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King Abdullah Petroleum Studies and Research Center

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Breaking Down Gasoline and Diesel Prices

The Role of Taxes, Oil, and Other Components

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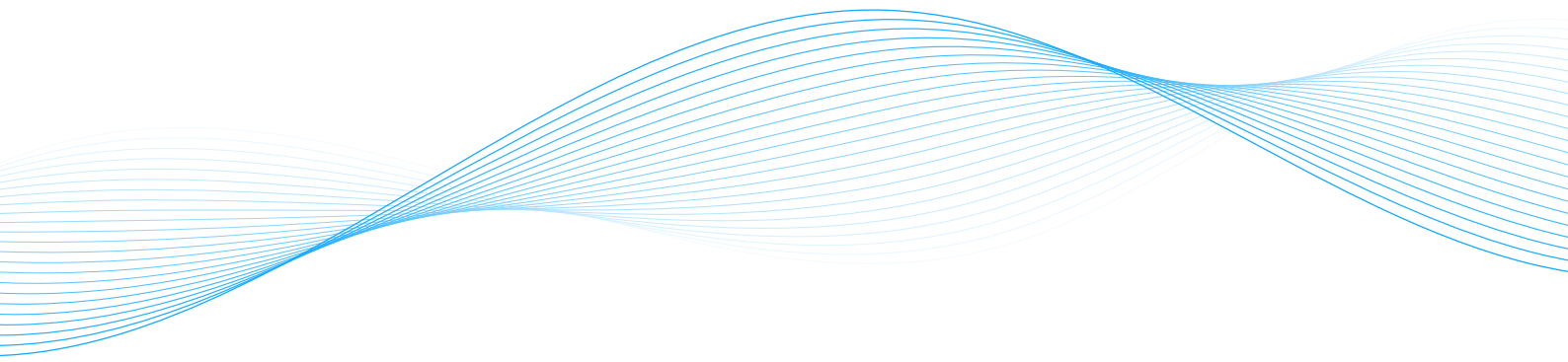
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This publication is also available in Arabic.

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Introduction

There is a common belief that fluctuations in gasoline and diesel retail prices are primarily driven by changes in oil prices (Bumpass, Ginn, and Tuttle 2015). While this is partly true, the fact is that gasoline and diesel prices are influenced by multiple components, which can reduce the impact of oil price changes depending on the country or region. For instance, taxes account for a significant portion of retail gasoline and diesel prices in many countries (Jo 2024).

Car drivers face widely varying fuel prices across different countries. For example, on September 9, 2024, the gasoline price in Egypt was US$0.31 per liter (USD), while in Monaco, it averaged $2.35 per liter (GlobalPetrolPrices.com 2024). This price disparity is driven by differences in the cost of oil extraction, taxes, refining, and marketing costs across regions.

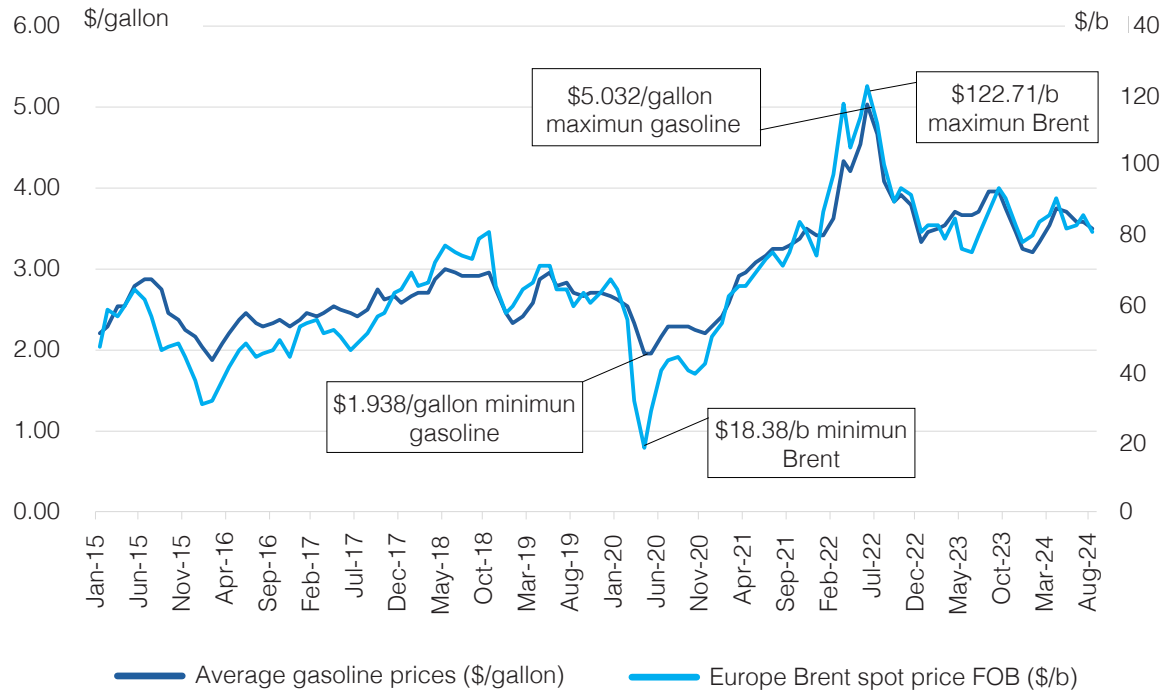
The pricing period also affects the weight of each component in fuel prices. During times of low oil prices, taxes can represent a larger portion of the overall price compared to periods of high oil prices. Over the last five years, we have experienced both extremes: unprecedentedly low prices during the COVID-19 pandemic and record highs in 2022 following the escalation of the Russian-Ukrainian military conflict.

During the COVID-19 pandemic, fuel prices experienced high volatility as early as March 2020, driven by uncertainty about the virus's impact on the economies of China and the rest of the world. In the U.S., gasoline prices dropped from $0.696 per liter ($2.636 per gallon) in January 2020 to $0.511 per liter in April of the same year, a decline of over 26.4% in just four months (Figure 1). However, this drop was relatively small compared to the more than 71% decline in the average spot price of Brent crude during the same period (EIA 2024b, 2024d).

For this reason, the present study analyzes the structure of gasoline and diesel prices based on their four main components[1]: the price of oil, taxes, refining margin, and commercial margin. The primary objective of the analysis is to provide the public with a dataset that allows for a comparison of the weight of each component across selected regions, expressed in U.S. dollars per liter. It also enables comparisons during periods of both low and high oil prices. The analysis covers the period from January 2020 to June 2024, a timeframe characterized by significant price fluctuations, as mentioned previously.

This effort continues the work initiated last year with the report *Gasoline and Diesel Prices in the OECD, China, and India: How Do They Behave During Volatile Times?* The report was a joint effort by KAPSARC, the Institute of Energy Economics Japan (IEEJ), and the Italian Association of Energy Economics (AIEE). It provided insights into the breakdown of gasoline and diesel retail prices, highlighting the influence of oil prices, taxes, refining margins, and commercial margins on the final price. Additionally, the report outlined key regional differences, explaining why gasoline prices are higher in some regions compared to others (Arboleda et al. 2023).

Figure 1. U.S. average gasoline retail prices and Brent spot prices (monthly) 2015-2024.

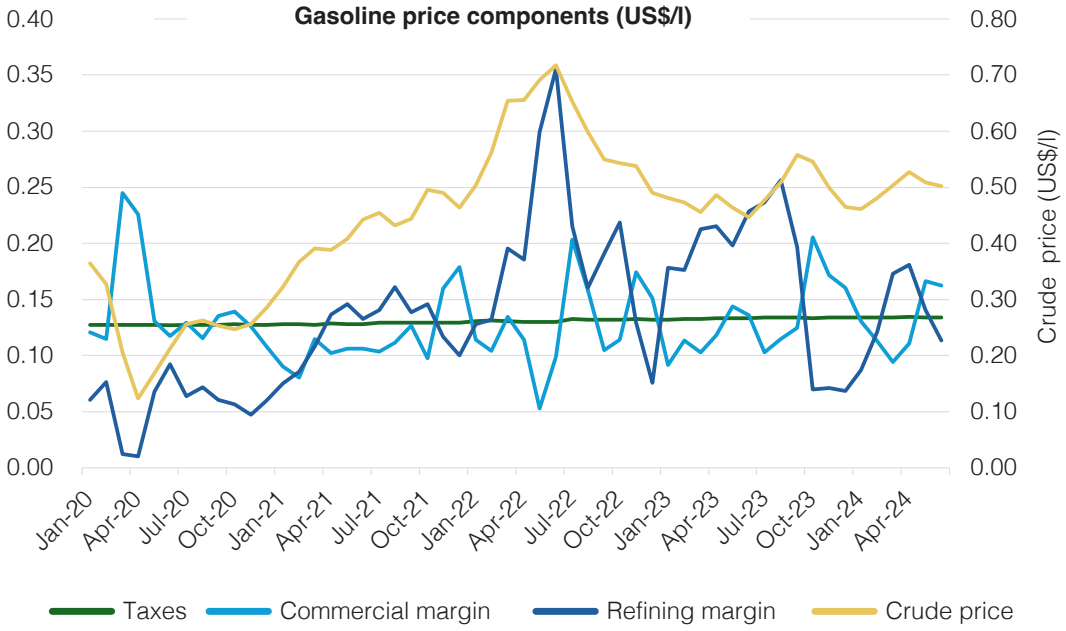


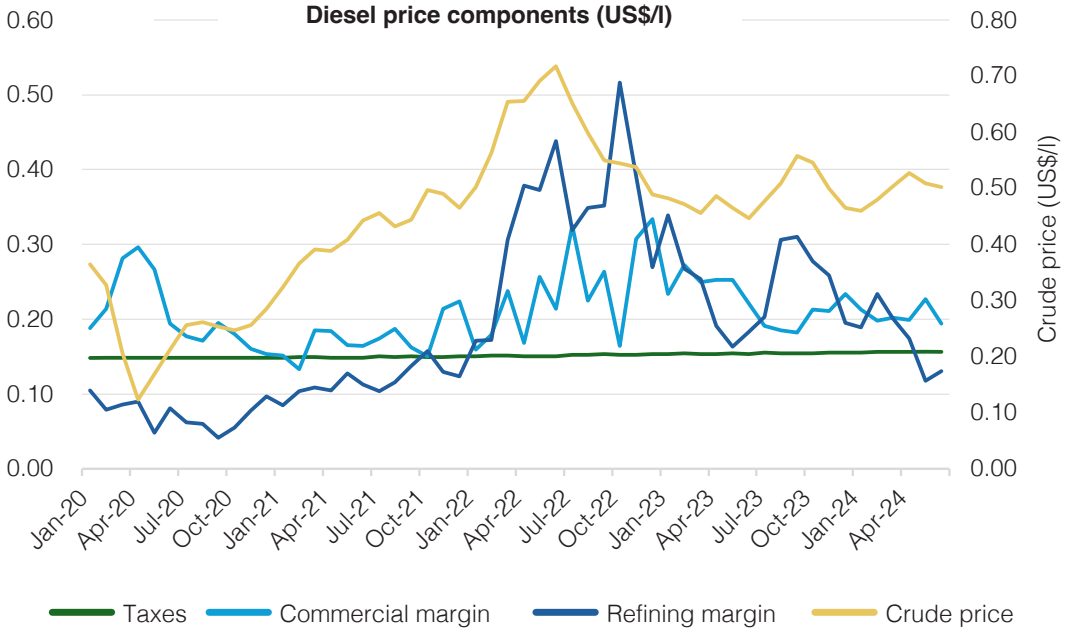
Source: EIA (2024d, 2024b).

United States of America (U.S.)

As shown in Figure 2, gasoline and diesel prices in the U.S. are primarily influenced by fluctuations in crude oil prices, which also exhibit some correlation with refining margins. Higher crude prices generally correspond with increased refining margins, while lower prices result in reduced margins. Taxes remain fixed, whereas commercial margins lack a consistent pattern. Instead, they fluctuate within a stable range, indicating that while commercial margins in the U.S. are not firmly established, they also do not vary significantly .

Figure 2. U.S. comparison of gasoline and diesel price components (January 2020-June 2024).

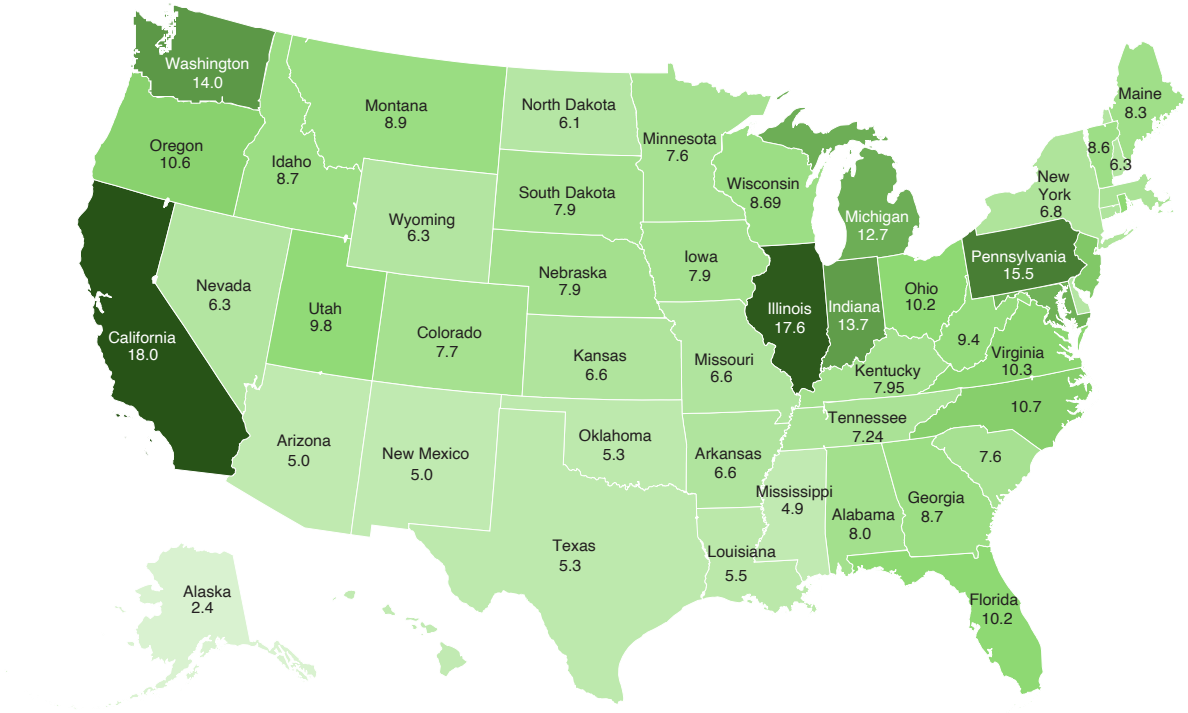




Source: EIA (2024a, 2024c).

Additionally, it is important to note that, while our study presents a national average tax, the tax rates on gasoline and diesel vary significantly from state to state in the U.S. For example, California imposes taxes as high as $0.18/l, followed closely by Illinois at $0.176/l. These figures do not account for the additional impacts of cap-and-trade carbon policies or low-carbon fuel standards, which further drive up prices in California and selected northeastern states. On the other hand, states like Alaska have much lower taxes at around $0.024/l, with Mississippi at $0.049/l (Hoffer and Macumber-Rosin 2024). These disparities reflect the diverse economic and regulatory environments within each state. As such, the national average presented here is not intended to reflect the exact experience of each U.S. consumer at the pump but rather to provide a baseline for comparison at an international level (Figure 3).

Figure 3. U.S. gasoline tax rates by state, 2024 (U.S. cents/liter).



Source: Hoffer and Macumber-Rosin (2024).

European Union (EU)

At the EU level, average retail prices for gasoline and diesel rose between January 2020 and June 2024, increasing from $1.39/liter to $1.79/liter for gasoline, and from $1.29/l to $1.73/l for diesel. Prices peaked in 2022, reaching record highs of $1.83/l for gasoline and $1.88/l for diesel. In 2023 and 2024, fuel prices in Europe remained elevated due to the ban on crude product imports from Russia, which supplied nearly half of the EU's annual diesel imports prior to 2022.

In 2022, Russia exported 4.8 million tons of gasoline and nearly 35 million tons of diesel, with around 25 million tons going to Europe. Although the ban took effect in February 2023, some countries exploited the situation by purchasing discounted Russian diesel for domestic use while redirecting their own production to Europe, or by buying discounted Russian crude and selling the refined output to the EU (Taboada 2024). However, in September 2023, Russia imposed a temporary ban on gasoline and diesel exports to curb rising domestic fuel prices and ensure sufficient supply. This move cut off "gray" exports (Martin 2023) and pushed European fuel prices even higher.

The average gasoline and diesel taxes from January 2020 to June 2024 ranged between $0.85-$0.98/l for gasoline and $0.71-$0.83/l for diesel, accounting for 42%-67% and 37%-60% of the retail price, respectively. In absolute terms, taxes remained relatively stable, but as a percentage of the retail price, their share decreased over the past two years, falling to 42%-53% for gasoline and 37%-47% for diesel.

During this period, crude oil prices experienced fluctuations. From January 2020 to June 2024, the share of crude oil in the retail price increased from 19% to 30% for gasoline and from 20% to 30% for diesel. However, it is important to note that comparing the current 2024 market conditions with the COVID-19 period, characterized by unusually low oil prices, is not entirely accurate. If we extend the analysis to the period since January 2010, we observe that the share of crude in the retail price of gasoline in Europe has remained largely unchanged, while it has actually decreased for diesel (see Figures 4 and 5).

The situation with the other two components of retail prices – refining margin and commercial margin – is complex. Refining margins saw unprecedented highs in 2022 due to market disruptions caused by the escalation of the Russia-Ukraine conflict. In 2022, the commercial margins also reached high levels at 16% for gasoline and 20% for diesel.

Refining margins, which dropped to 2%-3% of the retail price for both gasoline and diesel during the COVID-19 outbreak in 2020 (previously around 4%-5% for gasoline and 5%-7% for diesel), rebounded in 2022 to higher levels – 6% for gasoline and 13% for diesel. This rebound is likely one of the main reasons no refineries closed in Europe in 2022, compared to the record five refineries that shut down in 2020 (see Figure 6).

If we focus solely on the past five years, commercial margins have decreased for both gasoline and diesel, while refining margins have risen. However, this medium-term view can be misleading. Over a 15-year span, commercial margins have significantly increased – from $0.16/l for both gasoline and diesel in 2010 to $0.22/l and $0.26/l in 2024, respectively. Similarly, refining margins have grown, rising from $0.05/l for gasoline and $0.08/l for diesel in 2010 to $0.11/l for gasoline and $0.14/l for diesel in 2024 (see Figures 4 and 5). Their share of the retail price has also expanded, compensating for the decline in the share of taxes.

In the following sections, we will examine several key countries and highlight significant developments that have taken place since the publication of our previous report.

Figure 4. Gasoline and diesel price component dynamic, 2010-2024, $/l.

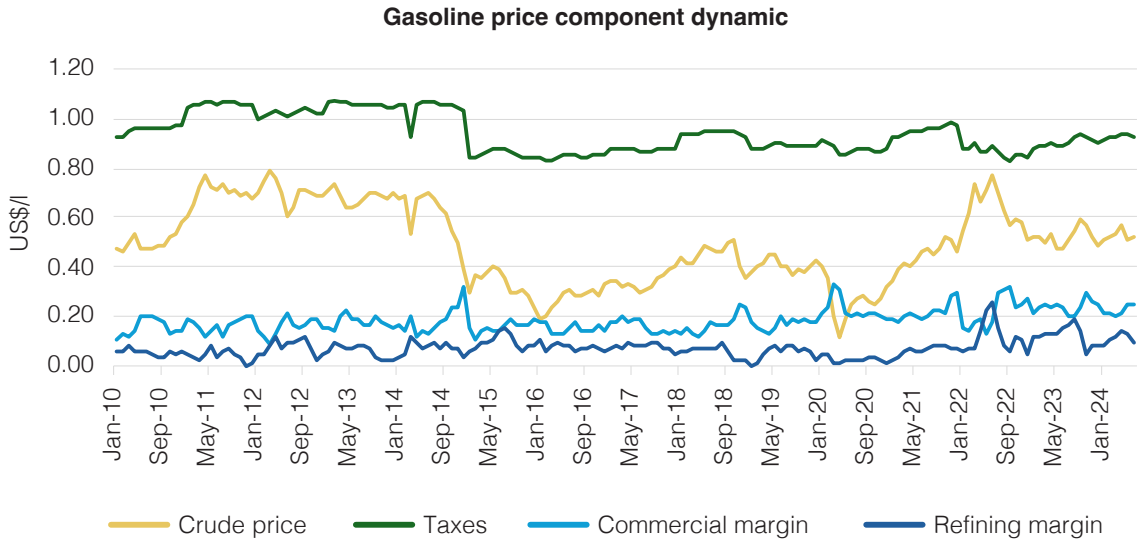
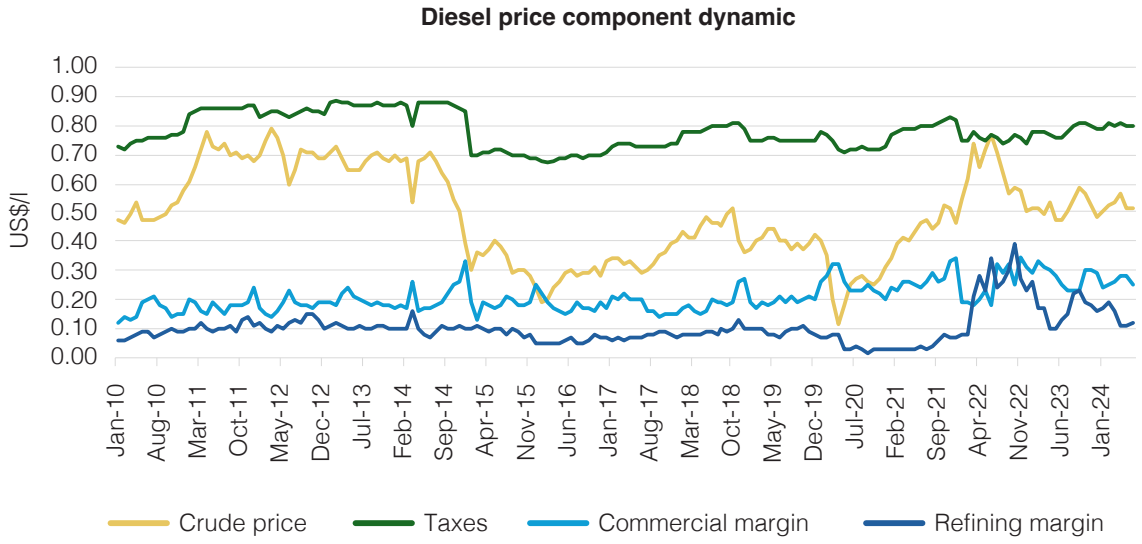


Figure 4. Continued.



Source: Authors.

Figure 5. Gasoline and diesel price component dynamic, 2010-2024, percentage.

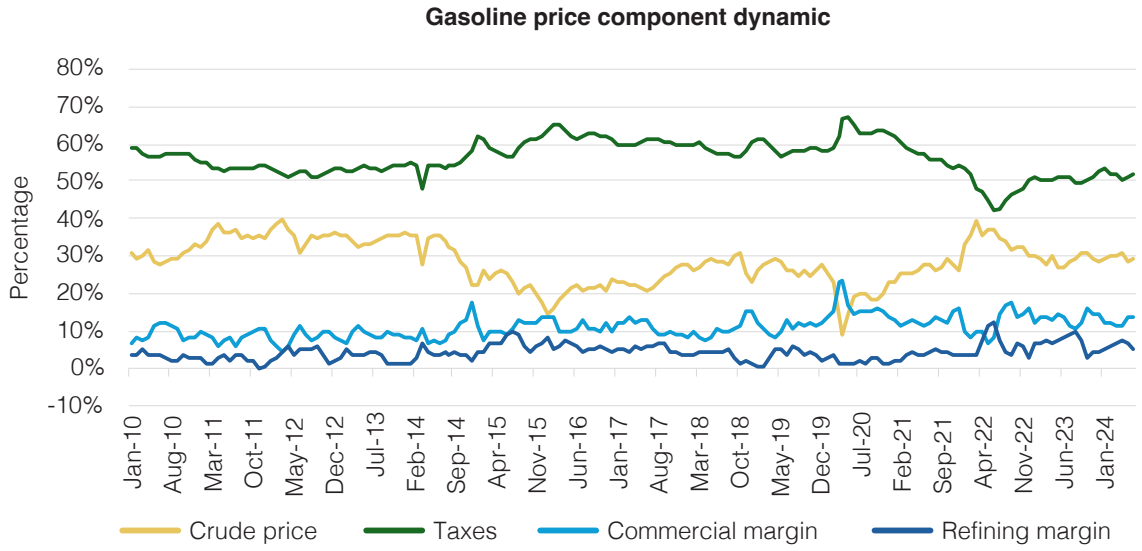
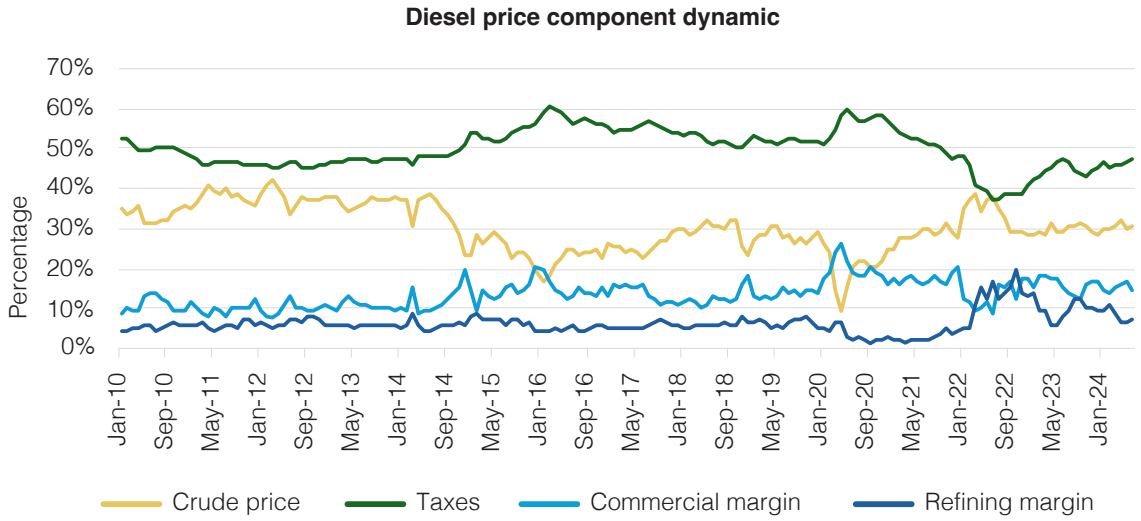
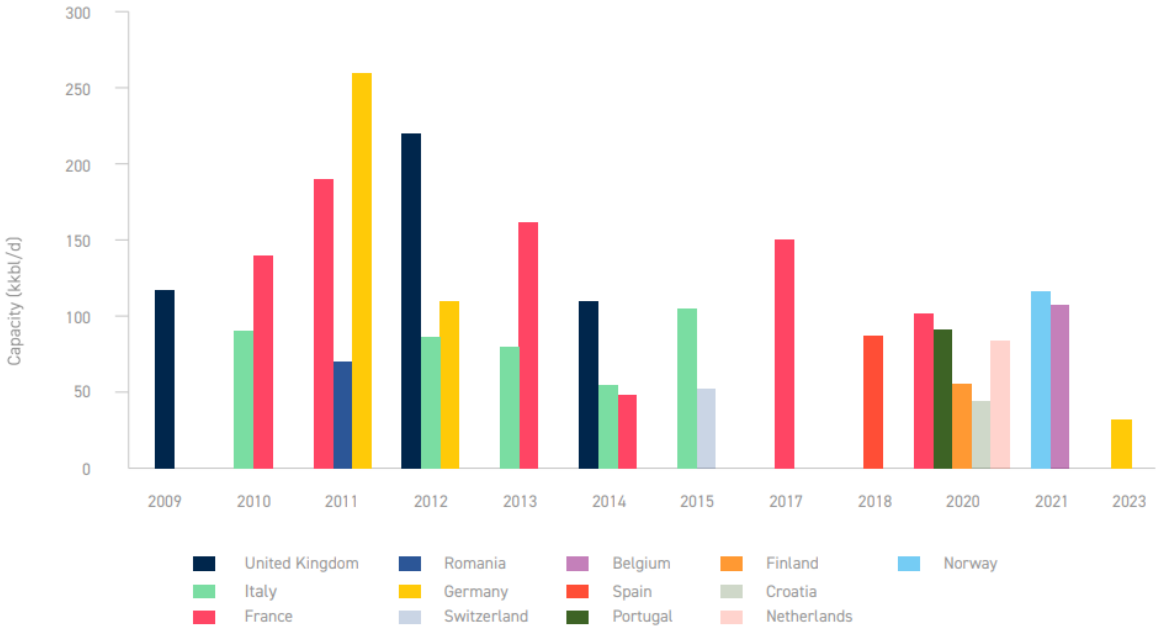


Figure 5. Continued.



Source: Authors.

Figure 6. Refinery closures in Europe, 2009-2023.



Source: Concawe (2024).

Germany

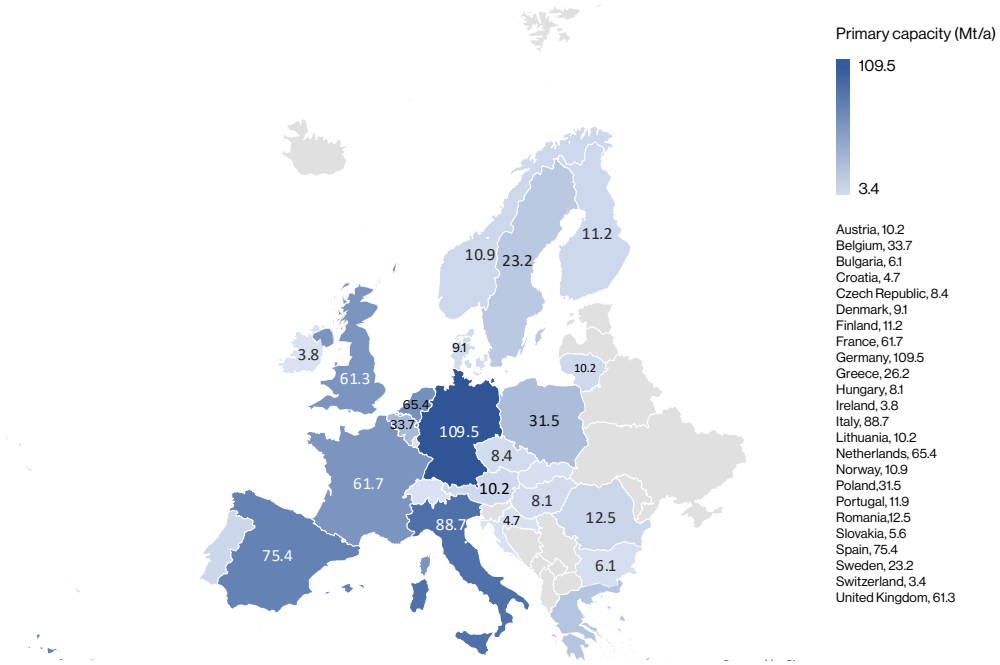
Germany, like all EU countries, experienced high gasoline and diesel prices in 2022, with the yearly average reaching $2.03/l for gasoline and $2.06/l for diesel. For diesel, this marked a record high for the past two decades. Average yearly gasoline prices were only higher in 2011-2012, when European gasoline prices were more than double those in the U.S. At that time, a combination of factors contributed to the price surge: rising international crude prices due to tightening sanctions against Iran and tensions in the Middle East, financial market speculations (as more traders expected oil prices to rise rather than fall, deterring producers from selling), fluctuations in the dollar-euro exchange rate, and refinery closures (Rowling and Nguyen 2012; Reuters 2013; Milmo 2012). However, the biggest factor was high taxes, which made up 55%-60% of the retail price for gasoline. Taxes on diesel were lower, at around 48%-51%, due to the EU's differential tax policy aimed at managing the shift in fuel demand over the past 20 years.

In March 2022, gasoline and diesel prices in Germany spiked again, reaching $2.27/l for gasoline and $2.29/l for diesel. Similar to a decade ago, this increase was largely due to high taxes, which made up 58% of the retail price for gasoline and 50% for diesel in 2021. A nationwide survey conducted by the General German Automobile Club (ADAC), the country's largest drivers' association, highlighted the unprecedented rise in pump prices (Deutsche Welle 2022b). In response, the government implemented a three-month fuel tax discount (FTD) from June 1 to August 31, 2022, reducing the energy tax on fossil fuels. The tax on gasoline was lowered from €0.6545 (EUR) per liter ($0.69/l) to €0.359 ($0.38/l), the European Commission's minimum required tax rate, while the tax on diesel dropped from €0.4704 per liter ($0.49/l) to €0.33 ($0.35/l) (Frondel, Thiel, and Vance 2024).

As a result, the overall share of taxes in gasoline and diesel retail prices fell to 46% and 38%, respectively, though this was still higher than the 31% share of the crude price component. However, after the tax relief ended, prices rose again and have remained elevated since then, averaging $1.99/l for gasoline and $1.84/l for diesel in the first half of 2024 (AP News 2022). Taxes once again accounted for 57% of the retail price for gasoline and 50% for diesel.

The broader European trend of refinery closures is evident in Germany as well. By 2025, Shell plans to shut down its 7.5-million-ton refinery in Wesseling, converting it for lubricant feedstock production by the end of the decade (Bousso 2024). As of the end of 2023, Germany hosted 15 refineries with a total capacity of 109.5 million tons per annum (MMtpa), accounting for 16% of Europe's total refining capacity – the largest concentration in any single European country (Concawe 2024) (see Figure 7).

