

Auto-fuel Price Monitoring Analysis 2020

21 May 2020

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Background

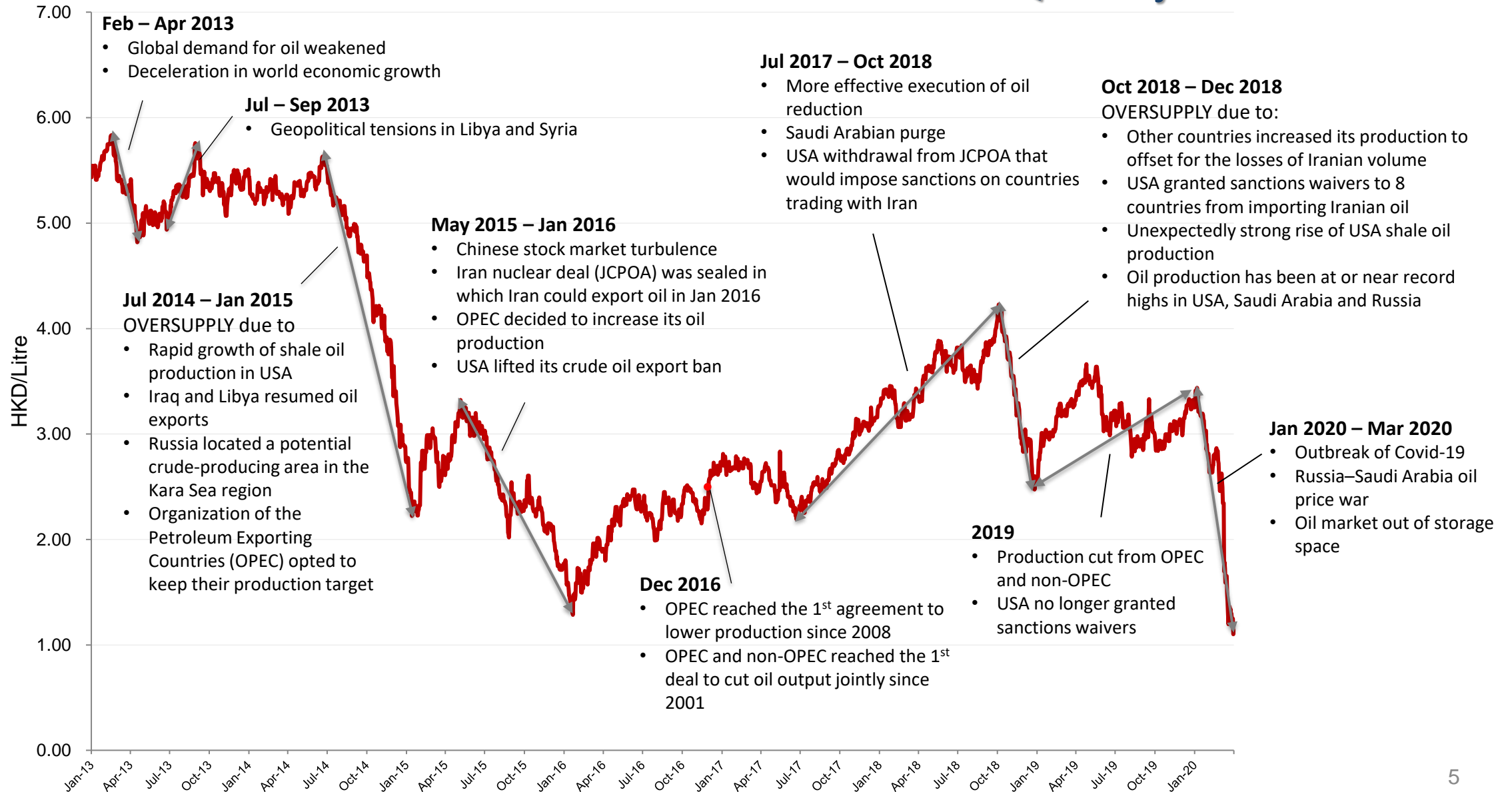
- **Price monitoring function** empowered in the Consumer Council Ordinance, Cap. 216
- Previous auto-fuel price monitoring analyses in 2015 and 2016
- **Public concerns** of the recent drastic decline in the international crude oil prices but not an obvious reduction in local retail auto-fuel prices

Methodology and Limitations of the Analysis

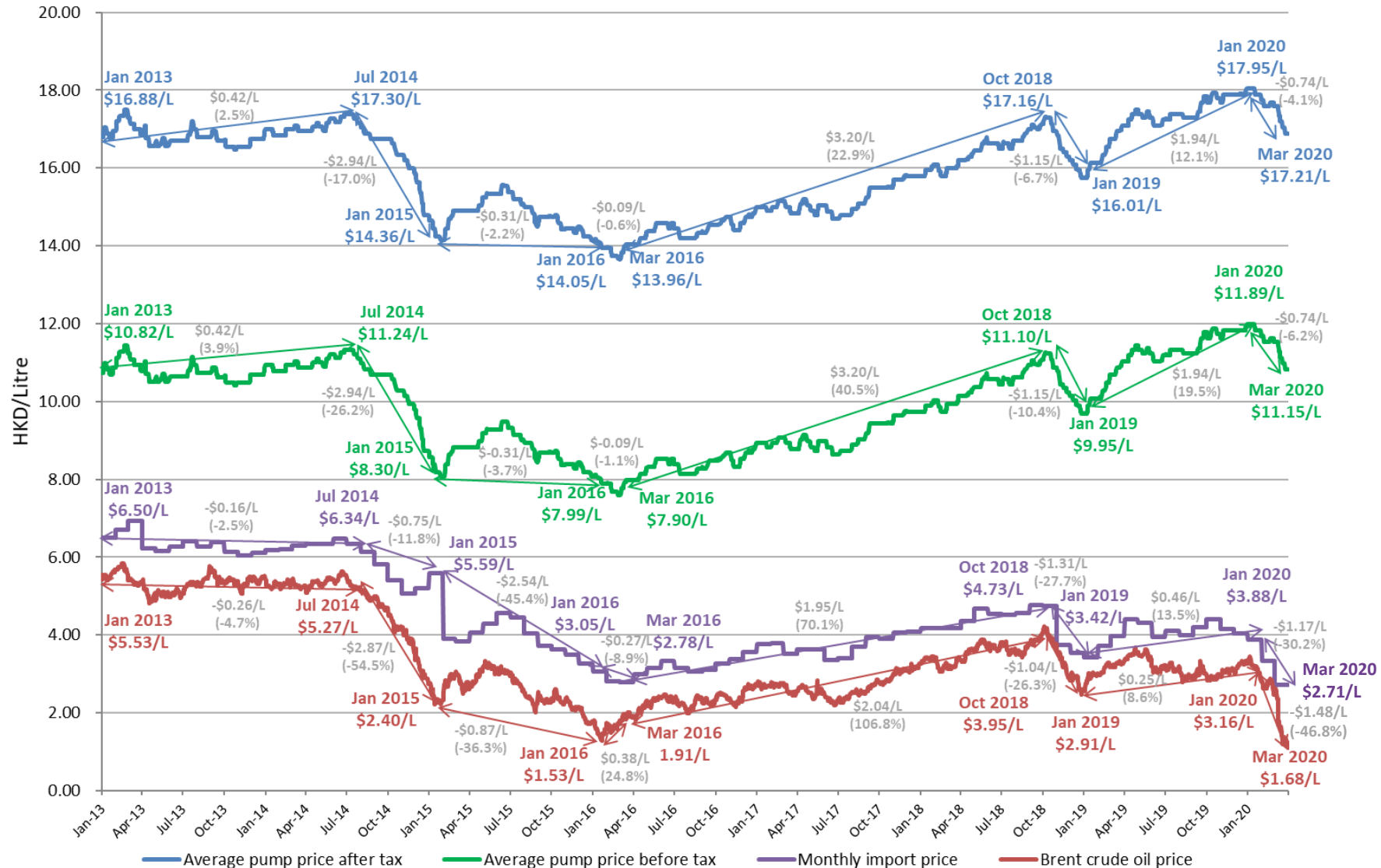
- Data
 - Daily pump price and discount information of standard petrol in the Council's Oil Price Database (web:www.consumer.org.hk/pricewatch/oilwatch/index.php and apps)
 - Daily Brent crude oil price collected from the newspapers
 - Monthly import price data of local unleaded motor gasoline from the Census and Statistics Department and the statistical month is two-month lagged
 - No access to the Singapore MOPS price data and its use is legally bound
- Analysis
 - Average approach to pump price and discount levels of oil companies*
 - Price gap is calculated as the gap between Brent crude oil price, import price and standard petrol pump price for the time period from 2013 to 2020 Q1
 - Based on standard petrol price since the correlation coefficient between standard petrol price and premium petrol price is significantly related
 - Days of significant daily % change in the Brent crude oil price are defined as days that the accumulated value is larger than or equal to 2% in at least 3 consecutive days

