Report of the SGV-UA&P Independent Study On Oil Prices

SUBMITTED TO

DEPARTMENT OF ENERGY

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University of Asia and the Pacific
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UNIVERSITY OF ASIA AND THE PACIFIC*

June 2, 2008

The Hon. Sec. Angelo Reyes
Department of Energy
Merritt Road,
Fort Bonifacio, Taguig

Dear Sec. Reyes

I am pleased to submit the report of the UA&P-SGV team on the reasonableness of oil prices. We will be happy to answer questions you may have on the report. We look forward to your comments and suggestions on how to improve the study further or address issues that we may have overlooked or may require further analysis.

Thank you for your support and patience and for giving us the opportunity to serve our nation through the practice of our profession.

Sincerely yours,

Peter Lee U, PhD
School of Economics
University of Asia & the Pacific

Executive Summary

This study has sought to assess the reasonableness of oil prices of the two refiners Petron and Pilipinas Shell (and also the largest players in the country) by:

a.) Comparing the trend of international benchmark crude oil (the raw material) and refined products (the finished products) prices with local pump prices of oil products.
b.) Constructing a price build-up of prices and look at whether the share going to oil companies has grown or shrunk.
c.) Looking at financial performance indicators of the major oil companies

Price data from Jan. 2005 to Jan 2008 suggests that local pump prices have not gone up as fast as the price of crude abroad or the MOPS prices for diesel and unleaded gasoline during the period. This means that oil companies' margins have probably shrunk. Statistical correlations seem to bear this out as well. Philippine pump prices simply tracked MOPS prices. A comparison of the share of the oil company take in 2007 with that in 1998 shows the same trend of a declining share of the pump price that goes to the oil company.

If oil companies have been overpricing, it should show up in higher profit rates. However, the adjusted return on equity figures for Petron and Shell do not appear extraordinary when compared with benchmark market interest rates. From another perspective, that of the stock market, if an oil company like Petron had been performing very well, one would expect its stock price to have appreciated significantly too. If Petron had been significantly more profitable than other companies listed on the stock exchange, its stock should have outperformed the stock market index. However, the performance of Petron's stock price has not been outstanding. If an investor had been able to acquire a share of Petron at the IPO price of PhP 9.00 in 1994 and held it until the close of 2007, he would have only earned an IRR of 4% for the period. This already accounts for the dividends earned in between. Thus, the stock market investors do not seem to have perceived Petron as having been extraordinarily profitable.

For these reasons, in the opinion of the author, the oil prices do not seem to have been unreasonably high for the period covered by the data in this study.[1]

[1] The author wishes to emphasize that this is a personal opinion and does not represent any stand taken by the University of Asia & the Pacific, where he is a faculty member.

Report for DOE-SGV-UA&P Study on Oil Prices
By Peter Lee U[1]

1.0 Background of the Study

International oil prices have been rising in recent months, reaching record high levels. Domestic pump prices have also been rising. As a result, there has been some public outcry that oil prices are too high.

In this connection, the Department of Energy has requested that Sycip, Gorres & Velayo (SGV) and the University of Asia & the Pacific (UA&P) conduct an independent study to determine the reasonableness of oil prices in the country. SGV will apply its accounting and auditing expertise to verify and validate the data used in the study while UA&P will use its expertise in economics to analyze and interpret the data.

2.0 Objective and Scope of the Study

The purpose of the study is to examine historical data and statistics on the oil industry, including firms' financial information, to come up with an opinion on the reasonableness of oil prices.

Given the extent of the industry, the study will focus initially on the on the two refiners Pilipinas Shell and Petron since they are the largest players and together account for almost 70% of the market. Economic theory suggests that because of their market share size, they are likely to be the market leaders, especially in price setting. If necessary, succeeding phases can cover the traders, which comprise multinationals like Chevron (Caltex), PTT, and Total, and other new players.

3.0 What is the 'right' price? Or when is a price 'fair' or 'reasonable'?

Rendering an opinion on whether a price is reasonable or not presupposes that there is a benchmark by which to measure against or compare with.

Economics has grappled with such concepts as a 'just price' or a 'theory of value' ever since Adam Smith, and even before.

The average person's instinct may be to consider only the cost of making or producing an item, allow for a certain markup or profit, and then judge whether or not it is commensurate to the listed price. In fact, profits may be viewed as a cost of doing

[1] The author is very grateful to SGV team (Mr. Wilson Tan, Mr. Victor Uson, Ms. Angiela Punzalan, Mr. Lloyd Kenneth Chua, Mr. Ramil Clemena) for verifying the data used in the study (except figures 4 to 7, the statistical results in tables 3 and 4, and the stock market data used in figure 11 and the annex). For the stock market data used in figure 11 and the annex, the author gratefully acknowledges the assistance of Mr. Roel del Castillo and Technistock .

business, for were the owners not to make enough profit, they may well decide to close shop and switch to another line of business where they can; or simply park their money in government securities, stock market, or some other acceptable investment.

Moreover to expand or increase production generally requires additional cost; e.g. bigger refineries and plant size etc. Thus, supplying greater amounts of the good generally incurs higher marginal costs. Economists represent this in graphs with an upward sloping curve/line. (see figure 1)

However, the cost side, or what economists call the supply side, is only one half of what determines prices.

The other half is how much consumers are willing to pay for an item and this is what economists call demand. It is probably intuitive enough that as the price of a product rises consumers would want to buy less of the product, and conversely when the price falls, buy more. This is represented by a downward sloping curve. (see figure 2)

Putting the two together, economists refer to this as the market mechanism, or supply and demand determining a market price. This price on the graph (see figure 3) is where the demand and supply lines intersect and is called the equilibrium price (P_{eq}) because the amount that the suppliers or the industry is willing to bring to the market is equal to the amount that the buyers are willing to buy; i.e. there is no excess or shortage. Thus, in the absence of any changes in market conditions, the market price would gravitate towards it.

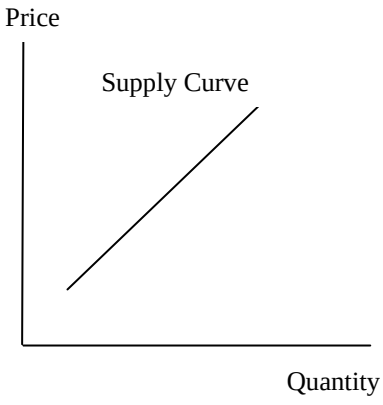


Figure 1

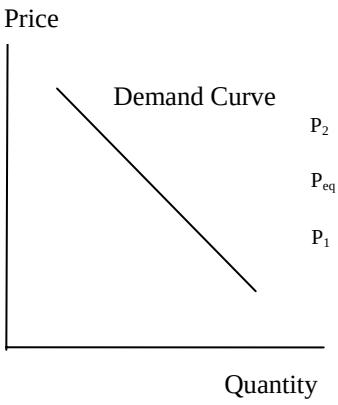


Figure 2

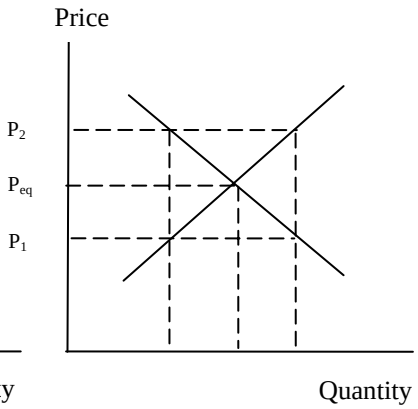


Figure 3

To motivate this argument further, consider what would happen at any other price, say P_1 in figure 3. This price is less than the equilibrium price and the quantity demanded exceeds the quantity supplied. One could imagine queues forming for this product as there is not enough of it. Sellers quickly realize that they can sell it at a higher price. The opposite would happen were the price too high, like P_2 in figure 3. Now sellers want to sell too much of the product and will have an incentive to cut prices in order to get rid of the inventory.

3.1 Why do prices vary across different gasoline stations?

The above conceptual supply and demand model might suggest that prices in a free market will gravitate towards a single price. It is important to appreciate why this conclusion arises. First, the story above implicitly assumes that the goods or products being sold are homogenous; i.e. either the products being sold by the various sellers are identical, or at least sufficiently similar from the consumers' perspective to make them interchangeable.

Second, the model also implicitly assumes that there are no significant switching costs on the part of the consumers. Buyers are assumed easily and costlessly able to acquire information on the offerings of the various sellers (including selling prices) and can easily and costlessly switch to the seller with the lower price.