Figure 7. European refineries' primary capacity (MMtpa), 2023.



Source: Authors based on Concawe (2024).

France

Like Germany, France implemented measures to reduce gasoline and diesel prices during the energy crisis, though the approach differed. Starting on April 1, 2022, the government introduced a rebate on all fuels (gasoline, diesel, LPG, etc.), a measure expected to cost over €2 billion ($2.2 billion) and introduced just before the presidential election. The rebate varied in size. Initially, it ranged from €0.15-€0.18/l ($0.16-$0.19/l), depending on the region. On September 1, 2022, the rebate increased to €0.30/l ($0.31/l), but starting on November 1, it was reduced to €0.10/l ($0.11/l), and was eliminated entirely by December 1, 2022 (Morgan 2022; Thompson 2022).

The government also urged fuel companies to share the burden of price reductions (Deutsche Welle 2022a). TotalEnergies responded with a large-scale price cut at all its service stations in France, which lasted until the end of the year. Initially, the company supported the government's policy with an additional price reduction of €0.10/l ($0.11/l). From September 1 to November 1, 2022, TotalEnergies further reduced petroleum fuel prices by €0.20/l ($0.21/l) compared to global market prices, followed by a €0.10/l ($0.105/l) discount from November 1 to December 31 (TotalEnergies 2022).

As shown in the graphs for France in the Annex, commercial margins were significantly lower during the rebate period, with the yearly average dropping to $0.11-$0.12/l. Starting in December 2022, commercial margins rebounded and remained elevated throughout 2023 and the first half of 2024, reaching $0.31/l and $0.30/l for gasoline, respectively, and $0.28/l and $0.25/l for diesel, respectively. Taxes have also remained at unprecedentedly high levels for diesel over the past year and a half at $0.98/l. For gasoline, taxes remained elevated but were comparable to the levels seen at the beginning of the 2010s, which were around $1.09/l.

Spain

Similar to France, Spain implemented a rebate on fuel prices to alleviate the burden of soaring retail prices for consumers. Startin g on April 1, 2022, following a two-week truck drivers' strike, the government introduced a €0.20/l ($0.21/l) subsidy for gasoline, diesel, and other fuels. Of this amount, €0.15/l ($0.16/l) was funded by the government budget, and an additional €0.05/l ($0.05/l) was covered by petrol companies (Carreño and Landauro 2022). This measure was part of a €16 billion ($17.5 billion) support package aimed at assisting companies and households during the period of high energy prices.

The subsidy was initially planned to be limited to a few months, but it was extended until the end of December 2022, and it was estimated to have cost €1.4 billion ($1.47 billion). In 2023, the discount was available only to transport workers, including truck drivers and employees in the agricultural, fishing, and livestock sectors (The Local Spain 2022).

Even after the government subsidy ended, major Spanish fuel companies continued to reduce prices to retain customers. For example, Repsol extended a €0.10/l ($0.11/l) discount for all types of fuels purchased through its Waylet payment app until March 31, 2023. Another company, Cepsa, increased its discount to €0.12/l ($0.13/l) for its premium fuels (Alba 2022).

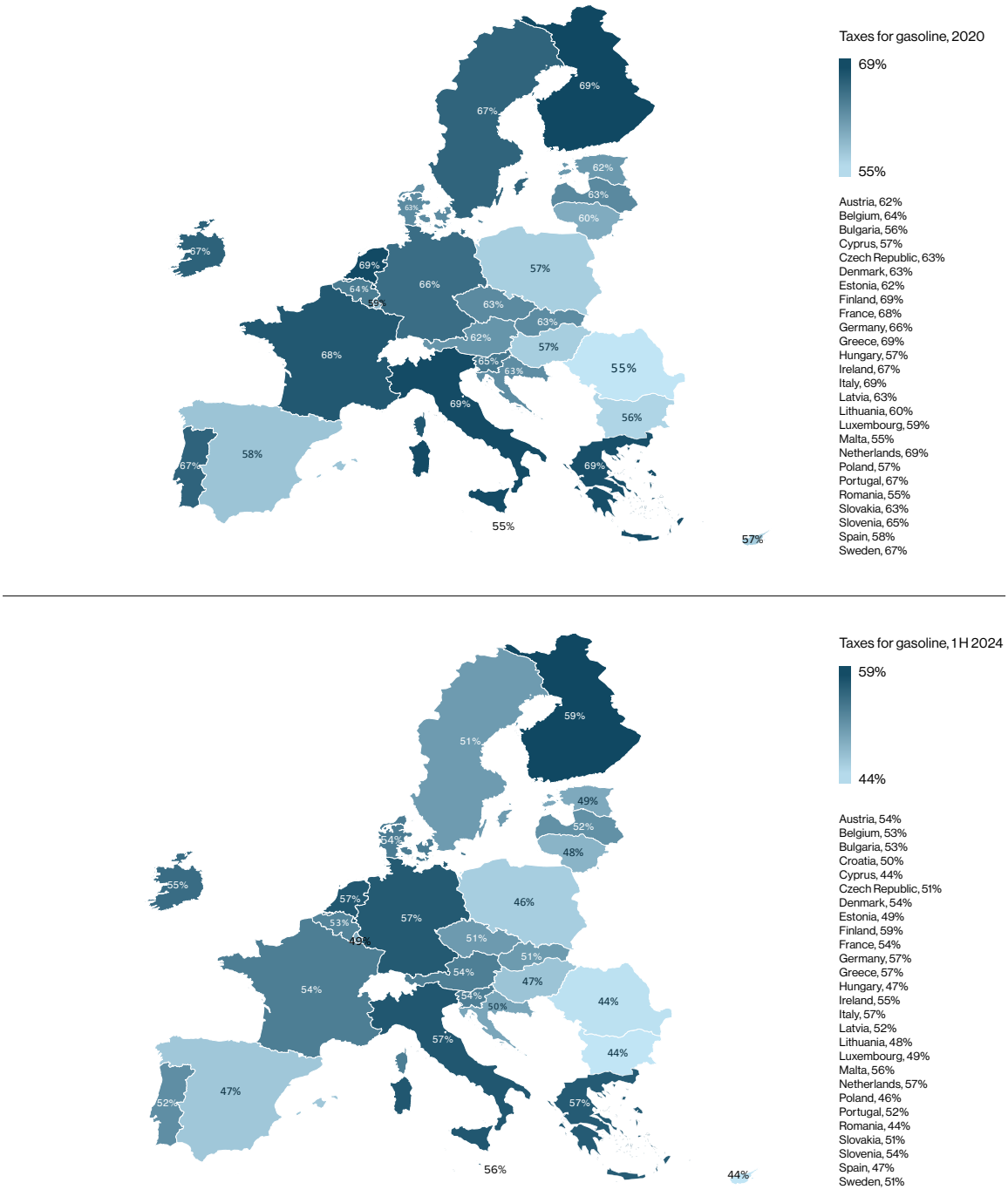
As a result of these policies, retail prices in Spain, particularly for gasoline, decreased in 2022 and have since remained in line with prices from 2010-2015.

Sweden

Sweden has historically had the highest fuel taxes in the EU (see Figures 8 and 9). From January 2020 to June 2024, taxes ranged from $0.89-$1.13/l (49%-67% of the retail price) for gasoline and $0.75-$0.93/l (36%-53% of the retail price) for diesel. On March 24, 2022, the Swedish parliament approved a reduction in the energy tax on diesel and gasoline, effective from May 2022, to address soaring retail prices in Sweden (Hofverberg 2022). However, this measure had only a moderate short-term effect. By June 2022, prices reached record highs of $2.34/l for gasoline and $2.63/l for diesel, largely due to extremely high commercial and refining margins.

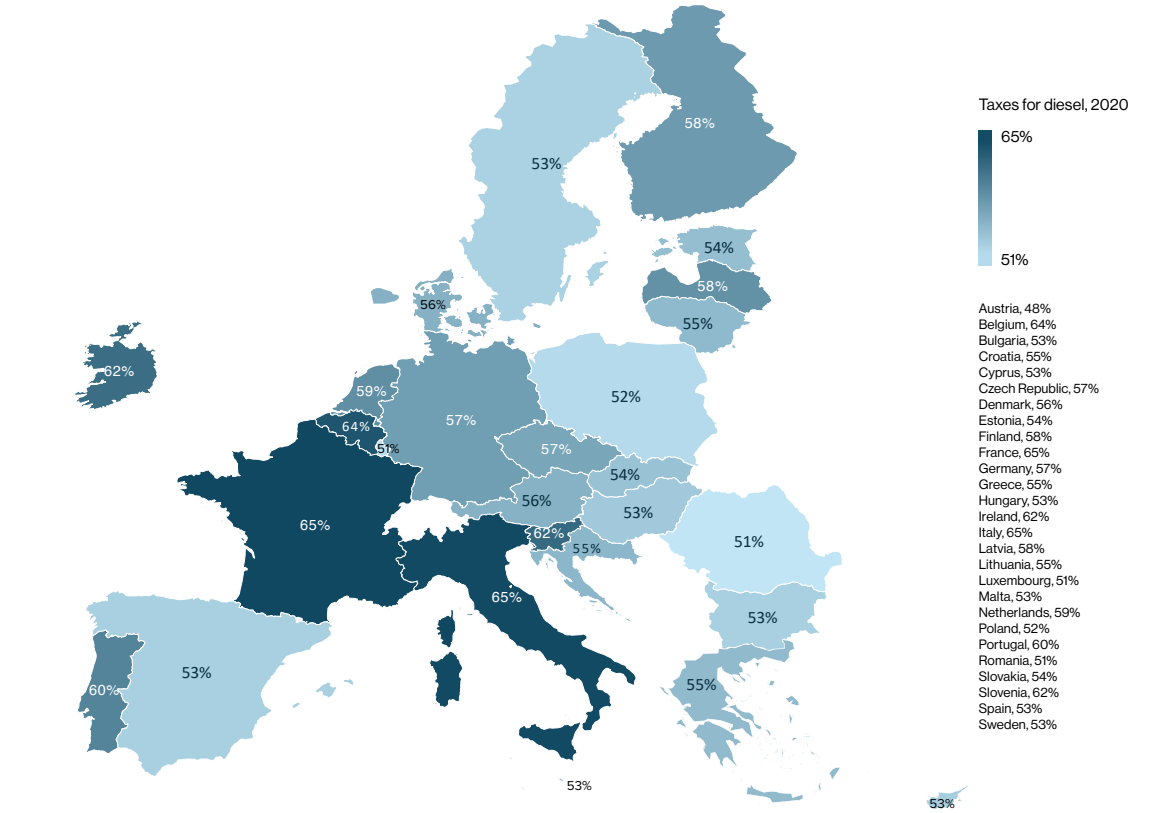
Commercial margins in Sweden have been elevated since 2020, reaching 15% of the retail price for gasoline and 28% for diesel – the highest levels in the past two decades. In 2022, these margins peaked, with gasoline reaching 20% of the retail price in September and diesel reaching 31% from July to September. Refining margins also increased from 2022 onwards, reaching 6%-7% for gasoline and 8%-10% for diesel.

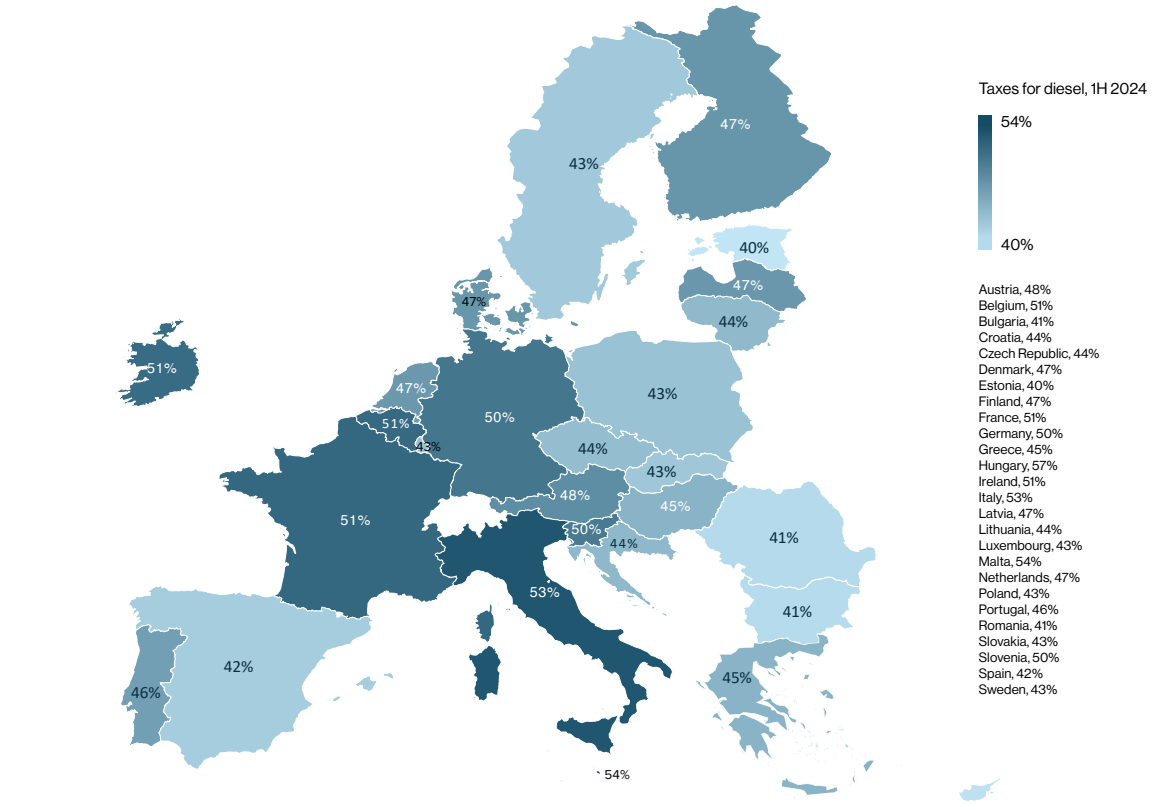
Figure 8. EU gasoline tax rates by state, 2020 and the first half of 2024.



Source: Authors, based on Concawe (2024).

Figure 9. EU diesel tax rates by state – 2020 and the first half of 2024.





Source: Authors based on Concawe (2024).

In 2024, the Swedish government again reduced taxes, leading to lower average prices of $1.76/l for gasoline and $1.75/l for diesel in the first half of the year (Reuters 2023). The structure of the retail price also became more stable in 2024, with the crude price comprising approximately 30% of the retail price, taxes comprising 50%, commercial margins comprising 13%, and refining margins comprising 6% for diesel. For gasoline, the breakdown was 30% crude price, 43% taxes, 19% commercial margin, and 8% refining margin.

Sweden is one of the few European countries that has maintained a stable number of refineries since 2009, and it recently updated one of them. The total primary capacity of the five refineries in the country is 23.2 MMtpa, representing 7.4% of Europe's refining capacity (Concawe 2024).

Japan

Energy security in Japan is a major concern for authorities. The country's energy self-sufficiency rate dropped from 20.2% in 2010 to just 6.3% in 2014 following the Fukushima nuclear disaster, and this was a result of the Great East Japan earthquake and the shutdowns of nuclear power plants (NPPs) across the country. This marked the lowest level of energy self-sufficiency in over a decade. By 2021, Japan's energy self-sufficiency had recovered to 13.3% after the slow restart of several NPPs, though it remains significantly lower than pre-Fukushima levels. The country's reliance on fossil fuels also remains high, with 83.5% of its energy needs being met by fossil fuels, and 36.2% of its total energy still dependent on oil (METI 2024a).

Japan's high dependency on oil has prompted the country to act swiftly during periods of oil price volatility, especially when prices are trending upwards. This was evident in 2022, when gasoline and diesel prices were affected by rising crude oil prices. At the beginning of 2022, Japanese authorities debated the implementation of the "trigger clause" to reduce gasoline prices (Machino 2022).

The trigger clause is a government measure designed to curb price increases, activated when specific pre-set conditions are met. In this case, it reduces gasoline taxes when the national average price of regular retail gasoline, as announced monthly by the Ministry of Internal Affairs and Communications, exceeds ¥160 (JPY) (approximately $1.40) per liter for three consecutive months.

In addition to the consumption tax, a gasoline tax of ¥53.8 (about $0.50) per liter is normally levied. The trigger clause reduces this tax by ¥25.1 (about $0.20) per liter. Similarly, it cuts ¥17.1 (about $0.15) per liter from the tax on light oil.

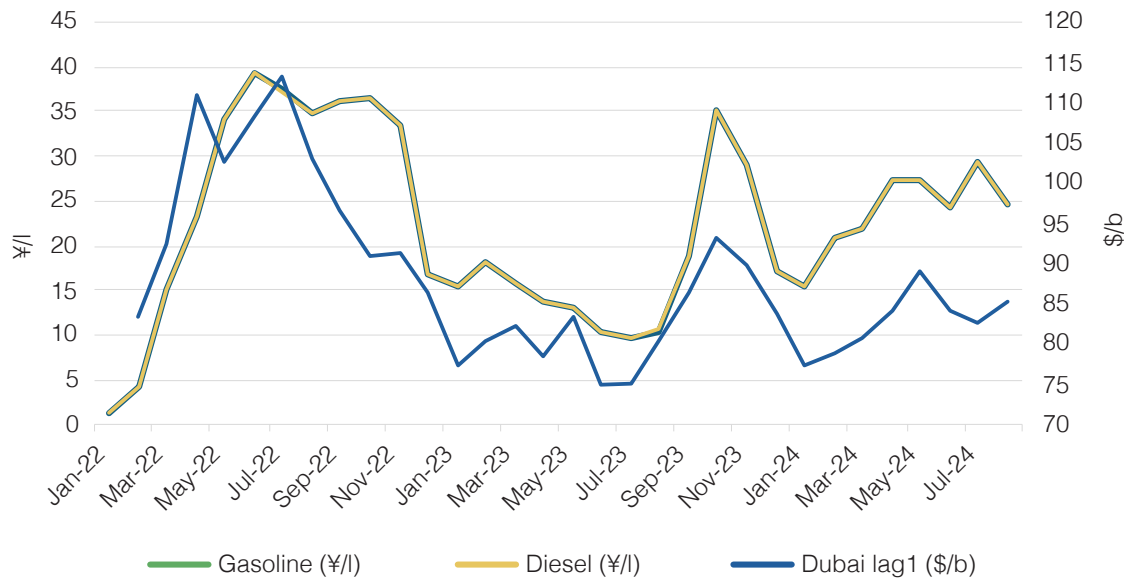
Despite the "trigger clause" not being officially implemented in 2022, Japan introduced a temporary subsidy program that has been extended multiple times. At the time of writing this report, Japanese authorities have confirmed that the subsidies for gasoline and diesel will remain in place until the end of 2024 (Enerdata 2024).

The subsidies introduced by Japan since 2022 have closely tracked oil price fluctuations, albeit with a slight one-month delay (Figure 10). This indicates that the authorities were actively working to mitigate the impact of rising oil prices. In doing so, the government managed to offset the effect of taxes on retail fuel prices, reducing the burden on consumers.

Since the gasoline and diesel subsidies are quite similar, historical monthly data suggest that Japanese authorities have adjusted the subsidies by ¥0.705 per liter for every $1 change in the price of a barrel of the Dubai crude oil, with a one-month lag. In other words, for every $1/b increase in the price of Dubai crude oil, gasoline and diesel subsidies rise by ¥0.705 per liter or $0.007 per liter, which is almost insignificant, unless the change in oil price is significant.

For the purpose of our study, we have chosen to convert all prices to USD (US$) per liter ($/l). However, the devaluation of the JPY (¥) in recent years has distorted the perceived impact of these subsidies in the domestic market when expressed in USD. In January 2022, the JPY-to-USD exchange rate was ¥114.8 per $1, but by June 2024, it had risen to ¥158.0 per $1. This shift creates a misleading impression, making the subsidies appear smaller than they actually are (OFX 2024).

Figure 10. Japanese gasoline and diesel subsidies (¥/l) compared to the Dubai crude prices ($/b) with a month delay.

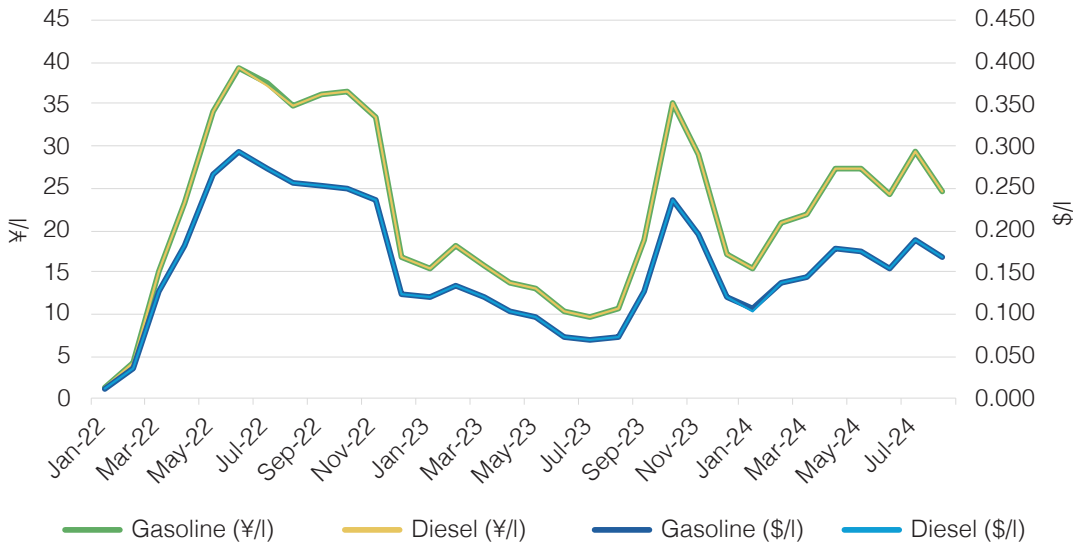


Source: METI (2024b), S&P Global (2024).

Note: Gasoline and diesel numbers are very similar, creating the illusion of only one line in the graph.

As shown in Figure 11, the subsidies for gasoline and diesel, when expressed in JPY (¥) per liter, appear significantly higher than when expressed in USD (US$) per liter. This visual discrepancy is a direct result of the devaluation of the JPY against the USD.

Figure 11. Japanese gasoline and diesel subsidies (¥/l) compared to the Japanese gasoline and diesel subsidies expressed in $/l.



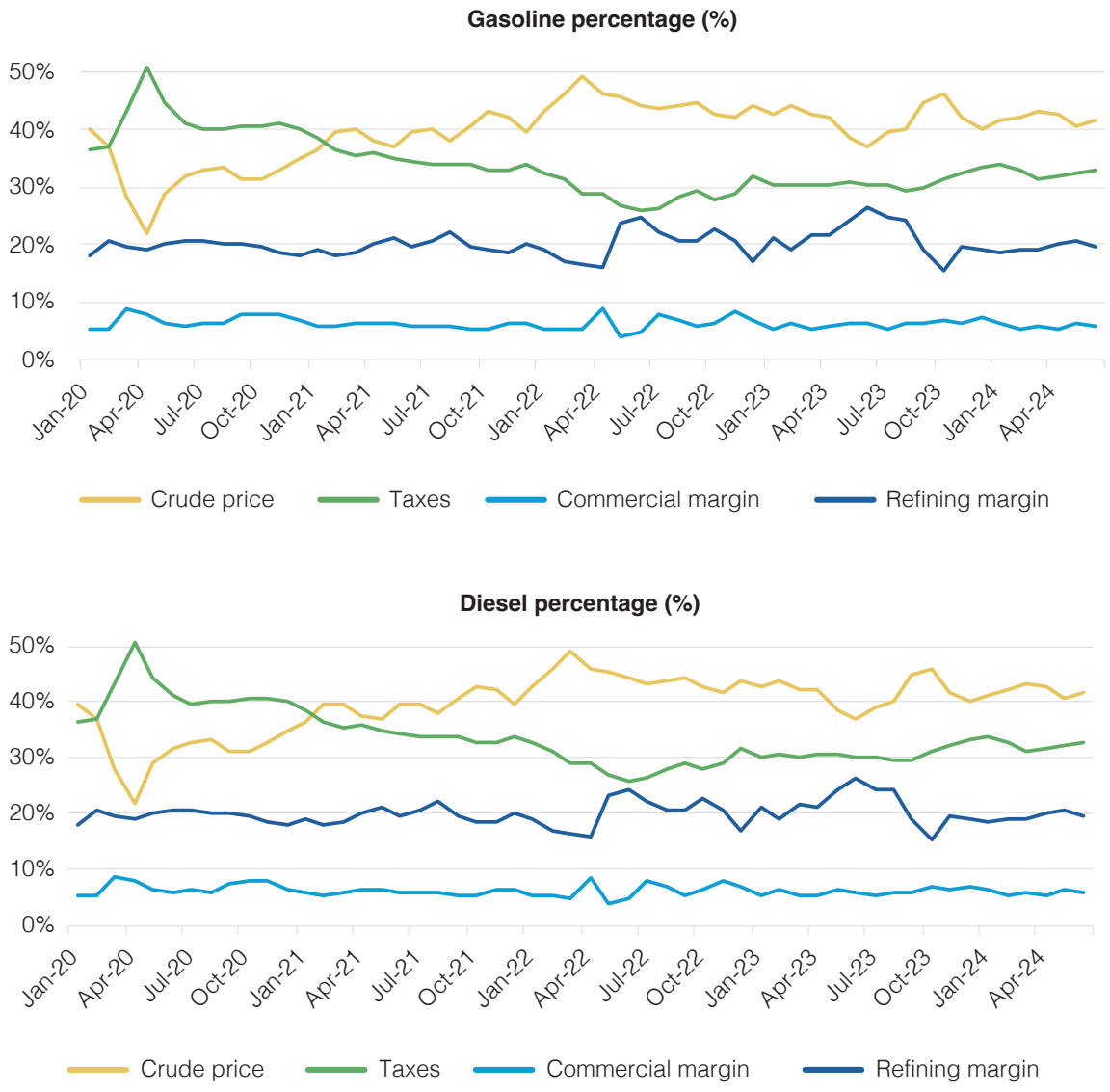
Source: OFX (2024), METI (2024b).

Note: Gasoline and diesel numbers are very similar, creating the illusion of a single line in the graph.

Canada

The retail price of gasoline and diesel in Canada is primarily driven by crude oil prices and taxes. While refining margins play a smaller role, they remain significant, occasionally making up as much as 25% of the final price. Even in such instances, their influence is far less than that of crude oil and taxes. Since July 2021 (Figure 12), despite fluctuations in crude oil prices, the share of crude oil in gasoline and diesel prices has ranged from 39% to 49%, while taxes have contributed between 26% and 35% during the same period (Kalibrate 2024).

Figure 12. Canadian comparison of gasoline and diesel price components – January 2020 to June 2024.



Source: Kalibrate (2024).

The federal government imposes an excise tax at a flat rate of C$0.10 per liter (CAD) ($0.0738 per liter) for gasoline and C$0.04 per liter for diesel. In addition, some provinces levy their own taxes on gasoline and diesel. Recently, three municipalities – Vancouver, Victoria, and Montreal – have also begun collecting local fuel taxes. Moreover, sales tax is applied as a percentage of the retail price. Provincial sales taxes generally do not apply to fuels like gasoline or diesel, except in provinces with the Harmonized Sales Tax (HST) and in Quebec, where the Quebec Sales Tax (QST) is applied (Natural Resources Canada 2016).

In April 2024, the federal government increased the carbon tax, raising gasoline and diesel prices and sparking discontent among many consumers. However, in most Canadian provinces, the impact on the final price remains relatively low at no more than C$0.033 per liter ($0.0244 per liter). Despite this modest effect, the federal action has reignited debates about fossil fuel subsidies and tax breaks provided to large fossil fuel producers (Lorteau 2024).

More than 20 fuel sources, including coal, oil, and gasoline, that generate greenhouse gas emissions are subject to the federal carbon charge. The levy on each fuel source is determined by the amount of greenhouse gas emitted when the fuel is burned. For example, burning one liter of gasoline releases 2.3 kg of carbon dioxide (CO_2), while diesel produces 2.7 kg per liter. According to the Canadian Media (Campbell 2024), Table 1 summarizes the recent increase that will affect the price of some common fuel sources:

Table 1. Impact of the increase of the carbon tax in 2024 in some common fuels in Canada.

In CAD cents per liter

Fuel source	Carbon price before April 1	Carbon price after April 1	Difference
Gasoline	14.3 cents/liter	17.6 cents/liter	3.3 cents
Diesel	17.38 cents/liter	21.39 cents/liter	4.01 cents
Propane	10.08 cents/liter	12.38 cents/liter	2.3 cents
Natural gas	12.4 cents/cubic meter	15.3 cents/cubic meter	2.9 cents

In USD cents per liter

Fuel source	Carbon price before April 1	Carbon price after April 1	Difference
Gasoline	10.56 cents/liter	13.00 cents/liter	2.44 cents
Diesel	12.84 cents/liter	15.80 cents/liter	2.96 cents
Propane	7.45 cents/liter	9.14 cents/liter	1.70 cents
Natural gas	9.16 cents/cubic meter	11.30 cents/cubic meter	2.14 cents

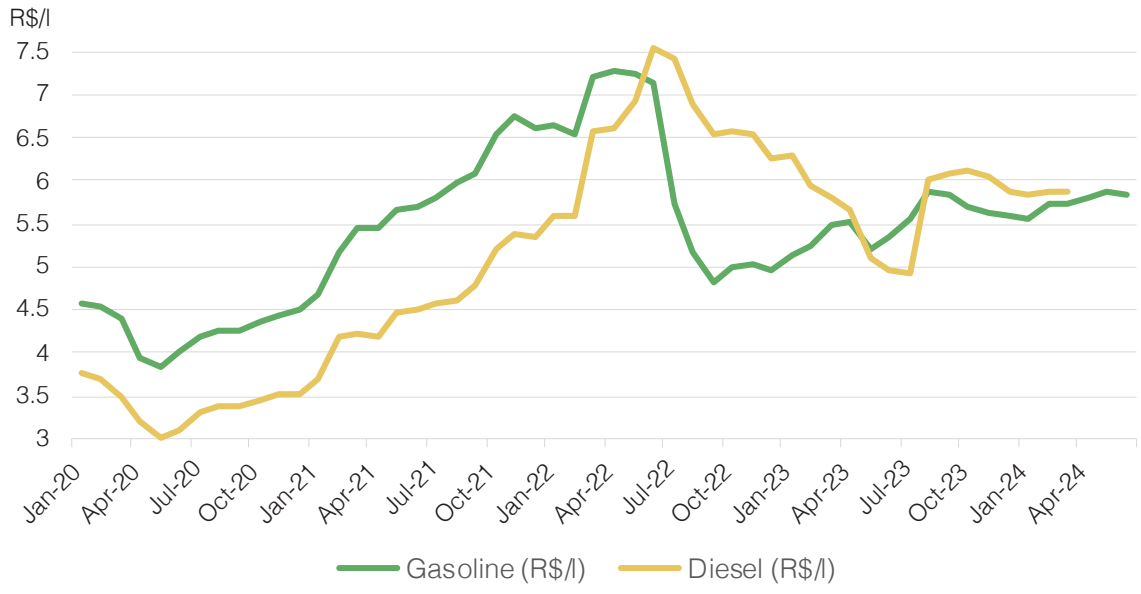
Source: Campbell (2024).

Brazil

Brazil's local gasoline and diesel prices are regulated by the state-owned oil company, Petróleo Brasileiro S.A. (Petrobras). However, the company faces pressure when market conditions necessitate price adjustments, particularly when prices need to be raised. During the period analyzed in our study (2020-2024), a significant spike in gasoline and diesel prices occurred in March 2022 (ANP 2024). That month, Petrobras announced a 25% increase in diesel prices, raising the cost to distributors to R$4.51 per liter (BRL) ($0.89/l), and a 19% increase in gasoline prices, bringing them to R$3.86 per liter (Millard 2022).

In the following months, Petrobras quickly reduced gasoline and diesel prices in response to fluctuations in international oil prices, providing some relief to consumers. This price reduction was further supported by a decrease in domestic retail prices after lawmakers passed a series of bills in June and July. These bills capped the state manufacturing tax on the movement of goods and services (ICMS – Imposto sobre Circulaçao de Mercadorias e Serviços) on diesel, gasoline, and ethanol at 17%-18% (this is easily observable in the Brazilian section of Annex 1), extended the tax calculation period to five years, and eliminated federal taxes on these fuels. As a result, retail gasoline and diesel prices dropped significantly, as shown in Figure 13. This development coincided with the presidential campaign (Fick 2022).

Figure 13. Brazilian gasoline and diesel retail price in BRL per liter (R$/l) in the period from January 2020 to June 2024.



Source: ANP (2024).

A similar situation occurred in August 2023, when Petrobras announced a sharp increase in gasoline and diesel prices at its refineries, raising prices by 16.3% to R$2.93/l ($0.537/l) for gasoline and 25.8% to R$3.80/l for diesel. This was the first price hike following a prolonged period of stability. The lack of previous increases was largely due to the pricing adjustments made during Bolsonaro's administration in 2022, as well as the new pricing policy introduced by Lula da Silva's government in January 2023 (Araujo 2023). Since then, gasoline and diesel prices in Brazil have remained relatively stable.

In February this year, a new hike of around 12.5% in gasoline and diesel prices was announced, driven by adjustments to the ICMS state goods and services tax. This increase, initially decided in October 2023, was intended to counteract inflationary trends linked to pricing modifications made in 2022. The gasoline tax rose from R$1.22/l ($0.22/l) to R$1.37/l ($0.25/l), while the diesel tax increased from R$0.94/l ($0.94/l) to R$1.06/l ($0.19/l). However, the impact on the final retail price has been less significant compared to previous adjustments (Reuters 2024).

