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Second Quarter 2019
April – June

Higher Crude prices and Rebounding Gasoline Refining Margins Helped Drive Gasoline Prices to an Eight-Month High

Higher Crude prices early in second quarter were also responsible for higher diesel prices despite declining diesel refining margins. As crude prices narrowed during the latter part of the quarter, both gasoline and diesel prices contracted.

Global crude prices were pushed higher early in the second quarter amidst perceived risks to global crude supplies, as the U.S. reinstated Iranian crude waiver sanctions and uncertainty around Venezuelan crude production arising from political unrest in the country. Heightened geopolitical risk in the Middle East from tanker attacks also added to supply concerns. Conversely, escalating trade war fears between China and the U.S caused crude prices to trend lower later in the quarter.

North American gasoline refining margins returned from first quarter lows to seasonal norms in the second quarter, as increased demand further reduced inventories already stressed from an unusually long spring refinery maintenance period. Combined with higher crude prices early in the quarter, gasoline prices reached their highest level of the year mid-quarter. As refineries came back online and crude prices fell, retail gasoline prices dropped, ending the quarter nearly fifteen cents per litre lower than a year ago.

Flooding in the U.S. Midwest delayed the start to the agricultural season, reducing North American distillate demand early in the quarter. Consequently, second quarter diesel refining margins averaged below levels from a year ago, erasing any crude-driven increases to retail prices. **Figures 1 & 2** show the historical movement of retail gasoline and diesel prices in Canada along with their component prices.

Figure 1: Canadian Average Regular Gasoline and Component Prices

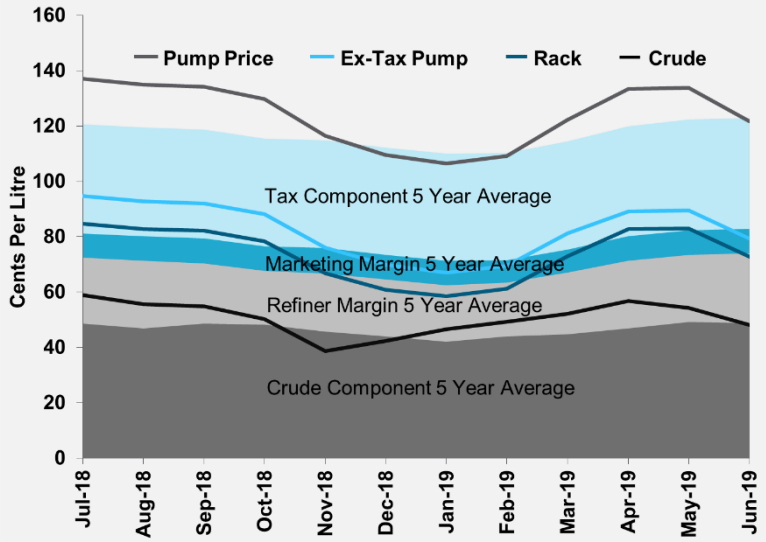
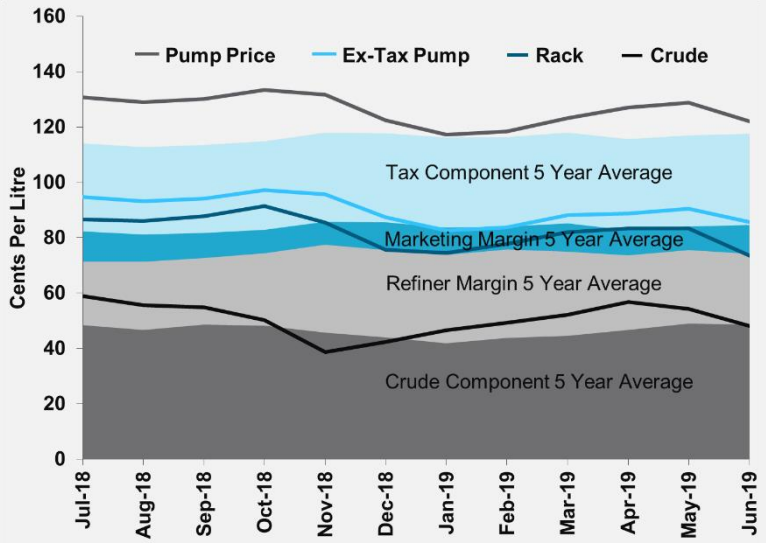