* Caltex, Esso, PetroChina, Shell and Sinopec

Brent Crude Oil Price Trend from 2013 to 2020 Q1 – Major Incidents*

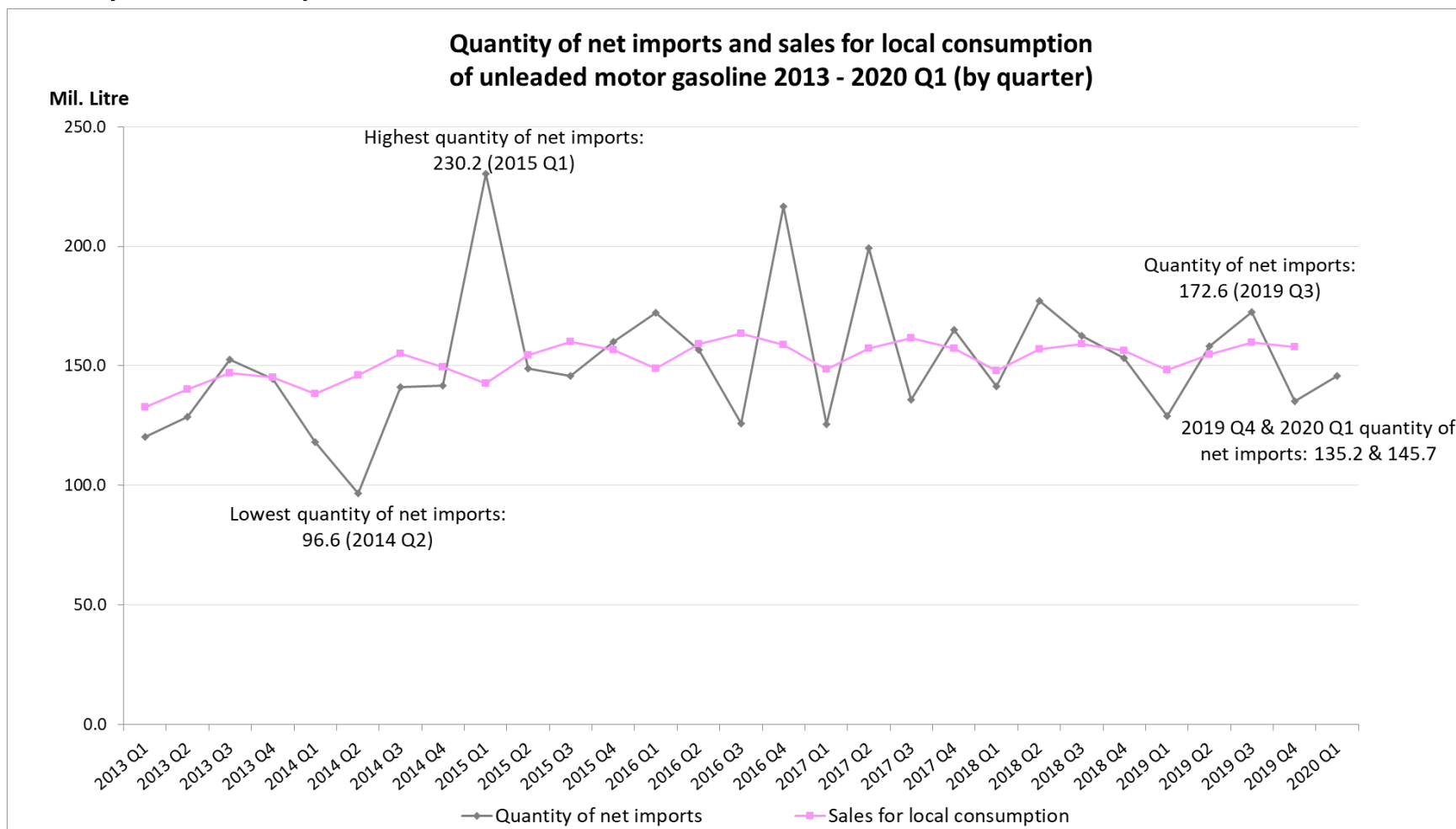


Hong Kong Auto-fuel Price – At a glance, change in local pump price is fairly in line with that of Brent Crude Oil Price and Monthly Import Price