Another notable aspect of Brazil's gasoline and diesel retail price structure is the biofuel component. According to the Agência Nacional do Petróleo, Gás Natural e Biocombustíveis do Brasil (ANP), regular gasoline type C – which serves as the basis for pricing in our analysis – contains 27% ethanol in its total composition. Similarly, regular diesel type B S500 – also used in our study – includes a percentage of biodiesel in its overall mix (ANP 2024).

In the final pricing structure, the combined cost of oil and biofuel accounts for over 50% of the total fuel price in most cases. Therefore, we have chosen to present the structure of Brazil's gasoline and diesel prices, including the respective biofuel components, in Annex 1. The primary aim of this study is to highlight the impact of oil on the final retail price.

United Kingdom

According to several sources, the UK has some of the highest gasoline and diesel taxes in the world. OPEC's pamphlet, *Who Gets What from Imported Oil*, estimates that in 2023, taxes accounted for approximately 51% of the retail price of fuel in the UK (OPEC 2024). The Tax Foundation Europe reported that the UK ranked eighth among European countries for gasoline tax and first for excise duty on diesel between August 2023 and July 2024 (Macumber-Rosin and Hoffer 2024). Regardless of the source, it is evident that taxes make up a significant portion of the final retail price of gasoline and diesel in the UK. Data used in our study shows that the share of gasoline and diesel taxes fluctuates between 45% and 72%, depending on the price. The higher the price of oil, the lower the tax share, and vice versa, as demonstrated in Annex 1 for the UK.

In 2022, the UK experienced record-high gasoline and diesel prices, prompting the government to seek alternatives to ease the burden on the public. In March 2022, the UK introduced a temporary cut in fuel duty rates as part of the Spring Statement. This cut was extended for an additional 12 months in March 2023. Furthermore, the planned inflation-linked increases in fuel duty for 2024 and 2025 were canceled, maintaining the existing fuel duty rates for an extra year. This represents a reduction of around £0.07 per liter (GBP) ($0.092 per liter) for gasoline and diesel compared to previous plans (GOV.UK 2024). Table 2 summarizes the reduction in fuel duty rates introduced in 2022, and Table 3 provides the same rates in U.S. dollars per liter.

Table 2. UK cut in fuel duty rates in 2022 in £ per liter – impact comparison.

Light oils

Type	Rates prior to 23 March 2022 (£ per liter)	Continued cut rates (£ per liter)
Unleaded petrol	0.5795	0.5295
Light oil (other than unleaded petrol or aviation gasoline)	0.6767	0.6267
Aviation gasoline (Avgas)	0.3820	0.3629
Light oil delivered to an approved person for use as furnace fuel	0.1070	0.0978

Heavy oils

Type	Rates prior to 23 March 2022 (£ per liter)	Continued cut rates (£ per liter)
Heavy oil (diesel)	0.5795	0.5295
Marked gas oil	0.1114	0.1018
Fuel oil	0.1070	0.0978
Heavy oil other than fuel oil, gas oil, or kerosene used as fuel	0.1070	0.0978
Kerosene to be used as fuel in an engine, other than in a road vehicle or for heating	0.1114	0.1018

Source: GOV.UK (2024).

Table 3. UK cut in fuel duty rates in 2022 in $ per liter – impact comparison.

Light oils

Type	Rates prior to 23 March 2022 ($ per liter)	Continued cut rates ($ per liter)
Unleaded petrol	0.770	0.703
Light oil (other than unleaded petrol or aviation gasoline)	0.899	0.832
Aviation gasoline (Avgas)	0.507	0.482
Light oil delivered to an approved person for use as furnace fuel	0.142	0.130

Heavy oils

Type	Rates prior to 23 March 2022 (£ per liter)	Continued cut rates (£ per liter)
Heavy oil (diesel)	0.770	0.703
Marked gas oil	0.148	0.135
Fuel oil	0.142	0.130
Heavy oil other than fuel oil, gas oil or kerosene used as fuel	0.142	0.130
Kerosene to be used as fuel in an engine, other than in a road vehicle or for heating	0.148	0.135

Source: GOV.UK (2024).

After COVID-19 and leading up to the spring of 2022, the UK saw a continuous rise in gasoline and diesel prices. This situation caused concern among consumers, and speculative actions by retail suppliers began to pose a problem. During the final months of 2021, several gas stations started withholding fuel, anticipating price increases in the near future. Many stations falsely claimed they were out of fuel, despite government assurances of regular supply (Sharma 2021).

In August 2021, UK consumer price inflation surged by 3.2% year-on-year, marking the highest annual increase in nearly a decade. Rising inflation, coupled with soaring energy prices, particularly impacted low-income households. Additionally, post-Brexit immigration rules caused supply disruptions and labor shortages, particularly among HGV (heavy goods vehicle) drivers. As a result, the population began experiencing shortages of food and fuel, with some experts comparing the situation in winter 2021 to the "Winter of Discontent" in 1979 (Sharma 2021).

While the situation improved after the winter of 2021-2022, the UK government had to implement several policies to alleviate the crisis and restore public confidence.

Although this study does not include data beyond June 2024, it is important to highlight recent events that may affect gasoline and diesel pricing in the UK in the coming months. In early September 2024, UK fuel prices dropped to their lowest levels in nearly three years. The Automobile Association (AA) reported that, on September 4, 2024, the average petrol price was £1.395 per liter ($1.85/l), which was the lowest since October 2021, while the average diesel price stood at £1.442 per liter ($1.91/l), just above July's price in 2023, and also the lowest since October 2021. This decline has shifted expectations of an imminent fuel duty increase, despite the fact that fuel duty has remained unchanged since 2011. At the same time, the Royal Automobile Club (RAC) predicted that the £0.05 ($0.066) cut retained in the Spring Budget of March 2024 is likely to be scrapped (Ambrose 2024).

The Social Market Foundation (SMF) found that the combined impact of the fuel duty freeze and the £0.05 duty cut has cost the UK Treasury £100 billion ($132.5 billion) since 2011, and could reduce revenue by £27 billion ($35.8 billion) over the next five years.

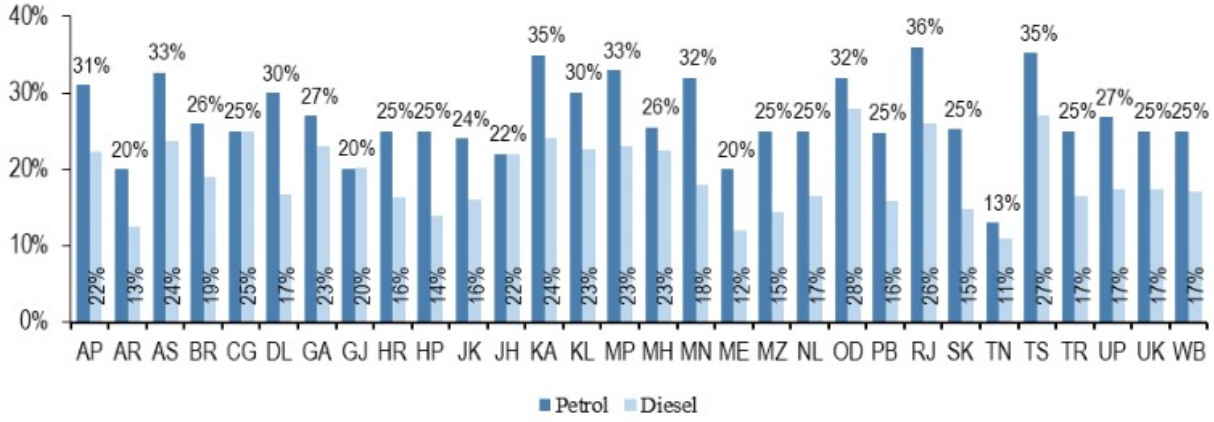
With expectations of a potential increase in taxes on gasoline and diesel prices in the UK, it is reasonable to anticipate that the tax component may represent a larger portion of the retail price in the coming months. However, this shift is unlikely to significantly impact consumers as long as oil prices remain low. The UK is a prime example of a country where the government benefits more from fuel consumption through taxation than the actual suppliers of oil.

India

Over the past four years, gasoline and diesel taxes have accounted for the largest share of the retail market price in India. In 2020, taxes on gasoline represented 49%-69% of the final price (39%-69% for diesel), varying by month and state. By September 2021, it became evident that high taxes, with the national average reaching $0.61/l, had become an overwhelming burden for the industry, as commercial margins for diesel fell into negative territory. In response, in November 2021, the central government cut excise duties by $0.07/l for gasoline and $0.13/l for diesel. Several Indian states followed suit, reducing local fuel taxes. This tax relief, introduced just before the nationwide Diwali Festival, aimed to stimulate consumer spending and boost economic activity during the festive season (Ahmed and Verma 2021).

In India, the central government taxes petroleum product production through excise duty, while states tax their sale via sales tax or VAT. In October 2021, prior to the tax cuts, the average excise duty imposed by the central government was fixed, comprising roughly 31% of the retail price for gasoline and 34% for diesel. Sales taxes and VAT, on the other hand, are not fixed and are charged as a percentage of the product's price. As a result, they depend on the excise duty set by the central government, the price charged to dealers, and the dealer commission. In October 2021, regional sales taxes or VAT made up an average of 23% of the retail price for gasoline and 15% for diesel (Srivastava 2021), as seen in Figure 14.

Figure 14. Sales tax/VAT rates levied by Indian states on gasoline and diesel (as of October 1, 2021).



Source: Srivastava (2021).

Note: In addition to these tax rates, many governments also imposed additional levies in the form of a cess. For instance, in Tamil Nadu province, the cess amounted to $0.15/liter.

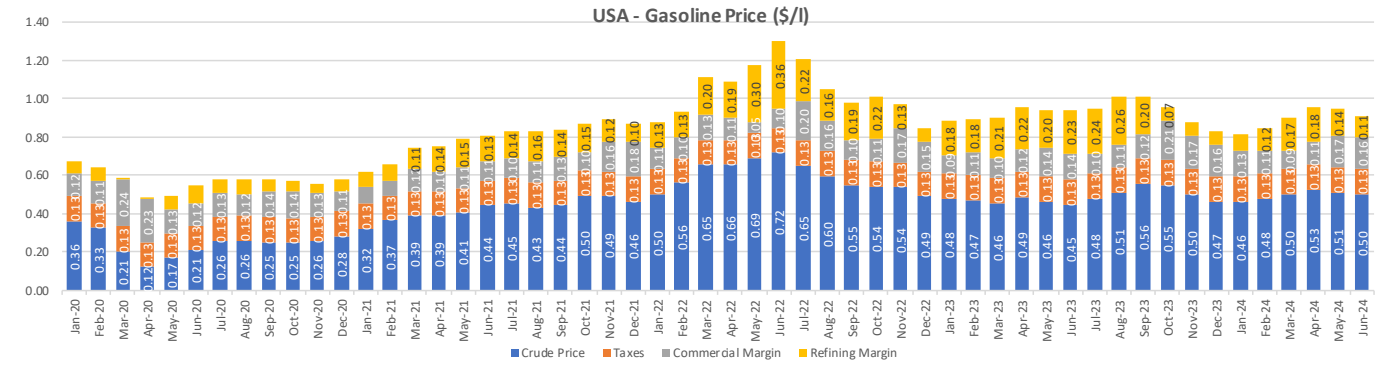
In March 2022, following the escalation of the military conflict between Russia and Ukraine, global crude prices surged. In India, where taxes still accounted for 44% of the final price of gasoline and 38% of diesel, refining margins for gasoline turned negative. Retail prices for both fuels peaked at $1.34/l for gasoline and $1.22/l for diesel, prompting another round of tax reductions by the central government. By June 2022, the cuts amounted to $0.10/l for gasoline and $0.08/l for diesel (Vengattil 2022).

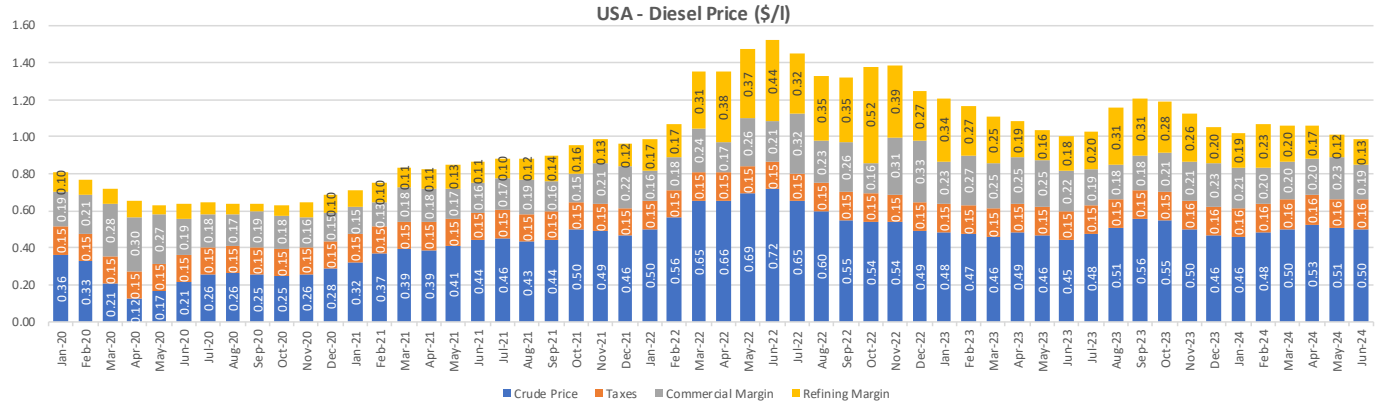
Since then, until June 2024, the volume of both central and local taxes has remained stable, amounting to $0.43-$0.42/l for gasoline (37% of the retail price) and $0.35-$0.34/l for diesel (32%-33% of the retail price). Between September 2022 and June 2024, crude prices fluctuated between $0.49-$0.59/l, while refining margins ranged from $0.11-$0.21/l (9%-19% of the retail price) for gasoline and $0.11-$0.24/liter (10%-22% of the retail price) for diesel – significantly higher than in the two previous years.

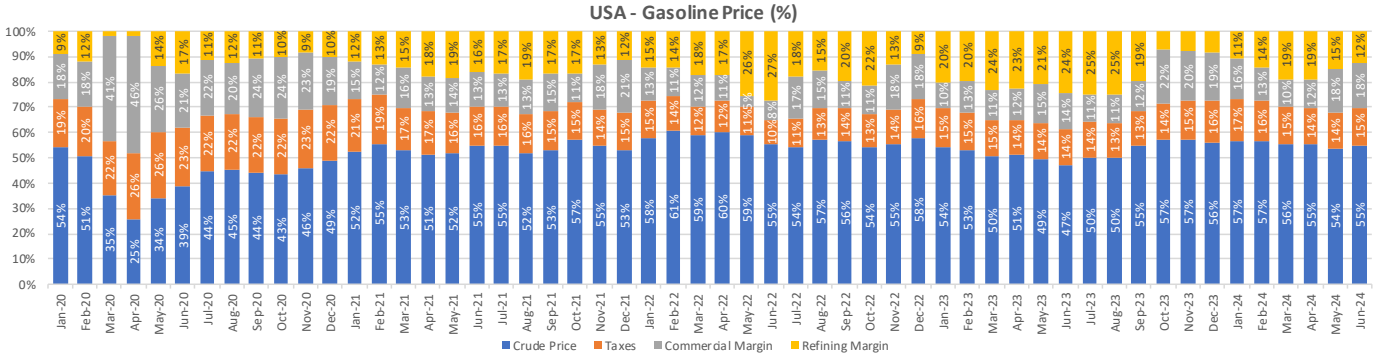
Unlike the U.S. and European countries, India is expanding its oil refining capacity, aiming for a 22% increase (56 million tons) by 2028. This ambitious expansion is driven by growing demand for gasoline and diesel, coupled with a lack of new refining capacity in recent years (Sharma and Cho 2024).

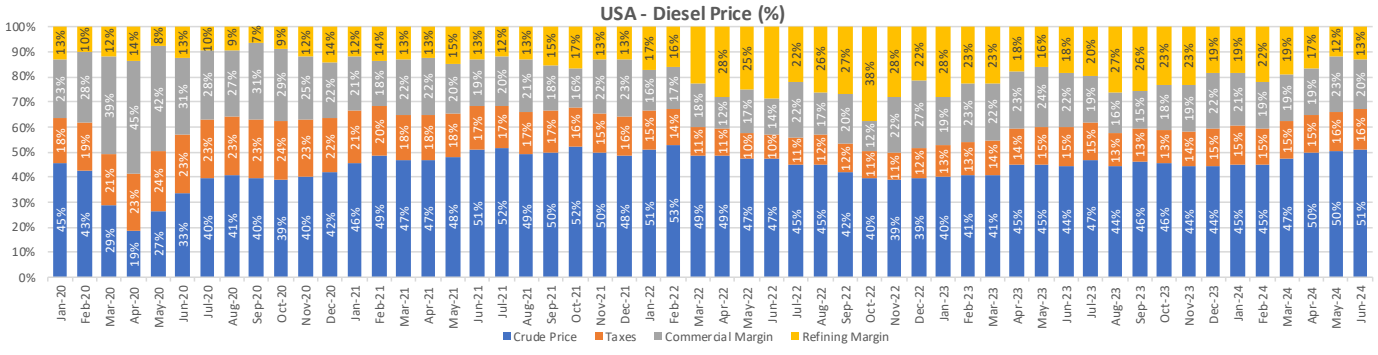
Annex 1

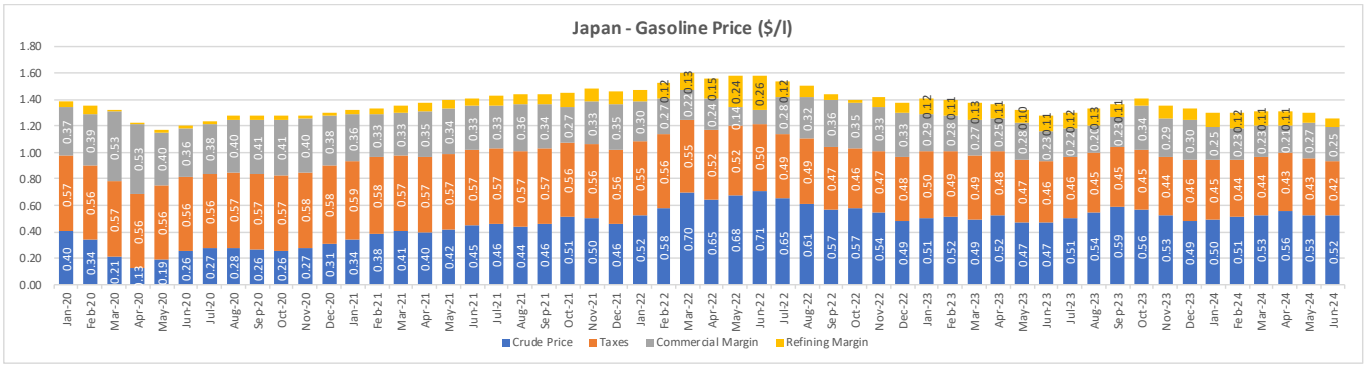
Country Gasoline and Diesel Pump Price Components in $US/l and in Percentage (%)

