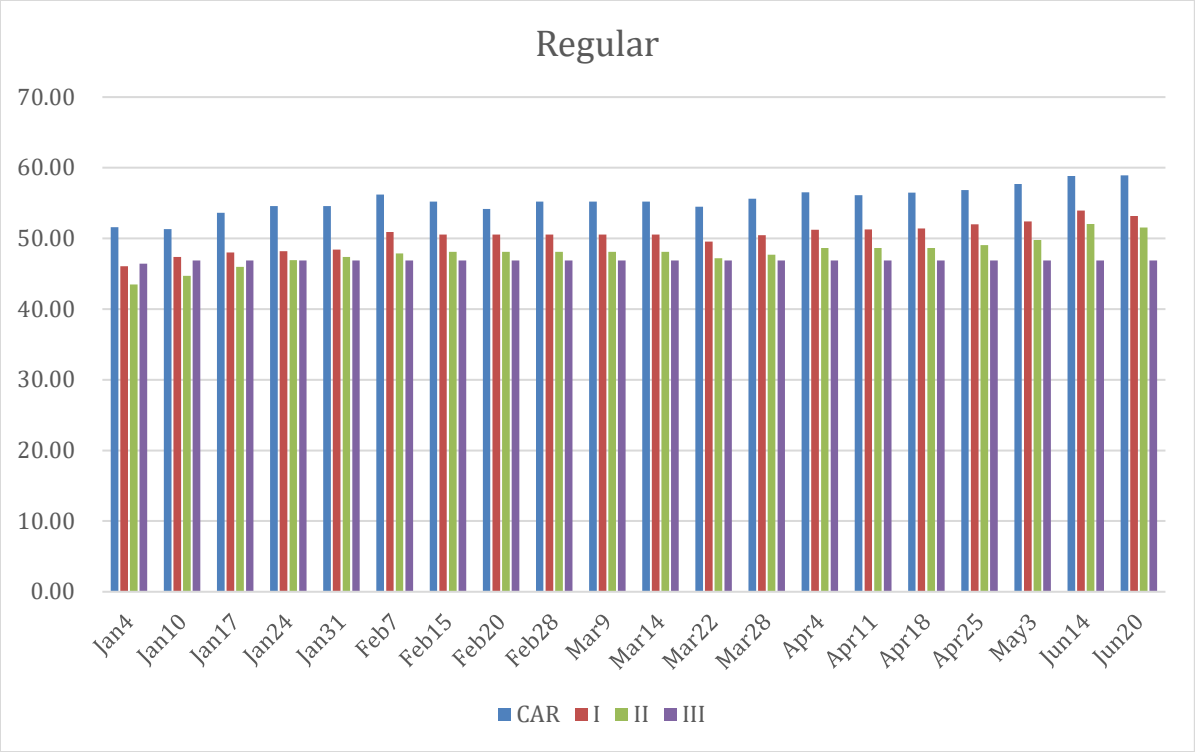
Source of data for graphs: 2016 Compendium of Philippine Energy Statistics and Information, DOE pp. 16-17 and 20-21. DOE for 2017 data.