No Significant Change of Local Sales of Unleaded Motor Gasoline

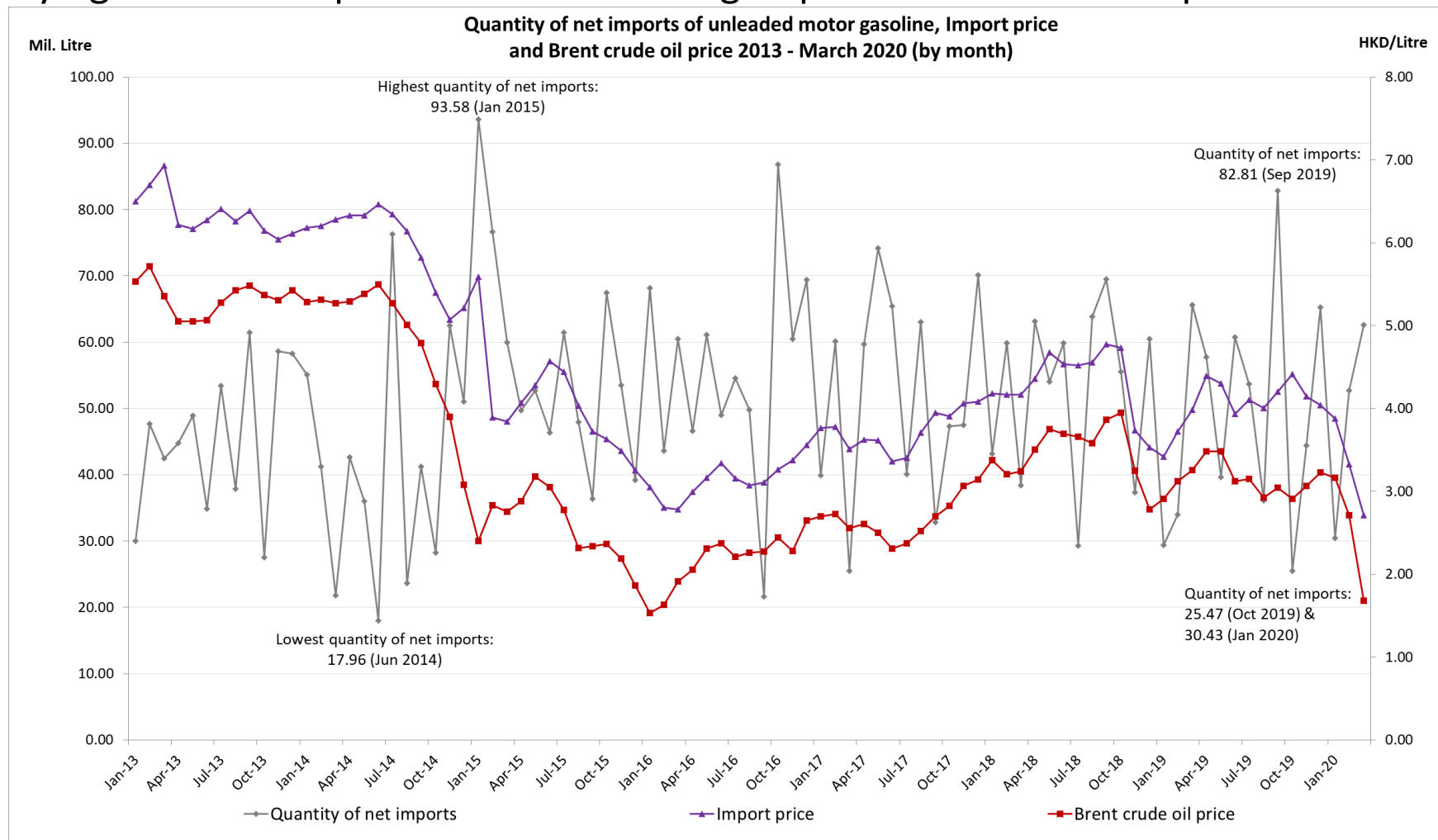
- Over the years, sales for local consumption* is stable, ranging from 132.6 to 163.4 million litres every quarter
- But quantity of net imports varies over time



*Sales for local consumption of unleaded motor gasoline of 2020 Q1 is not available at the time when preparing this analysis.

Quantity of Net Imports Have an Inverse Relationship with Import Price

- Overall trend is when import price increases, the quantity of import decreases; or vice versa, signifying that oil companies are also striving to procure oil when the price is lower



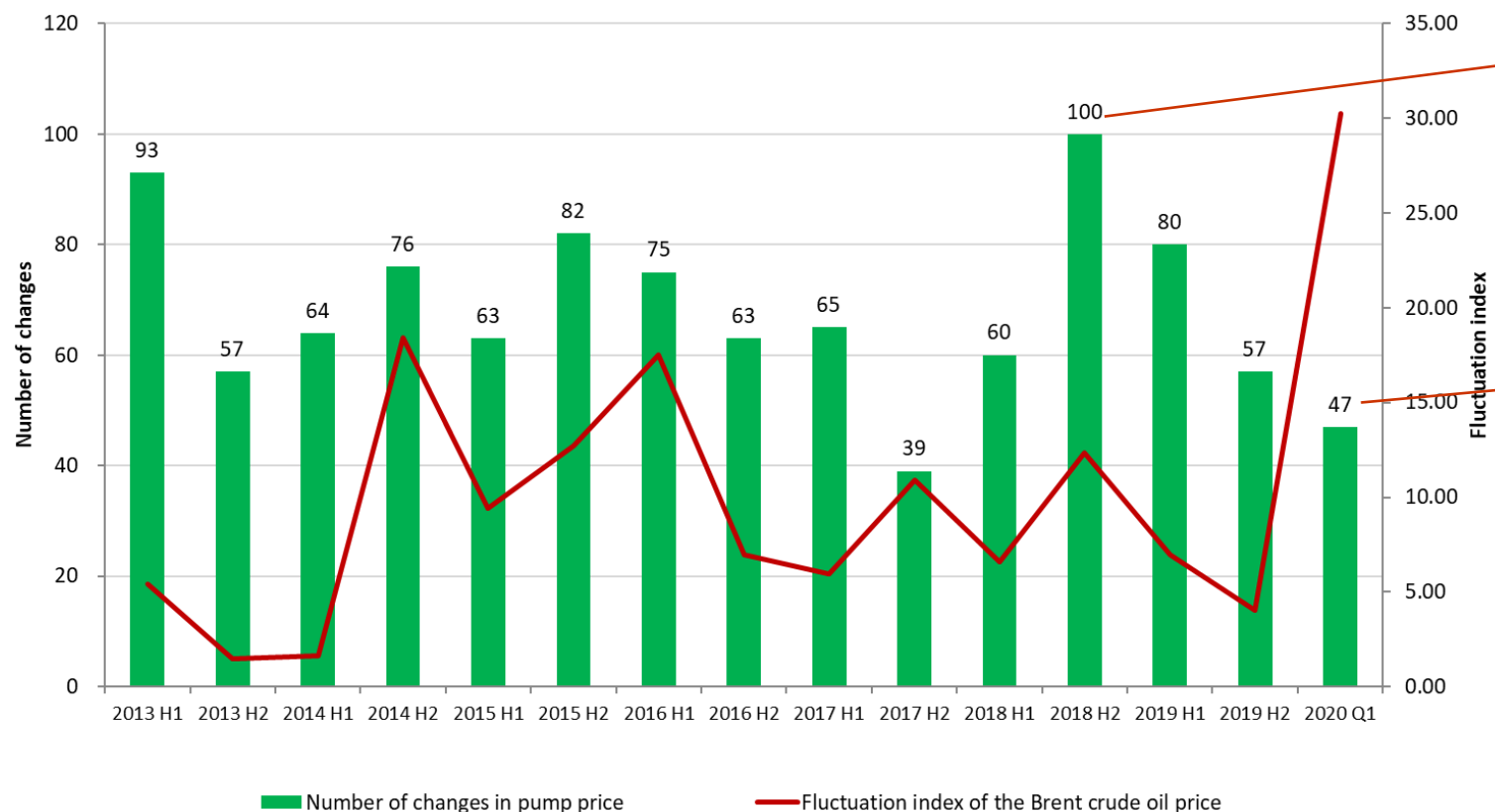
*The coefficient value = -2.92, p value <0.05