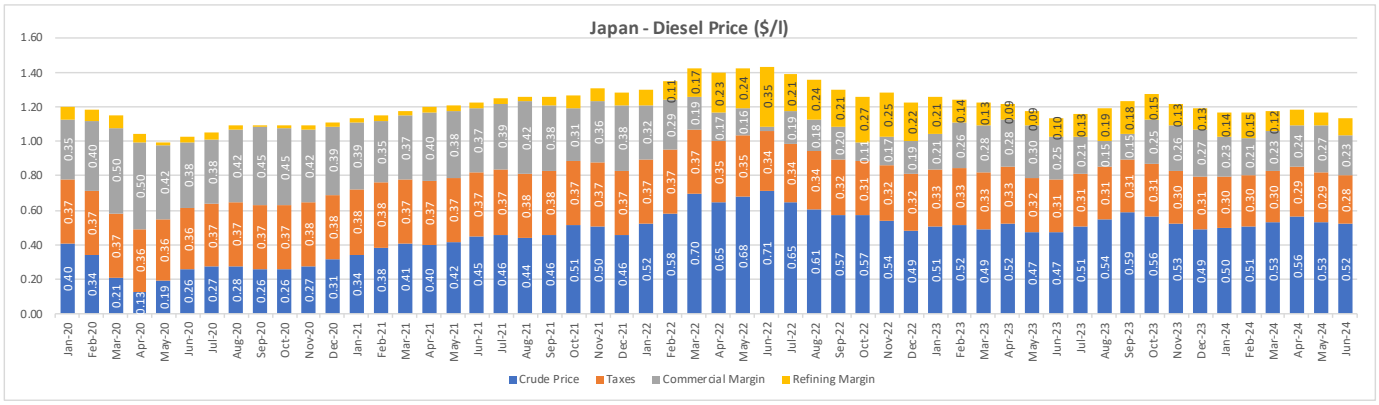

USA - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

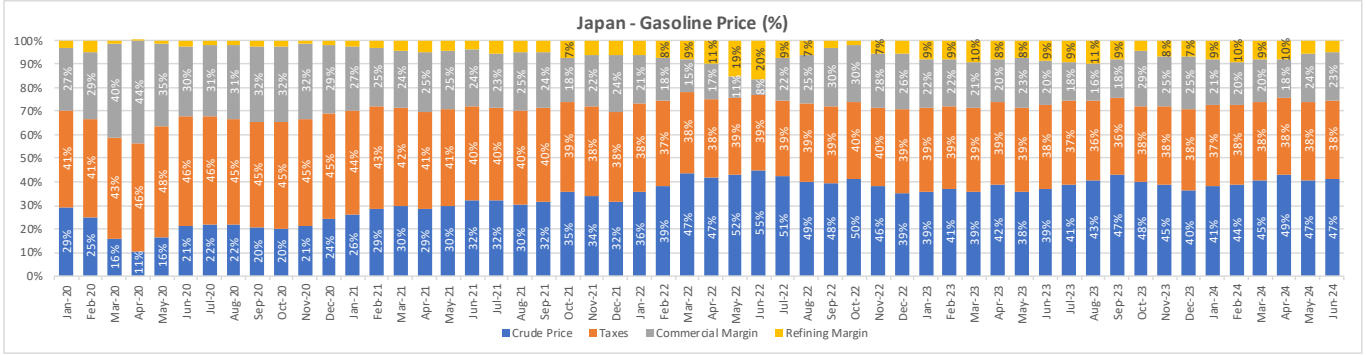

USA - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

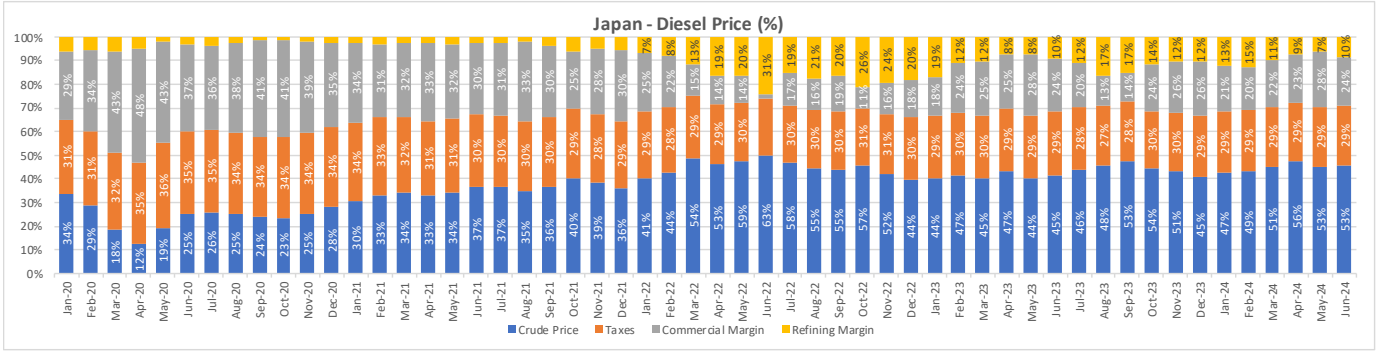

USA - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

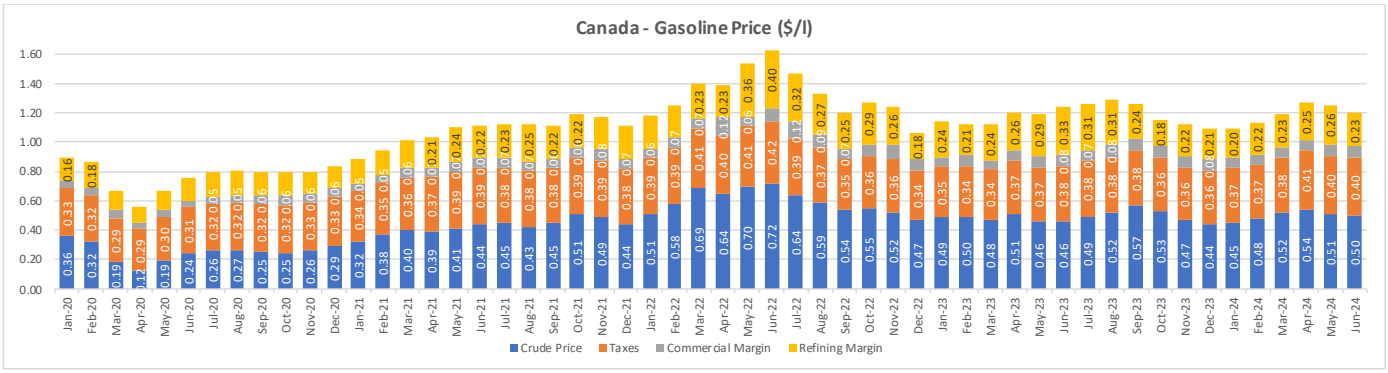

USA - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

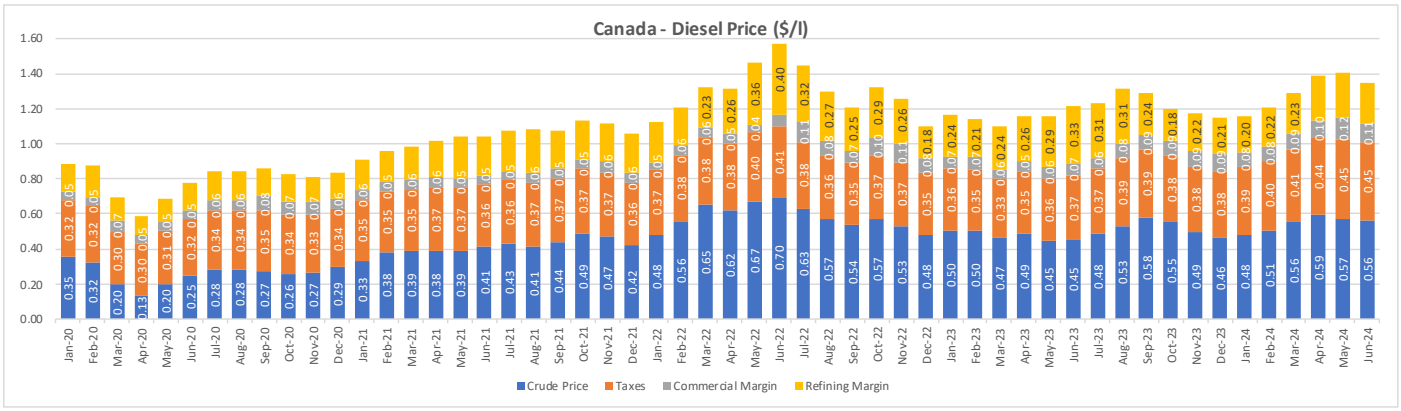

Japan - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

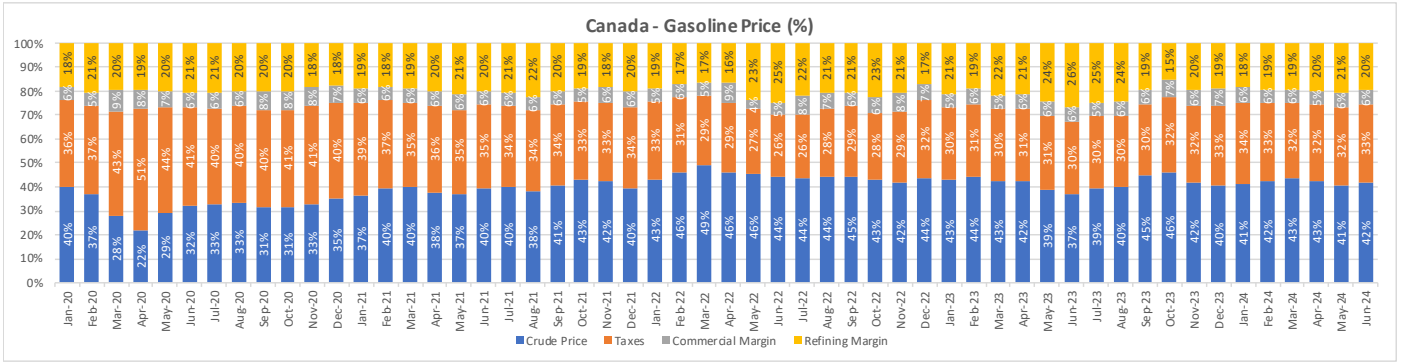

Japan - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

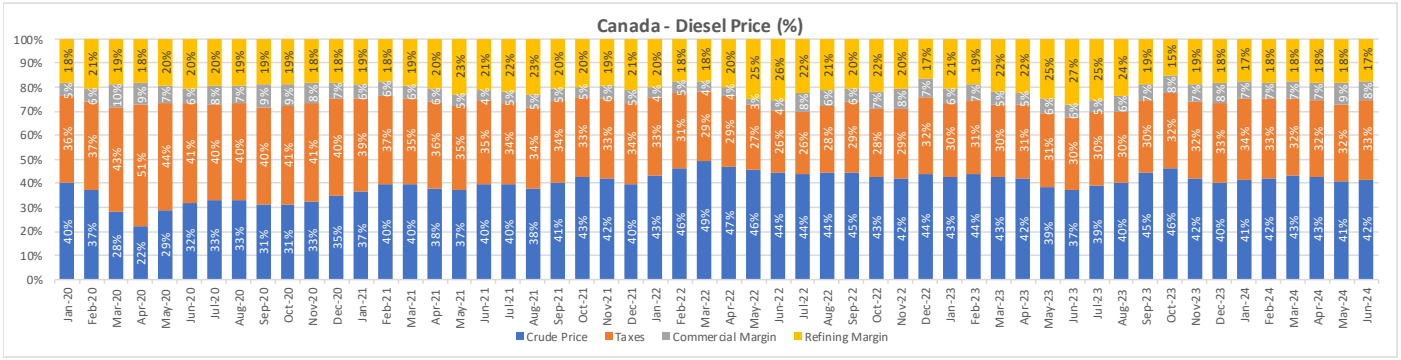

Japan - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

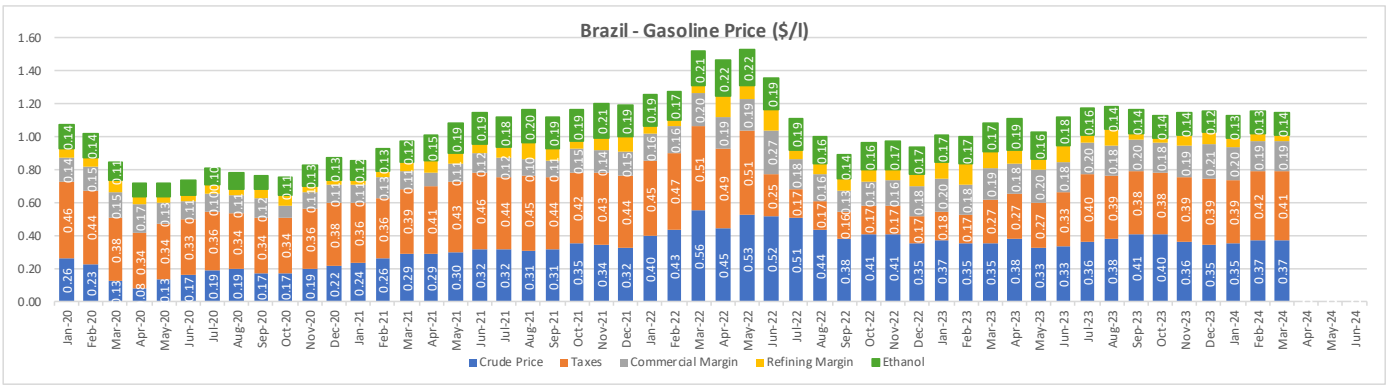

Japan - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

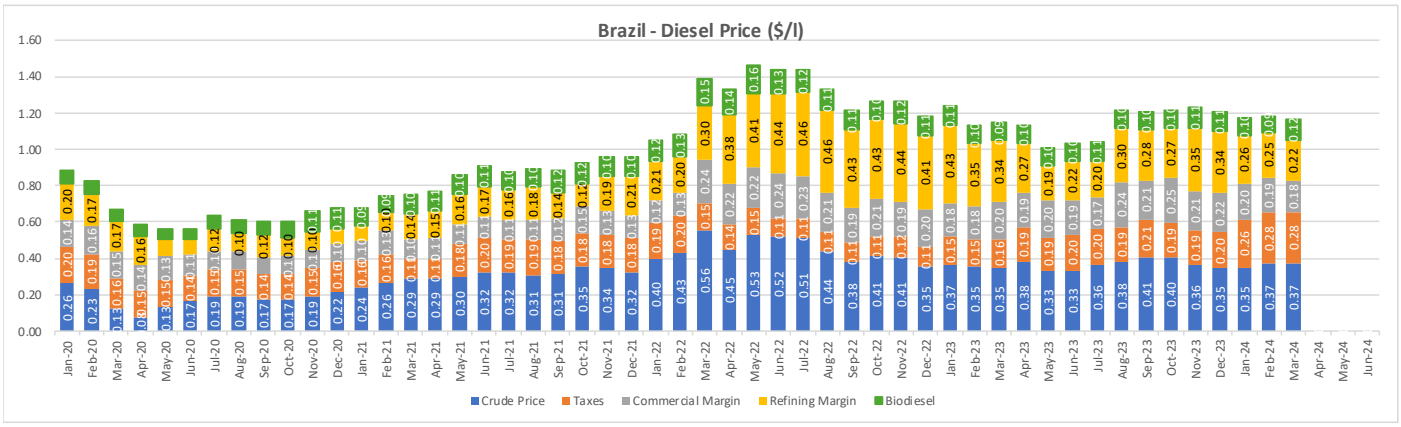

Canada - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

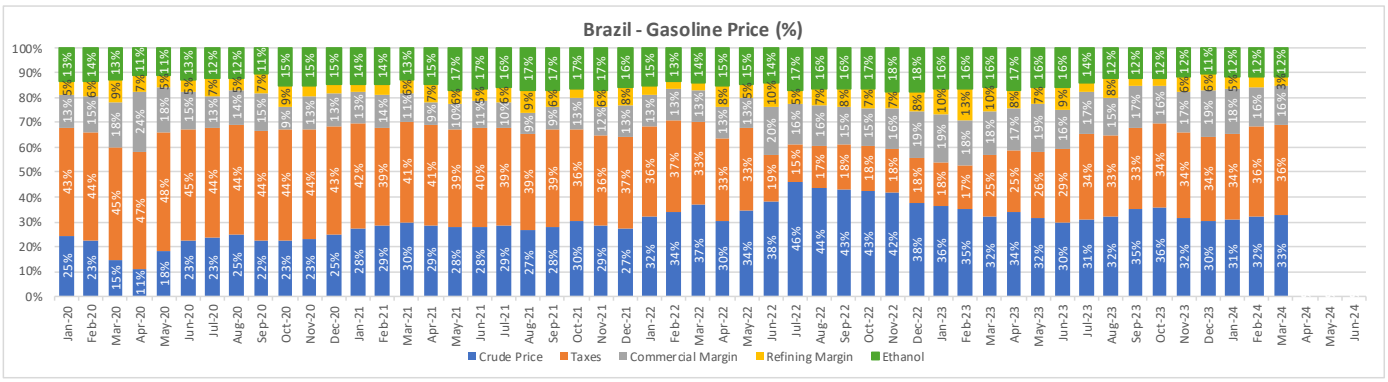

Canada - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

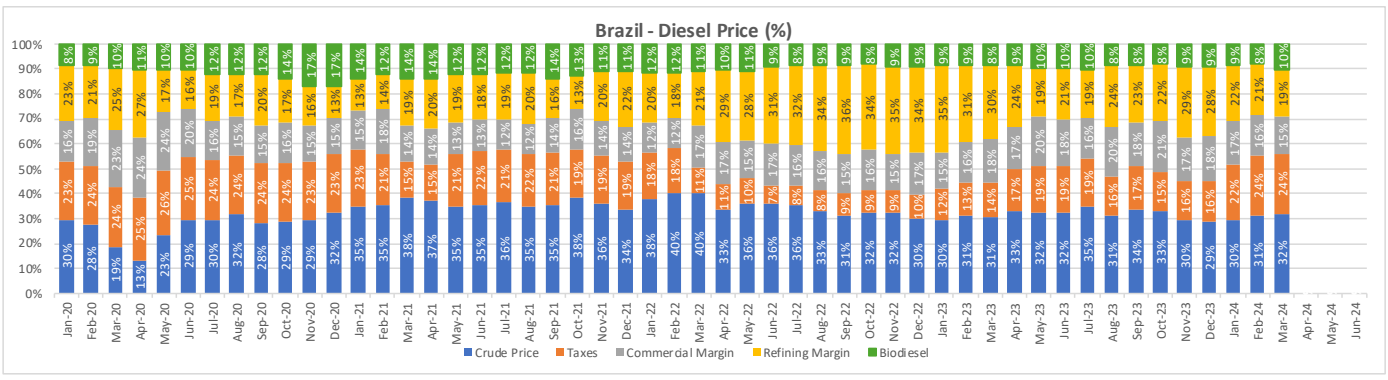

Canada - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

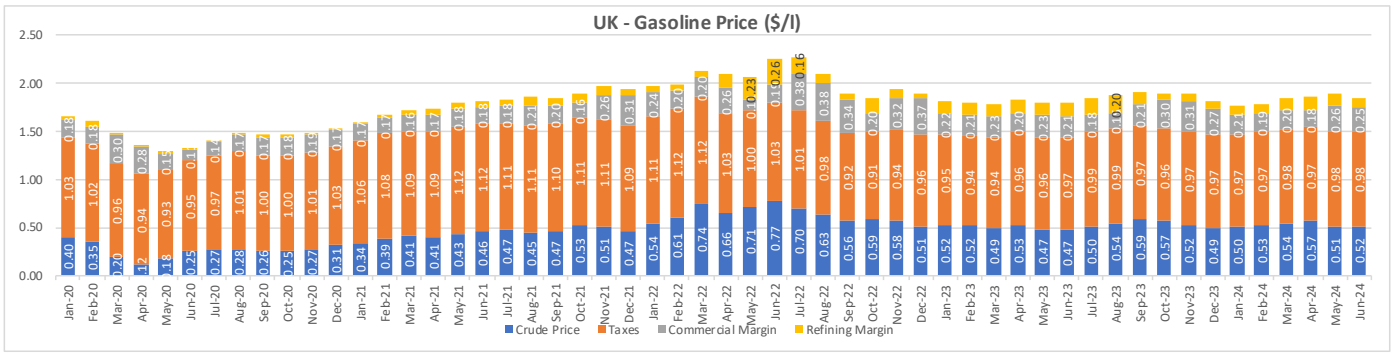

Canada - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

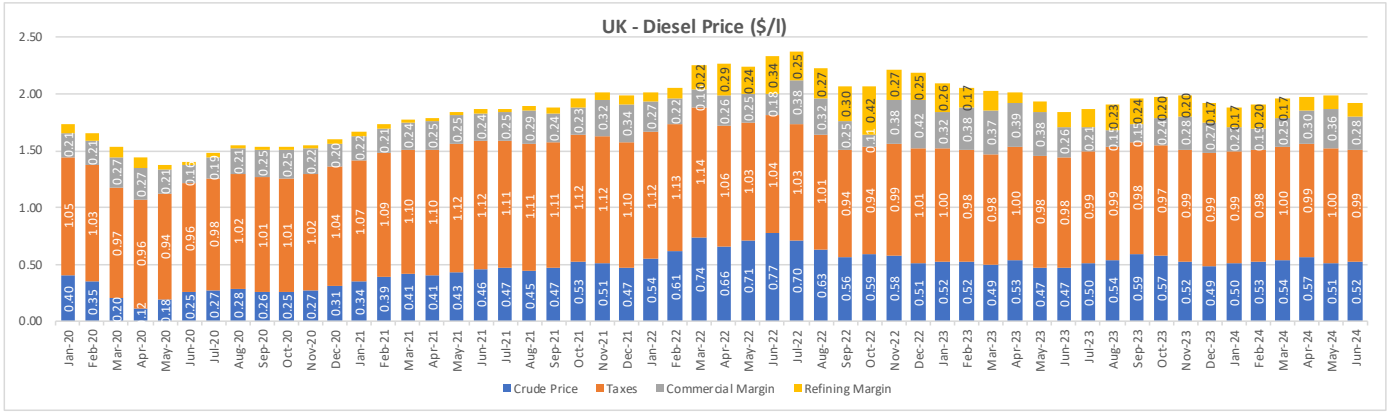

Brazil - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin
Ethanol

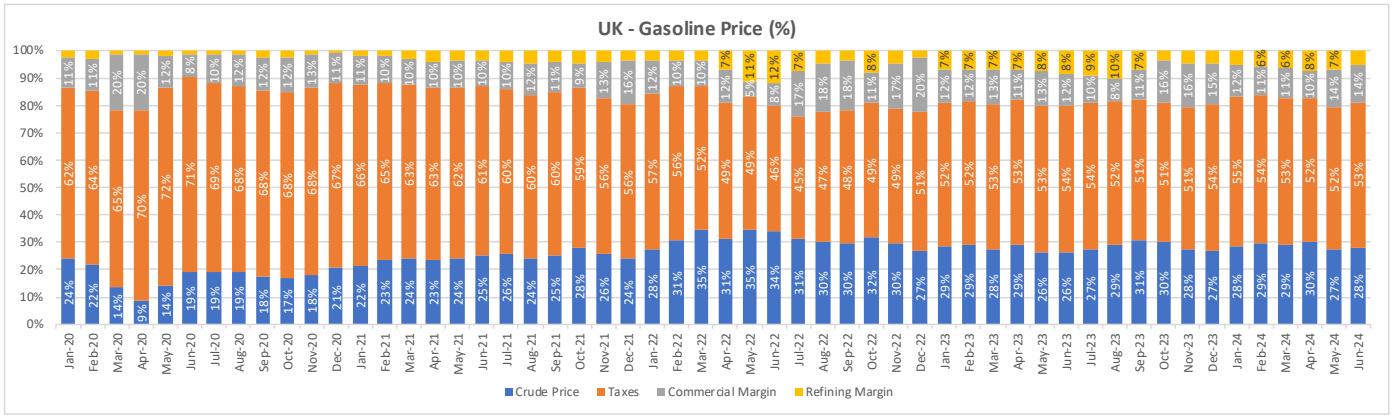

Brazil - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin
Biodiesel

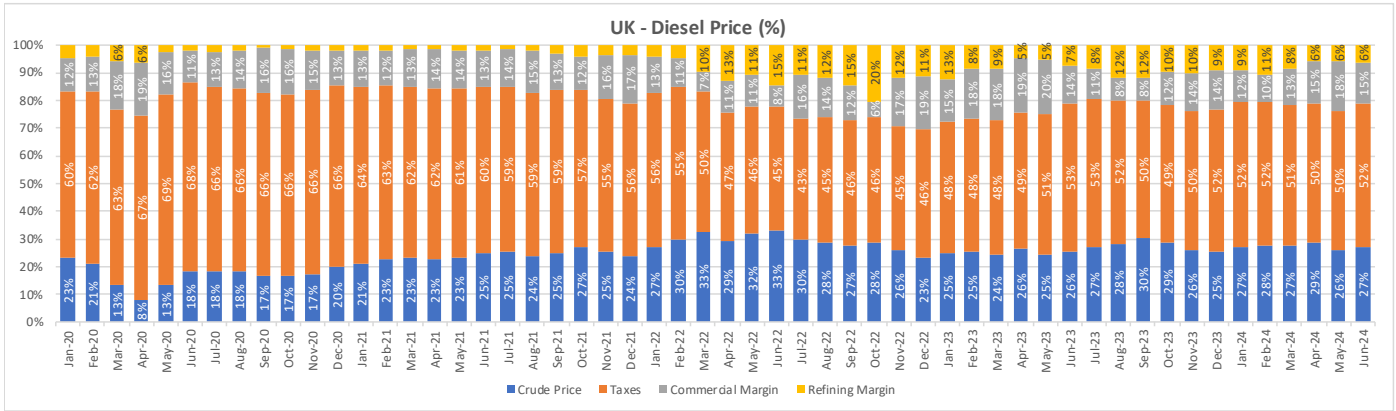

Brazil - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin
Ethanol

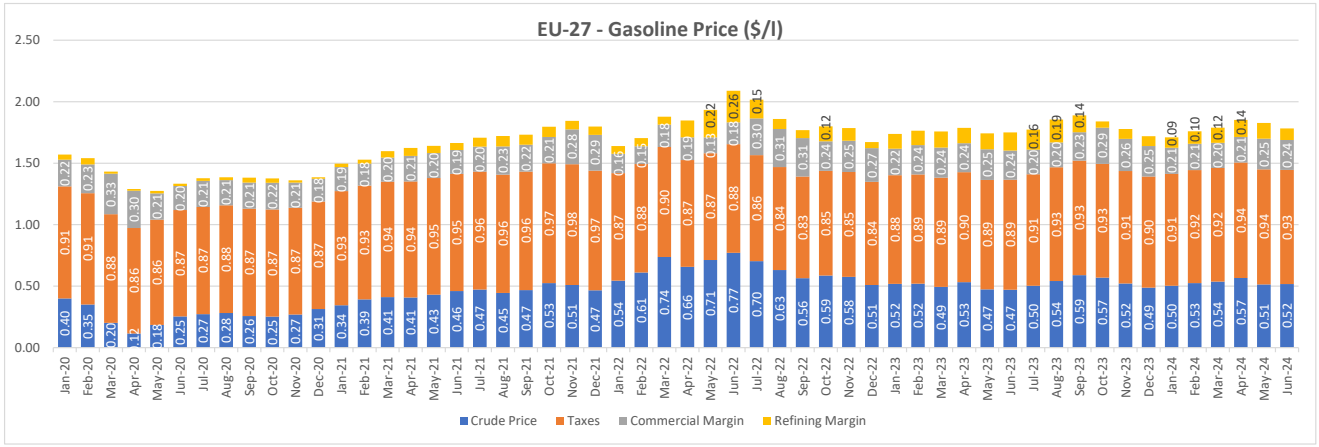

Brazil - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin
Biodiesel

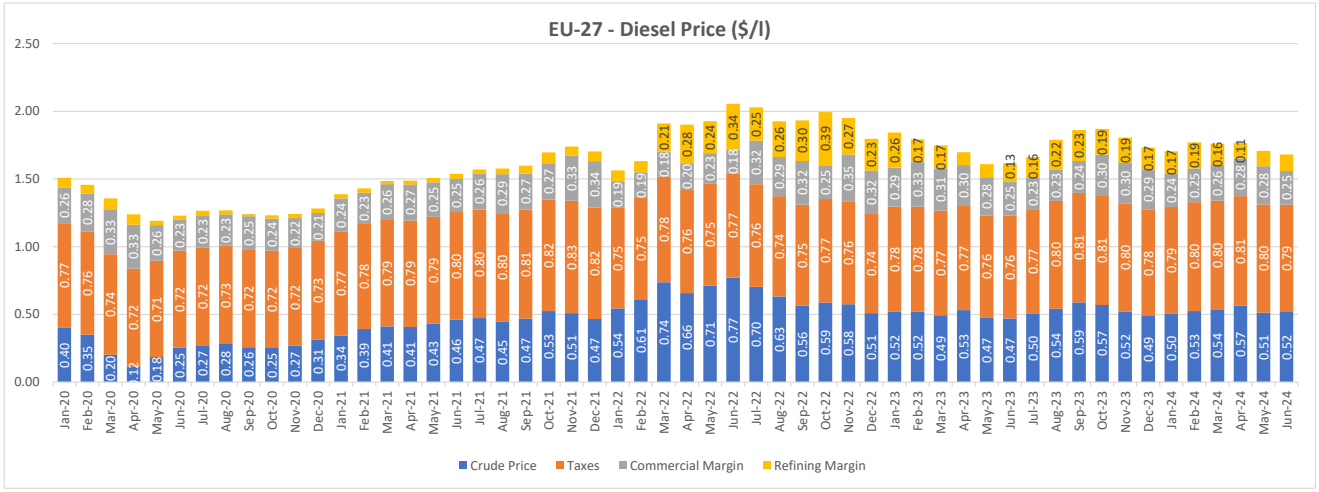

UK - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

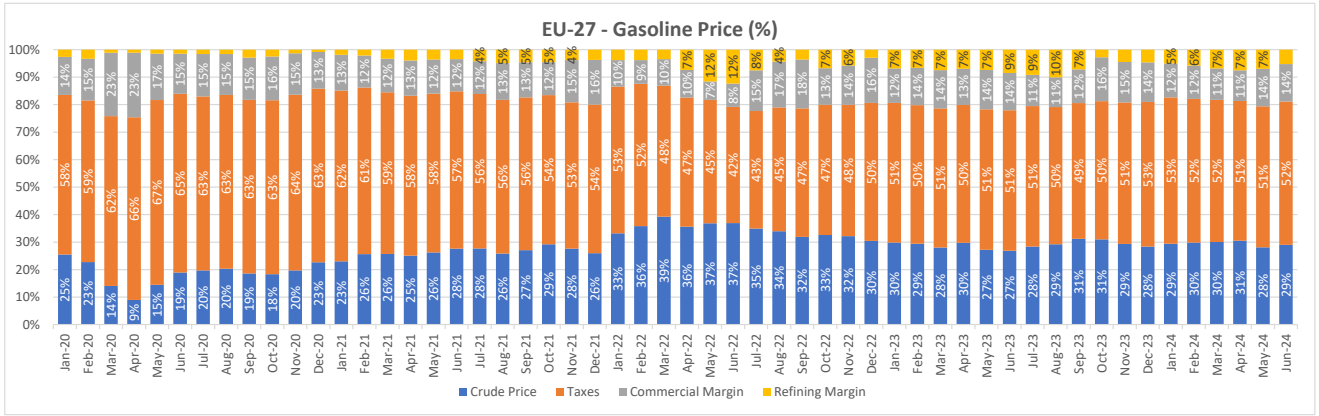

UK - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

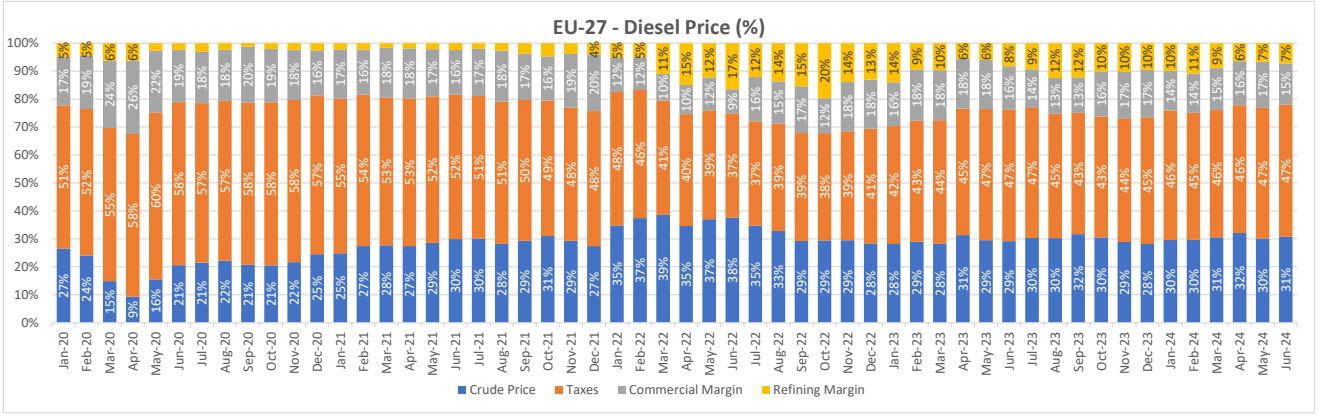

UK - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

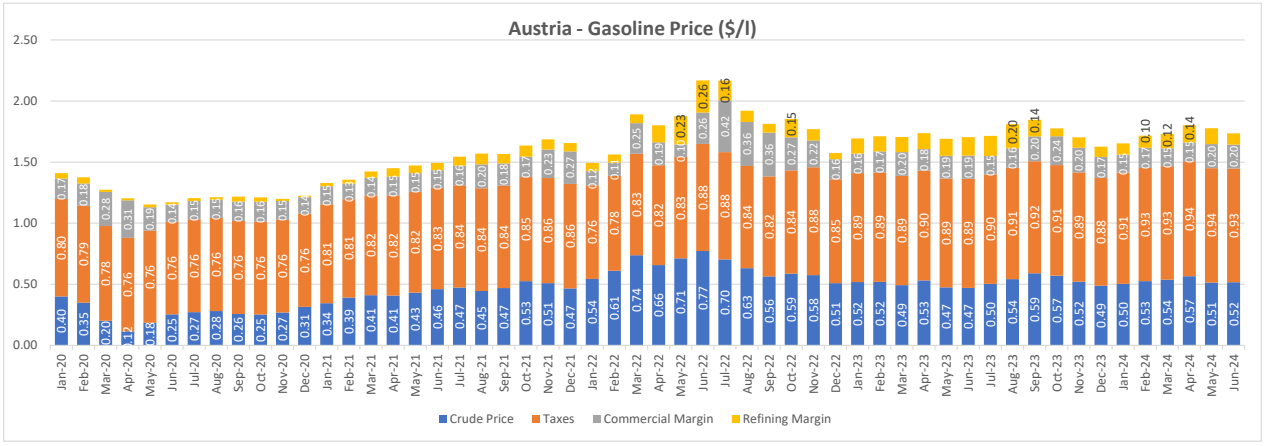

UK - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