Figure 2: Canadian Average Diesel and Component Prices



After peaking in April, crude prices declined over most of the remainder of second quarter. Brent crude, a global benchmark, reached as high as 74.65 $US/BBL before dropping to end the quarter at 65.08 $US/BBL, 4.0 percent lower than the end of the previous quarter. The key North American WTI benchmark saw similar movement, peaking in April at 66.27 $US/BBL, before ending the quarter at 58.69 $US/BBL, 2.6 percent below the end of the previous quarter. Brent's premium to WTI peaked near the end of May at 12.14 $US/BBL with Russian pipeline contamination issues limiting supply in Europe. Flooding in the US Midwest prolonged refinery maintenance, resulting in expanded crude supplies at Cushing OK, the main North American storage hub. As these issues diminished, the premium declined, reaching 6.39 $US/BBL, 1.2 $US/BBL below the end of last quarter.

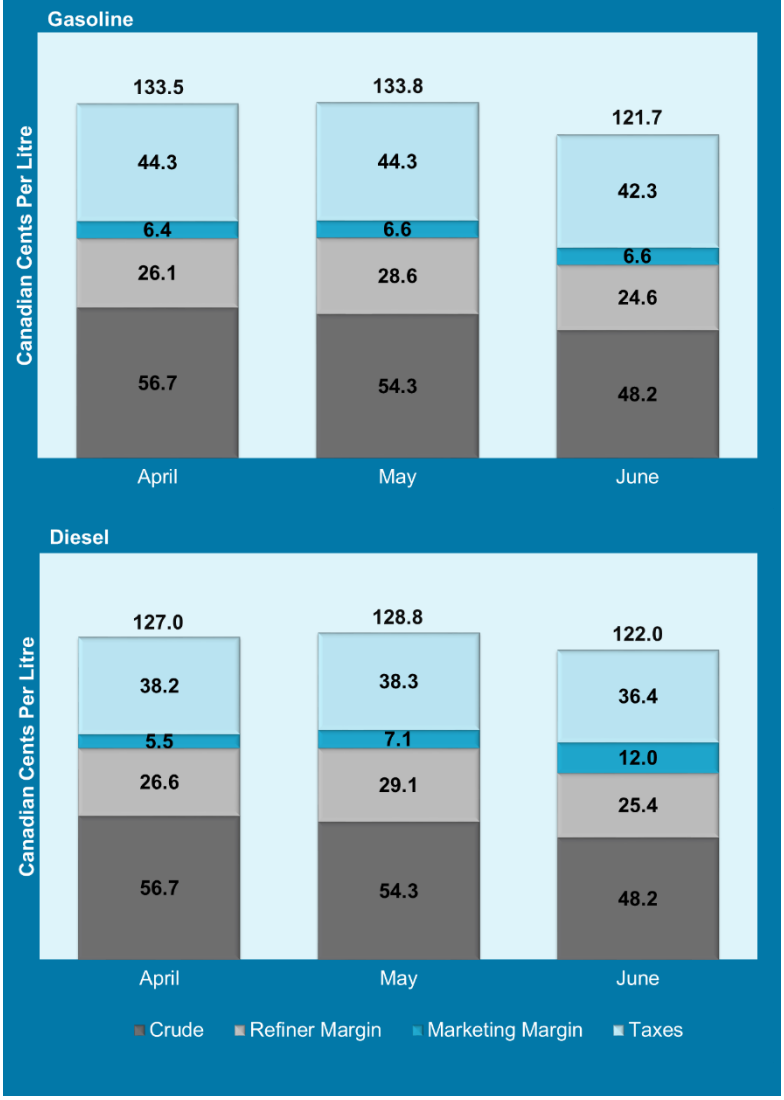
The spread between WTI and the Western Canadian Select (WCS), heavy crude benchmark increased over much of second quarter since narrowing with the Alberta government's crude oil production restrictions earlier in 2019. A prolonged refinery maintenance period in the U.S.

Midwest this past spring and the Alberta government's decision to increase production limits allowed heavy oil inventories to build, and consequently, the heavy/light crude differential increased. After beginning the quarter at 8.26 $US/BBL, the WCS price differential to WTI reached as high as 18.72 $US/BBL mid-May, before ending the quarter at 13.50 $US/BBL as Midwest refinery utilization returned.

Gasoline and Diesel Market Overview

Increased crude prices and gasoline refining margins pushed retail gasoline prices to an eight-month high in May. In June, crude prices declined and refining margins narrowed, allowing retail prices to drop significantly, a trend uncharacteristic for late spring when gasoline demand typically rises as the summer driving season begins.