Analysis on Price Adjustment Practices – Timing And Magnitude

Timing - Frequency of Price Adjustment from 2013 to 2020 Q1

- The frequency of pump price adjustment in general is related[^] to the frequency with which Brent crude oil price varies
- From 2013 to 2016 H1, when pump price adjusted more frequent, a higher fluctuation index of the Brent crude oil price in general is recorded; however, such pattern was not observed from 2016 H2 onwards

The monthly number of changes in the pump price of standard petrol and the monthly fluctuation index* of the Brent crude oil price (2013 - 2020 Q1)



In 2018 H2, there was an occasion that 3 companies increased pump price from \$16.99 to \$17.19, then decreased back from \$17.19 to \$16.99 within 6 days

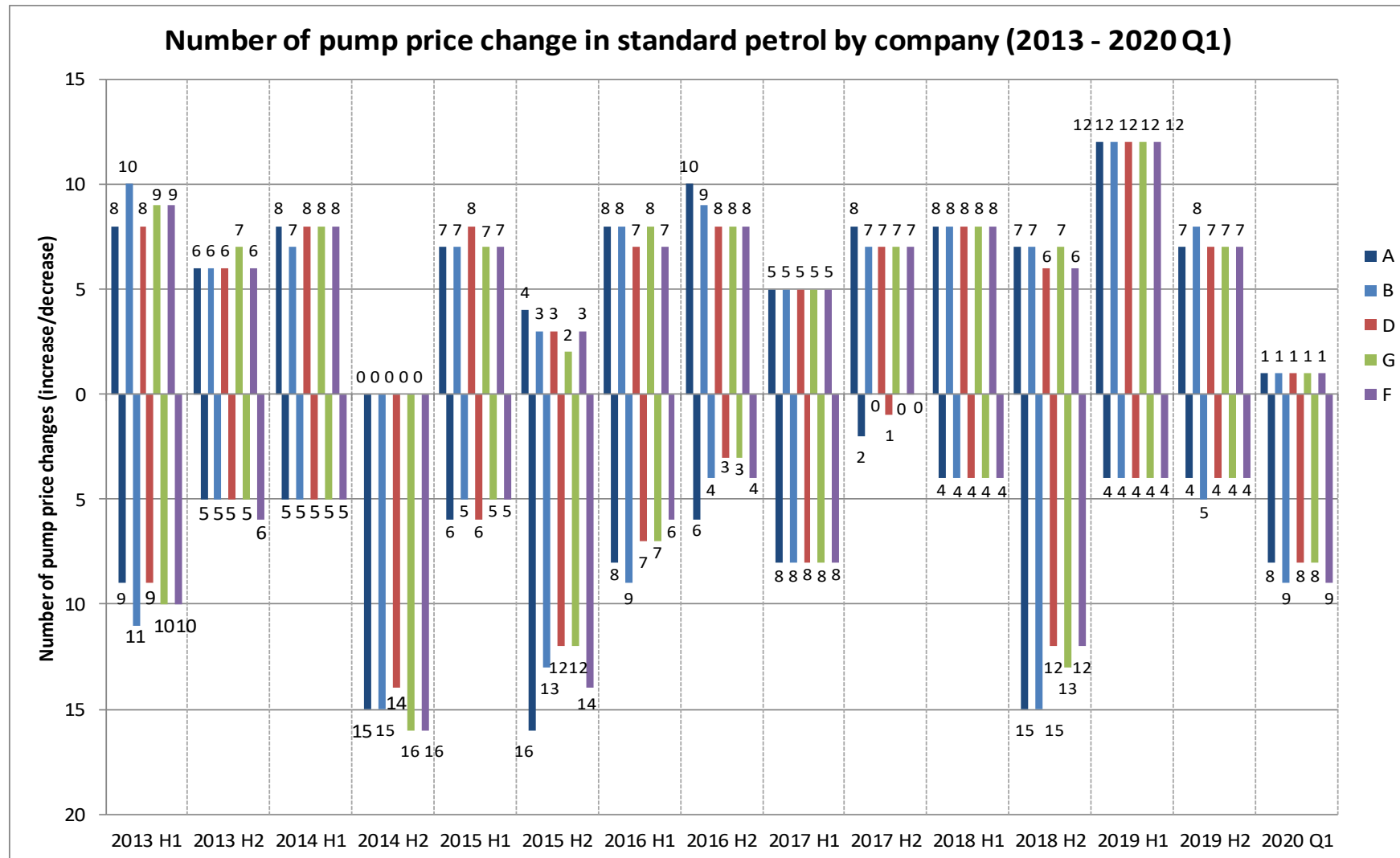
In 2020 Q1, 3 companies decreased pump price from \$17.59 to \$17.34 directly, while 2 companies decreased their price in 2 times - from \$17.59 to \$17.49 first, then further decreased from \$17.49 to \$17.34 within 2 days.

* Fluctuation index equals to the coefficient of variation (standard deviation divided by the average)

[^] The significance of number of changes in pump price and fluctuation index of the Brent crude oil price (p value) <0.05

Frequency of Price Adjustment from 2013 to 2020 Q1 (by Company)

- Price adjustment pattern of the five oil companies is similar



Sign of Quick Going Up, Slow Coming Down?