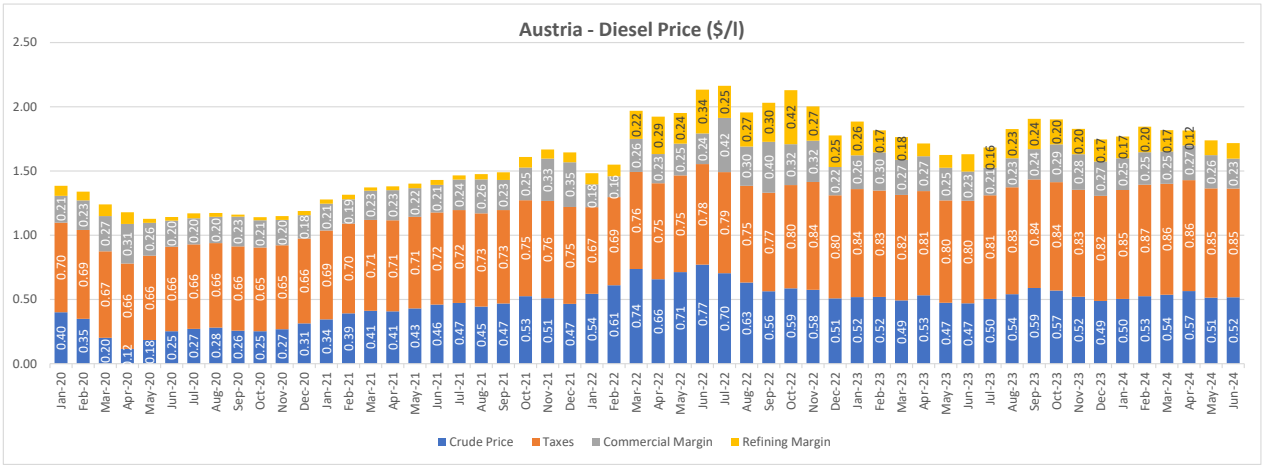

EU-27 - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

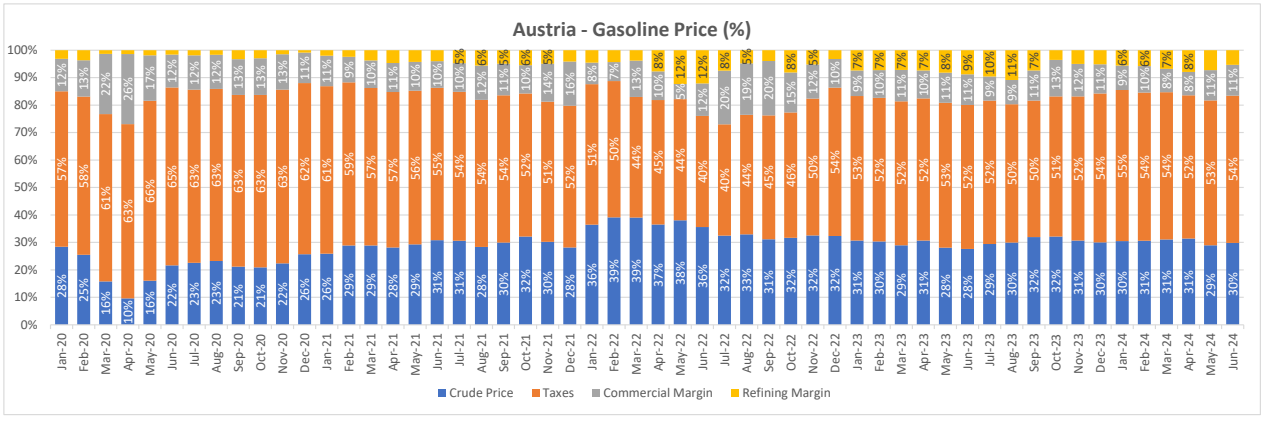

EU-27 - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

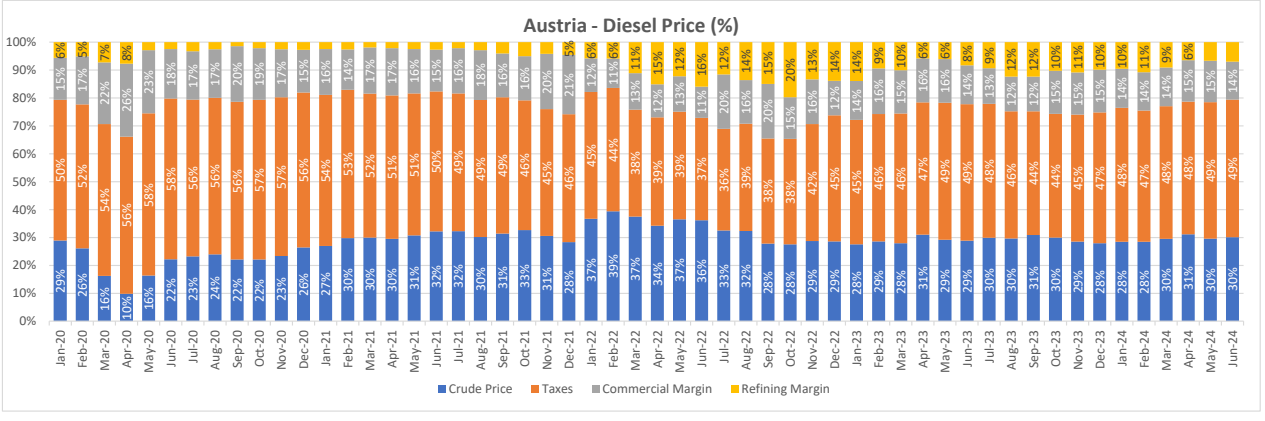

EU-27 - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

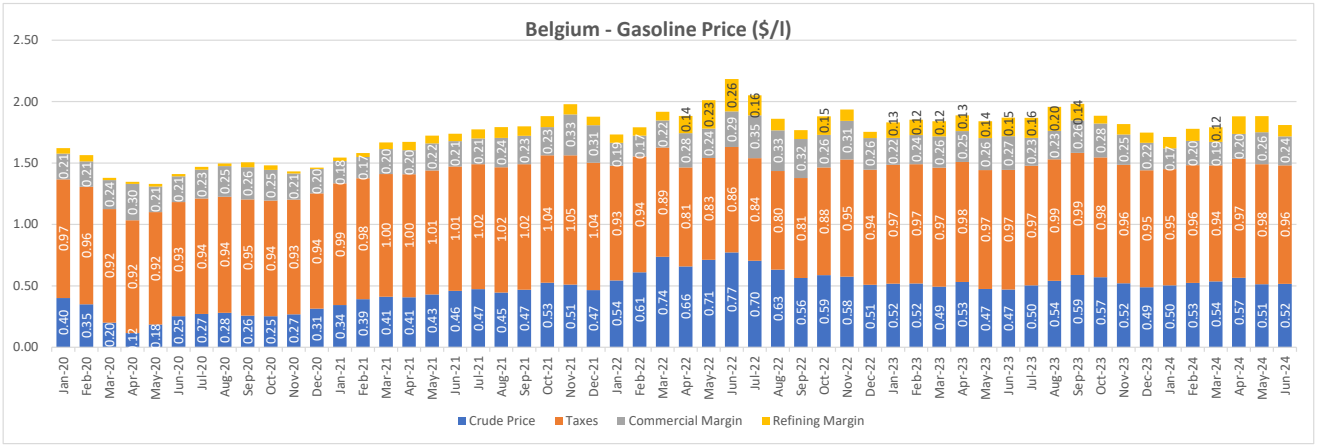

EU-27 - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

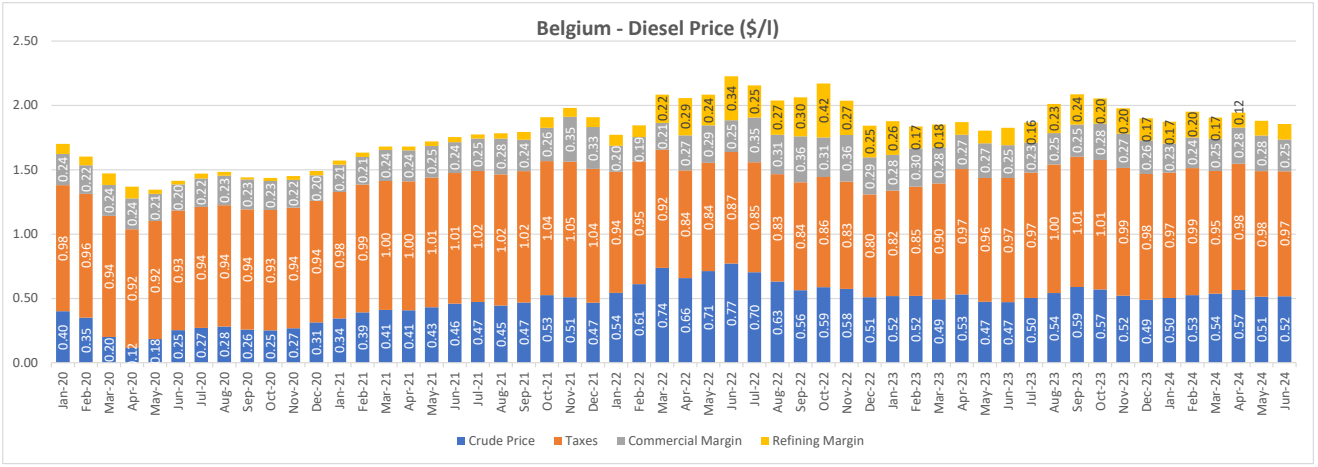

Austria - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

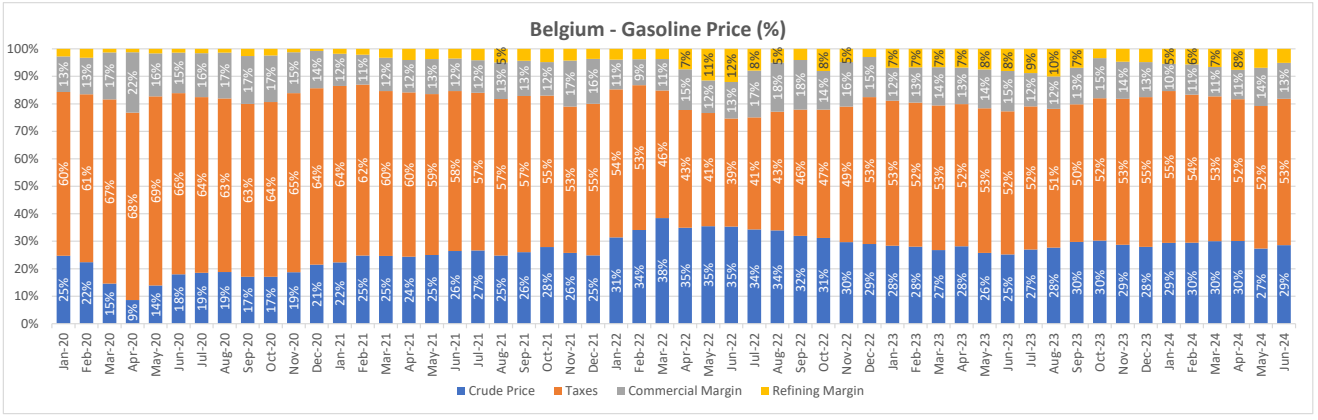

Austria - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

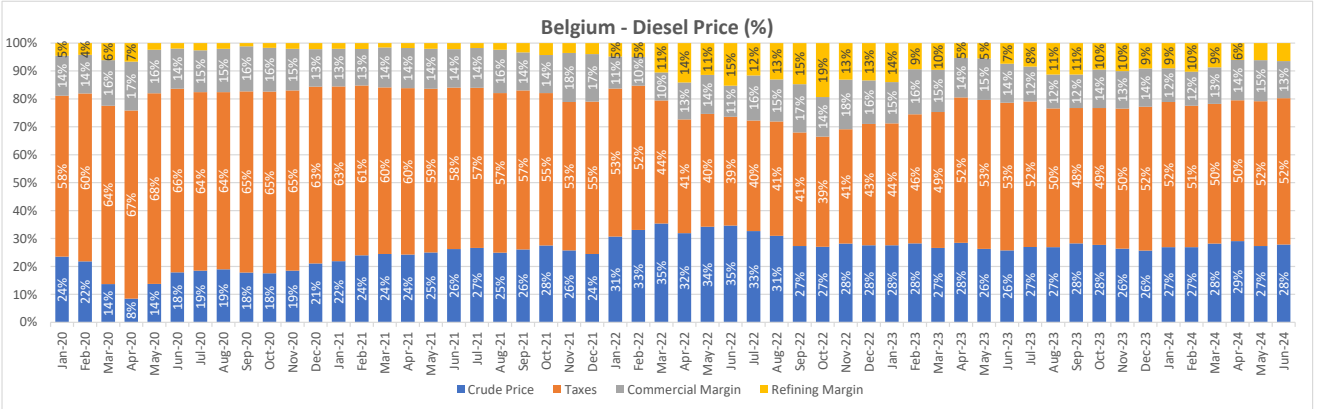

Austria - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

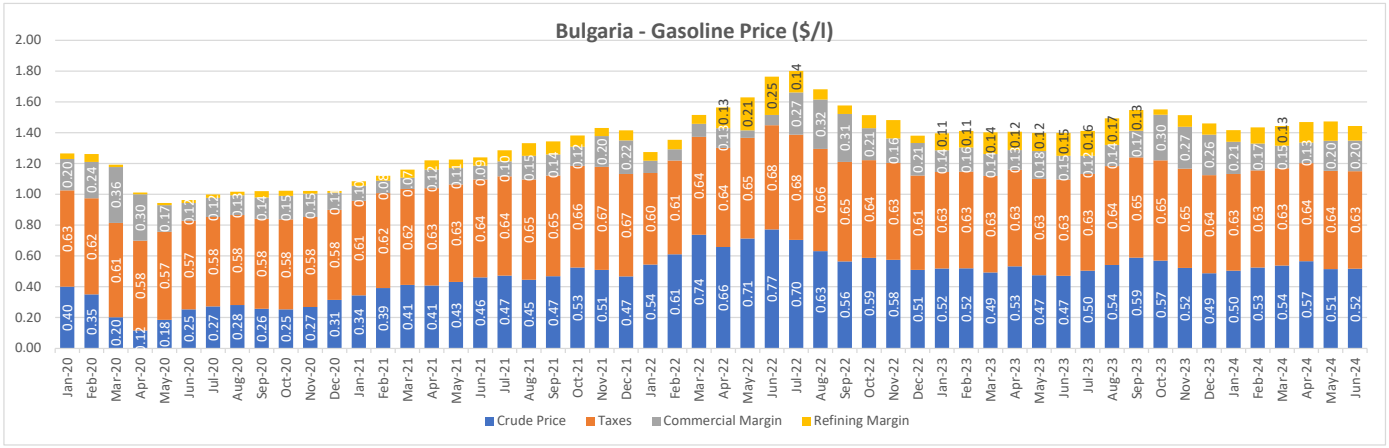

Austria - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

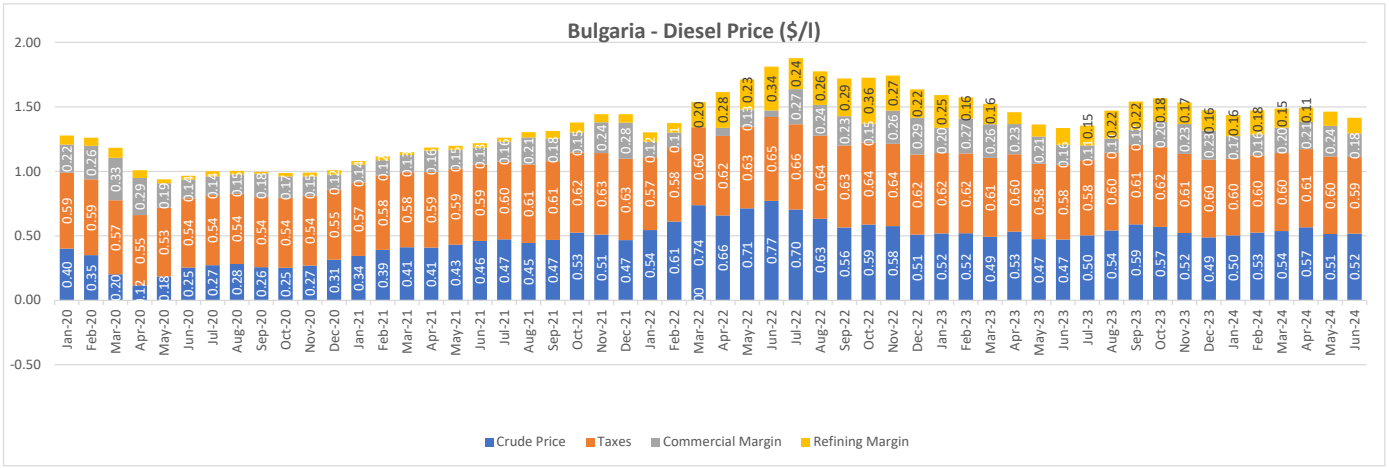

Belgium - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

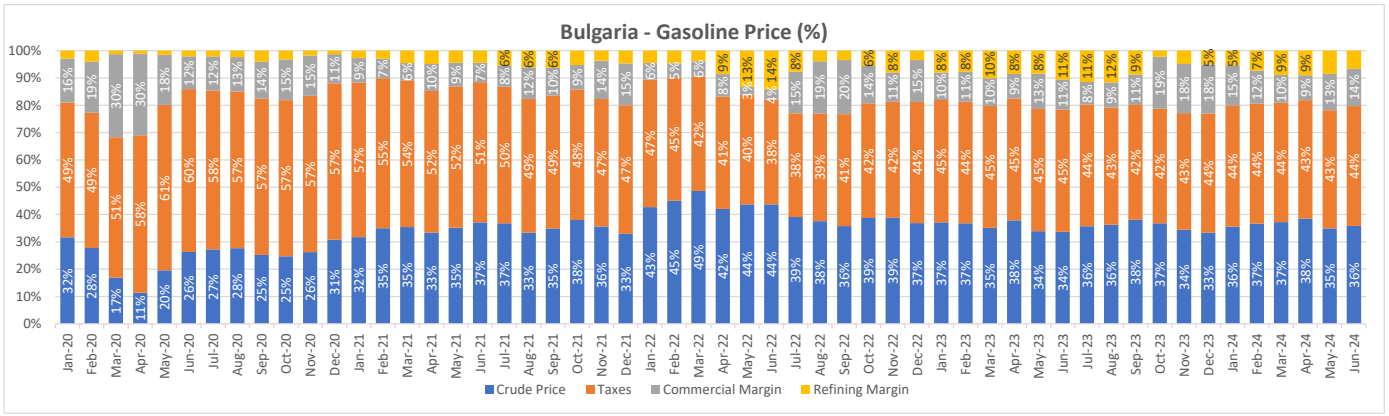

Belgium - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

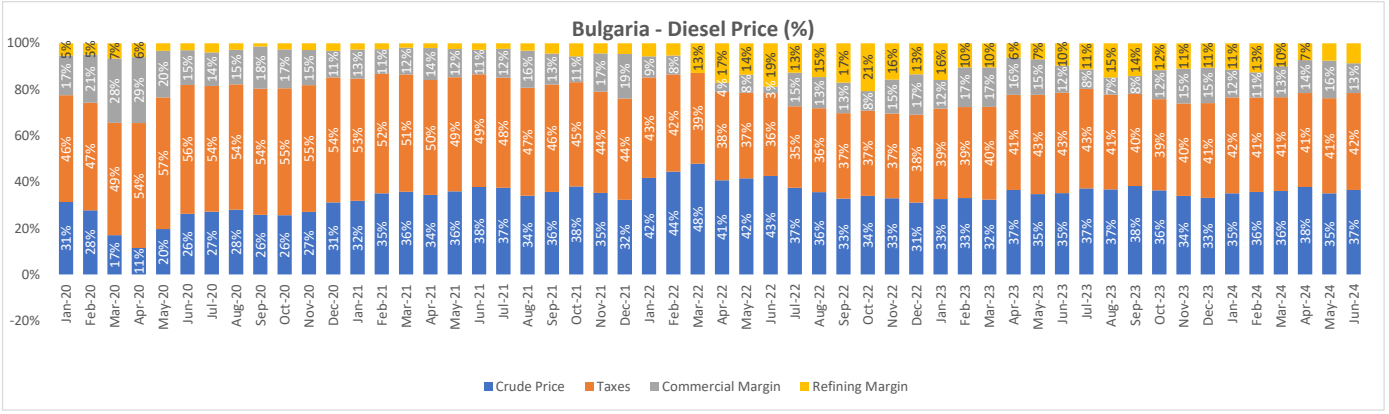

Belgium - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

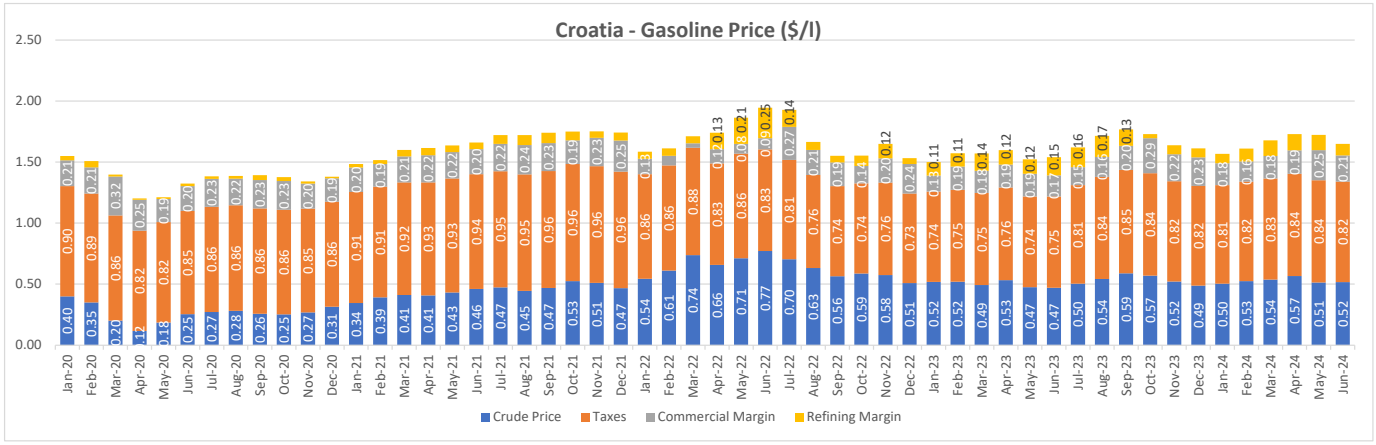

Belgium - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

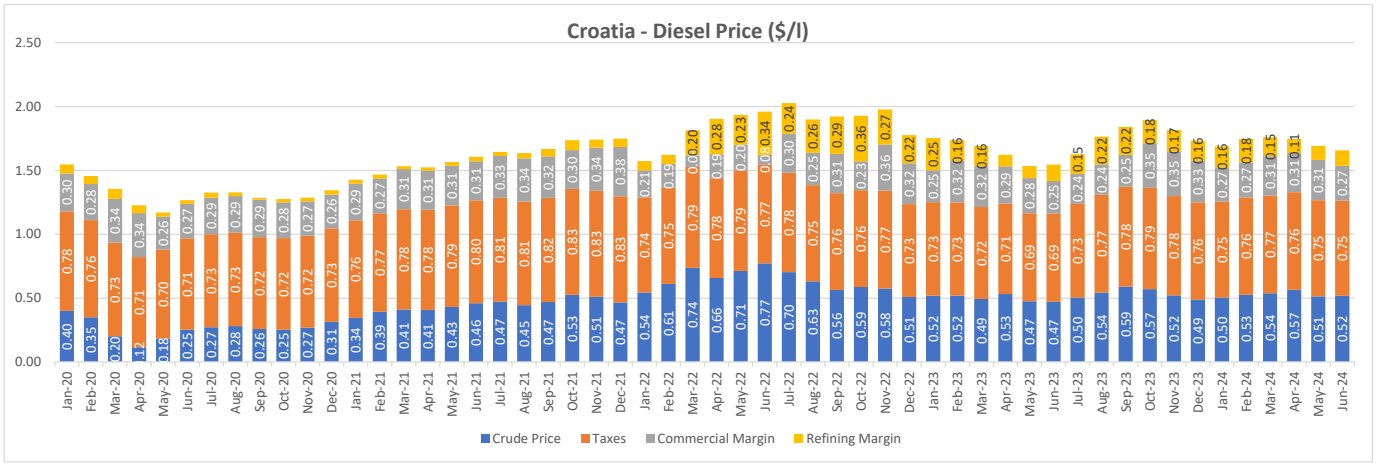

Bulgaria - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

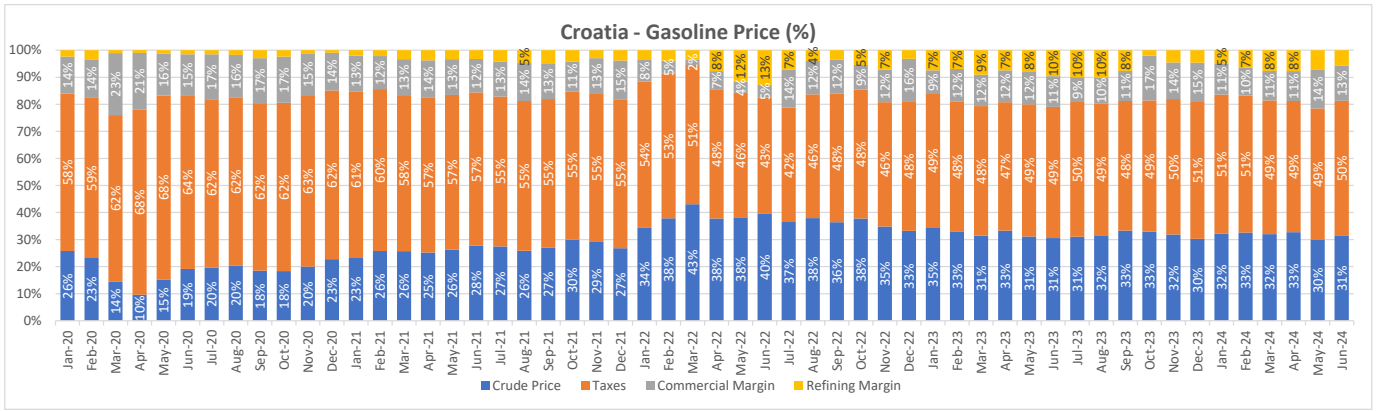

Bulgaria - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

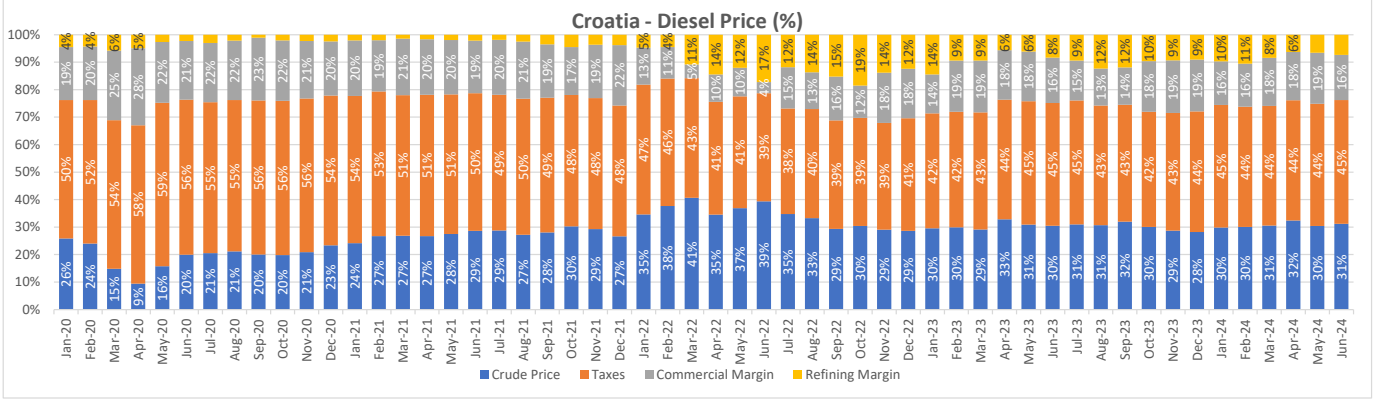

Bulgaria - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

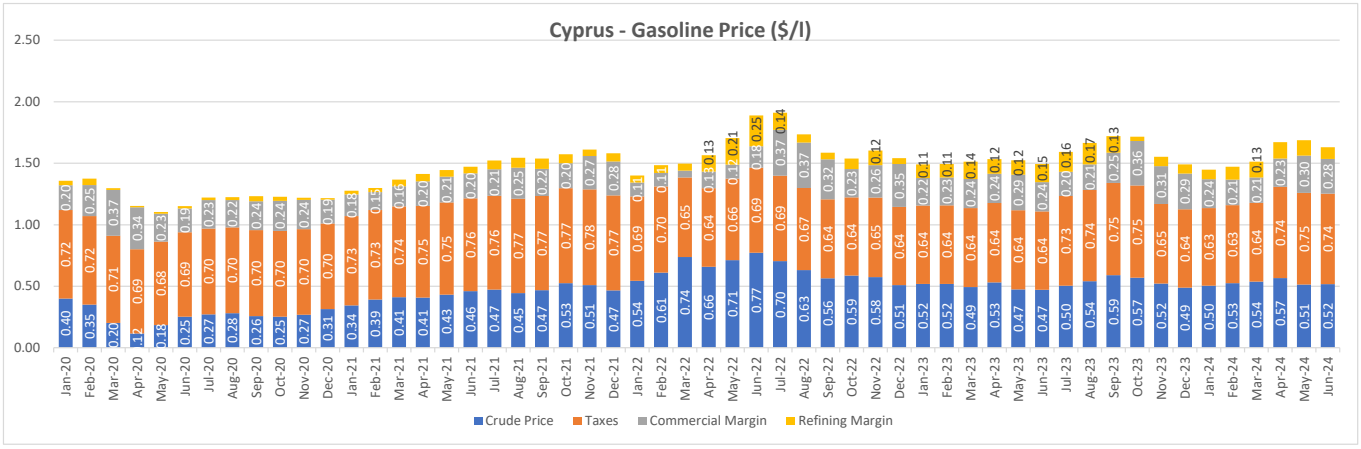

Bulgaria - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

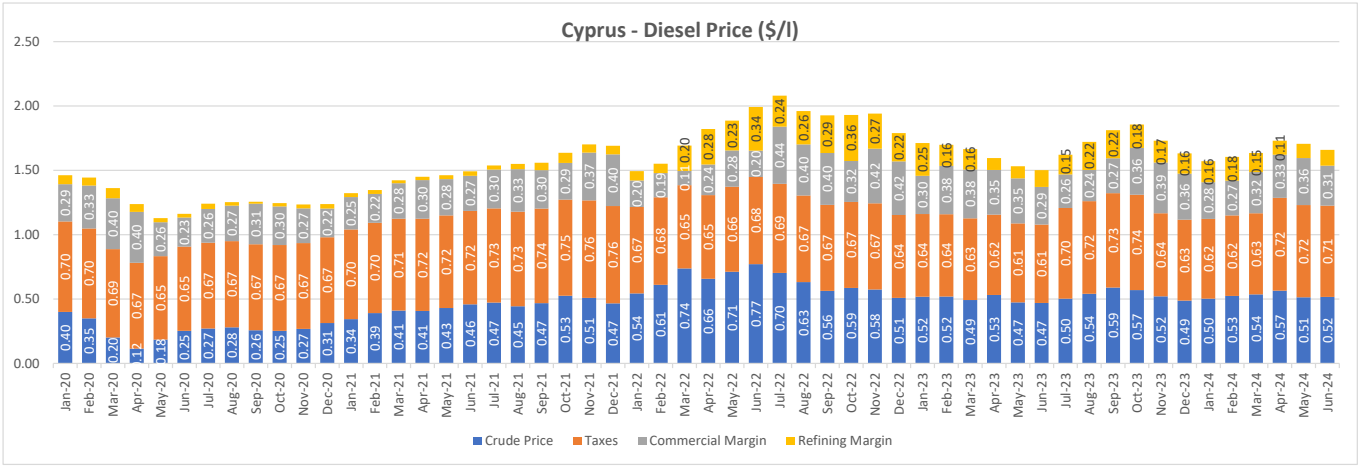

Croatia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

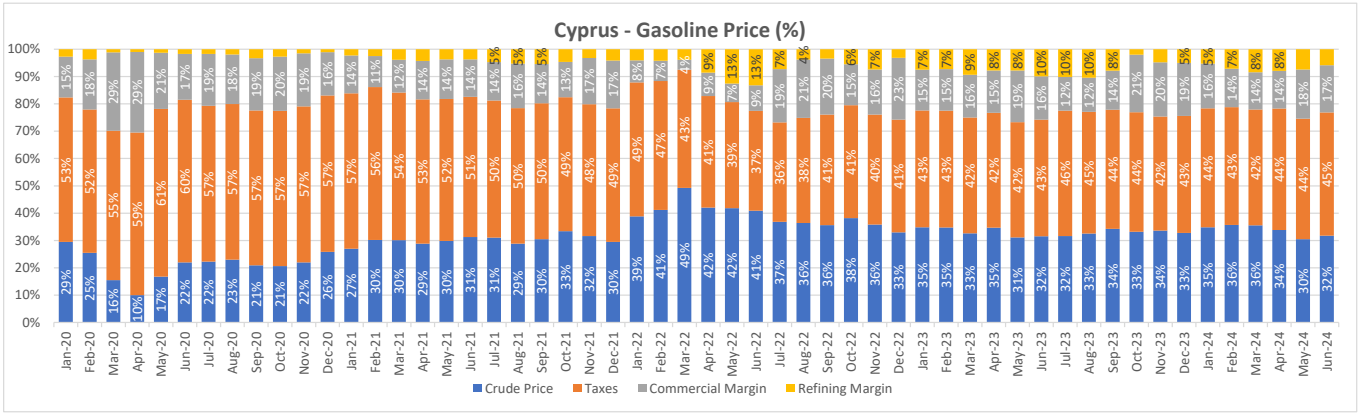

Croatia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

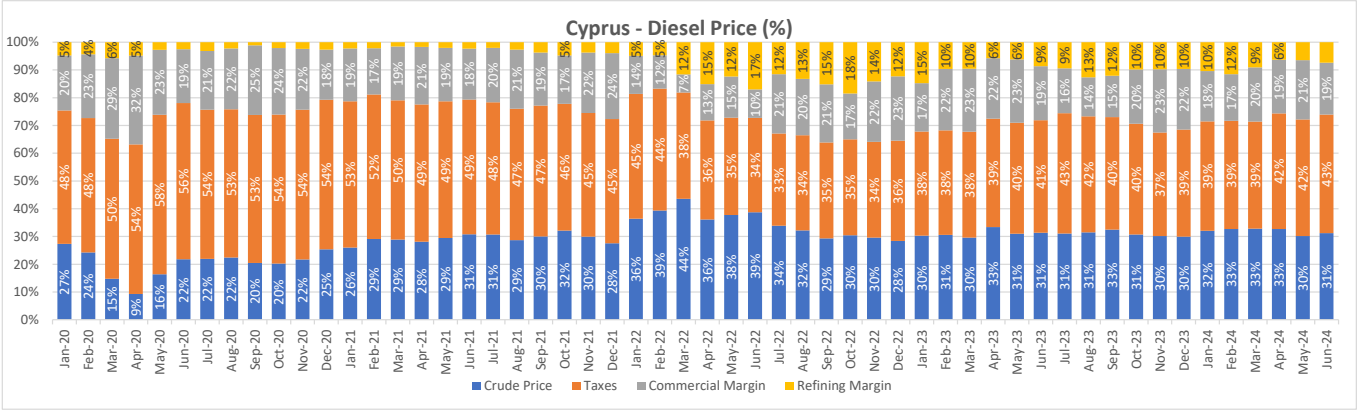

Croatia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

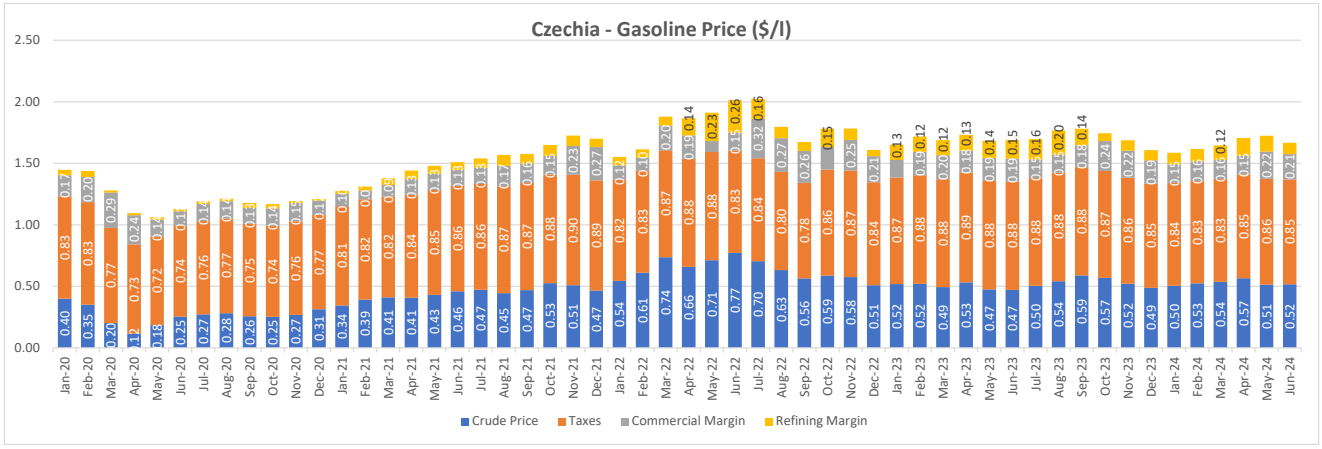