Under these very ideal and stringent conditions, it is clear that buyers will all flock to the lowest priced sellers. High priced sellers will not sell anything and will be forced to match the lower prices. This is the so-called economic law of one price.

Clearly, in reality gasoline stations do not all have the exact same price; though in most cases they differ only by a peso or less. Prices at gasoline stations obviously differ due to differences in transportation costs owing to the different distances to Luzon, Visayas, and Mindanao from Pandacan, the main bulk terminal, and the other import terminals and the refineries in Bataan and Batangas.[2]

But beyond differences in transportation cost, varying market characteristics and demographics can also affect prices. It is expected that in locales where there are many gasoline stations relatively close to each other, and hence greater competition, pump prices are likely to be lower. Prices of stations located in more 'affluent' areas may also have higher prices as the clientele may have more inelastic demand; i.e. are less price sensitive.

3.2 What are the costs that go into a liter of gasoline? Or diesel? (A basic primer on the oil supply chain)

The oil products that we consume (e.g. gasoline, diesel, LPG) are all derived ("refined") from crude oil. Crude oil in turn is found under the earth (sometimes offshore even, or under the ocean floor) and are the remains of animals and plants crushed under the weight of the earth over millennia of years. To get at the oil, we need to drill oil wells to let the oil come up to the surface. The crude oil is then transported to the refineries where they are refined into the final products. En route, it may require various transportation and storage services (e.g. pipelines, tankers, barges, trucks, depots). The finished or refined products are then transported again over the various transportation modes as geography may dictate, to terminals, wholesalers, and retailers; e.g. the gasoline stations where they are sold.

[2] Only Luzon is supplied by the Pandacan terminal. Visayas and Mindanao source their supply from the refineries and other import terminals.

Most of the known oil deposits happen to be concentrated in the Middle East though other regions and countries like Latin America, Africa, northern Europe, Russia, China, and the US have been significant oil producers too historically.

While there is some oil production in the Philippines, it is miniscule and nowhere near the country's requirements. Thus we have to import practically all of our oil requirements.

3.3 What if the sellers are colluding? Their pump prices are all the same!

As explained above, when products are highly substitutable with each other, (or what economists call 'homogenous' products) then firms will tend to set similar prices, especially when there are many competing sellers. Otherwise, if one firm tried to set a price significantly higher than the others, it would find itself losing customers to the others. During hearings conducted in the course of the review of the oil deregulation law by the Independent Review Committee in 2005, gasoline station operators recounted how even differences of a few centavos per liter would drive some of the clientele, especially public utility vehicles like jeepneys, over to the competing station.

Of course, customer loyalty may mitigate this behavior a bit, and is the reason why oil companies advertise and launch various promotion campaigns. But loyalty presumably has its limits as well.

Similar prices may be the product of explicit collusion, but they are not conclusive evidence thereof. Very often, antitrust enforcement will have to rely not so much on economic evidence (data on price, market share, etc.), as 'garden variety' police detective work. If one looks at the international experience in antitrust, one will be struck by how many instances anti-competitive practices (including collusion) are found out because a disgruntled executive or former employee in the know of some arrangements squeal to authorities, or incriminating correspondence is stumbled upon, etc.; rather than by economic data. Of course, the latter will be indispensable as supporting evidence.

4.0 Can the boundary between a reasonable and an unreasonable price be determined precisely?

Having discussed what determines prices, we must qualify that economics is not a precise science. It is very difficult to define an exact price boundary that separates reasonable from unreasonable prices. For one, market conditions are constantly changing. In figure 3 above, this means the supply and demand lines may be shifting over time, making the equilibrium price a moving target.

Also, some (probably a lot of) subjectivity inevitably enters such a judgment of reasonability. Judging prices may be like judging beauty in many respects. We may differ whether a particular beauty contestant is prettier than another. There will of course be some contestants unanimously judged as pretty or ugly (perhaps with a face only his/her mother can love, but then there will be at least one dissenting opinion).

Similarly, except for extremely high or low prices, there will likely be a wide price range which many different analysts might consider as "reasonable".

It is important to keep this in mind lest we harbor unrealistic expectations for the output of this study. In the end, we can only render an opinion; which may or may not be shared by many and which will always find dissenters.

If gasoline prices were say, P70 per liter today, one might conclude this *has to be* unreasonable. As long as there is competition though, it will not only be consumers who will think so, but the firm's competitors as well. And they will proceed to undercut that price and outsell that firm.

5.0 What indicators can we look at then? What are their limitations?

The discussion on how prices are determined suggests some approaches to getting a feel for the reasonableness of prices.

One is the relative movement of input and output prices. If the selling price has been rising faster than the cost of raw materials, then this suggests the gross margin of sellers have been increasing. However, the gross margin includes only the costs directly linked to goods sold but not other costs like office expenses, administrative costs, rent, etc. Thus a positive or growing gross margin need not imply a firm is making positive profits.

A second approach is to "build up" costs through the value chain, tracing them from raw material (crude oil or imported finished product) to gasoline station. Data on refined products prices at a major trading hub like Singapore are available. It is also possible to canvas shipping and freight charges for oil products, as well as local hauling rates. Lastly, tax rates (excise and tariff duties) are known. Thus we can theoretically estimate the landed cost of refined products net of oil company and dealer margins. Comparing this with actual pump prices will then give us an estimate of these margins.

If a firm has been setting prices much higher than its costs, then this should eventually show up as a bulging bottom line. The third approach then is to examine the audited financial statements of oil firms and look at the size of their profits by computing some financial ratios that are commonly used to assess firm profitability. The Return on Equity (ROE) is commonly used as a measuring stick for a firm's financial performance. This ratio can then be compared with those of firms in other industries as well as financial market interest rates.

Stock market performance can also shed some light on the profitability of a company. Economic theory suggests the price of a company's stock should reflect the market's sentiment on the earning potential of the firm. Unfortunately, among the oil majors, only Petron is currently listed on the stock exchange at the moment.

Finally, we can also compare Philippine pump prices with those of other countries, and in particular, with neighboring countries. One must be careful though making direct comparisons of oil prices, as oftentimes oil products are taxed more heavily in other countries, making them naturally more expensive than in the Philippines. To get around this, we can resort to comparing the rate of growth instead of selling prices.

5.1 What were the findings of the 2005 Independent Review Committee with regards pricing?

The 2005 Independent Review Committee (IRC) had been formed to review the oil deregulation law. As part of its inquiry, it also investigated the pricing issue and tackled the question of whether oil prices could be lower. The Committee was chaired by former Energy Regulatory Commissioner and retired SGV Chairman Carlos Alindada. The present writer of this report had been a member of the Committee.

The 2005 IRC report had also compared the rates of growth of international crude oil and MOPS refined products prices with local pump prices. The IRC also collected financial information on the oil companies, in particular for Pilipinas Shell and Petron; comparing their Return on Equity with benchmark government securities rates. The 2005 IRC report eventually concluded that oil prices were not inordinately high, as their raw material costs (international crude oil and refined products prices) had risen more than local pump prices. Meanwhile, their Return on Equity (after adjusting for appraisal depreciation and surplus) were found to be lower than Philippine government treasury bill rates.

6.0 Have local pump prices gone up faster than international prices?

If local pump prices rose faster than international prices then it suggests that oil companies have been able to pass on their cost increases to the consumers. On the other hand, if local pump prices have not kept pace with international prices, then the reverse is true and oil companies have not been able to pass on their cost increases; i.e. their gross profit margins have deteriorated. The table below suggests the latter seems to have been the case.

Table 1 : Local (Manila) vs International Prices

Prevailing Prices (PhP/li, PhP/kg)			
	Dec. 2006	Nov.19, 2007	
			% increase
Unleaded Gasoline	37.24	43.95	18.0
Diesel	33.24	37.95	14.2
LPG	36.99	46.98	27.0
International Prices (PhP/li, PhP/kg)			
	Dec. 2006	Nov. 1-16, 2007	
			% increase
Unleaded Gasoline	21.19	26.99	27.4
Diesel	22.45	29.55	31.6
LPG	24.25	31.98	31.9
International Prices ($/bbl)			
	Dec. 2006	Nov. 1-16, 2007	
			% increase
Unleaded Gasoline	68.16	99.03	45.3
Diesel	72.20	108.41	50.1
LPG	43.60	65.57	50.4

Prevailing prices refer to local prices (Manila) while international prices are Mean of Platt or MOPS and FOB; i.e. not including freight and other costs needed to bring the product to Manila. These costs presumably account for the differences between the corresponding 'Prevailing' and 'International' peso per liter or kg prices in the table above. The international prices in pesos per liter and kg were arrived at by using prevailing exchange rates.