- Time Lag effect: Analysis on responsiveness of the daily pump price to changes in the Brent crude oil price
- Increase: Significant relationship between the rise in the Brent crude oil price and the subsequent rise in pump price in 2015 H1 (7 days), 2019 H1 (5 days) and 2019 H2 (1-2/7-8 days)
- Decrease: Significant relationship between the fall in the Brent crude oil price and the subsequent fall in pump price in 2014 H2 (8 days), 2015 H2 (1/7days) and 2016 H2 (9 days)
- Seems no sign of “quick going up, slow coming down” in recent years

Period	Days interval between change in the Brent crude oil price and average pump price*	
	Increase	Decrease
2013 H1	NIL	
2013 H2	NIL	
2014 H1	NIL	
2014 H2	N/A	8 days
2015 H1	7 days	NIL
2015 H2	NIL	1/7 days
2016 H1	NIL	
2016 H2	NIL	9 days
2017 H1	NIL	
2017 H2	NIL	
2018 H1	NIL	
2018 H2	NIL	
2019 H1	5 days	NIL
2019 H2	1-2/7-8 days	NIL
2020 Q1	NIL	

Remarks:

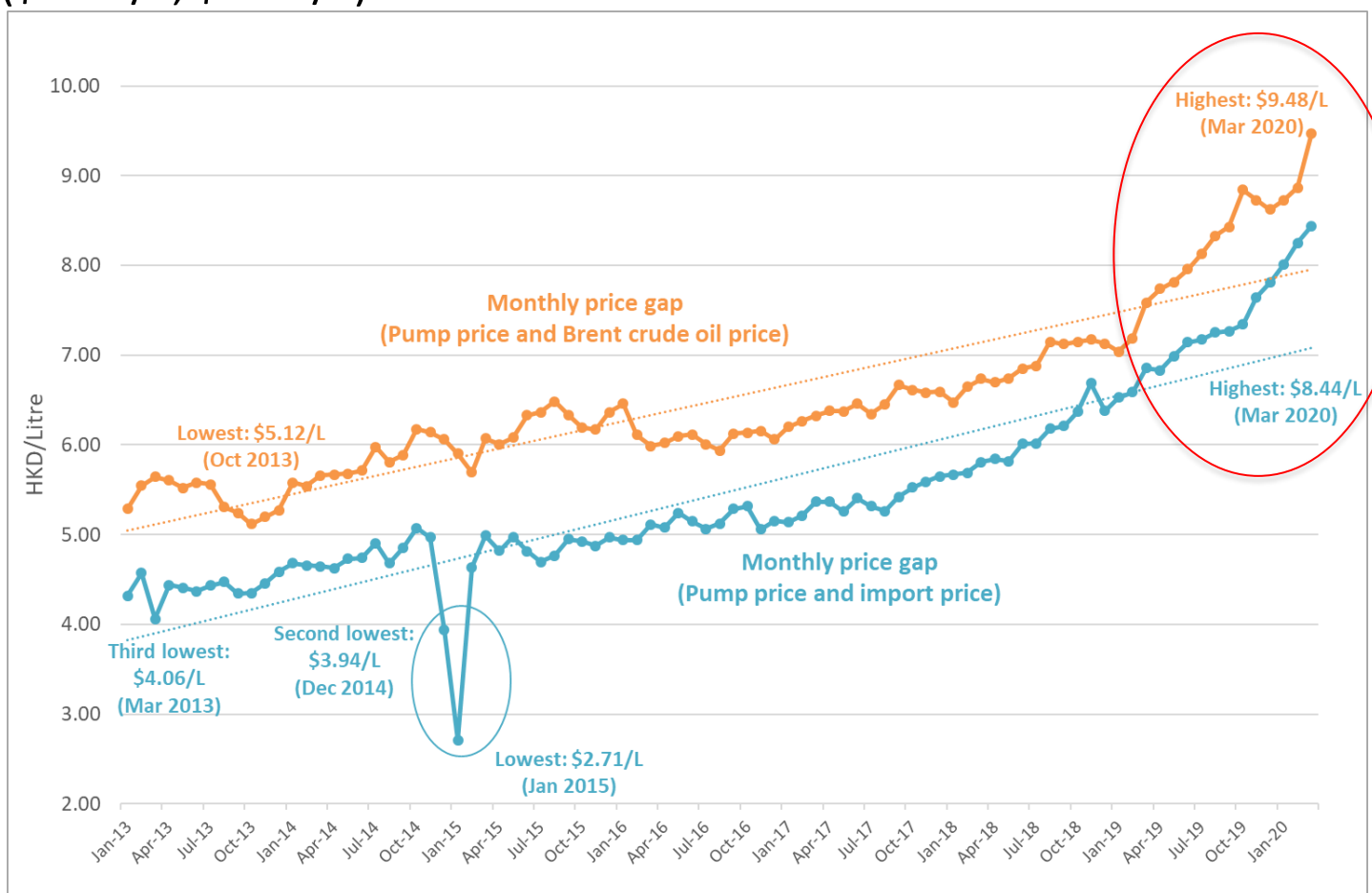
* Results of the current analysis in certain periods might not be the same as the results in 2015 and 2016 because the current analysis covers the period from 2013 to 2020 Q1 and the data relationship might be changed over a longer period of time and with a larger data set.

NIL denotes an absence of any statistical significance in the lag effect.

N/A denotes no increase in pump price of regular gasoline.