Croatia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

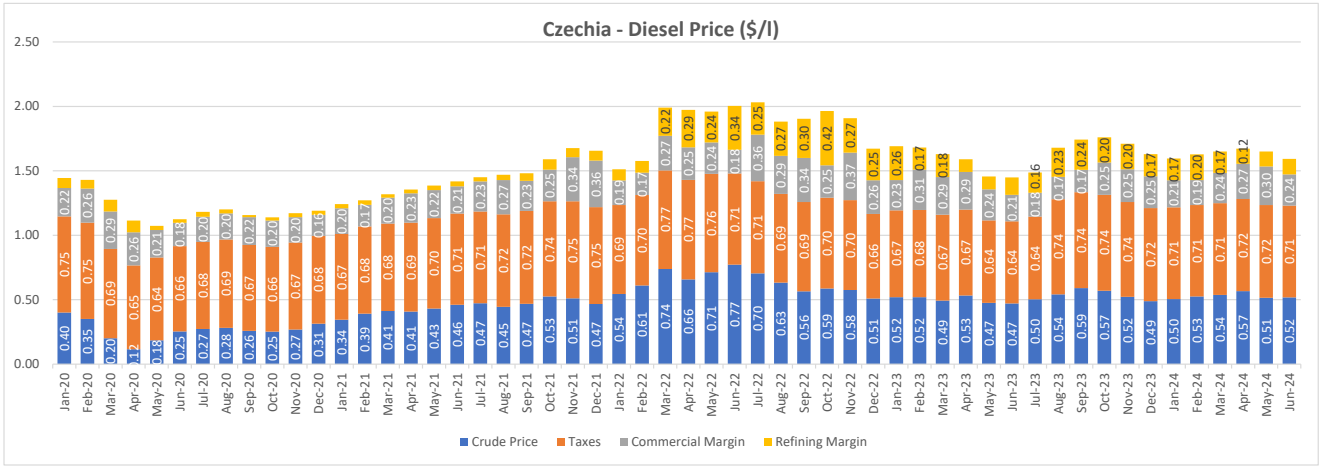

Cyprus - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

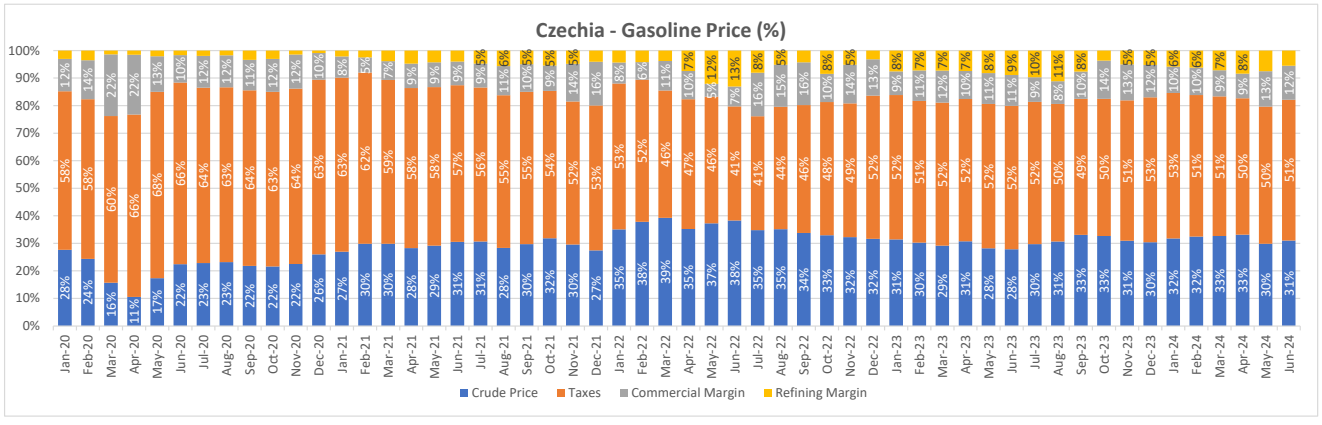

Cyprus - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

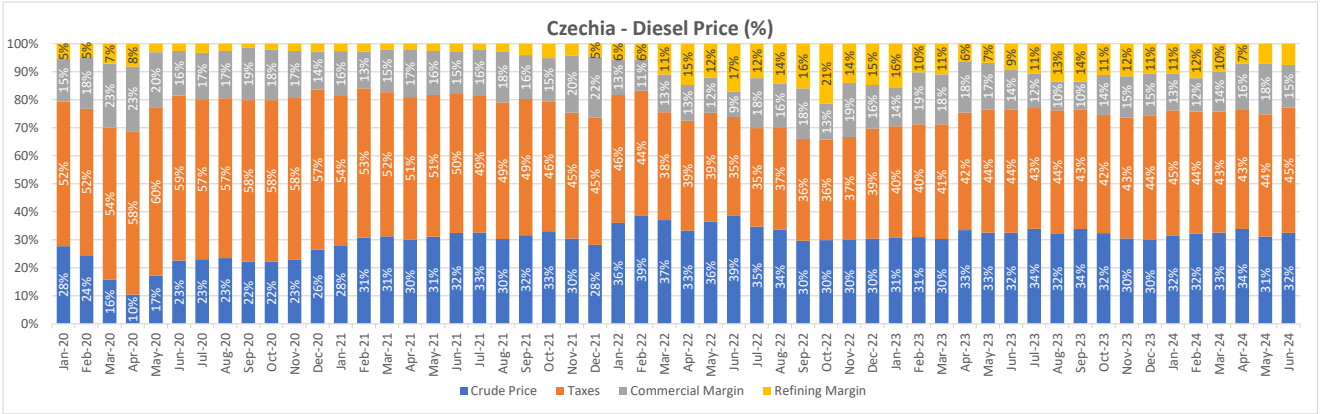

Cyprus - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

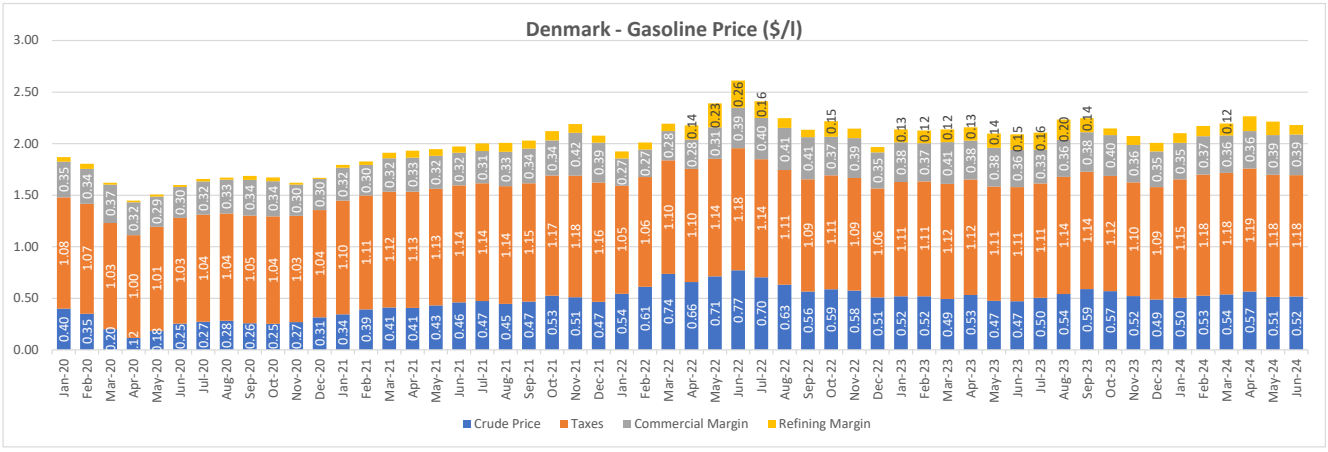

Cyprus - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

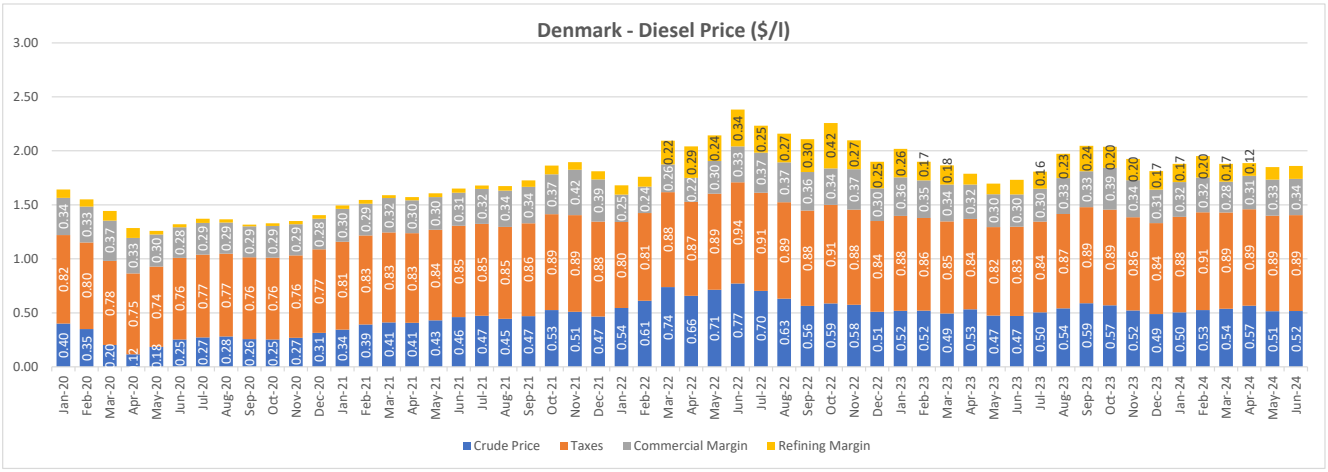

Czechia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

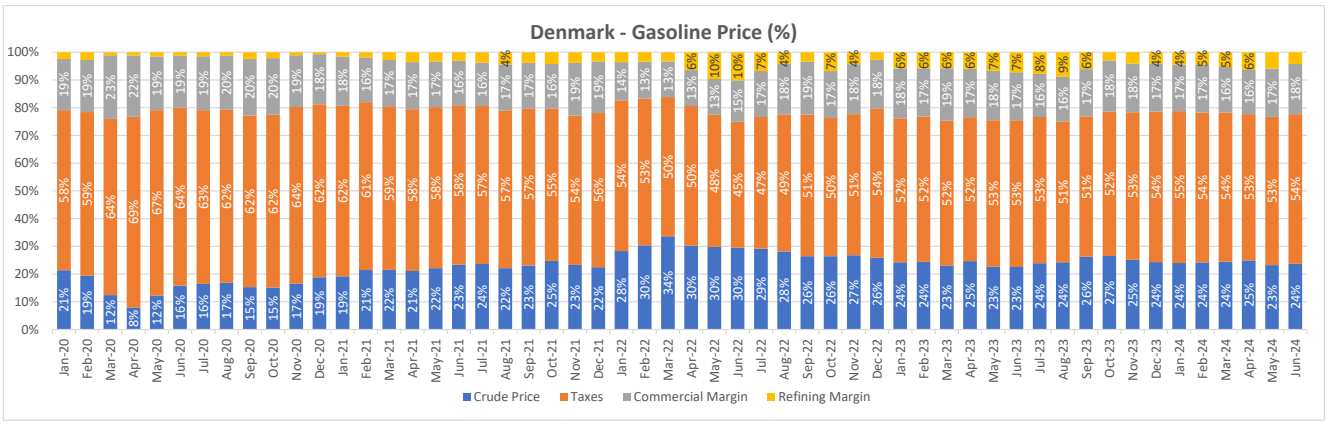

Czechia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

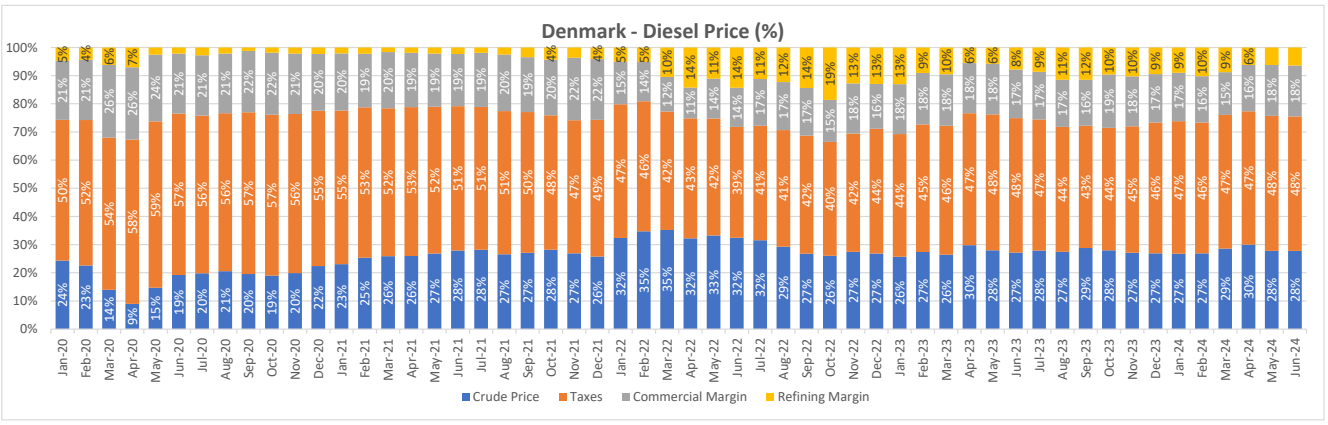

Czechia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

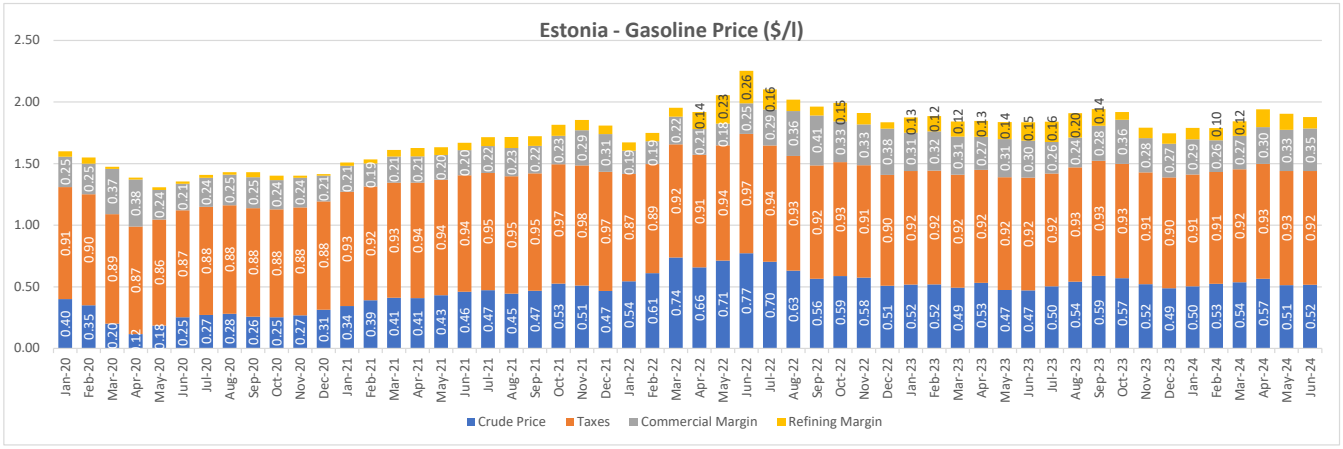

Czechia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

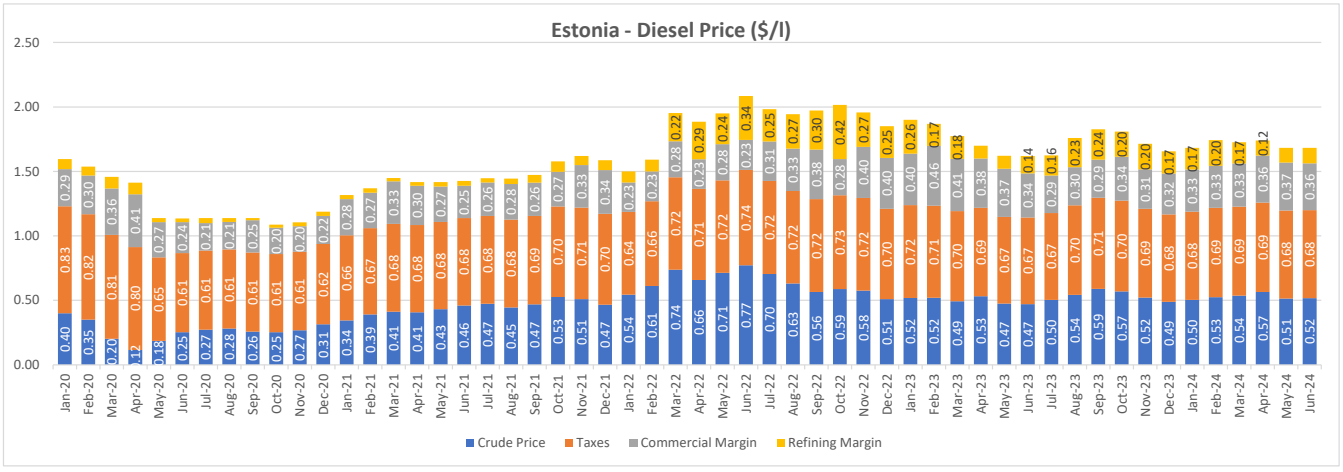

Denmark - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

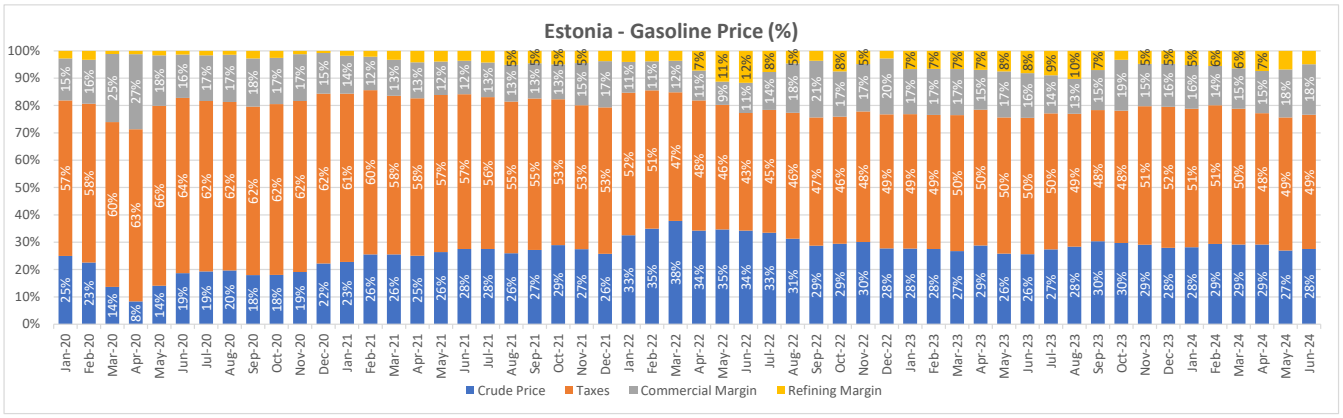

Denmark - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

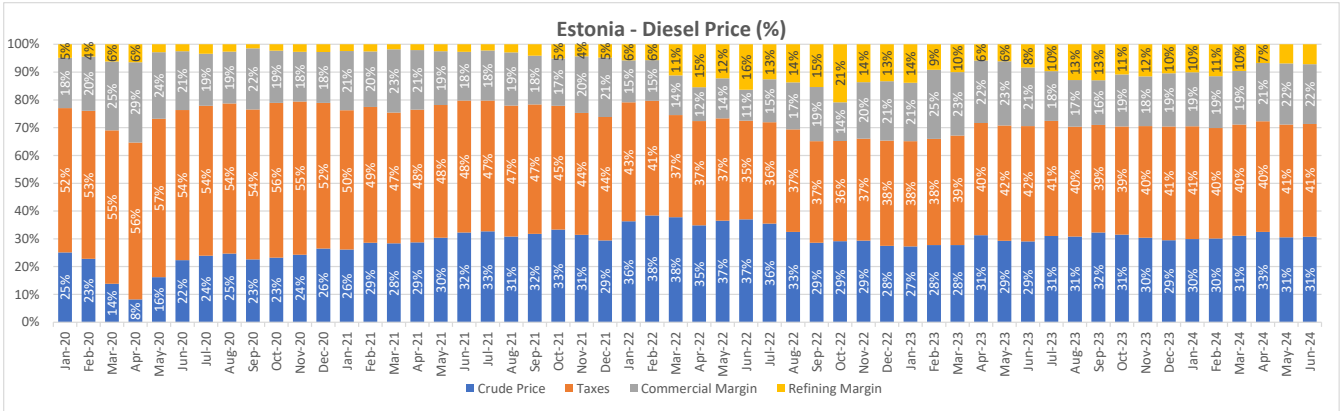

Denmark - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

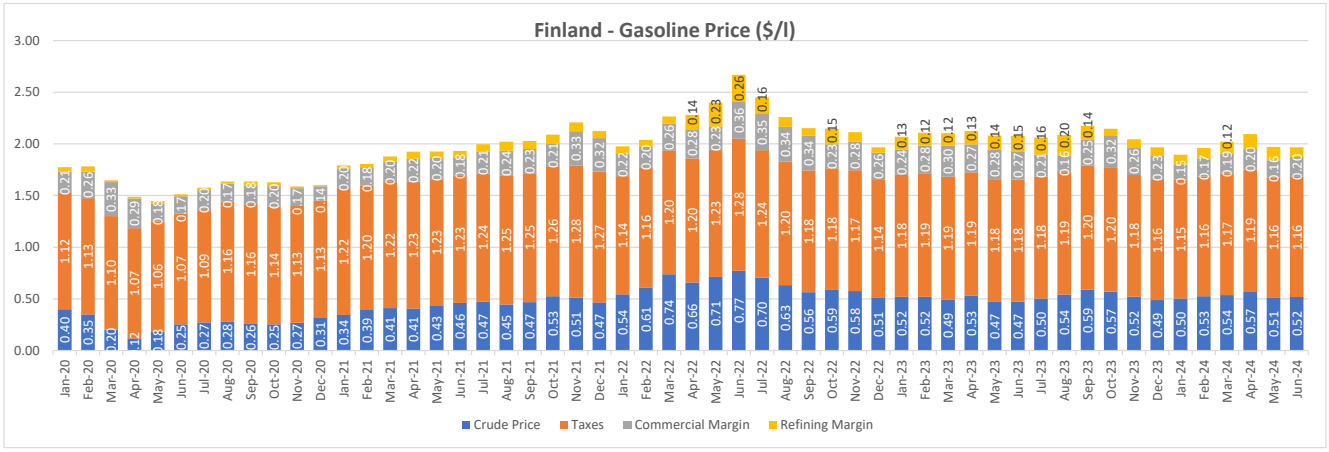

Denmark - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

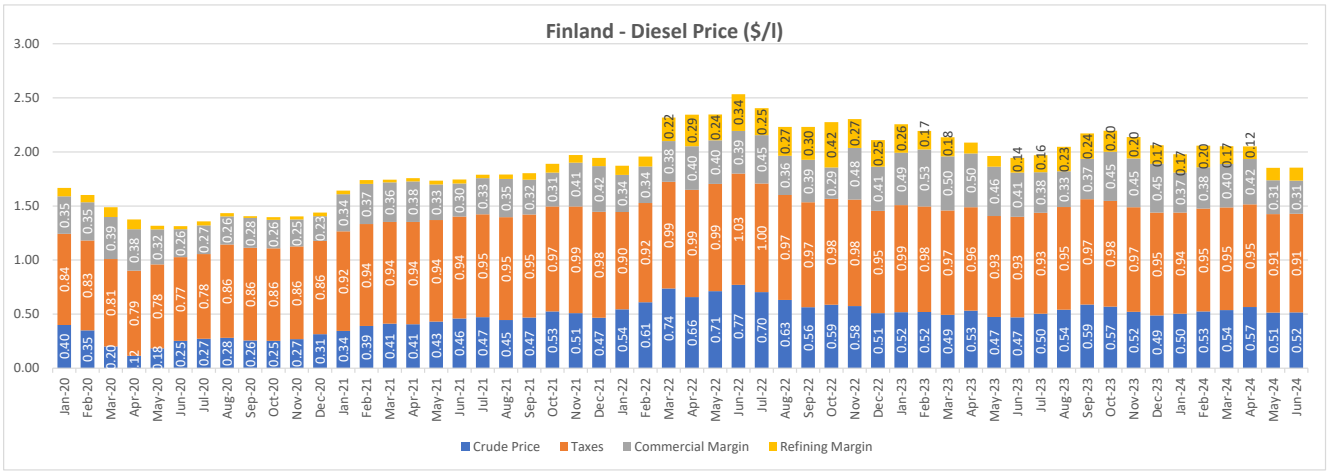

Estonia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

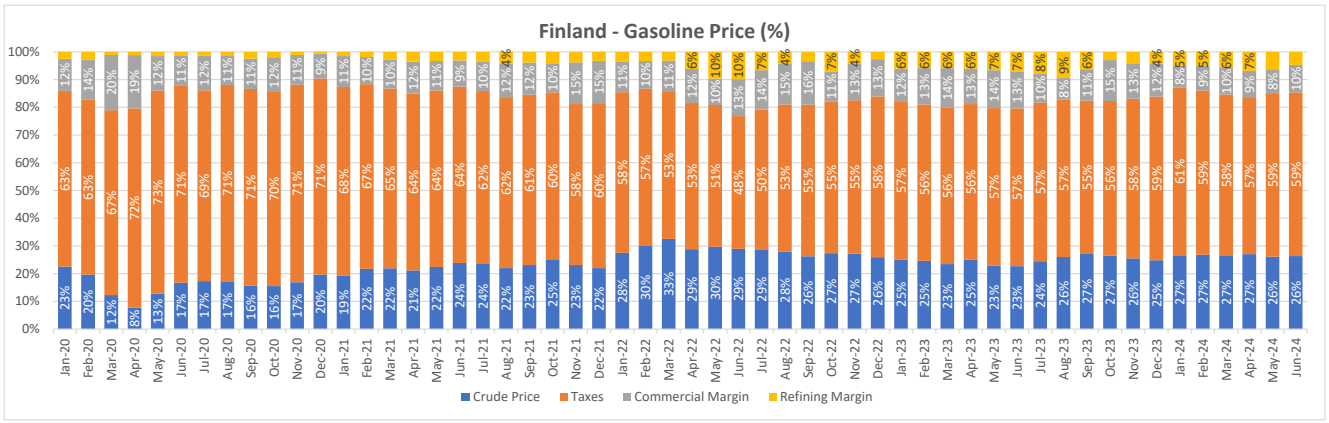

Estonia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

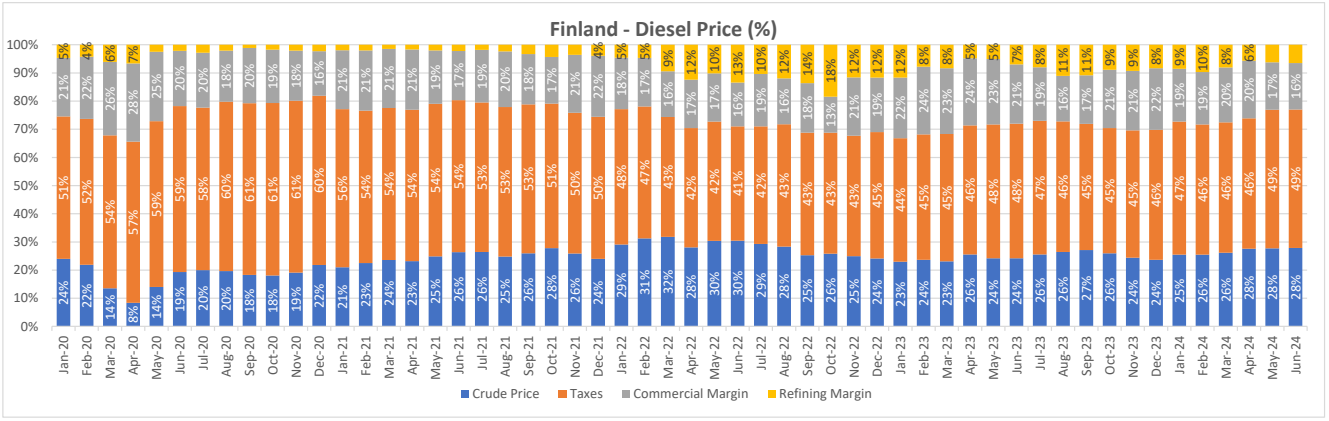

Estonia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

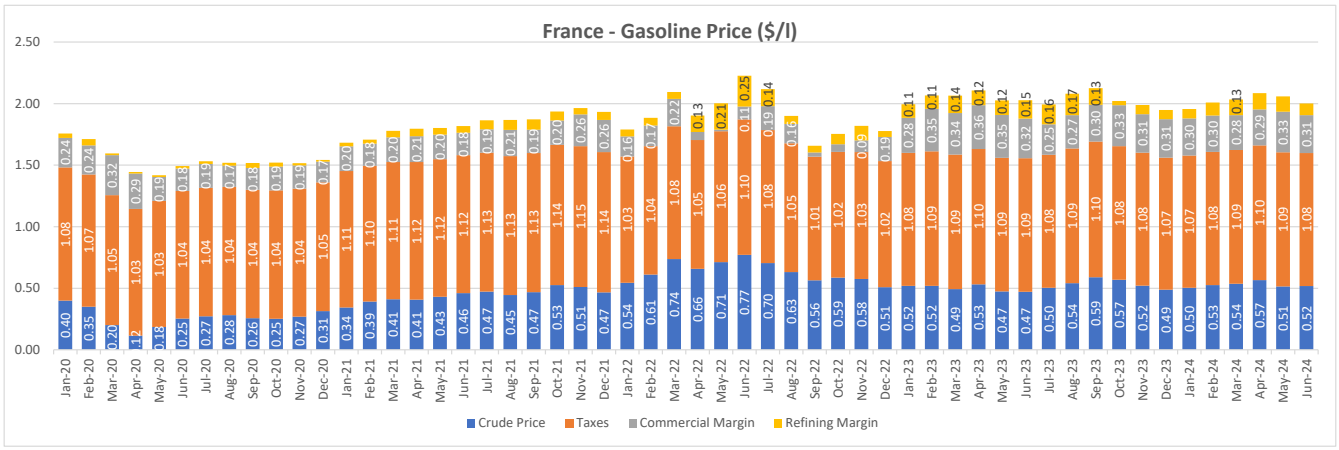

Estonia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

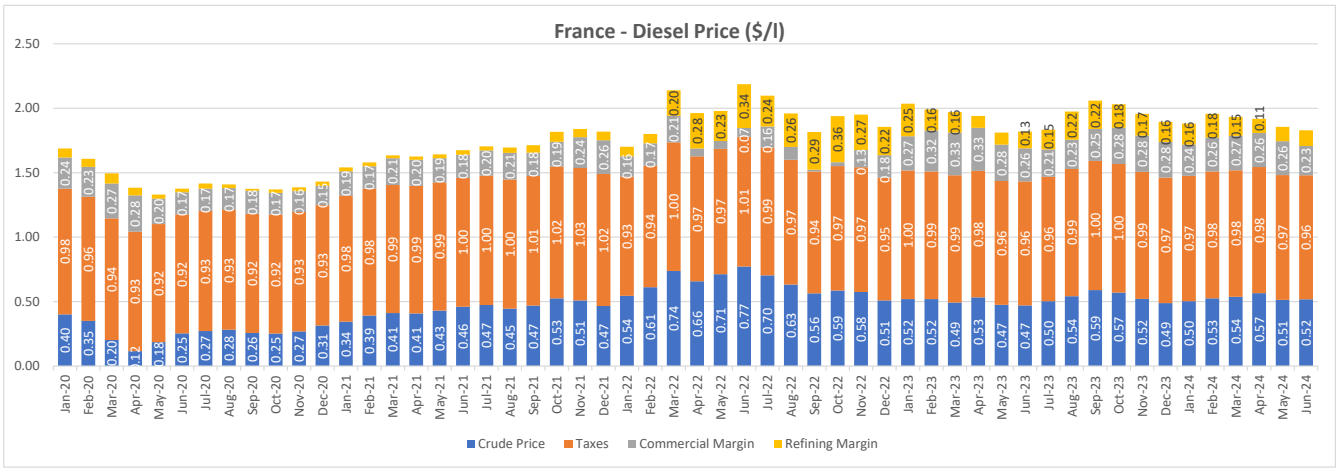

Finland - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

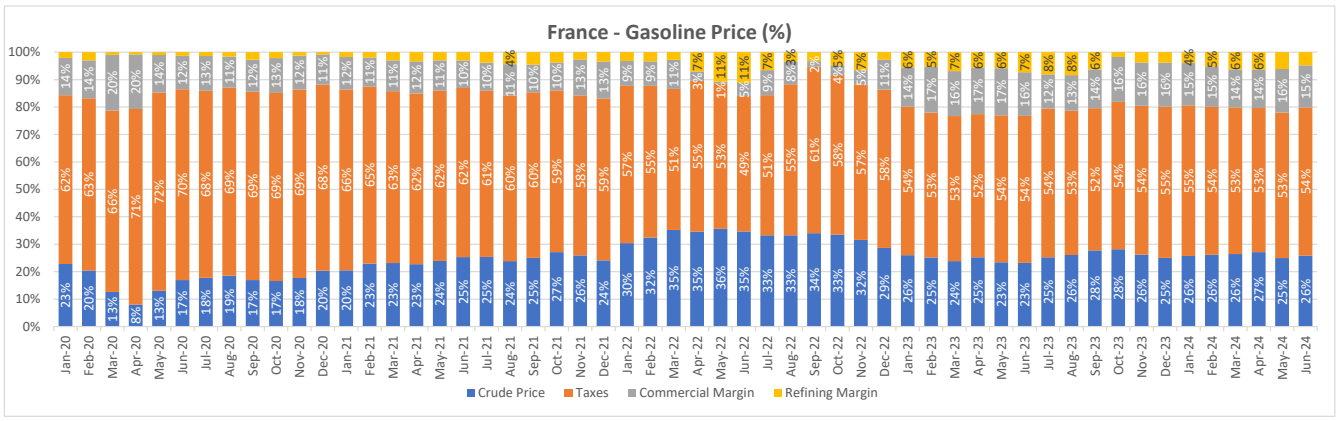

Finland - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

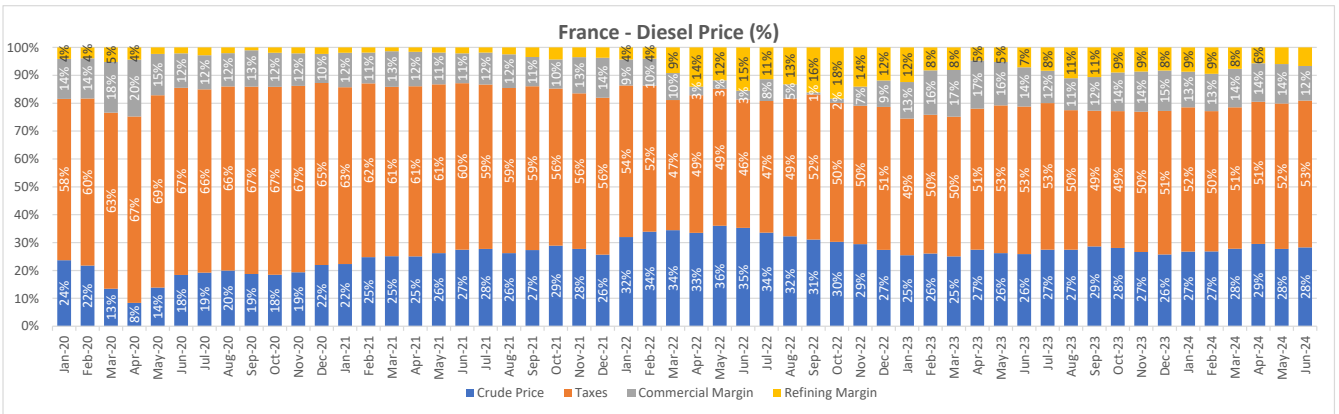

Finland - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

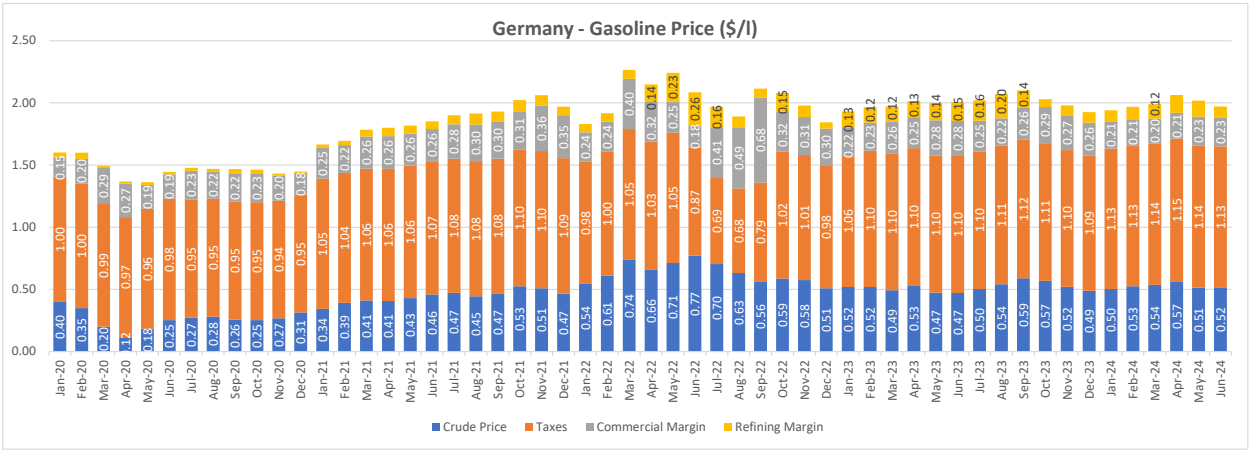