The appreciation of the peso has clearly helped contain prices. Table 1 shows that the international prices in $ terms rose from 45% to 50% for the products concerned. Converting these prices to peso terms brings down the increase a little as the peso appreciated from around PhP 49.50 /$ in Dec. 2006 to an average PhP 43.302 in the first half of November 2007.

The 'preferential option' for diesel during the period is also apparent as its local pump price rose the least relative to the increase in corresponding international price compared to gasoline and LPG.

The following table presents data over time comparing pump prices for unleaded gasoline and diesel with their respective MOPS prices (all in Pesos per liter). At least for the period 2006 to 2007, we find that while the average MOPS price per liter of unleaded gasoline rose 0.98% in 2007, the average pump price for unleaded gasoline in Manila rose 1.11%. Meanwhile, MOPS price per liter for diesel rose 5.22% while pump prices for diesel in Manila rose only 0.33%. For the period covered by the data, the table shows local pump prices hewing very close to the MOPS price movements.

Table 2 further reinforces the statement earlier that there exists a perceptible bias towards keeping diesel prices low as local diesel pump prices rose less than its MOPS counterpart. On the other hand, local unleaded gasoline pump prices actually rose a bit faster, 1.11% vs. 0.98% for MOPS unleaded; though that the difference is negligible.

In addition we can also compare the movement of Manila pump prices with those of other countries. One must always be careful in cross country comparisons because no two countries are alike, and structural, and policy (e.g. taxes) differences may render comparisons meaningless. For example, many countries tax oil products heavily. In ASEAN, Indonesia and Malaysia are oil producers and Indonesia is even a member of OPEC. Like the Philippines, Thailand is an oil importing country and a comparison of Manila pump prices with Bangkok pump prices may be more appropriate. (see figures 4 to 7)

Table 2: Comparative Local (Manila) and MOPS Prices (Unleaded Gasoline and Diesel in PhP/liter)

2006	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Ave**
Unleaded (PhP/liter)													
Manila	36.1	37.5	37.1	37.5	39.7	41.9	43.1	43.9	41	38.8	37.4	37.2	39.2
MOPS	22.1	21.2	22.4	26.2	28.5	27.7	28.1	26.2	20.9	19.4	19.7	21.2	23.7
Diesel (PhP/liter)													
Manila	31.2	32.5	32.4	33.5	35.6	36.3	36.6	37.6	36.4	34.3	33.3	33.2	34.4
MOPS	24.2	23.4	25.1	28.0	28.8	29.2	28.7	28.3	24.4	22.7	22.3	22.4	25.6
2007	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Ave.**
Unleaded (PhP/liter)													
Manila	36.6	35.7	36.0	37.4	38.5	40.3	40.5	41	40.7	42.1	43.4	44.1	39.7
% change y-o-y	1.81	-4.8	-2.8	-0.4	-3.1	-3.5	-6.1	-7	-0.9	8.5	15.9	19.0	1.1
MOPS	18.9	20.3	23.4	25.1	26.1	24.6	24.5	22.4	23.9	24.7	27.2	25.8	23.9
% change y-o-y	-13.3	-4.2	4.2	-4.1	-8.5	-11.5	-13	-16.6	14.5	27.3	38.3	21.7	1.0
Diesel (PhP/liter)													
Manila	32.6	31.7	31.9	32.9	33.7	34.5	34.5	35	35.1	36.6	37.5	38.1	34.5
% change y-o-y	5.0	-2.4	-1.6	-1.9	-5.2	-5.0	-5.9	-7.1	-3.7	6.7	12.6	15.3	0.3
MOPS	21.1	21.8	22.9	24.7	24.5	24.4	25.3	24.8	26.9	27.1	29.9	28.6	25.2
% change y-o-y	10.5	7.0	-2.1	-1.8	-5.9	-0.7	3.2	10.9	12.5	9.8	9.8	11.2	5.2

Manila refers to the pump price in Manila.
MOPS refers to the Mean of Platt's price converted to Pesos per liter.

Source of raw data; DOE

Figure 4 Unleaded Gasoline Prices (MOPS vs. Bangkok vs. Manila)
(Jan. 2007 to Jan. 2008)

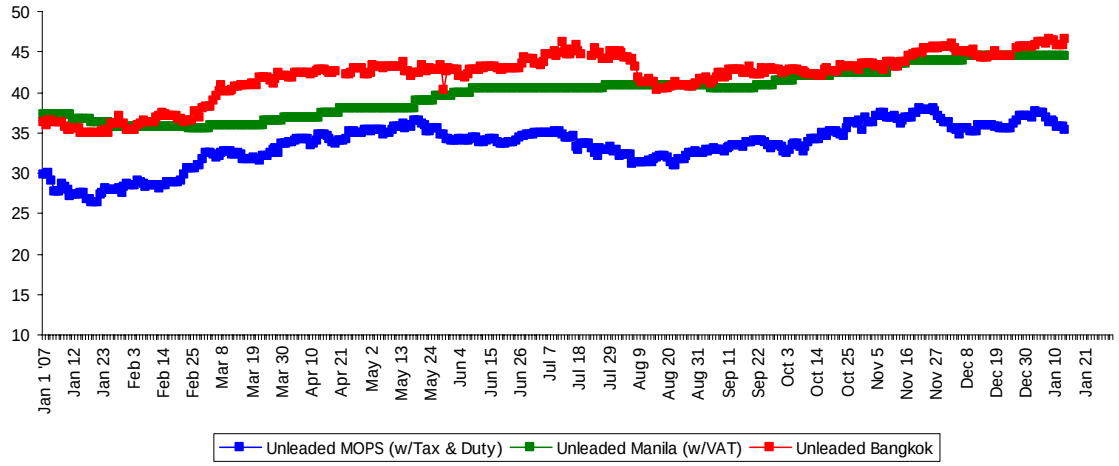


Figure 5 Unleaded Gasoline Prices (MOPS vs. Bangkok vs. Manila)
(Jan. 2005 to Jan. 2008)

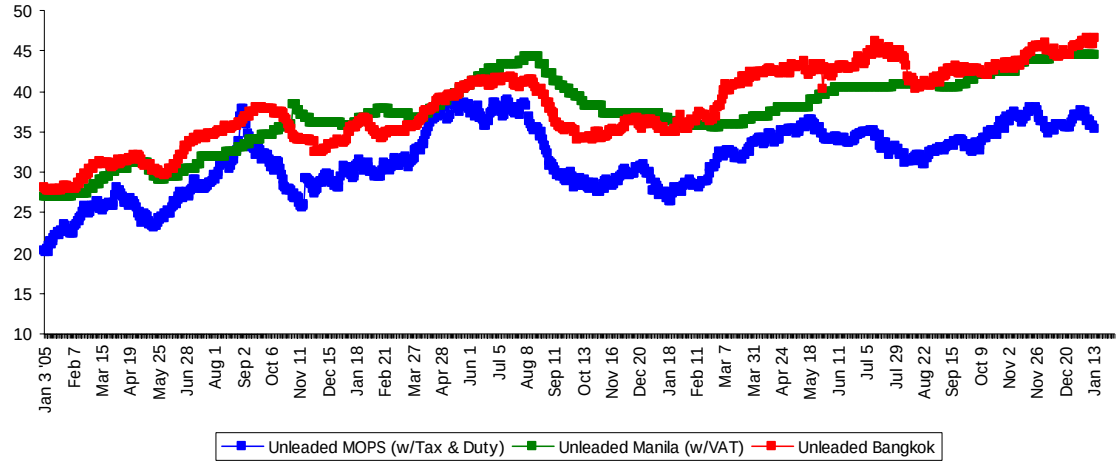


Figure 6 : Diesel Prices (MOPS vs. Bangkok vs. Manila)
(Jan. 2007 to Jan. 2008)