Magnitude – Increasing Price Gaps from 2013 to 2020 Q1

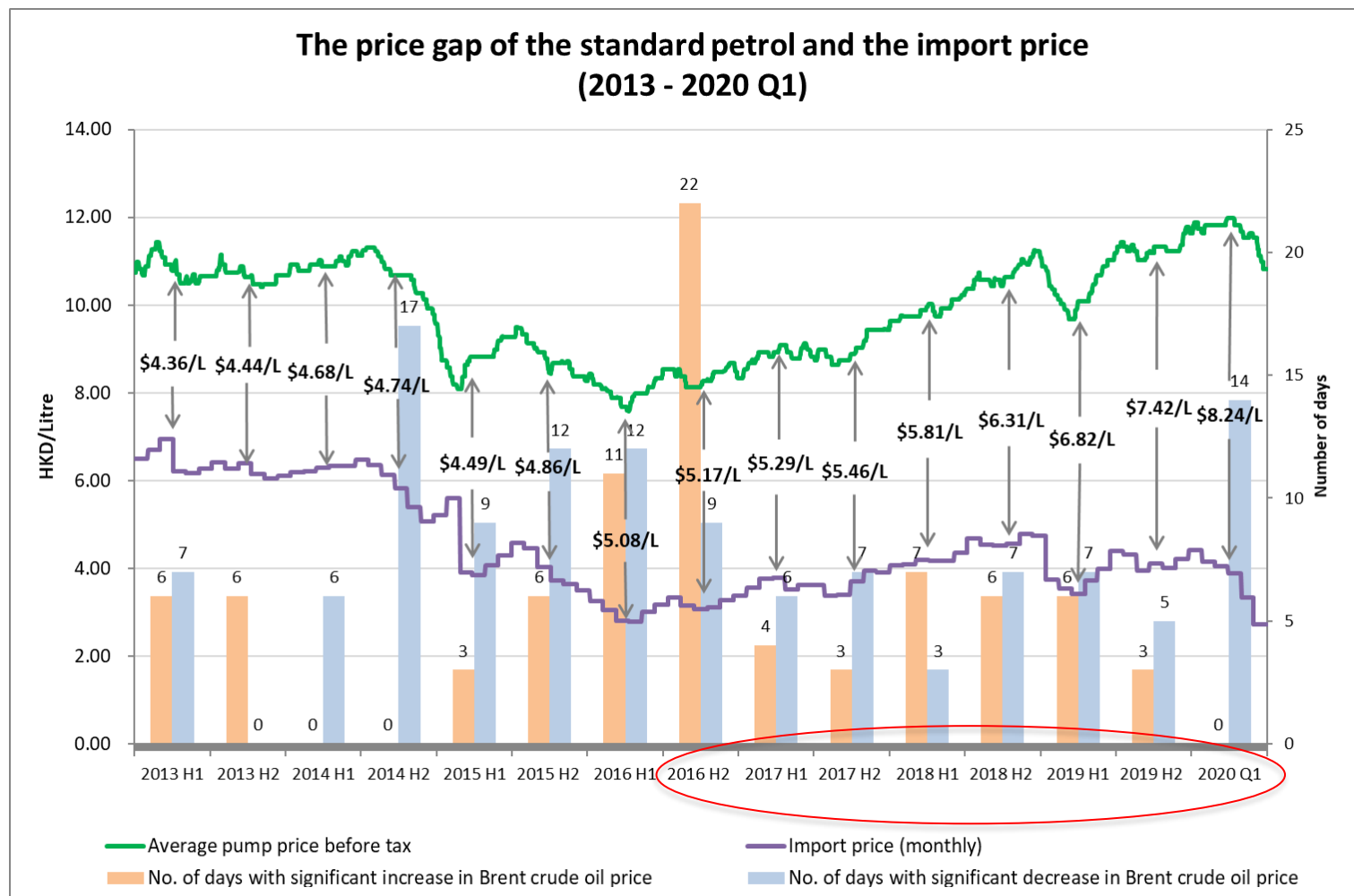
- The **price gap** between pump price and Brent crude oil price raised from \$5.12/L to \$9.48/L (+ 85.2%)
- The **price gap** between pump price and import price is recorded from \$4.06/L to \$8.44/L (+ 107.9%)
- The highest gaps (\$9.48/L, \$8.44/L) are both recorded in March 2020



As reported previously, 2015 Q1 is an outlier because an exceptionally high import price was recorded in Dec 2014 – Jan 2015, leading to a sharp decline in price gap between pump price and import price. As remarked by the Census and Statistics Department: “Figures for the statistical months of Dec 2014 and Jan 2015 include also declarations of earlier months ... Given the volatility of international oil prices since mid-2014, the higher oil prices (import prices) in earlier months had larger impact on figures for the statistical months of Dec 2014 and Jan 2015.”

Price Gaps between Import Price and Pump Price are Widened

- Before 2016 H2, when there was a relatively stable Brent crude oil price, the spread was also stable; when there was a significant increase/decrease in Brent crude oil price, the spread widened
- After 2016 H2, even when there was a relatively stable Brent crude oil price, the spread still continued to widen



Brent Crude Oil Price, Import Price and Average Pump Price Before Tax At Different Periods

- Although the Brent crude oil price in “March 2020” returned to almost the same price level in the period of “January/March 2016”, so as the import price, the average pump price before tax in March 2020 is **\$3** higher than that in January/March 2016

HK\$/L	Jan-2013	Jul-2014	Jan-2015	Jan-2016	Mar-2016	Oct-2018	Jan-2019	Jan-2020	Mar-2020
Brent crude oil price	\$5.53	\$5.27	\$2.40	\$1.53	\$1.91	\$3.95	\$2.91	\$3.16	\$1.68
Import price	\$6.50	\$6.34	\$5.59	\$3.05	\$2.78	\$4.73	\$3.42	\$3.88	\$2.71
Average pump price (before tax at HK\$6.06/L)	\$10.82	\$11.24	\$8.30	\$7.99	\$7.90	\$11.10	\$9.95	\$11.89	\$11.15