Finland - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

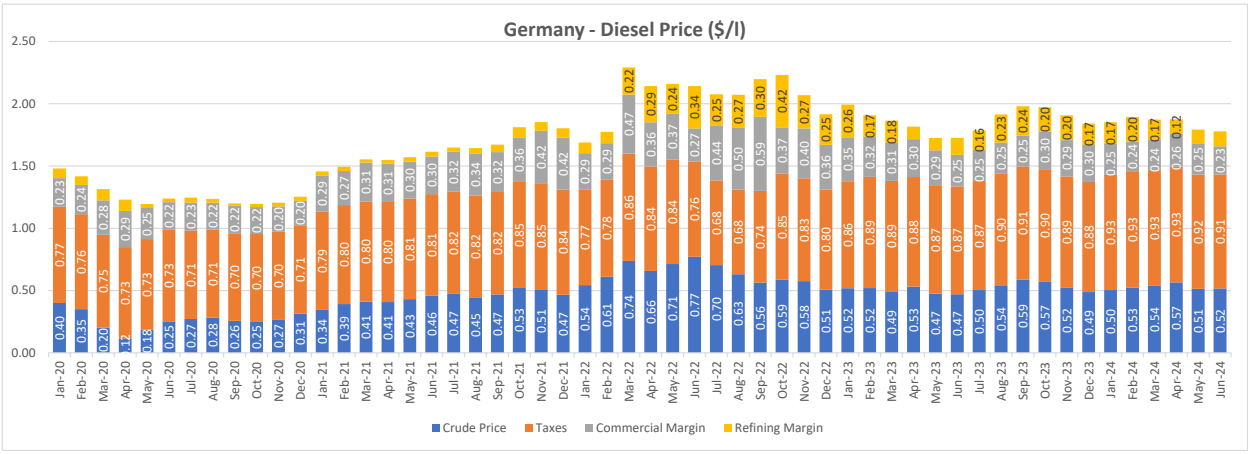

France - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

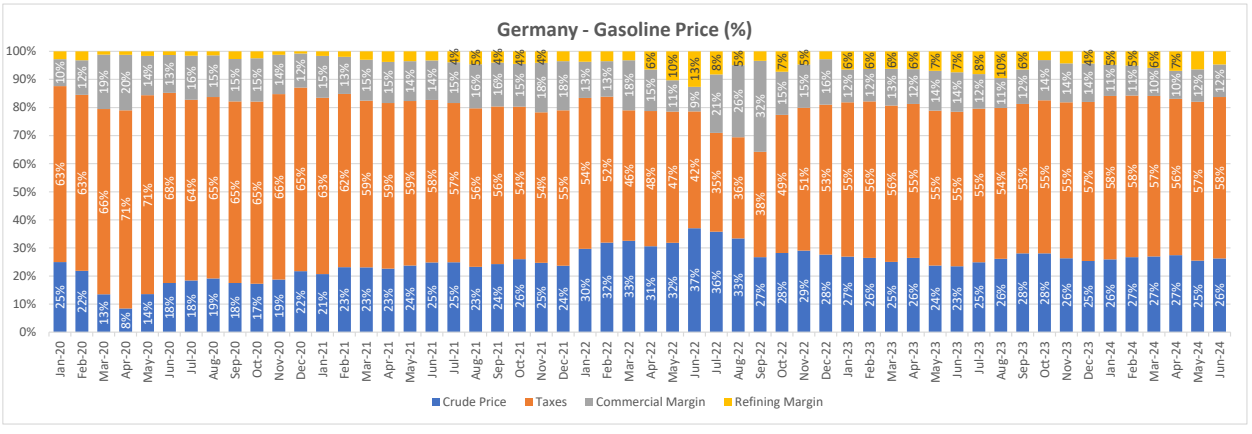

France - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

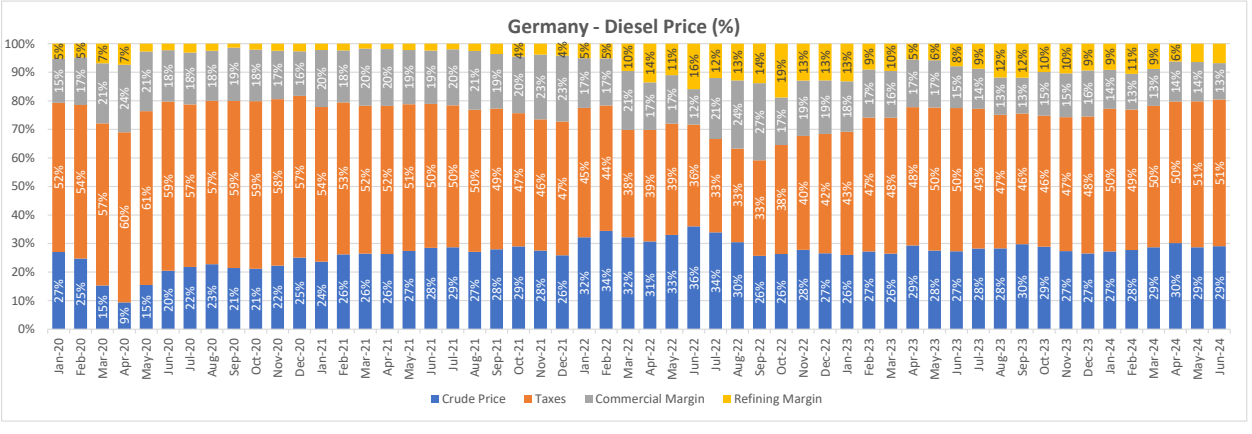

France - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

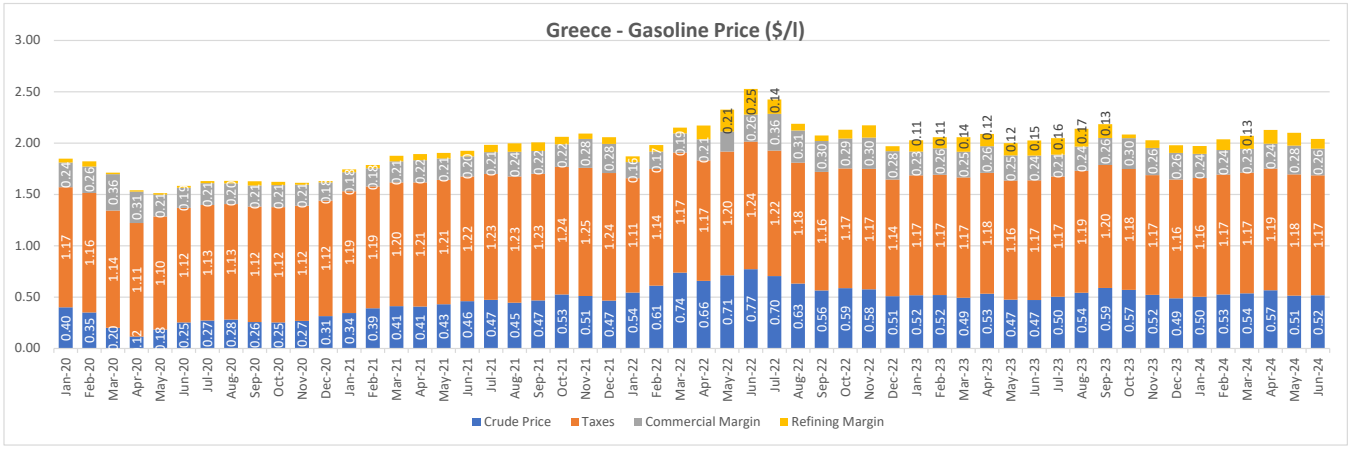

France - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

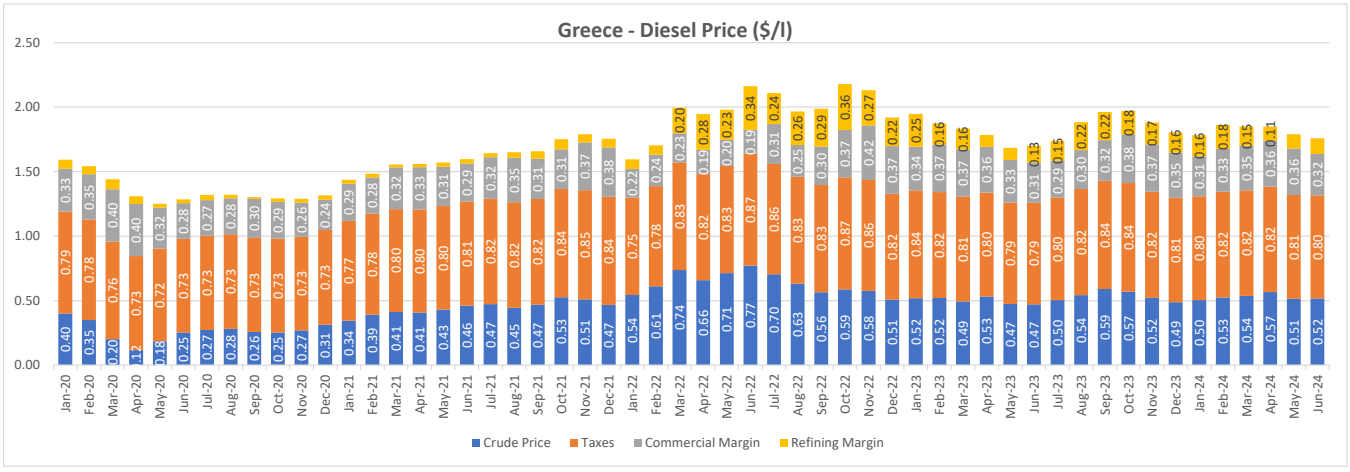

Germany - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

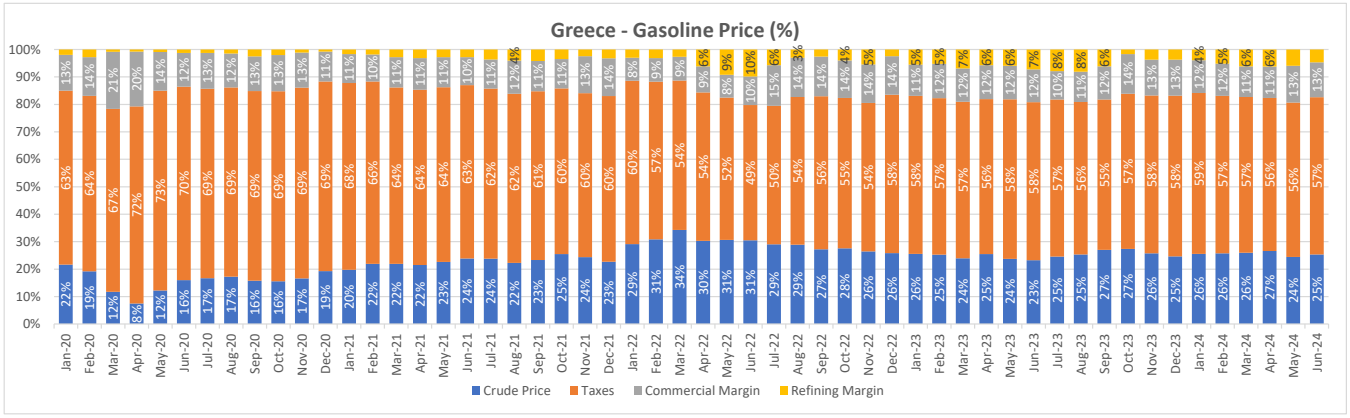

Germany - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

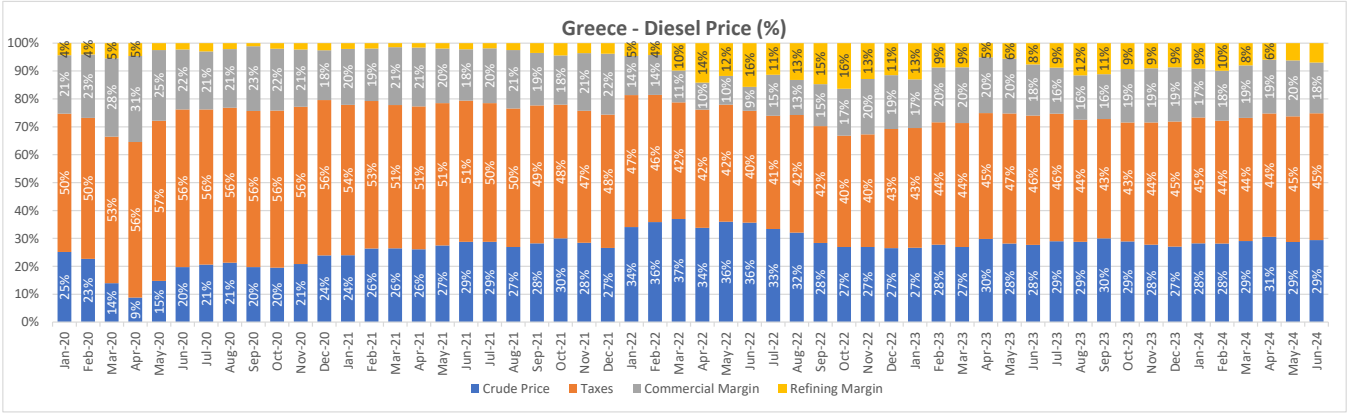

Germany - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

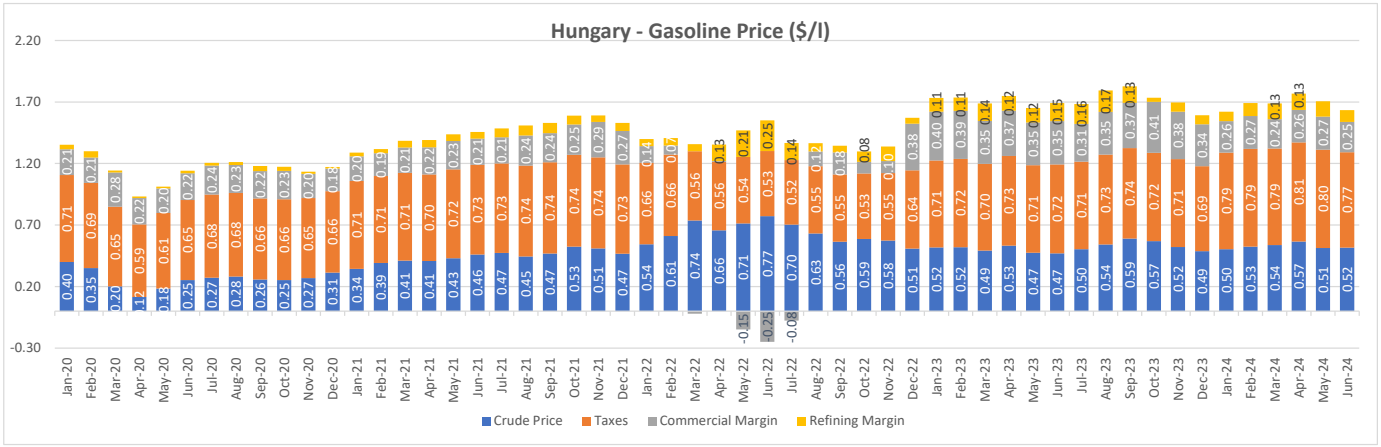

Germany - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

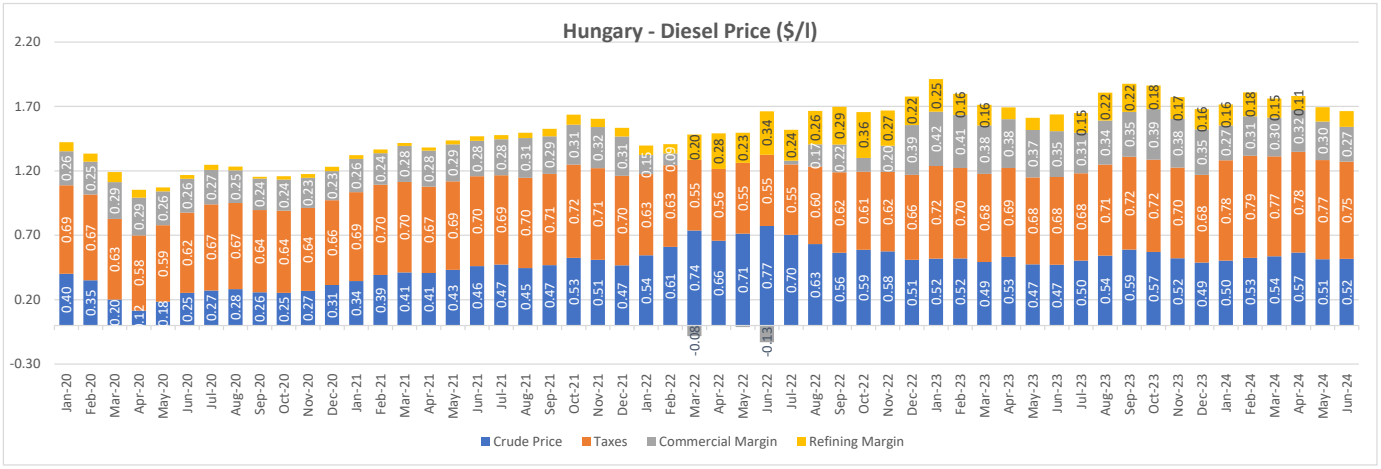

Greece - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

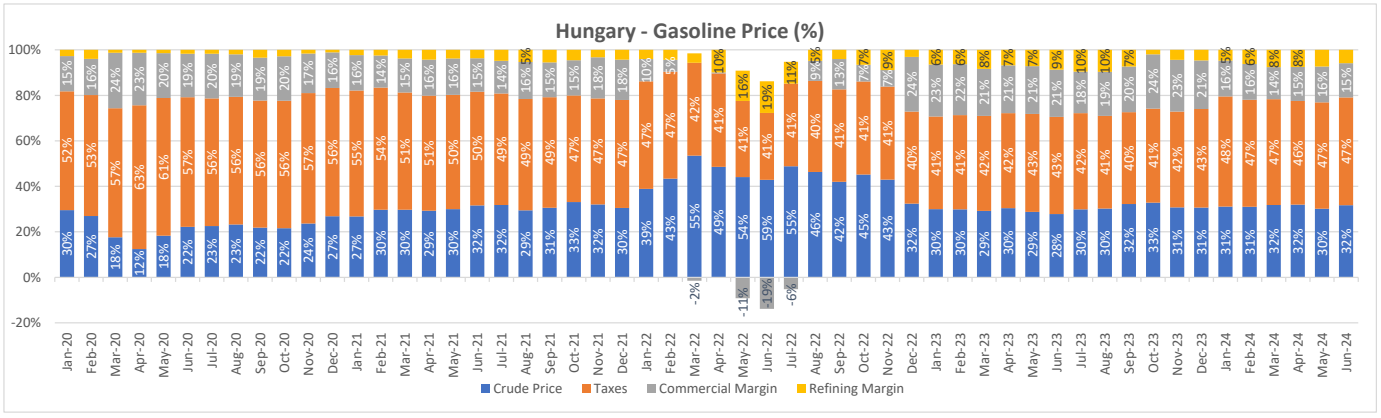

Greece - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

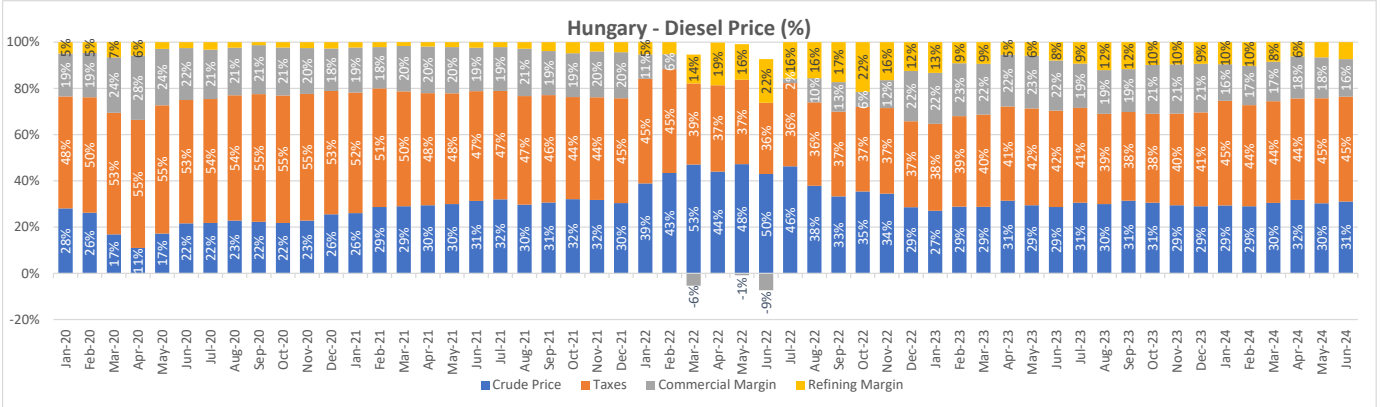

Greece - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

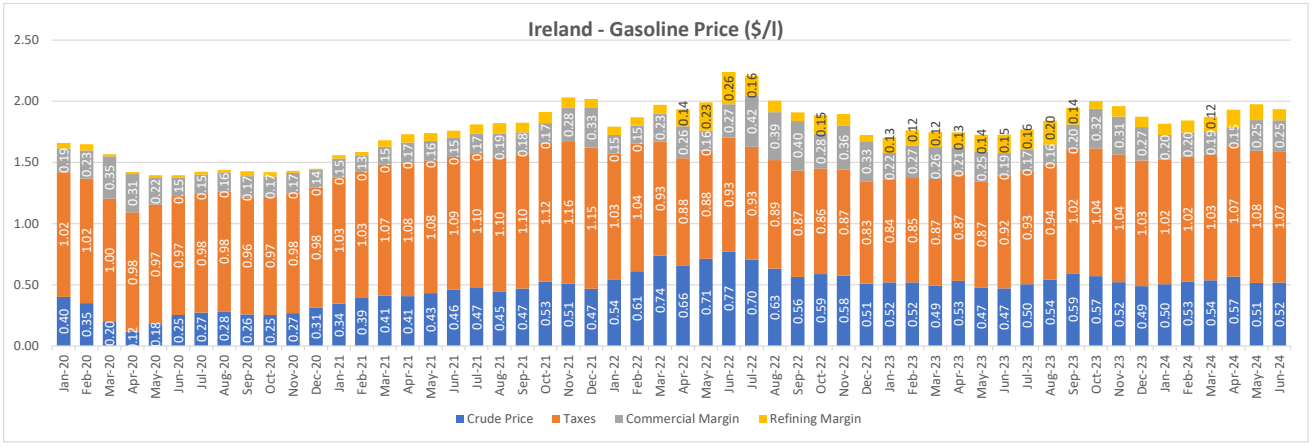

Greece - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

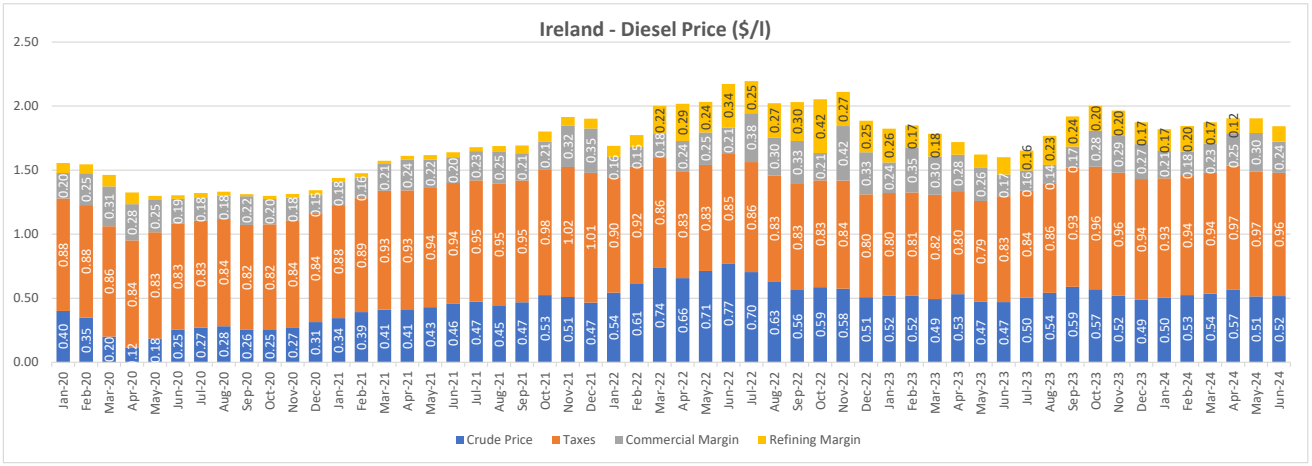

Hungary - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

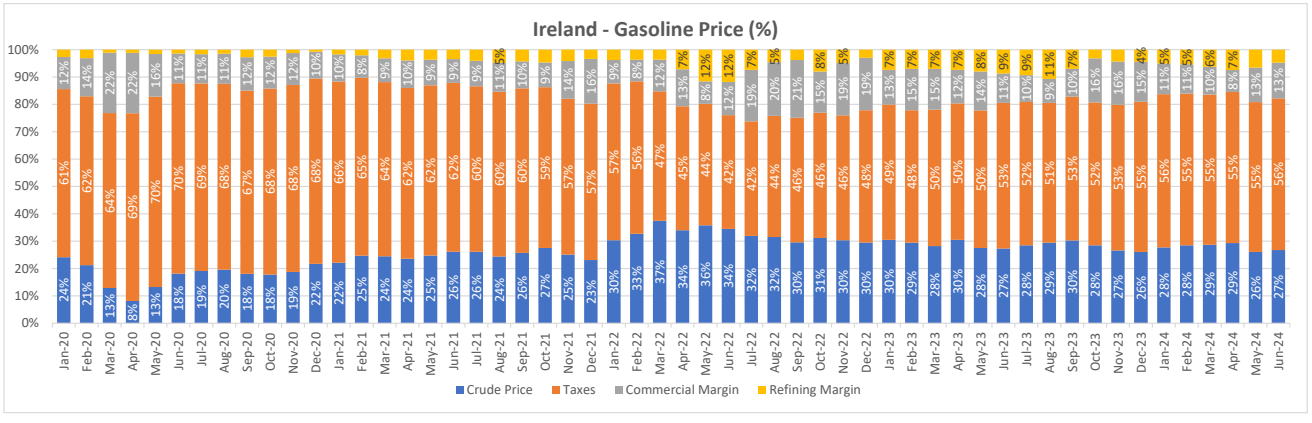

Hungary - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

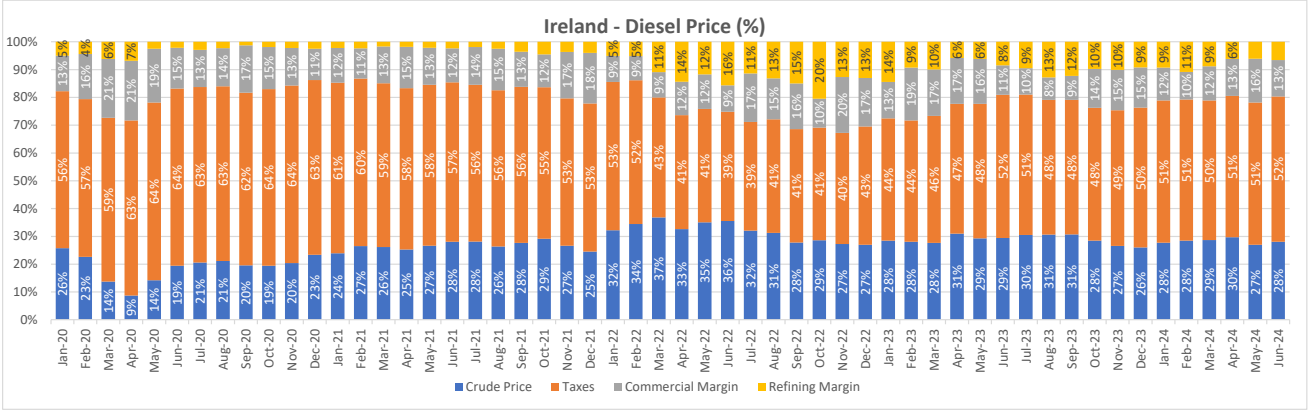

Hungary - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

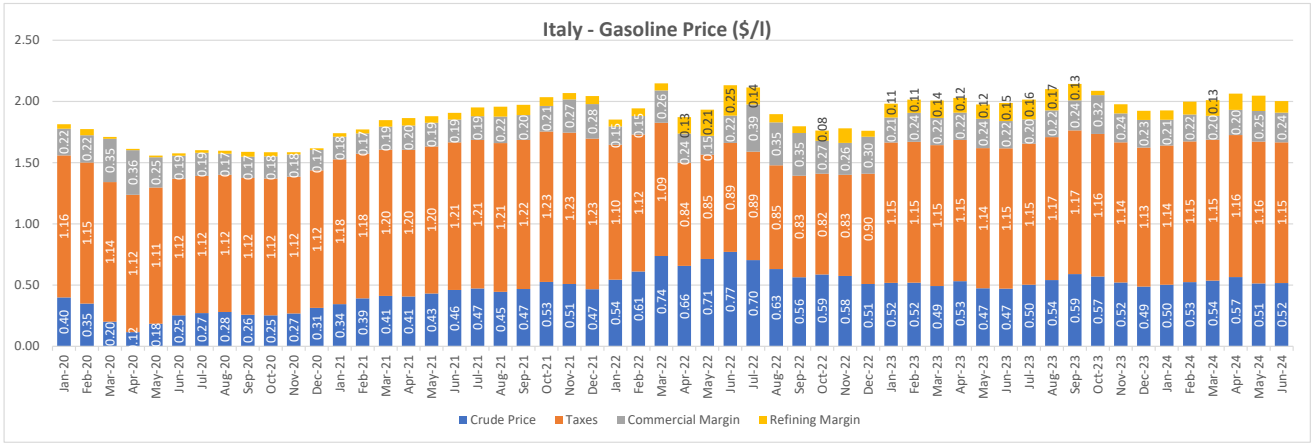

Hungary - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

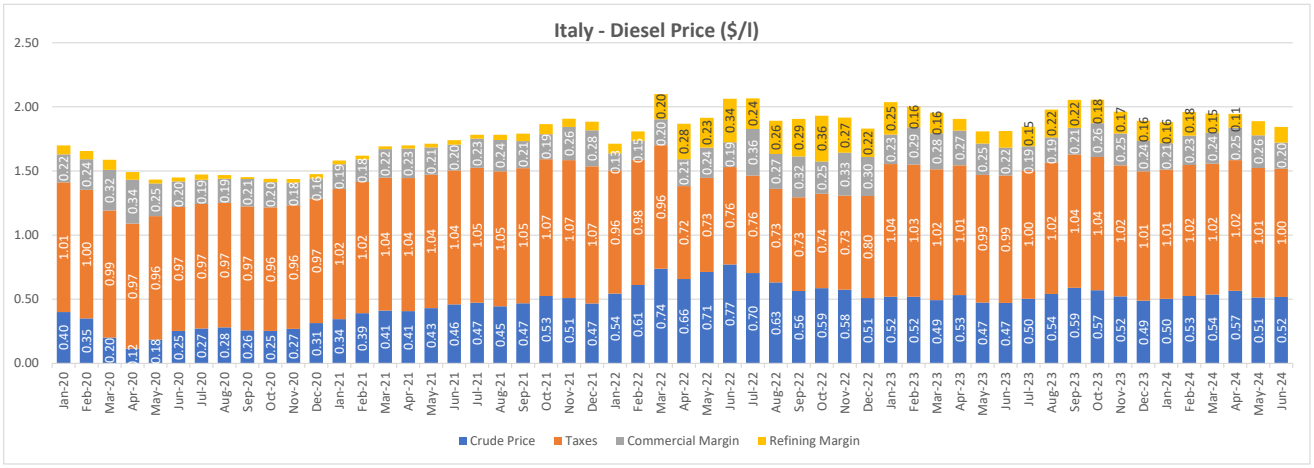

Ireland - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

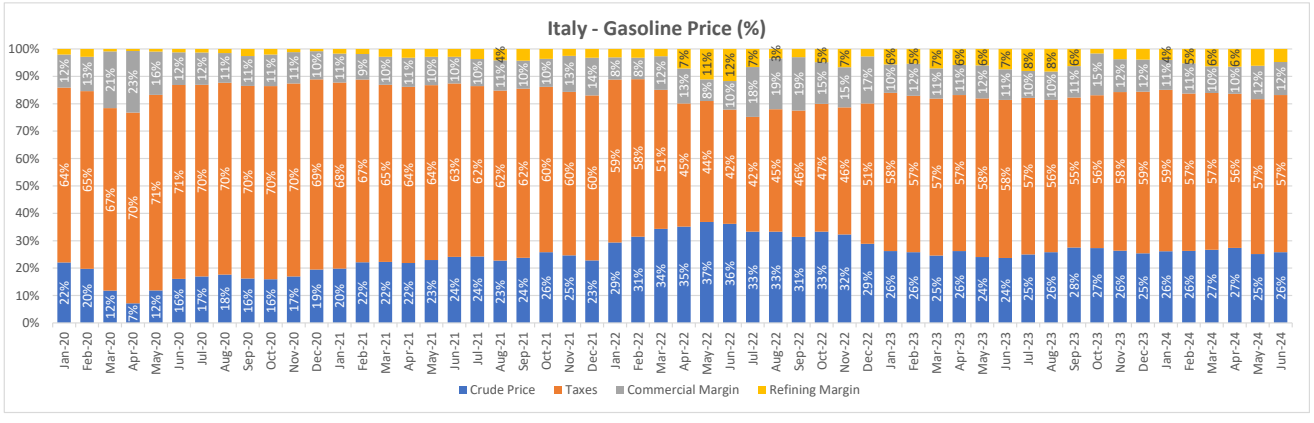

Ireland - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

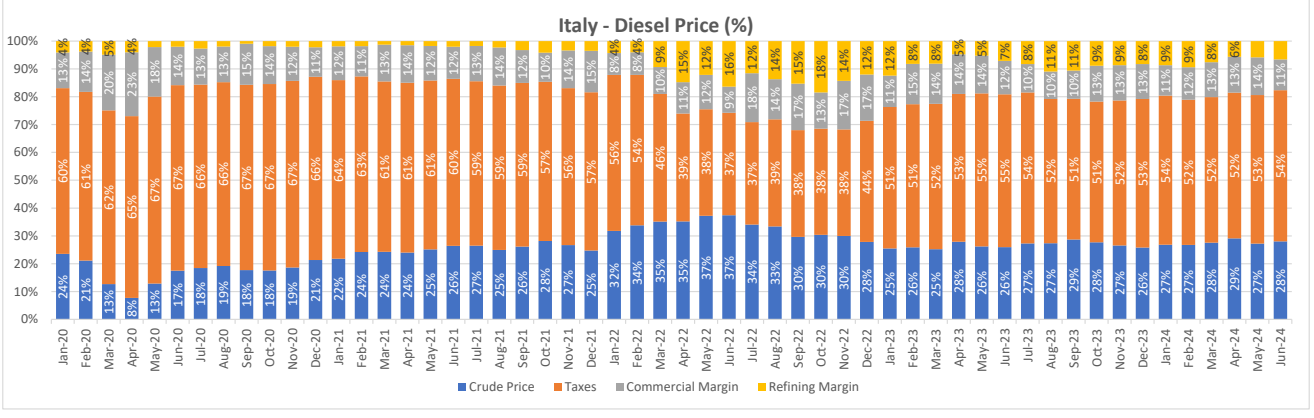

Ireland - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

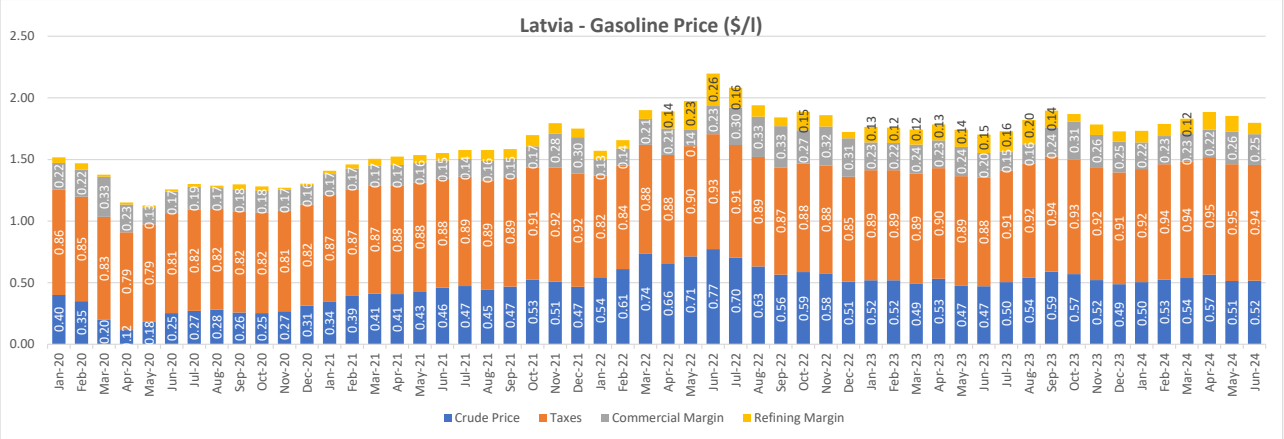