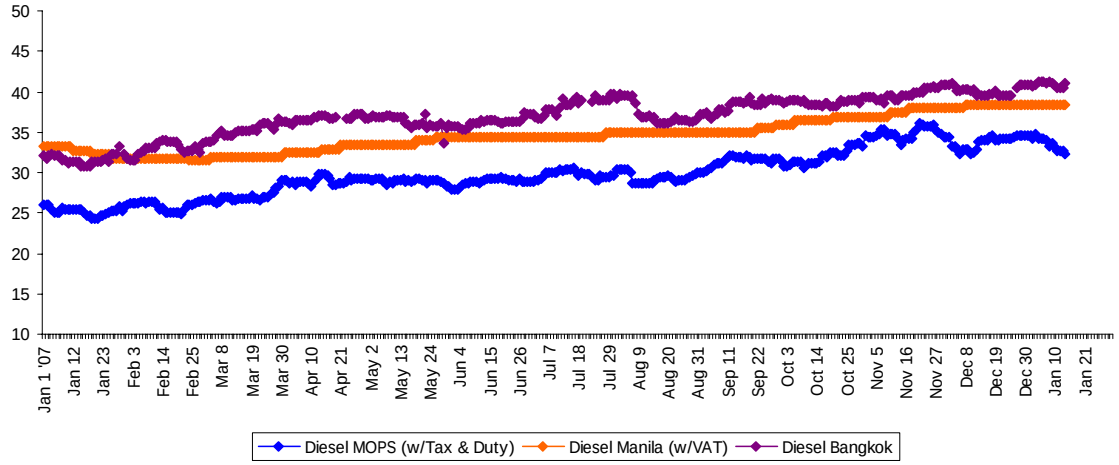


Figure 4 presents the comparison of unleaded gasoline prices while figure 6 compares that for diesel, both for 2007. Figures 5 and 7 present the same data but over a longer time period. In all figures, the data for MOPS is also presented as a further base of comparison. All prices have been converted to Philippine pesos using the appropriate exchange rates to minimize distortions due to the appreciation or depreciation of the peso versus the baht. As noted above, tax regimes on oil products may vary across countries. Many countries tax petroleum products heavily, so that pump prices in other countries are often higher than in the Philippines when converted into pesos or vice-versa. However, as long as tax regimes (and tax rates) in the countries have not changed too much, a comparison of their trends could still be useful. Thus rather than focusing on the absolute price differences between the two countries, we will compare their trends (rate of growth).

Even just visually, both countries' price movements for unleaded gasoline and diesel appear to follow the movement of MOPS, as well as each other. If Manila prices had spiked upwards faster than either Bangkok prices or MOPS, then one might start to suspect local players of overpricing, but that doesn't seem to have been the case.

The statistical tool of linear regression can be used to quantify more objectively the degree of linear association between variables. We regressed the Manila pump prices (unleaded gasoline and automotive diesel in PhP/liter) against MOPS unleaded gasoline prices and automotive diesel prices (in PhP/liter). Similar linear regression models were fitted between Bangkok pump prices (unleaded gasoline and automotive diesel in Baht/liter). Table 3 summarizes the statistical results of these regressions.

Figure 7: Diesel Prices (MOPS vs. Bangkok vs. Manila)
(Jan. 2005 to Jan. 2008)

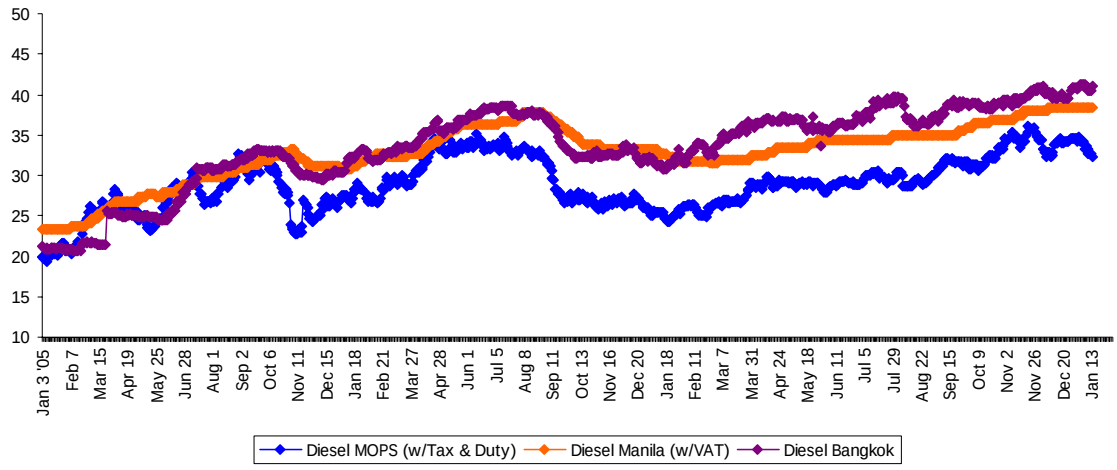


Table 3: Regression Results*

	REGRESSION RESULTS	
	Dependent Variable: Unleaded Gasoline Price	
	Manila (PhP/li)	Bangkok (Baht/li)
Intercept	26.572 (34.07)	16.315 (30.975)
MOPS Unleaded	0.545 (16.79)	0.709 (23.273)
r-square	0.348	0.510
F statistic	281.876	541.628
	Dependent Variable: Automotive Diesel Price	
	Manila (PhP/li)	Bangkok (Baht/li)
Intercept	19.733 (35.181)	12.250 (34.345)
MOPS Diesel	0.581 (26.550)	0.734 (37.956)
r-square	0.572	0.735
F statistic	704.888	1440.666

*Figures in parentheses are t-statistics.
Data used: daily prices from Jan. 2, 2006 to Jan. 14, 2008

In both countries, there is a significant relationship between the pump prices and the MOPS prices (converted into the respective local currencies.) One notices though that the r-squares of the Thailand models are higher. Since the r-square statistic is a measure of the goodness of fit of the model, or how well the regression line fits the data points, the higher r-square of the Thai models means that the pump prices of unleaded gasoline and diesel in Bangkok follow the movements of their respective MOPS prices (converted to Baht per liter) more closely than do Manila pump prices follow the MOPS prices (expressed in PhP/liter).

The slopes of the Thai models are also higher. This means that for every increase in the MOPS prices by one Baht per liter, the pump price trend in Bangkok goes up on average by 0.709 and 0.734 Baht per liter for unleaded gasoline and diesel respectively. In contrast, for every one PhP/liter increase in MOPS prices, the corresponding increase in Manila pump prices are on average 0.534 PhP/liter for unleaded gasoline and 0.581 PhP per liter for diesel. Thus relatively speaking, Thai pump prices move up more in response to increases in MOPS prices than do Philippine pump prices.

That the slopes of the Philippine models are less than one is also consistent with our previous observation that Manila pump prices rose at a slower rate than the rise in MOPS prices. Interestingly, the regression models for the Philippines show diesel pump prices rising slightly faster (though perhaps not a statistically significant difference) than unleaded gasoline prices.

By computing the cross correlation coefficients between local pump prices and lagged MOPS prices (previous weeks' MOPS prices), we can also get an idea of the degree of correlation between local pump prices and the MOPS prices x no. of weeks ago. Table 4 below presents the results of the cross correlation computations between unleaded gasoline and diesel pump prices in Manila with lags of the corresponding MOPS unleaded gasoline and diesel prices. All prices have been converted to Peso per liter basis. Weekly data from January 2006 to January 2008 were used. For unleaded gasoline it seems that the local pump price has the strongest correlation with the MOPS price around four to six weeks ago. On the other hand, local diesel prices seem to bear the strongest correlation with MOPS prices about three to four weeks ago. The peaks are not pronounced however, and in general, one could surmise that MOPS prices have the greatest influence on Manila pump prices within about a month.