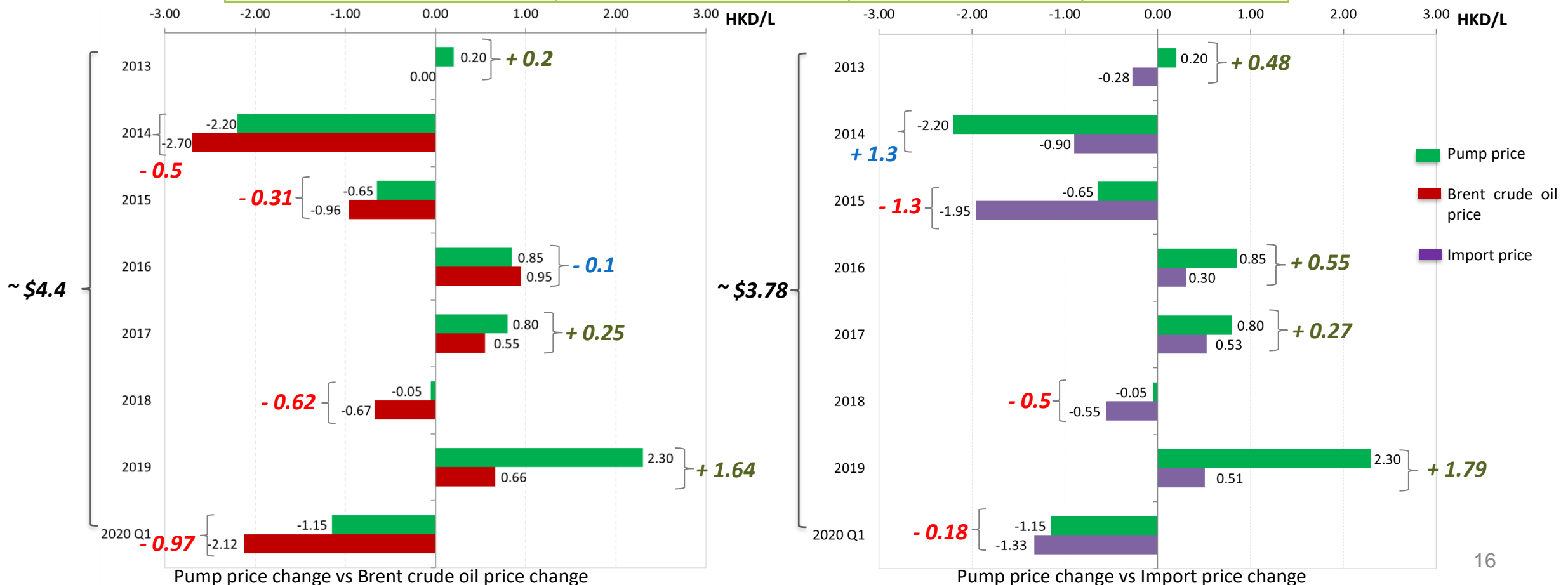

\$3 more

Tax not changed, what are the key factors attributed for the extra \$3/L? Inflation? Operating cost? Station land cost?

Sign of More Going Up, Less Coming Down?

- While the daily cumulative changes of Brent crude oil price and import price dropped by -\$4.3/L and -\$3.68/L, that of pump price raised by \$0.1/L.
- Except 2014, all years demonstrated a clear sign of “more going up, less coming down”.

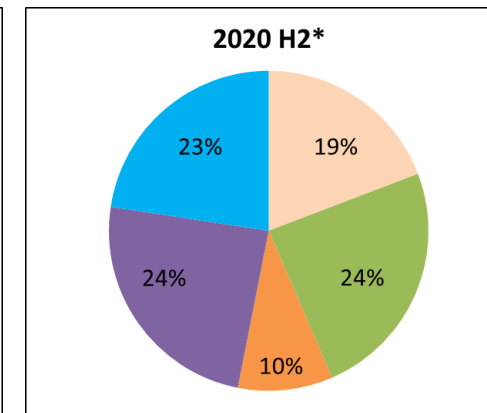
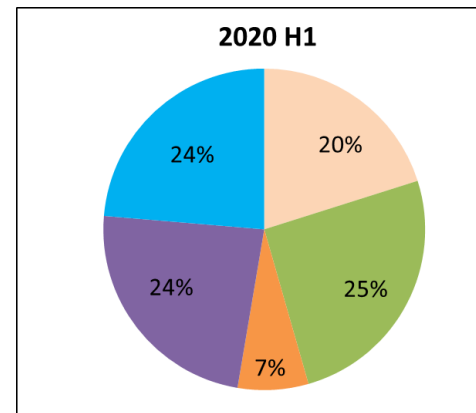
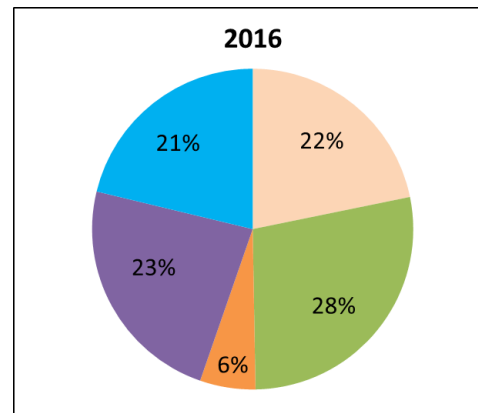
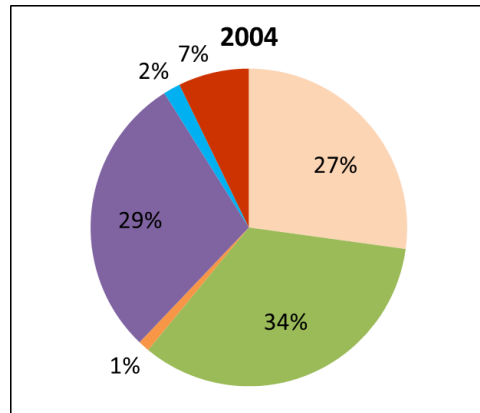
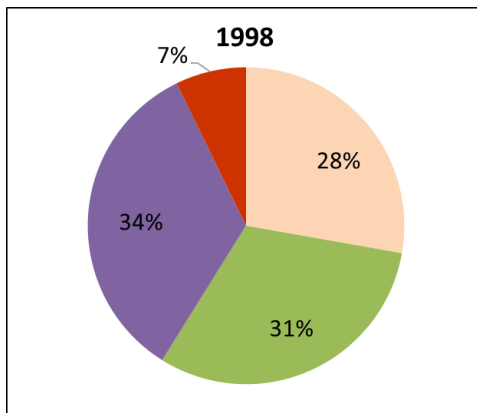
2013 2014 : 2020 Q1	Brent crude oil price change (HKD/L)	Import oil price change (HKD/L)	Pump price change (HKD/L)
Daily cumulative change	- 4.3	- 3.68	0.1



Market Competition

Change in Market Share by No. of Petrol Filling Station (PFS) Sites

- Market share of 3 oil companies (Caltex, Esso and Shell) dropped from 93% in 1998 to 67% in 2020 H2



Changes in number of PFS sites by each oil company from 1998 to 2020 H2

	Caltex	Esso**	Petrochina	Shell	Sinopec	Others***	Overall
1998	50	56	-	61	-	13	180
2004	47	59	2	50	3	12	173
2016	39	50	10	42	38	-	179
2020 H1	34	43	12	40	40	-	169
2020 H2*	34	43	17	43	40	-	177

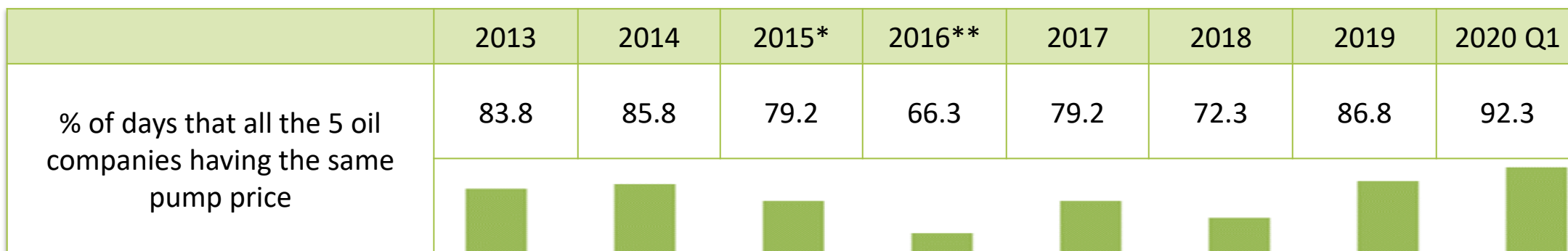
*In 2020 H2, 3 new Shell stations and 5 new Petrochina stations are expected to start operation