Figure 3: Canadian Average Gasoline and Diesel Price Components for 2nd Quarter 2019



Regionally, higher wholesale prices on Canada's West Coast, driven by refinery issues south of the border, limited alternate supply options due to geographical isolation from the rest of the country. This resulted in record-breaking retail gasoline prices in this region. West Coast wholesale gasoline prices averaged nearly thirty cents per litre higher than those in the East Coast in May, before retreating by nearly twenty cents per litre in June as supply issues subsided.

Diesel refining margins declined from the previous quarter as demand declined at the end of the home heating season, and with a delayed start to the agricultural season. Lower refining margins and dropping crude prices led to lower diesel retail prices; diesel retail margins expanded in June however, as retailers were slow to react to falling wholesale prices.

Much like gasoline, West Coast wholesale prices were pushed higher upon supply issues in the area, averaging nearly seven cents per litre above diesel wholesale prices along the East Coast this last quarter. Ontario diesel wholesale prices have averaged lowest in Canada throughout 2019, an indication of supply outpacing demand in the region. (**Figure 3**)

Next Quarter Market Outlook

Gasoline prices will likely remain around current levels heading into the summer months. Although demand will likely remain strong during the peak summer driving months, increased refinery activity will likely maintain supplies. Regionally, the two northern territories are expected to implement carbon taxes (Yukon in July, Northwest Territories in September), bringing higher pump prices. Alberta gasoline prices will likely average lower than the previous summer due to the removal of carbon taxes at the end of May.

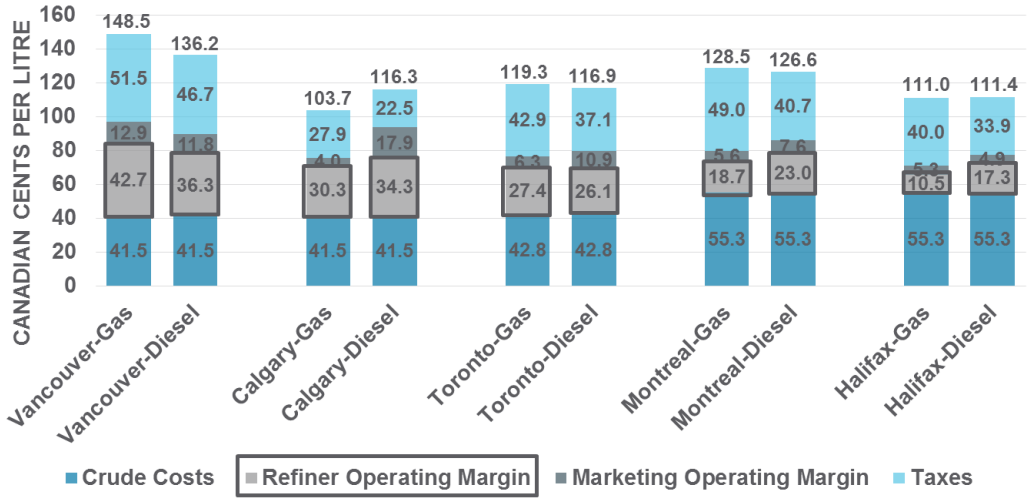
Diesel prices tend to peak in early winter as fuel suppliers attempt to increase supplies in anticipation of the home heating season. We may see an earlier rise in diesel prices this fall or late summer however, due to the implementation of IMO 2020 regulations limiting the amount of sulphur in marine fuel. Due to the limitations set to come into effect in 2020, suppliers may attempt to build inventories. Consequently, diesel prices may rise earlier than seasonal norms.

Along the East Coast and in some interior regions, we may see higher than typical refined product prices during the summer months due to the Philadelphia refinery explosion and its subsequent closing – the largest refinery complex along the Eastern seaboard. Product prices may rise in the short term as logistical supply consequences are resolved for the long term.

Factors Affecting Refining Margins in Canada

The refining margin is the difference between the wholesale refined product price (gasoline for example) less the relevant regional crude price. In Canada, refining margins can vary by product, by region, and by season, among other factors. **Figure 4** highlights the average monthly refining margin variances between gasoline and diesel among select Canadian cities in June 2019. East coast refining margins for both gasoline and diesel are significantly less than those of the west coast. In this section we will explore some of the reasons for these differences.