Table 4: Cross Correlation Matrix

Sample: 1 106		
Included observations: 106		
Correlations are asymptotically consistent approximations		
	Cross correlation Coefficients	
Lag i	ULGMLA,ULGMOPS(-i)	ADOMLA,ADOMOPS(-i)
0	0.5958	0.7634
1	0.6559	0.7973
2	0.7004	0.8166
3	0.7366	0.8252
4	0.7615	0.8204
5	0.7726	0.8078
6	0.7691	0.7833
7	0.7445	0.7403
8	0.7063	0.6882
9	0.6622	0.6349
10	0.6092	0.5721
11	0.5575	0.5150
12	0.5072	0.4643
13	0.4504	0.4085
14	0.3947	0.3565
15	0.3396	0.3078
16	0.2777	0.2555
17	0.2152	0.1979
18	0.1534	0.1365
19	0.0952	0.0804
20	0.0455	0.0285

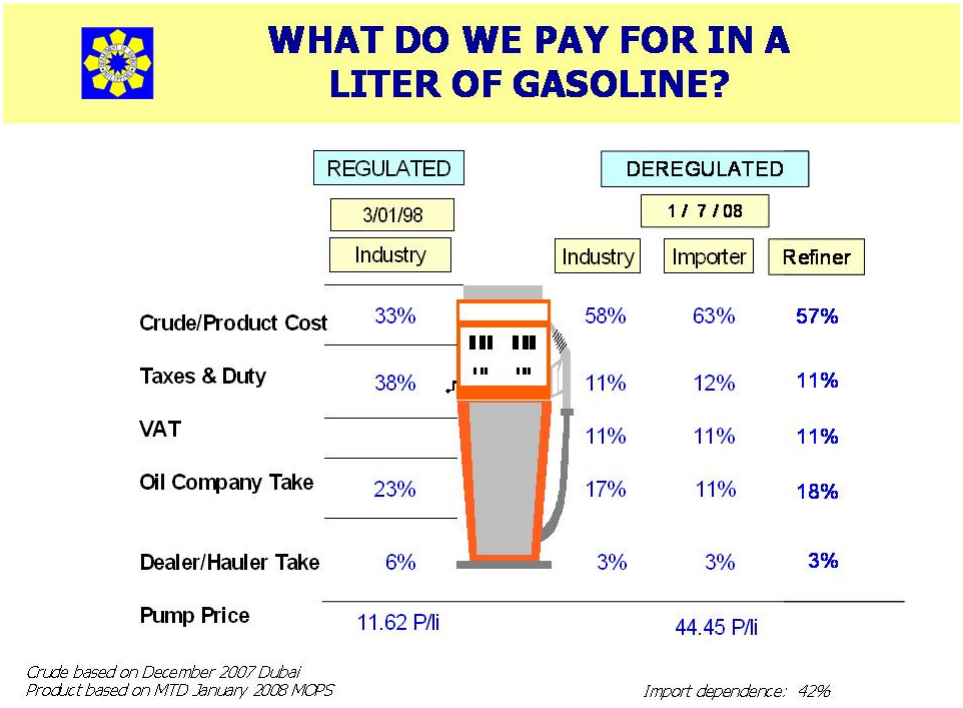
7.0 What are the different components of the market price of oil products?

The major cost components of oil products correspond roughly to the main parts of the supply chain for oil products. In the following figures (figure 8 to 10) the price is broken down according to the cost of the product, taxes and duties, oil company take, and dealer/hauler take. The figures compare the current (as of January 7, 2008) breakdown with that of March 1998. The label 'Refiner' is self-explanatory while 'Importer' refers to those oil companies who import refined products for resale in the Philippines. Finally the label 'Industry' refers to the industry average.

The figures suggest that the estimated 'Oil Company Take' or the proportion of the pump price that goes to the oil company has fallen across all three product lines from the share in 1998, when the industry was deregulated anew under RA 8479. It is also readily apparent that the decline has been greatest in the LPG sector. This seems consistent with the fact that the LPG sector is where the new players have made the greatest inroads. This may explain why last year, Caltex (Chevron) decided to pull out of the LPG sector and sold its LPG business to Liquigaz and Petron. Note that part of the 'Oil Company Take' would go towards recovering the cost of refining the finished product sold. Thus, the 'Oil Company Take' does not represent gross margin or profit.

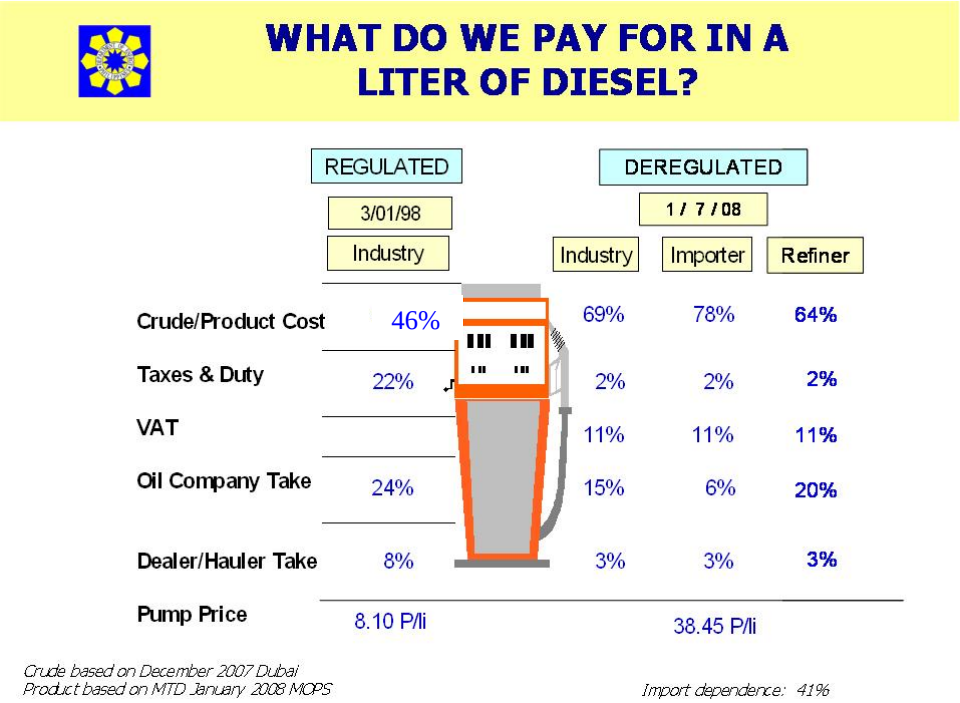
The figures show that presently, the cost of the product accounts for the greatest portion of the total cost across all product lines. Even in 1998 the cost of product already accounted for at least one third of the price. Its share has increased even more since March 1998 due to the skyrocketing oil prices in recent years.

Figure 8 Cost Buildup for Unleaded Gasoline



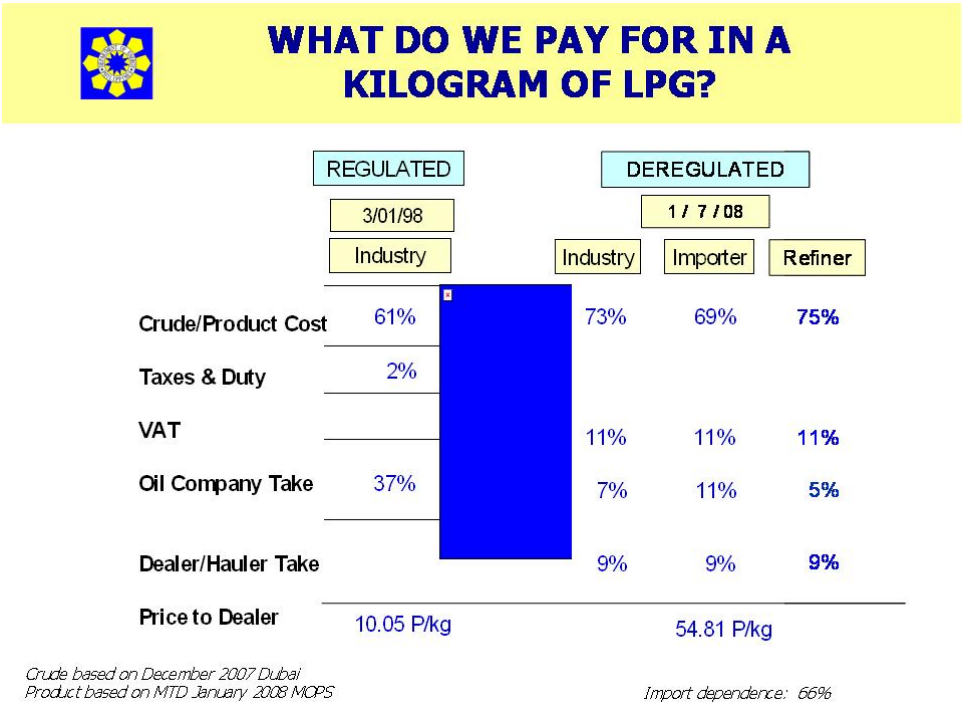
Source: DOE

Figure 9 Cost Buildup for Diesel



Source: DOE

Figure 10 Cost Buildup for Liquefied Petroleum Gas



Source: DOE

8.0 Do the oil companies really buy or import their crude oil/refined products at MOPS or Dubai prices?

It should be noted that the actual costs of raw material or products of the oil firms may not actually be the MOPs or the Dubai prices. Both are international benchmark prices at major oil trading markets. Oil companies may actually be sourcing their imports from other sources where prices may be higher or lower.