Annex **6**: **North Luzon Regional Price Comparison (Jan to June 2018)**

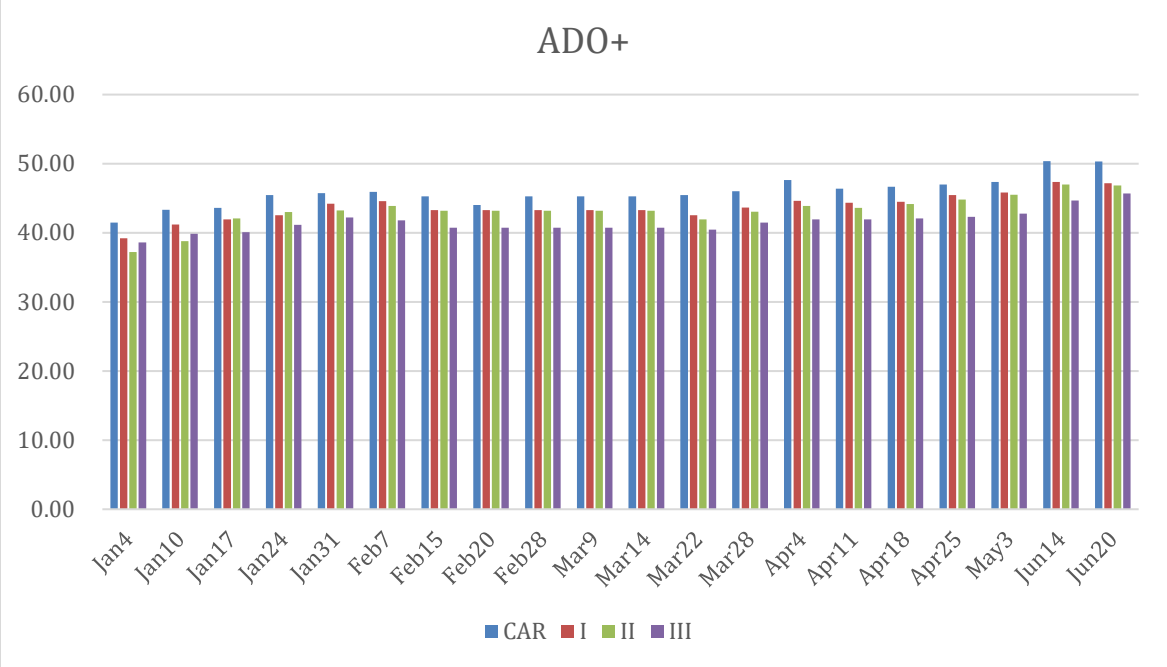
Gasoline

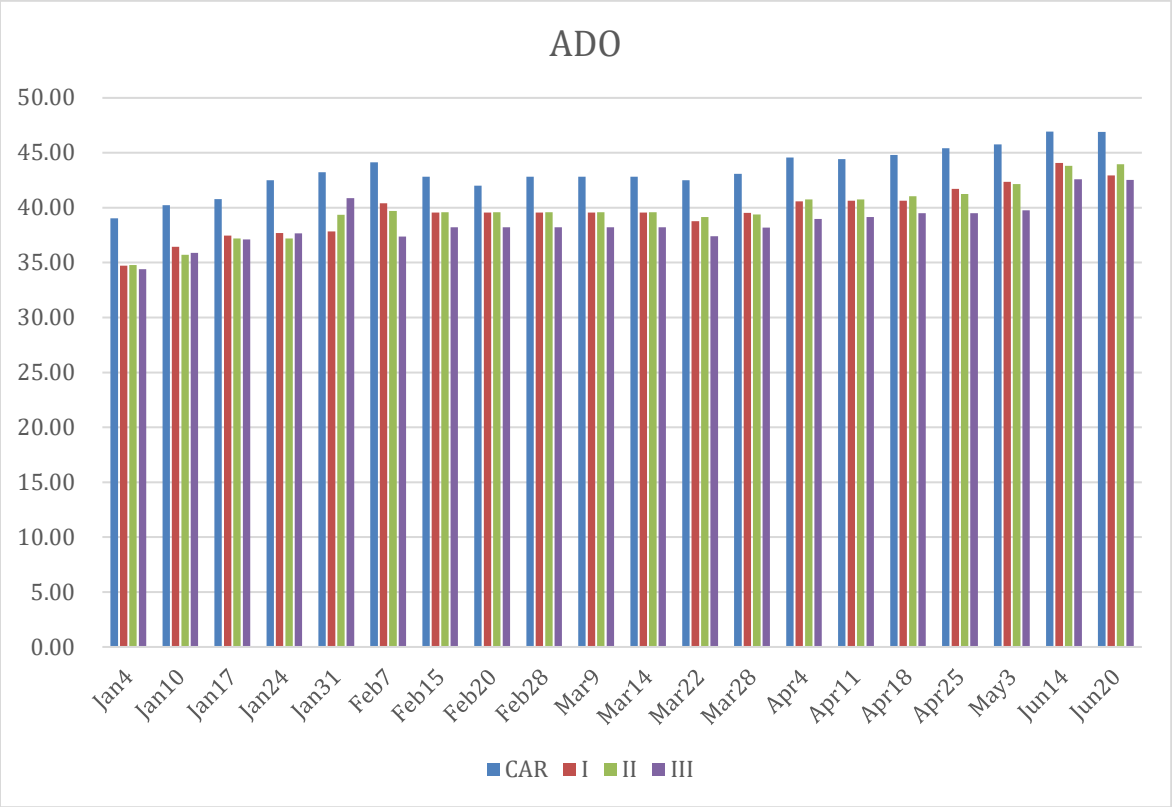




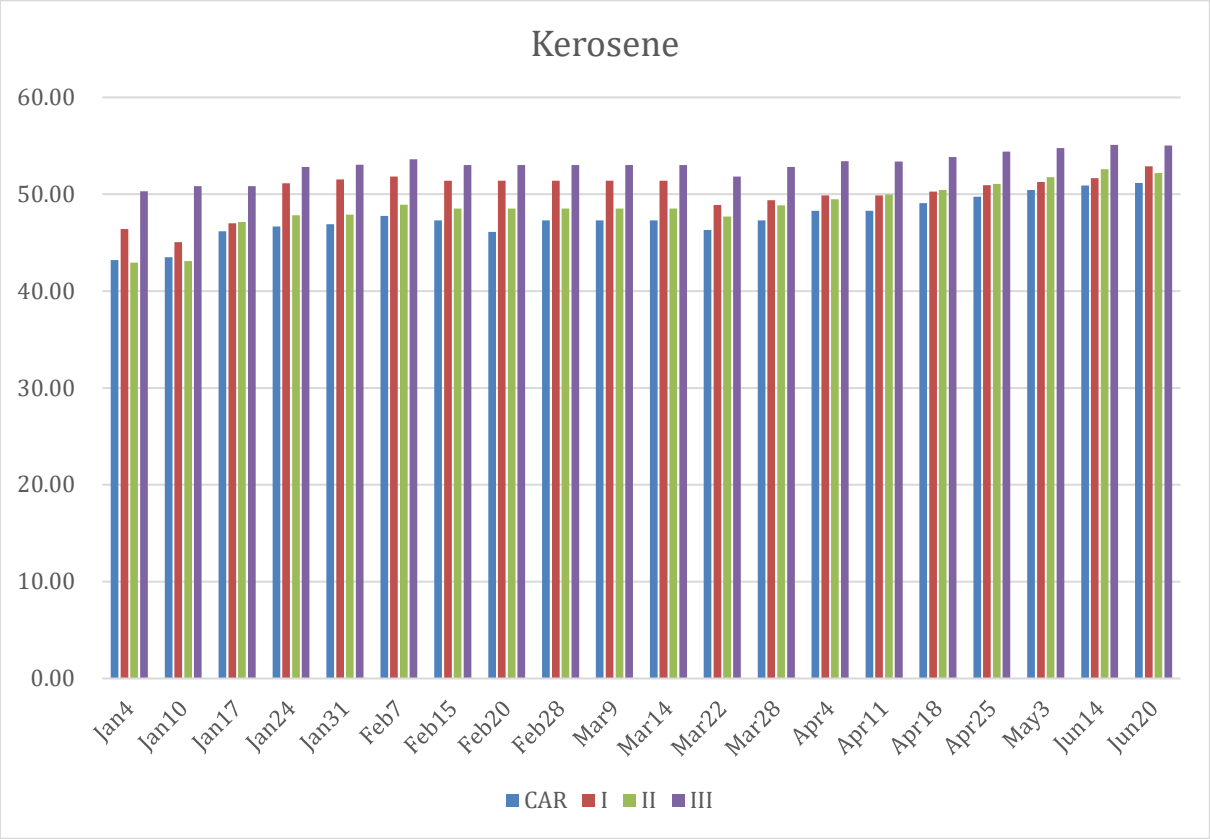


ADO is automotive diesel oil or diesel




ADO
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Jan4
Jan10
Jan17
Jan24
Jan31
Feb7
Feb15
Feb20
Feb28
Mar9
Mar14
Mar22
Mar28
Apr4
Apr11
Apr18
Apr25
May3
Jun14
Jun20
CAR
I
II
III

Kerosene



Source of Data: DOE North Luzon Field Office

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