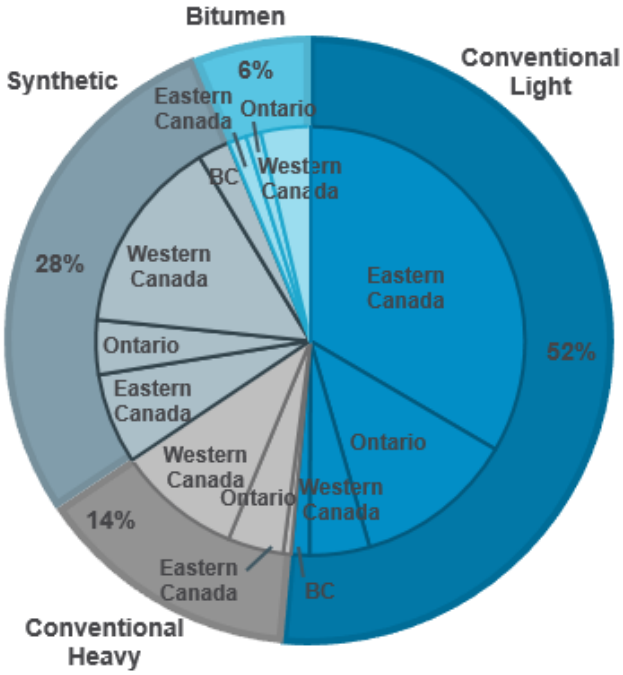
Figure 4: Pump Price Component Comparison, Select Canadian Cities, June 2019, Gasoline and Diesel



Since refinery margin is the difference between two prices, higher crude input costs can squeeze refining margins if the refined product price remains relatively unchanged. Such is the case between eastern and western crude input costs. According to Canada's National Energy Board (NEB), Western Canada (all provinces west of Ontario) produced 95 percent of crude oil in Canada in 2018. However, eastern Canadian refineries make up 66 percent of total Canadian refining capacity. Due to logistical issues in transporting crude oil, it makes economic sense for eastern Canadian refineries to import a significant portion of crude products for refinery input.

Crude prices are largely determined by international crude markets and commodity exchanges. Prices can vary by the quality of crude (e.g. light vs heavy grades), and the cost of transporting the crude from the seller's point of storage to the refinery. **Figure 5** illustrates the types of crude oil inputs for Canadian refineries in 2018. Eastern regions are more reliant on conventional light blends, while western regions utilize readily available heavier blends. The NEB reported that in 2018, Canada produced about 50 percent of crude as heavy blends, nearly all of which was produced in Western Canada. In addition, a significant amount of heavy crude bitumen was upgraded in Western Canada to synthetic crude, a product similar in quality and price to lighter blends.

Figure 5: Types of Crude Oil Charged by Region, 2018



Source: Estimated using Statistics Canada

Heavier crude blends fetch lower prices than lighter blends due to higher processing required to refine into petroleum products such as gasoline and diesel. Consequently, refineries capable of using heavier blends as crude inputs will have lower crude input costs and higher refining margins. In June 2019, Western Canadian Select (WCS), a heavy Western Canada blend, averaged 34.6 cents per litre while Brent, a much lighter international crude benchmark, averaged 55.3 cents per litre delivered at Montreal, Quebec.

As illustrated in **Figure 4**, Eastern Canada crude input costs averaged higher, as the region is very reliant on offshore crude imports, which are priced similar to Brent. Further west, crude input costs are lower as those regions can take advantage of cheaper (albeit more expensive to process) crude blends such as WCS. It is worth noting that although Kent reports all of Western Canada including British Columbia, as having one average crude input price, British Columbia refinery crude inputs include virtually no heavy blends, as illustrated in **Figure 5**. Thus, British Columbia's average crude input costs are likely higher while western interior provinces would likely average lower than shown.

Figure 6: Comparison of Gasoline and Diesel Average Monthly Refiner Margin Differential to Annual Average, 2009-2018