Dubai, for example, represents the price for a specific grade of crude oil. The refiners (Shell and Petron) may or may not be actually purchasing this grade of crude. In fact, they are reportedly importing more expensive grades of crude oil, perhaps because of refinery or product mix requirements.

Meanwhile, MOPS represents the average price of trades transacted in Singapore, a major regional trading hub. Some new players are reportedly buying their products from refiners in Taiwan at prices lower than MOPS. However, wherever it is sourced, it is expected that these prices should follow the same global price trends. Even if the oil is smuggled, the price paid at the origin should still follow this trend. What an oil smuggler 'saves' on is the tariff and taxes that would otherwise be paid on entry into the country.

Thus, comparing pump prices with the international benchmark prices can only suggest the trend of oil firms' gross margins (the difference between selling price and cost of goods sold) and not the exact level of gross margin. Figures 8 to 10 of the previous section do suggest though that the margin has probably gone down since 1998.

Table 5 below presents the actual reported imported costs by the oil companies compared with the respective benchmark prices. The reported actual import costs on average are generally higher except for diesel, though not by a significant amount in the opinion of this writer.

Table 5: Actual vs Benchmark Import Prices
(FOB, US $/Barrel)

	CRUDE		ULG		ADO		LPG	
	ACTUAL	**DUBAI**	**ACTUAL**	**MOPS**	**ACTUAL**	**MOPS**	**ACTUAL**	**CP**
6-Jan	60.00	58.44	66.97	66.78	68.88	73.14	53.92	51.73
6-Feb	59.65	57.61	66.18	65.02	69.67	71.90	57.66	55.60
6-Mar	59.39	57.82	69.79	69.64	75.45	77.99	48.33	47.11
6-Apr	65.40	64.14	80.97	81.13	82.60	86.66	40.68	38.04
6-May	67.33	65.00	88.76	86.80	85.46	87.53	43.01	41.78
6-Jun	66.66	65.22	83.75	82.76	86.68	87.57	44.20	41.78
6-Jul	71.14	69.17	87.89	85.50	86.87	87.37	46.99	44.62
6-Aug	71.30	68.77	85.84	81.22	86.80	87.39	50.93	48.62
6-Sep	61.87	59.82	71.19	65.86	77.63	76.95	51.06	49.86
6-Oct	57.77	56.42	64.08	61.83	72.64	72.27	44.72	42.98
6-Nov	58.81	56.72	64.46	62.89	70.66	71.03	41.91	41.24
6-Dec	59.29	58.68	70.13	68.16	69.90	72.20	45.93	43.60
Average	**63.22**	**61.48**	**75.00**	**73.13**	**77.77**	**79.33**	**47.45**	**45.58**
7-Jan	53.60	51.69	64.76	61.59	67.66	68.45	49.16	48.11
7-Feb	56.83	55.75	71.57	66.80	69.24	71.67	48.02	46.14
7-Mar	60.68	58.80	78.87	76.62	72.09	75.03	45.93	44.39
7-Apr	66.13	63.97	85.76	83.49	77.25	82.11	49.74	47.41
7-May	67.38	64.61	90.97	88.77	82.74	83.42	52.02	50.04
7-Jun	68.34	65.79	86.08	84.79	81.10	84.20	53.48	53.16
7-Jul	70.14	69.49	87.30	85.35	85.80	88.13	52.21	51.67
7-Aug	71.36	67.38	79.57	77.15	84.86	85.57	53.63	52.41
7-Sep	75.66	73.36	83.32	82.51	90.69	92.83	52.45	50.35
7-Oct	80.26	77.12	91.76	88.71	95.38	97.35	60.27	57.68
7-Nov	91.39	86.87	101.44	100.29	106.76	110.19	68.70	65.57
7-Dec	90.28	85.58	101.05	98.38	106.95	109.14	77.55	76.97
Average	**71.00**	**68.37**	**85.20**	**82.87**	**85.04**	**87.34**	**55.26**	**53.66**

ADO = automotive diesel oil
CP = Contract Price
LPG = liquefied petroleum gas
MOPS = Mean of Platt's Singapore
ULG = unleaded gasoline

Source: (DOE)

In the 1970s and 80s, there had been frequent charges that the oil companies may have been repatriating profits to their parent companies through transfer pricing. (In fairness the charge was leveled at multinational corporations in general.) Theoretically, this would have the parent companies then charge their subsidiaries here inflated prices for products and services supplied to the subsidiary. In previous decades when capital and currency controls were more restrictive, this might have been done. (Again, in fairness, the same allegations against multinational corporations were heard in developing countries all over the world.) With more liberalized capital and currency markets, there is arguably less reason to practice this today.

From a theoretical standpoint, it may not also make sense for a mother company abroad to disadvantage its local subsidiaries with unreasonable costs or practices, especially if the other international oil majors are not imposing it on their subsidiaries. This would handicap the subsidiaries in competing locally and possibly mean lost market share and profits.

The above table can also serve to check whether the oil companies' parents are overcharging their local subsidiaries, at least on the oil products. This may be a valid concern, especially since the local oil majors may tend to procure mainly from other international affiliates. If we accept that international benchmark prices like Dubai, MOPS, etc. are competitively set, then table 5 suggests that there is not significant overpricing of local oil companies' inputs.

9.0 Are the oil companies making an inordinate amount of profits?

Sometimes the business media report the profits or net income of the oil companies, which for the oil majors may run into the billions of pesos. To the average person, this of course seems like a very large amount. However, profits need to be judged relative to the size of the firm, and usually, profits are compared to the amount invested by the owners (equity) or by the total assets of the business. The Return on Equity (ROE) is a common financial ratio used to measure this. The ROE is calculated as net income (usually after tax) divided by the firm's equity. The more profitable a firm is, the higher would be its ROE.

Following the 2005 IRC methodology, Petron and Shell were allowed to adjust their net income after tax and equity figures by their respective appraisal depreciation and surplus adjustments. The rationale for this is that the current value of a company's assets may actually be higher than its book value. One possible reason is that replacement costs may have risen with inflation over time. Consequently, an adjustment is required also for depreciation expense, which will also lead to an adjustment in net income after tax. Drawing on his Energy Regulatory Commission regulatory experience as well, then IRC Chairman Alindada, felt this was an acceptable practice and the 2005 IRC Report adopted it. This report follows the 2005 IRC Report in this regard.

Initially, financial data for Petron and Shell were requested to calculate the above mentioned financial ratios. The following table 6 presents the computed adjusted Return on Equity for Petron.

Table 6 Financial data for Petron[†]

Year	*NIAT** (million Php)*	*Equity** (million Php)*	*ROE (%)*	*NIAT* (million PhP) (net of exports)*	*Equity (million PhP) (net of exports)*	*ROE (%) (net of exports)*
2002	1,698	28,152	6.03%	1,106	27,419	4.03%
2003	1,851	28,072	6.59%	982	26,609	3.69%
2004	2,345	28,067	8.35%	881	25,438	3.46%
2005	2,067	64,453	3.21%	132	60,124	0.22%
2006	1,455	64,855	2.24%	1,026	59,344	1.73%
2007	1,587	65,134	2.44%	237	58,732	0.40%

*Net Income After Tax (adjusted for appraisal depreciation)
** Adjusted for appraisal surplus
[†]Adjustments for 2005 onwards to NIAT pertaining to appraisal depreciation and adjustments to equity pertaining to appraisal surplus were based on appraisal reports of accredited appraisers.

In the case of Petron, one might also consider that the company has been earning significantly from its exports business. Following the 2005 IRC Report methodology, this study requested Petron to also provide data on its profits from exports to isolate the profitability of the local business. Thus, two ROEs are calculated in Petron's case; one using the total net income after tax and another after removing the profits attributable to the export market.