** Including Feoso stations

*** Including Concord and CRC stations

Conformity in Pump Prices Stills

- The number of days the 5 oil companies having identical pump prices was reduced in 2015 and 2016
- However, the level of conformity in pump price increased since then, and in 2020 Q1 the highest 92.3% was recorded
- Among them, generally Company B and Company D were being the first one to adjust the pump price



Oil Company	The Percentage Share of Being the First One to Adjust Pump Price***									
	2018 H1		2018 H2		2019 H1		2019 H2		2020 Q1	
	+	-	+	-	+	-	+	-	+	-
A	25%	-	43%	6.7%	42%	25%	25%	16.7%	-	11%
B	75%	50%	57%	20%	33%	25%	50%	16.7%	-	22%
D	-	50%	-	46.6%	25%	50%	25%	66.6%	100%	67%
G	-	-	-	-	-	-	-	-	-	-
F	-	-	-	26.7%	-	-	-	-	-	-

*In February 2015, the Council released its findings of Auto-fuel Price Monitoring Analysis

** In June 2016, the Council released a report of Auto-fuel Price Monitoring Analysis 2016

*** Based on the information collected by the Council and published on "Oil Price Calculator"

Increase in Walk-in Discounts Doesn't Mean a Lower Price

- From 2016 to 2020 Q1, the average amounts of walk-in discounts of the 5 oil companies were increasing
- However, in absolute dollar, consumers still had to pay more to purchase every litre of standard petrol

Oil Company	Period	Average Pump Price (per Litre)	Average Walk-in Discount (per Litre)	Average Price that Consumers paid (per Litre)
A	2020 Q1	\$17.60	\$1.12	\$16.48
	2018	\$16.47	\$0.94	\$15.53
	2016	\$14.34	\$0.9	\$13.44
B	2020 Q1	\$17.60	\$1.15	\$16.45
	2018	\$16.46	\$1	\$15.46
	2016	\$14.33	\$0.95	\$13.38
D	2020 Q1	\$17.61	\$1.76	\$15.85
	2018	\$16.44	\$1.48	\$14.96
	2016	\$14.32	\$1.06	\$13.26
G	2020 Q1	\$17.60	\$1.5	\$16.10
	2018	\$16.45	\$0.9	\$15.55
	2016	\$14.31	\$0.8	\$13.51
F	2020 Q1	\$17.60	\$2.39	\$15.21
	2018	\$16.43	\$2.01	\$14.42
	2016	\$14.31	\$1.6	\$12.71

Complexity of Multitudinous Discount Types

- Difficulties encountered by consumers
 - To get aware of all the discount and promotional on offer, particularly time-limited or “flash” offers
 - To identify the best cost-saving among the various discount and promotional offers
 - To know the combination of discounts which varies by different oil companies
 - To understand the complicated terms and conditions



Complexity of Multitudinous Discount Types (Cont'd)

Examples

Assuming regular gasoline pump price is \$17.59/L and choosing one discount out of the different offers

	Company X		Company Y	
	Fuel up \$300 of regular gasoline		Fuel up \$400 of regular gasoline	
Discount type	Discount Offer	Actual Paid Price (per Litre)	Discount Offer	Actual Paid Price (per Litre)
Walk-in discount	-\$1.5/L	\$16.09 (\$17.59 - \$1.5)	-	-
Walk-in discount with membership / discount card	Spending \$300 (Discounted) or above will enjoy - \$3.2/L	\$14.39 (\$17.59 - \$3.2)	-\$0.9/L	\$16.69 (\$17.59 - \$0.9)
Credit card	8%	\$16.18 (\$17.59 x (1-0.08))	-\$0.9/L	\$16.69 (\$17.59 - \$0.9)
Petrol coupon	Spending \$300 or above will have free \$60	\$14.66 (\$300 / \$360 x \$17.59)	Spending \$400 or above will have free \$50	\$15.64 (\$400 / \$450 x \$17.59)

Most cost-saving option

Most cost-saving option

Consumer Complaint Cases

Case 1 – Complications of terms and conditions

- Complainant purchased petrol coupon which was claimed “**Deduction of \$300 when fueling up \$400 of petrol**”
- When the complainant used the petrol coupon, oil company staff explained that the petrol coupon referred to “pay \$300 and get \$400 of petrol” and the customer can’t enjoy walk-in discount simultaneously
- The complainant only got \$100 discount by using the petrol coupon
- The actual payment of same volume petrol by using petrol coupon was more expensive than using walk-in discount

Case 2 – Confusion about different explanations given at different stations

- Complainant called the oil company staff in different oil stations about the **special discount** at \$2.5/L on a certain of the week, one said the special discount was not valid anymore and another discount would be offered after 10 pm; one said the special discount was still valid at its oil station
- Then the complainant refilled his car at the second oil station
- When he received the payment slip after fueling up, the actual discount was \$0.9/L
- The complainant was confused about the different explanation at different oil stations and thought he was misled by the staff

Conclusion

- Hong Kong is a stable market in sales of auto-fuel for local consumption.
- Import statistics suggest that oil companies procure oil when the prices are lower.
- In general, the frequency of local pump price adjustments is related to the frequency of international oil price adjustments, and the adjustment pattern of all oil companies is similar.
- No obvious sign of “quick going up, slow coming down” but a clear sign of “more going up, less coming down”.
- The pump price gap with Brent crude oil price and import price widened by almost one fold in 7 years, even after 2016 when the Brent crude oil price was relatively stable. **Question: What caused the significant increase in pump price?**
- A high level of conformity of pump prices despite new entrants entered the market since mid-2000.
- The multitudinous discount types offered by the oil companies are complicated and highly confusing. In absolute dollar, consumers still have to pay more to purchase every litre of auto-fuel.

Recommendations

Objective: To enhance transparency in market information to allow greater public scrutiny of auto-fuel price fluctuations and the ultimate impact on consumers.

Consumers

- On-going comparison on price and different offers in order to capture and enjoy the most economical one

Oil Companies

- Direct reduction of the pump price to make it more straightforward, simple and beneficial to consumers
- Increase transparency by disclosing more cost and sales information

Government

- Conduct regulatory review and enhance oversight of the market*
- Disclose more frequent and more detailed import oil price information
- Consider empowering the Competition Commission to investigate the market

* In the Council's 2014 Report on Study of Hong Kong Electricity Market, the Council saw the necessary formation of a full-fledged energy sector regulator to meet the future challenge of competing objectives of the Hong Kong Government's energy policy.