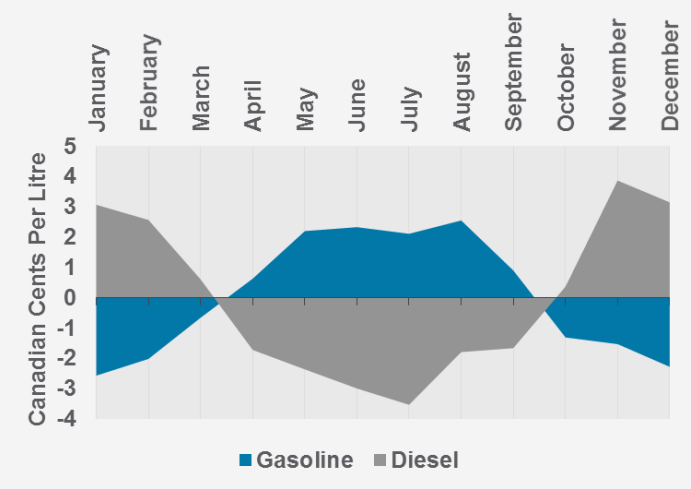


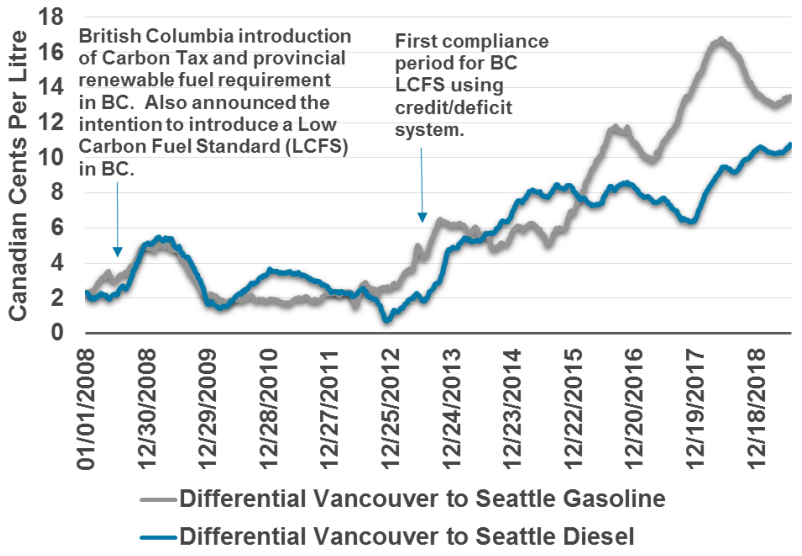
Figure 4 also illustrates that product prices can differ between gasoline and diesel, a consequence of differing demand patterns: Gasoline and diesel follow almost opposite seasonal patterns (**Figure 6**), with gasoline demand rising during the summer months due to increased consumer demand, while diesel demand rises in winter months due to its close resemblance in product specification to that of home heating fuel. Hence, price fluctuations at the wholesale level (and the incidental effect on refining margins) are linked to the supply and demand of refined products and wholesale product inventory levels.

Wholesale prices are competitive and vary little within areas logistically connected by supply. The west coast is a unique region in Canada however, as it is geographically and largely logistically isolated from the rest of Canada, with local refining capacity being far less than total product demand. Subsequently the area is highly reliant on imports not only from other provinces but from other countries. Since 2015, the entire North American west coast has experienced successive refinery issues necessitating a greater need for imports. Therefore, British Columbia has had to compete with U.S. markets for re-supply, and accordingly, has experienced higher wholesale prices in recent years, and as a consequence, refining margins well above the Canadian average.

Normally, regional spikes in wholesale prices are temporary in nature as wholesale prices rise in order to attract product to the affected market and deter discretionary buyers. This temporary shock to wholesale prices can cause a spike to regional refining margins however. Refiners at or near peak utilization rates leave little or no room to expand production when such temporary issues occur, leading to greater volatility in refining margins.

Differing product specifications can also lead to greater price volatility and larger refining margins. With British Columbia's Low Carbon Fuel Standard (LCFS) for example, product imported into the province must meet certain standards. Due to higher costs to meet these standards (or otherwise pay for compliance credits), products have become less fungible to trade between the Canada/U.S. border. Consequently, wholesale product prices have begun to digress, as shown in **Figure 7**. Higher wholesale prices have led to larger refining margins in BC since 2013. Due to tighter gasoline supplies in the area, the effects on refining margins have been more pronounced for gasoline than for diesel.

Figure 7: Gasoline and Diesel Wholesale Price Comparison to Seattle, Washington, 2009-2018



One last factor affecting refining margins in Canada is the effect of a devalued Canadian dollar. In June of 2019, the Canadian dollar averaged just 0.75 cents per U.S. dollar. This added approximately eighteen cents per litre to the average price of both gasoline and diesel in June 2019. The higher the wholesale price in an area, the greater the effect on retail prices. For example, the effect on retail prices in Vancouver was an additional three cents per litre for gasoline and about one cent per litre for diesel above the Canadian average for June 2019.

So, what does this mean in the future? In the near term, pipeline capacity to ship raw crude from Western Canada will likely not change, necessitating eastern Canadian refineries to continue to import more expensive crude blends. This will keep eastern Canada refining margins below those of Canadian regions that have access to cheaper crude blends. In addition, we will likely continue to see expanding Canadian refining margins in all regions of the country as the federal government is set to impose greater environmental standards on refined products as the Clean Fuel Standard (CFS) comes in effect in 2022, a program similar to that of British Columbia's LCFS.

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