In the case of Shell, earnings from exports were not considered significant enough to warrant the same approach. Thus only one ROE was calculated for Shell. (see table 7)

Table 7 Financial data for Shell

Year	*NIAT* (million Php)*	*Equity** (million Php)*	*ROE(%)*
2002	1,544	25,473	6.06
2003	1,450	24,934	5.82
2004	1,771	35,373	5.01
2005	3,336	34,531	9.66
2006	1,908	32,836	5.81
2007	3,809	31,201	12.21

*Net Income After Tax adjusted for appraisal depreciation
** Adjusted for appraisal surplus

Table 8 Benchmark Interest Rates

Year	*Treasury Bill Rate (all maturities)*	*Treasury Bonds*		
		5 Year	*10 Year*	*20 Year*
2000	10.90	13.76	14.68	n.a.
2001	11.05	14.53	17.00	n.a.
2002	6.04	12.11	12.56	13.88
2003	6.65	8.15	11.81	12.23
2004	8.13	11.64	12.31	13.00
2005	7.53	10.95	11.69	12.13
2006	6.20	8.72	8.06	9.69
2007*	3.71	n.a.	n.a.	n.a.

Source:
Bangko Sentral ng Pilipinas (http://www.bsp.gov.ph/statistics/spei_pub/tab19.pdf accessed Jan. 20, 2008)
National Treasury of the Philippines (http://www.treasury.gov.ph/statdata/yearly/yr_gsyieldrates.pdf accesesed Jan. 29, 2008)

As with prices, it is difficult to talk about a dividing line between reasonable and unreasonable rates of return. However, we can compare with some market interest rates like those on treasury bills and treasury bonds in table 8 to get some idea of the relative profitability of Petron. The treasury bill rates are average of all maturities up to 365 days. It is thus a short term interest rate. Treasury bond rates, on the other hand, are for longer terms. (It may be argued that a comparison with treasury bond rates may then be more meaningful, as a business should presumably take on a longer term outlook; certainly more than a one year horizon.) Government securities like treasury bills and treasury bonds are generally considered risk free investments. Therefore, commercial firms' ROEs should be even higher than government securities rates to compensate for the risk that is part and parcel of business operations.

Table 7 suggests that Petron's profitability as measured by its adjusted ROE has been less than 5% in recent years (2005 to 2007). Interestingly, these were also the years when oil prices started to rise. Their adjusted ROEs were higher for 2002 to 2004. Petron's net of exports ROE is lower than Treasury Bills and Treasury Bonds for most of the years in the table while its total ROE was comparable for 2002 to 2004 but lower thereafter.

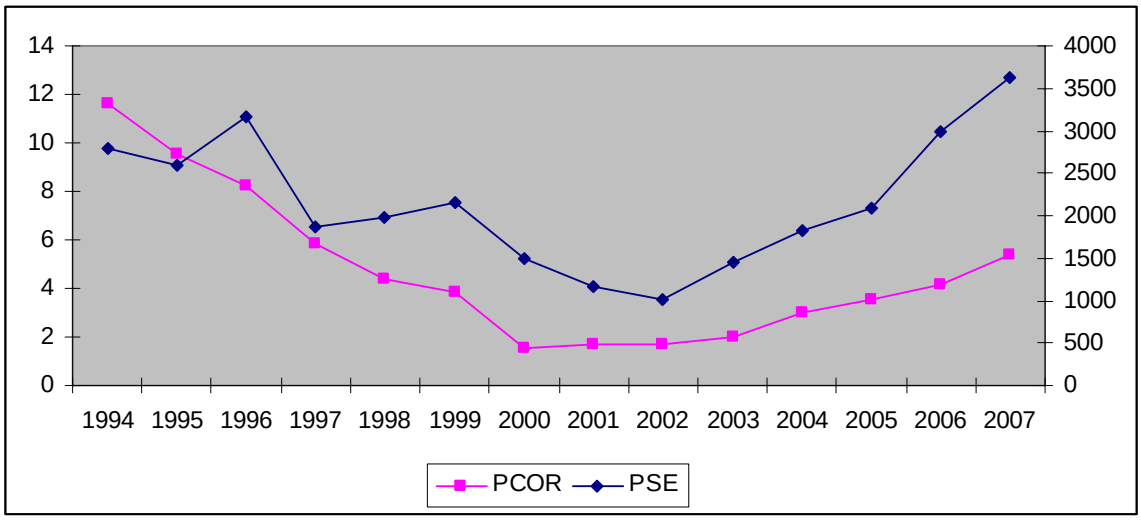
Another view of a firm's profitability may be offered by the stock market. Stock markets are markets where shares of a company are bought and sold. Investors buy shares of stock in a company in anticipation of making a return on their investment through appreciation of the price of the stock or dividends, which may be either cash or stock dividends. Thus stock prices reflect fundamentally the perception by the market of their earning potential. This perception would of course be based in great part also on historical financial performance of the company. All things equal, a company that earns greater profits is more likely to give dividends to shareholders. This makes shares of that company more attractive to the investing public, which would tend to bid up the price of the stock.

The only oil major currently listed on the Philippine Stock Exchange is Petron. If we look at the stock price of Petron, it has not significantly outperformed the market. Its Initial Public Offering (IPO) price had been set at PhP 9 per share and Petron made its debut on the Philippine Stock Market in September of 1994. At the time, the market price quickly went up to more than PhP 20 per share.

Figure 11 compares the movements of the stock price of Petron with the Philippine Stock Exchange index. The vertical axis for Petron stock prices is on the left and that for the PSE index is on the right. The Petron stock prices have been adjusted for dividends.[3] Quite clearly, Petron stock has mirrored the general movement of Philippine stocks. Looking at the latter years, one can also see that Petron stock prices have not recovered at the same pace as the PSE index since 2002. Note that the PSE index is not adjusted for dividends. It would be very tedious to do this as it would require dividend information and computation for each stock listed on the exchange. Thus the appreciation of the PSE index since 2002 is even understated. It is safe to say that the Petron stock price has underperformed relative to the average stock price on the PSE since 2002. This would support the view that the investing public does not perceive Petron to be an exceptionally profitable stock, and perhaps by extension, view the company's financial profitability similarly.

One could also calculate an internal rate of return (IRR) for a share of Petron stock. The calculation can be found in the annex. Basically if we start with the PhP 9.00 per share IPO price in 1994, and end with the PhP 5.70 closing price per share for Dec 28, 2007, and accounting for the dividends in between, the IRR for holding a share of Petron stock comes out to about 4%. This is lower than the government securities rates.

Figure 11 Petron Stock Price versus PSE Index



Source of data: Technistock

[3] The author is grateful to Technistock and Mr. Roel del Castillo for their assistance in obtaining stock market data. I am especially grateful to Mr. del Castillo for explaining various stock market terms and helping calculate the adjusted stock prices.

One might want to also consider that the IPO price of PhP 9.00 assumes you were among those given an initial allotment of the stock. As mentioned above, Petron stock traded at over PhP20 per share for the first few weeks after the IPO. Thus, if you had purchased on the market at that time instead, your IRR would be even negative.[4]

10.0 Summary, Conclusions, and Recommendations

This phase of the independent audit has sought to assess the reasonableness of oil prices of the two refiners Petron and Pilipinas Shell (and also the largest players in the country) by:

a.) Comparing the trend of international benchmark crude oil (the raw material) and refined products (the finished products) prices with local pump prices of oil products.
b.) Constructing a price build-up of prices and look at whether the share going to oil companies has grown or shrunk.
c.) Looking at financial performance indicators of the major oil companies

The price data suggests that local pump prices have not gone up as fast as the price of crude abroad or the MOPS prices for diesel and unleaded gasoline. This means that oil companies' margins have probably shrunk. Statistical correlations seem to bear this out as well. Philippine pump prices simply tracked MOPS prices. A comparison of the share of the oil company take in 2007 with that in 1998 shows the same trend of a declining share of the pump price that goes to the oil company.

If oil companies have been overpricing, it should show up in higher profit rates. However, the adjusted return on equity figures for Petron and Shell do not appear extraordinary. From another perspective, that of the stock market, if an oil company like Petron had been performing very well, one would expect its stock price to have appreciated significantly too. If Petron had been significantly more profitable than other companies listed on the stock exchange, its stock should have outperformed the stock market index. However, the performance of Petron's stock price has not been outstanding. If an investor had been able to acquire a share of Petron at the IPO price of PhP 9.00 in 1994 and held it until the close of 2007, he would have only earned an IRR of 4% for the period. This already accounts for the dividends earned in between. Thus, the stock market investors do not seem to have perceived Petron as having been extraordinarily profitable.

For these reasons, in the opinion of the author, the oil prices do not seem to have been unreasonably high.[5]

[4] The author is grateful to Mr. Roel del Castillo of Technistock for providing data on Petron stock and the methodology for calculating the IRR of a share of Petron stock.
[5] The author wishes to emphasize that this is a personal opinion and does not represent any stand taken by the University of Asia & the Pacific, where he is a faculty member.

Recommendations

If oil prices are high presently, the causes are beyond our control. Since the country has very little oil production of its own, it must import all the oil it uses. Thus we are subject to the vagaries of international oil prices.

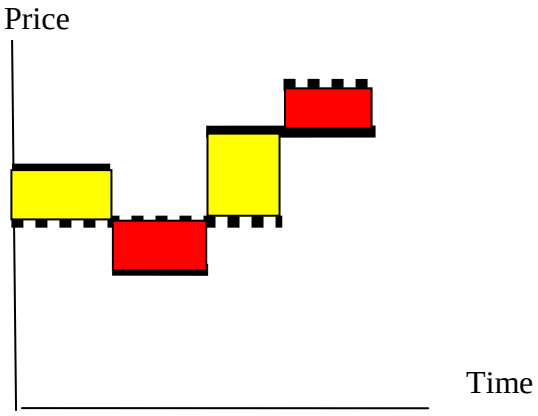
Since we cannot stop oil prices from rising, can we alleviate its effects?

Don't Subsidize

There is a natural temptation to subsidize oil prices. Even in the 2005 IRC report, the IRC strongly discouraged subsidizing oil prices. It urged instead more targeted assistance to the poorer sectors of society. Countries that have been subsidizing oil prices have felt the strain it puts on government tax coffers. Subsidizing oil prices also blunts the incentive to conserve and be more efficient in the use of oil.

There have also been calls for a return to oil price regulation, or a restoration of the Oil Price Stabilization Fund (OPSF), or both. If there is no overpricing and market prices allow oil firms to simply earn a decent return, then price regulation can only effect lower prices by pushing profits below the decent rate of return. In the long run, firms may simply leave the market and worsen the supply situation. It will also likely discourage investments and entry of new firms in the industry; possibly lessening competition. Moreover, both would run counter to the spirit of oil deregulation.

As for a buffer fund like the OPSF, neither will it result in lower prices if implemented responsibly. The objective of an OPSF, as the name suggests, is to stabilize prices, not to lower prices. In times when oil prices are lower than the regulated price, the excess of the regulated price over the cost of oil go into the fund. Then, when the cost of oil rises above the regulated oil prices, the market draws from the fund to allow it to keep the regulated price below the cost. If the latter situation persists too long, the fund will eventually run out and need to be replenished, preferably by raising the regulated price to reflect the true cost of oil, or even above it, in order to replenish the fund. This is depicted schematically in figure 12a below where the solid lines represent international prices of oil while the solid lines represent regulated prices. The yellow shaded areas represent drawdowns from the fund while the red shaded areas represent replenishment of the fund.



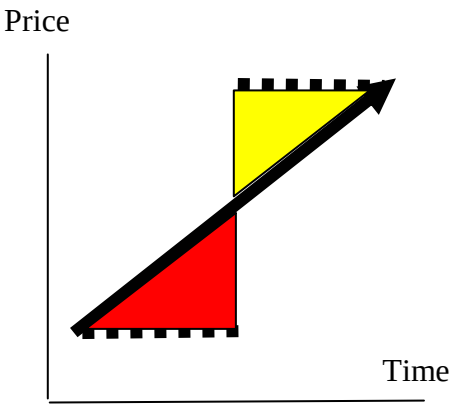


Figure 12 a **Figure 12 b**

Ironically, in a period of steady increases in oil prices such as the world is confronted with today, the upward adjustments of the regulated price in such a setting may have to be larger, or more frequent. (figure 12b) If regulatory authorities did not adjust regulated prices upwards sufficiently, then the fund would be depleted, and the government would be in debt to the oil firms. In part, this was why the OPSF ended in a deficit position when it was finally abolished. This effectively becomes a subsidy because the government would presumably pay back the deficit.

Need for Continued Research

The high oil prices of the previous energy crises have provided the incentive for the economy to shift away from oil. The economy today is much less reliant on oil for energy than it was in the 1970s. As a result, we have been less affected by high oil prices. Inflation remains relatively benign, though the appreciation of the peso has played a great role behind this. This is not to belittle the potential impact and suffering high energy prices may nevertheless bring to the poorest sectors of society.

But in crafting effective policy responses to the high energy prices, a better understanding of how oil, and energy in general, impacts the economy is necessary. How are energy price shocks transmitted through the economy? What forms of energy and what quantities are consumed by the various stakeholders in society, especially the poor? All these questions and more must be studied further to aid in drafting laws and policies to address the energy crisis. The Energy Summit last January has produced a slew of proposals that require further study to determine their likely impact and effectiveness. The Department of Energy, perhaps in partnership with academe, industry and other stakeholders, can embark on a research program to study these and other issues.

The last two recommendations are not directly related to prices. The first is not expected to have an impact on prices though the second one could, in the long run.

Listing of oil firms on the stock exchange

Perhaps the oil companies can be urged to list publicly on the local stock exchange. For the refiners, this would merely be complying with Section 22 of RA 8479, the Oil Deregulation Law; which requires oil refiners to offer at least 10% of their common stock within three years of the effectivity of RA 8479. Currently, among the oil companies involved in retailing, only Petron is listed in the stock exchange. In recent months' business news however, newcomer Seaoil has announced that it is planning an initial public offering of its shares.

Listing on the stock market democratizes the ownership of a firm and brings a measure of added transparency. It is true that the firms already regularly submit their financial statements to the Security and Exchange Commission as required by law. But listing would also subject the firms' financials as well as their operating decisions, to the scrutiny of the investing public, who can literally vote with their money. Through periodic stockholders' meetings for example, the firm will have to answer to the stockholders for their performance and strategies taken. If the firm's financial performance is not satisfactory, their stock price would also fall as investors would shy away from investing in the company's stock.

A broader ownership base of the company also means that if a listed oil firm were to actually make exorbitant profits, then the benefits would be shared with the stockholders through dividends or stock price appreciation.

However, if the oil companies are not earning attractive profits, then if they list on the stock market, the stock prices they fetch may not be that high. The case of Petron stock considered above may be an example of this.

Need for a Competition Law/Policy and Enforcement Agency

Lastly, this study itself underscores that the time is ripe for the Philippines to enact a competition policy that would also set up an enforcement agency, a Philippine counterpart of the Department of Justice and Federal Trade Commission of the US, the Australian Competition and Consumer Commission, or the Japan Fair Trade Commission, to name a few.

The very nature of this study's inquiry is normally the province of competition authorities such as those enumerated above. Competition policy and law redounds to lower prices in the long run by preventing the abuse of market power and the promotion of more competitive market environments. Many countries also entrust their competition authorities with consumer protection.

This does not mean that merely passing such a law and setting up a competition authority would guarantee lower prices or the elimination of cartels. It will be a long hard road as such an agency would have to build up its expertise and experience in handling antitrust type cases. But we should at least get started.

Annex: IRR computation for Petron Stock

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Stock dividends [a]		25%	25%	20%										
No. of shares [b]	1	1.25	1.5625	1.875	1.875	1.875	1.875	1.875	1.875	1.875	1.875	1.875	1.875	1.875
Cash dividends (PhP/share)[c]		0.3	0.3	0.3		0.2			0.15	0.2	0.2	0.1	0.1	0.1
Cash dividend equivalent [d]		0.3	0.3750	0.4688	-	0.3750	-	-	0.2813	0.3750	0.3750	0.1875	0.1875	0.1875

The IPO price of Petron was PhP 9 per share in 1994. The price of a share of Petron at the close of trading in 2007 was PhP 5.70 per share. Suppose a share of stock was purchased at the IPO price in 1994 and sold at the end of 2007 for PhP5.70, the IRR of the resulting income flow (including the last row or 'Cash dividend equivalent') is about 4%.

Notes

[a] Stock dividends are quoted as the percent of a share each share receives; e.g. 25% means one share of stock receives an additional 25% of a share. Thus one share in 1994 becomes 1.25 shares.

[b] Assume one share purchased in 1994. Succeeding number of shares reflect the total number of shares including subsequent stock dividends received.

[c] Cash dividends are declared as amount of pesos per share; e.g. 0.3 means each share receives PhP 0.30.

[d] 'Cash dividend equivalent' represents the estimated amount that would be received in a particular year adjusted for the accumulated stock dividends received. For example, in 1996, the cash dividend received would have been PhP 0.3750 = 0.3 x 1.25 shares that the investor would have owned in the prior period.