Ireland - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

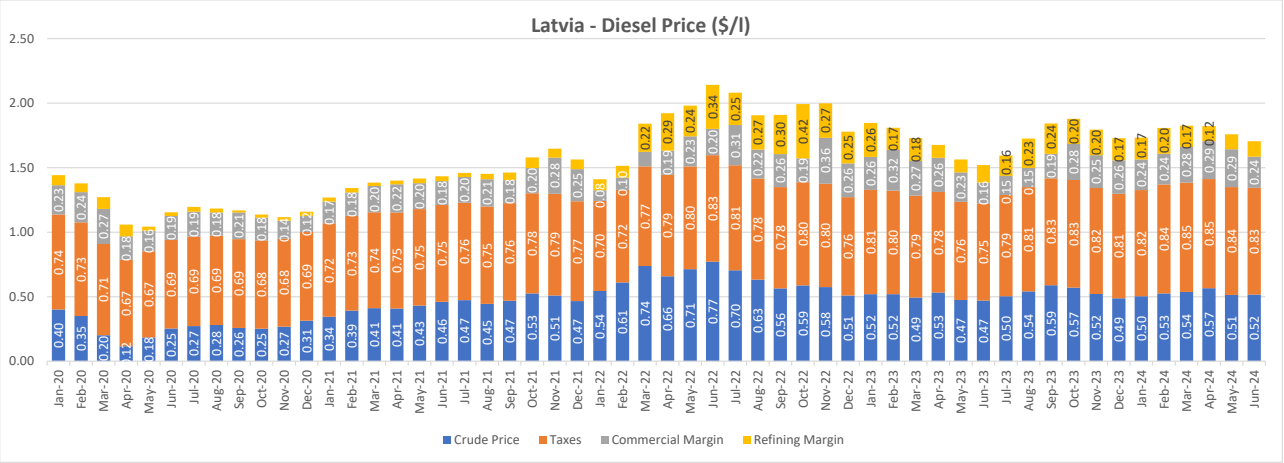

Italy - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

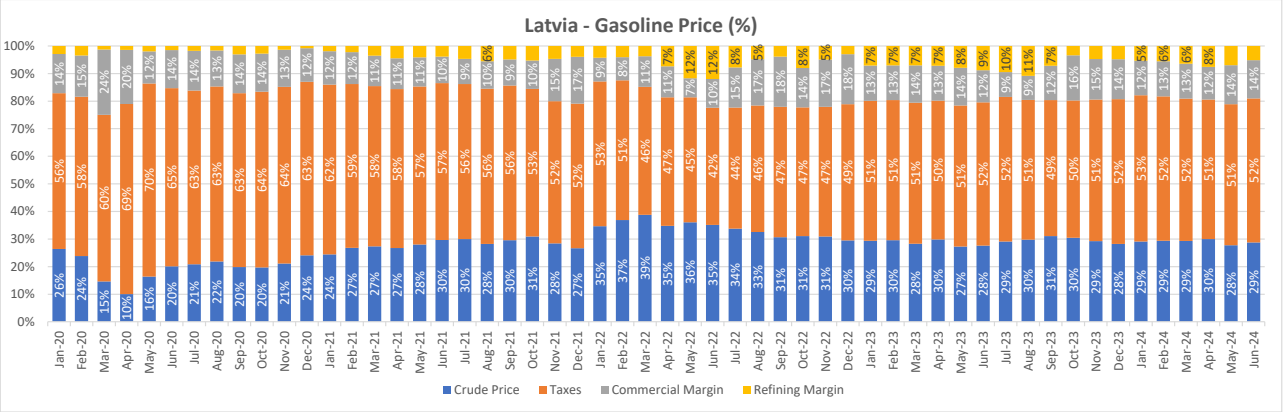

Italy - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

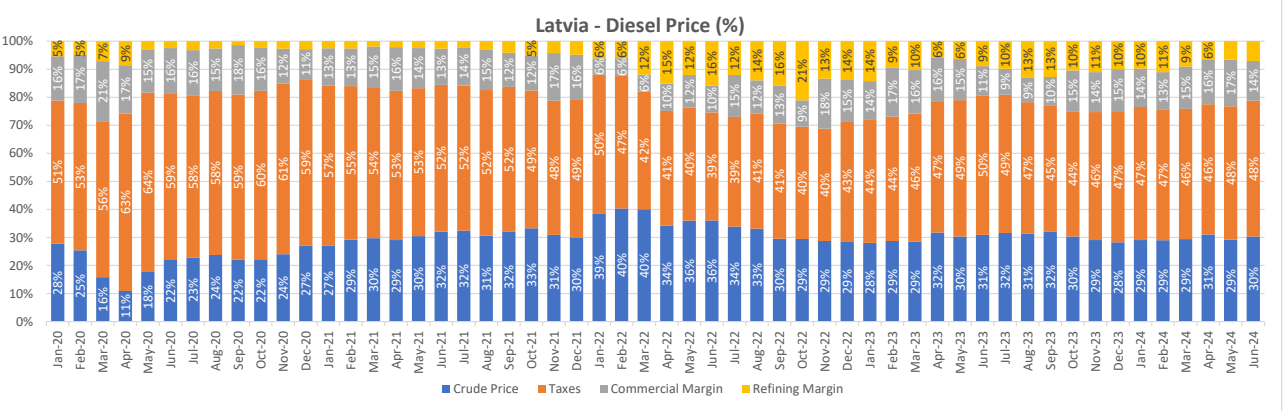

Italy - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

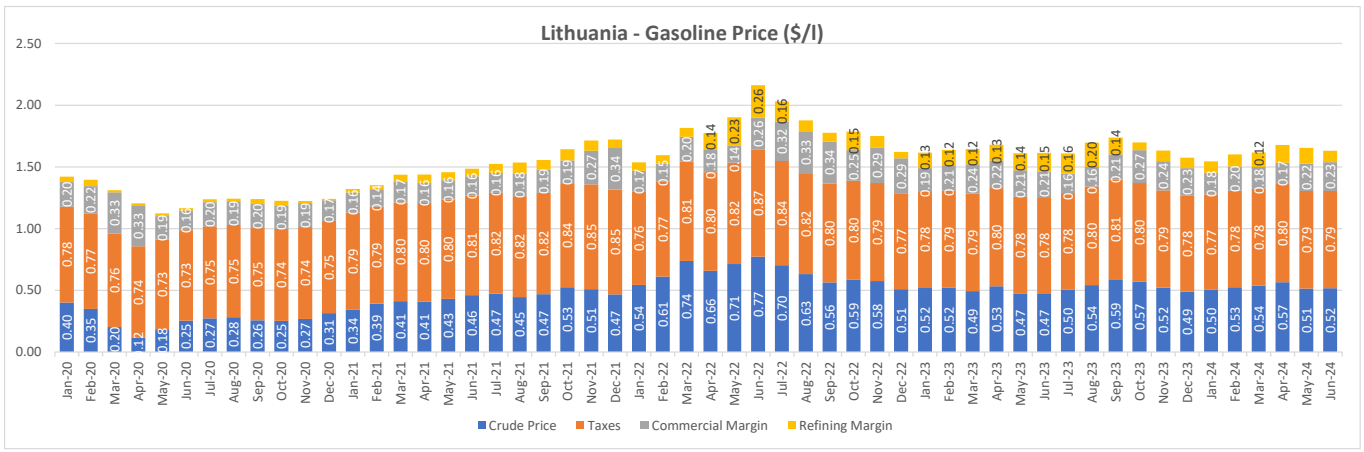

Italy - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

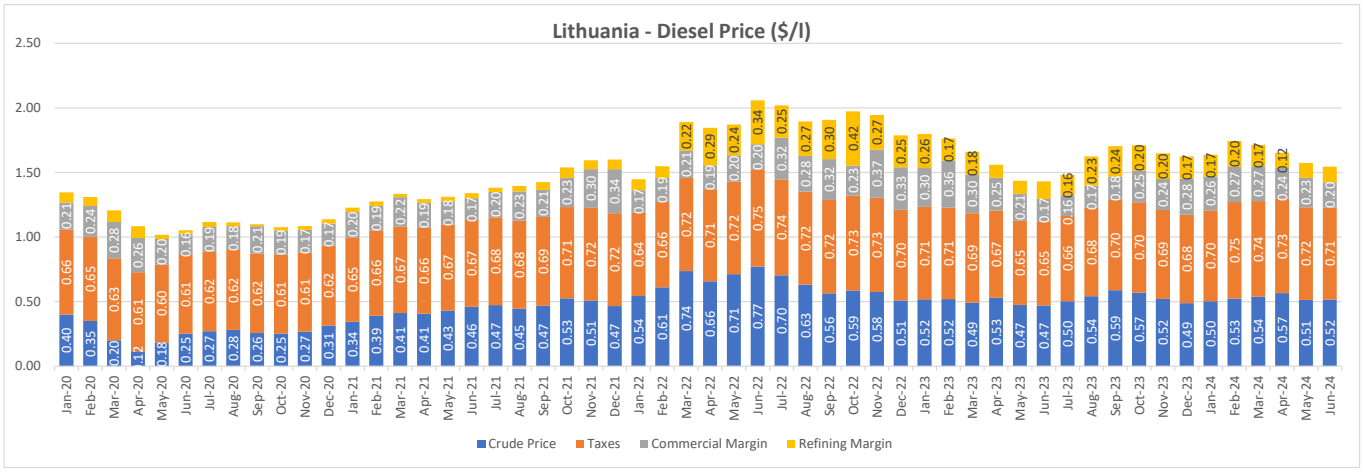

Latvia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

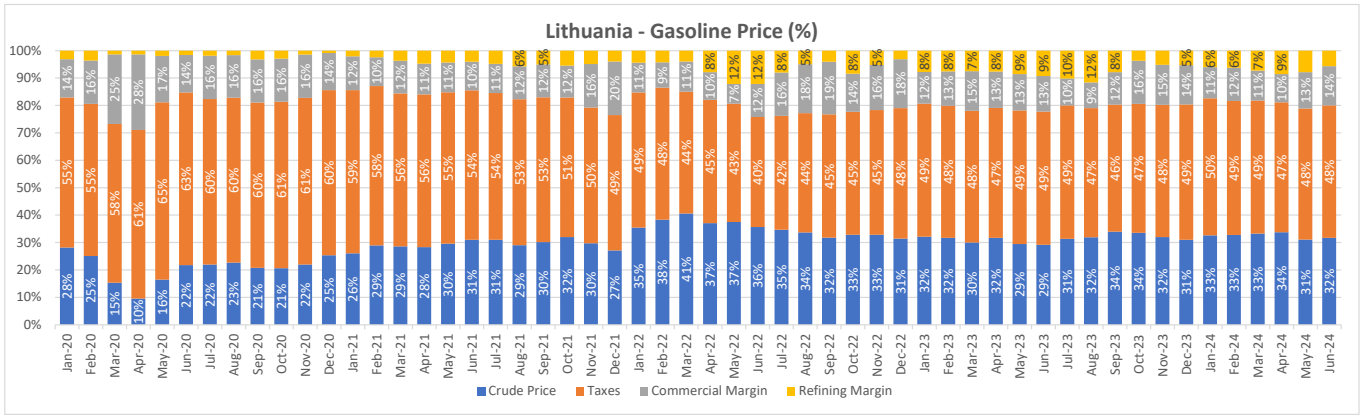

Latvia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

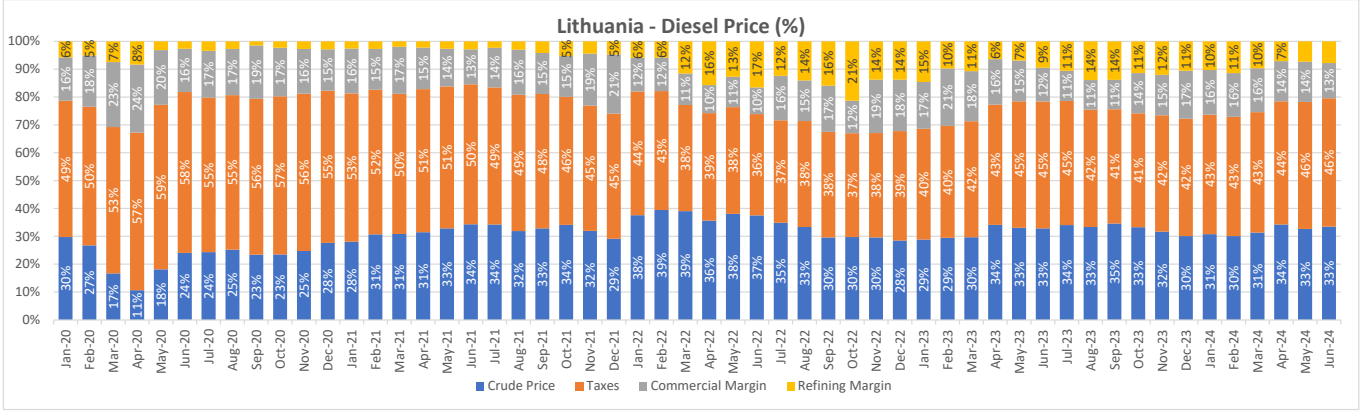

Latvia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

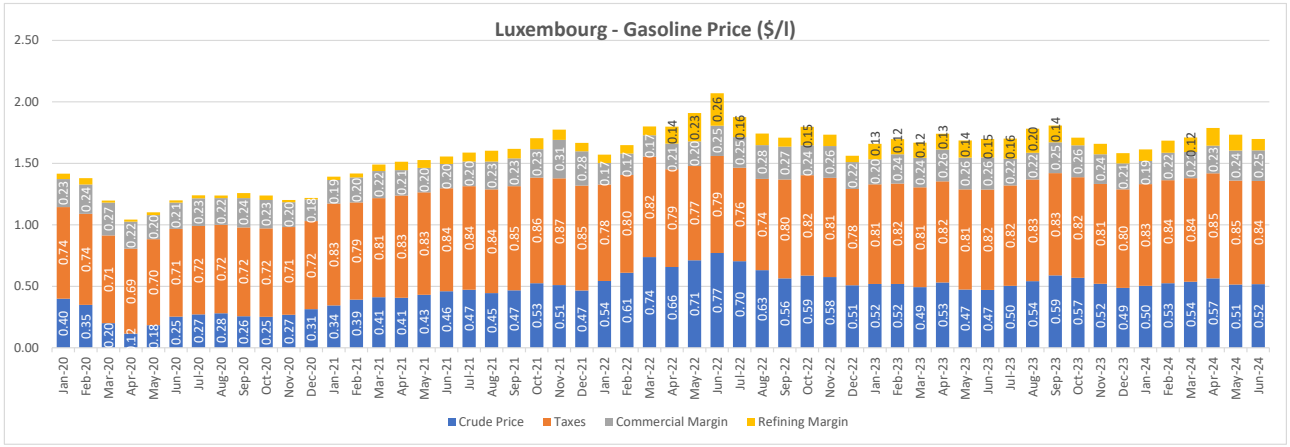

Latvia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

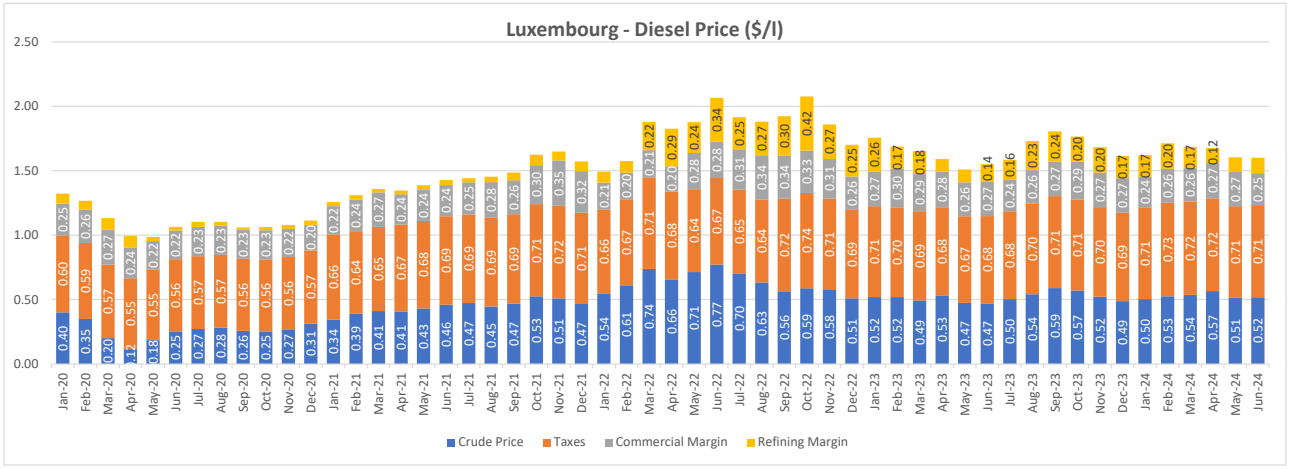

Lithuania - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

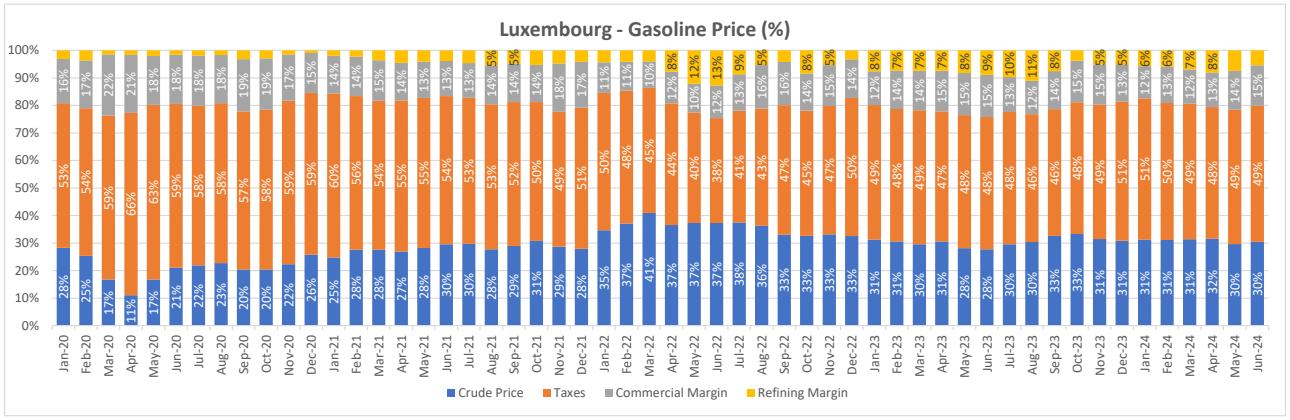

Lithuania - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

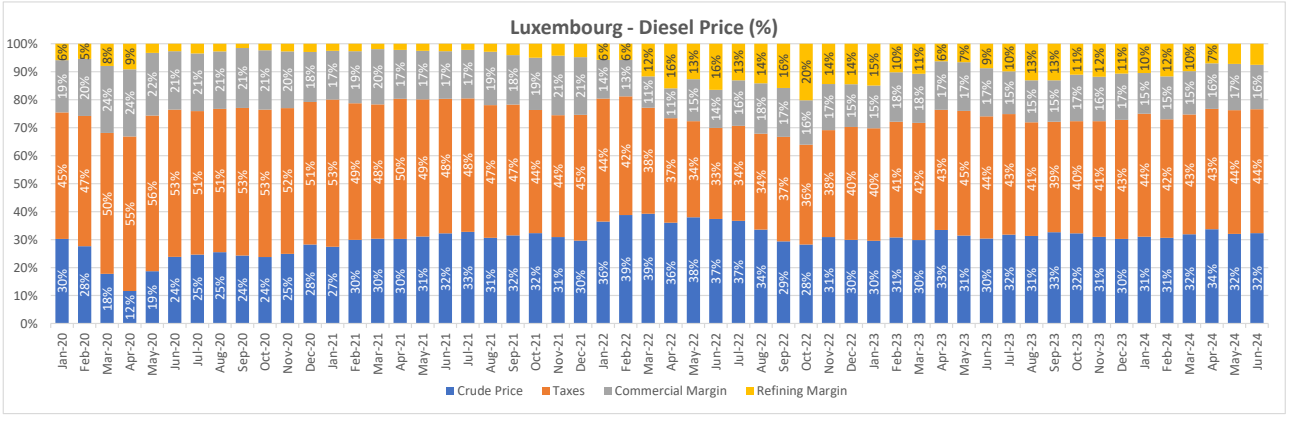

Lithuania - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

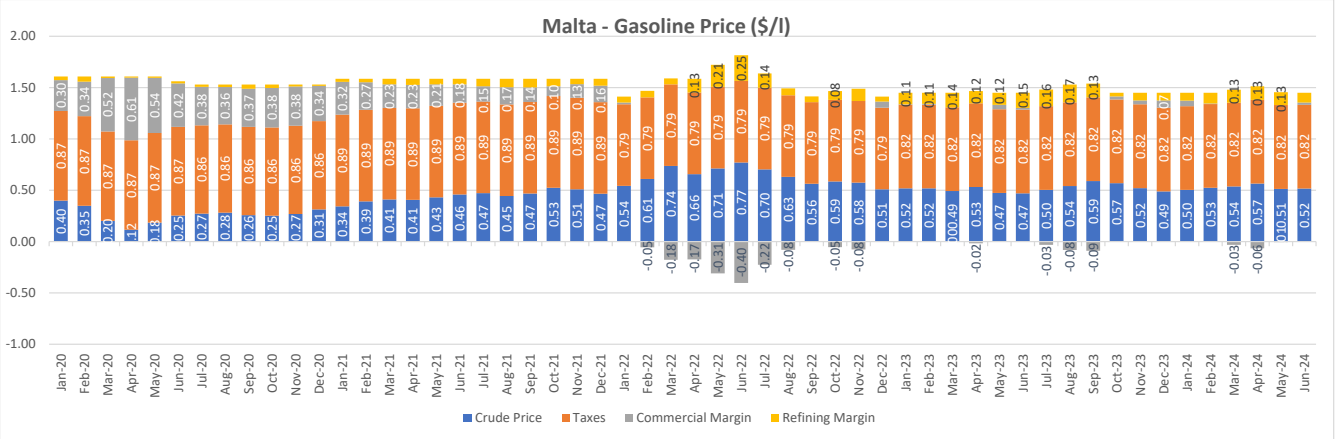

Lithuania - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

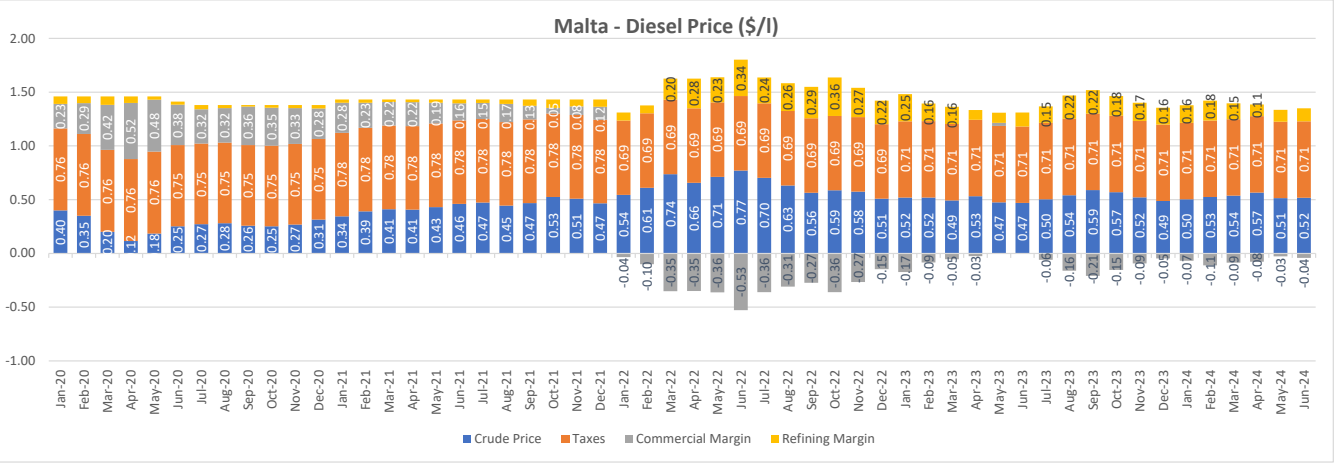

Luxembourg - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

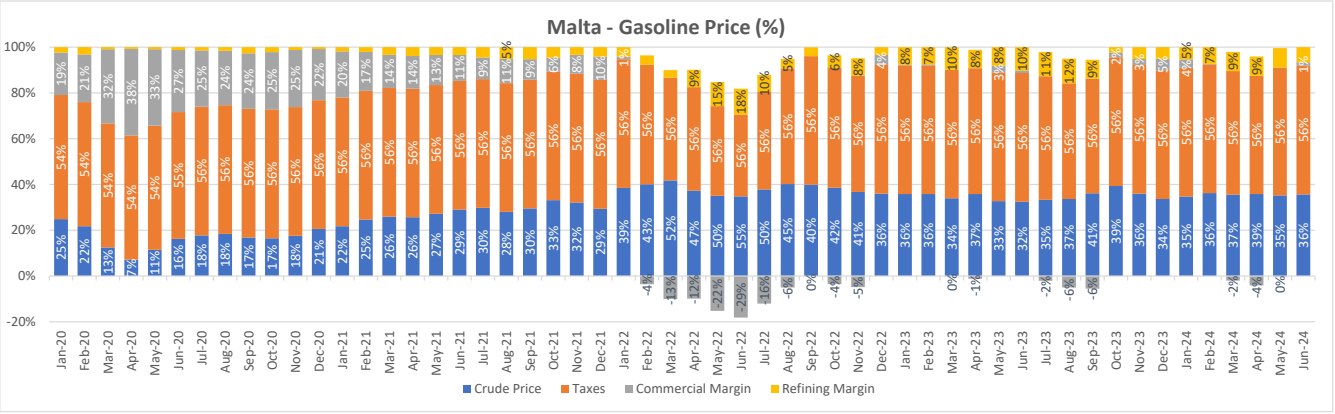

Luxembourg - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

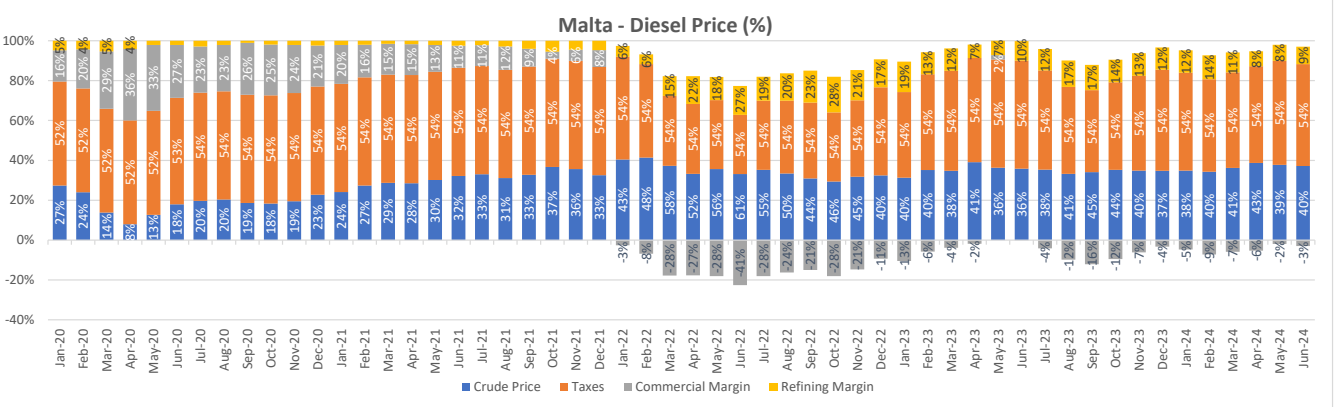

Luxembourg - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

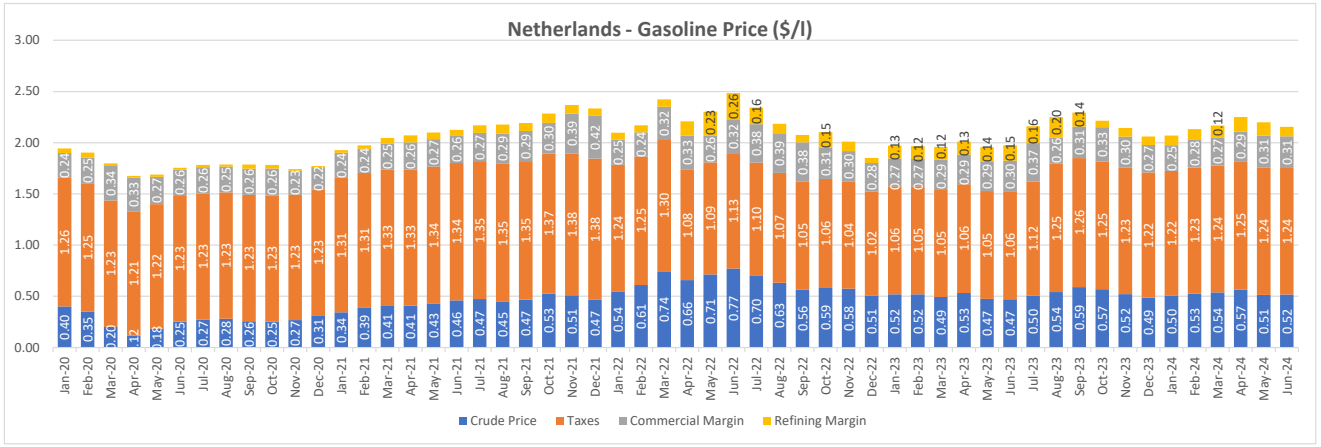

Luxembourg - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

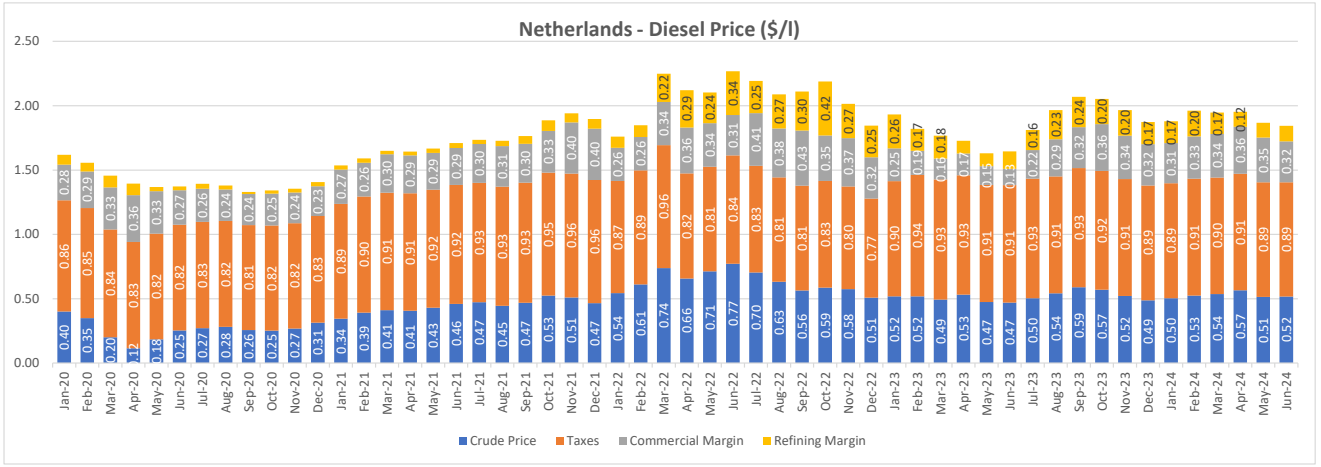

Malta - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

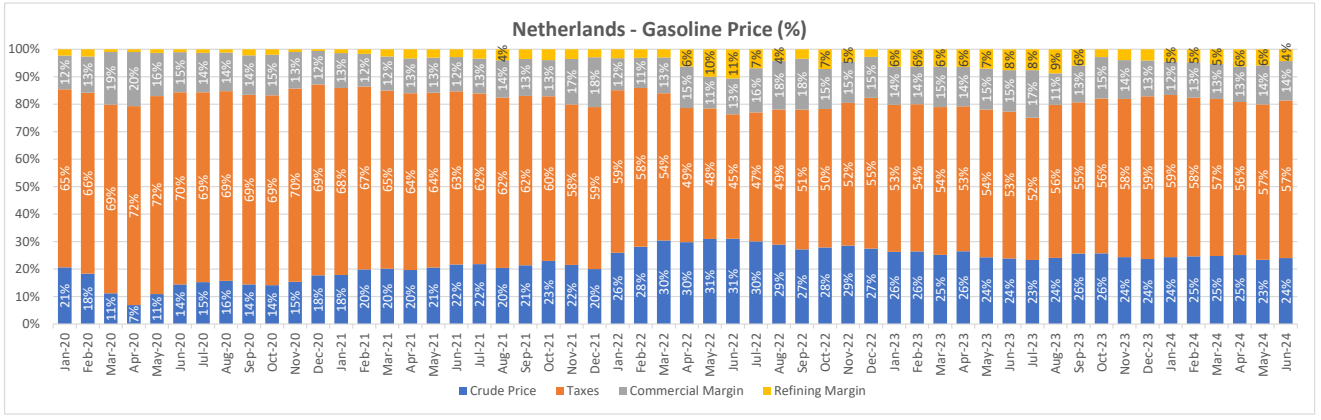

Malta - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

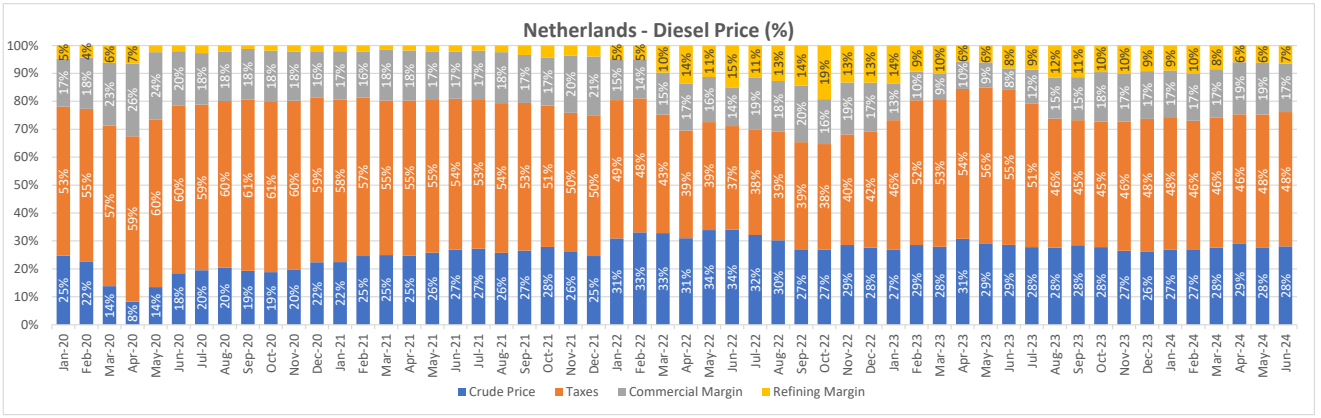

Malta - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

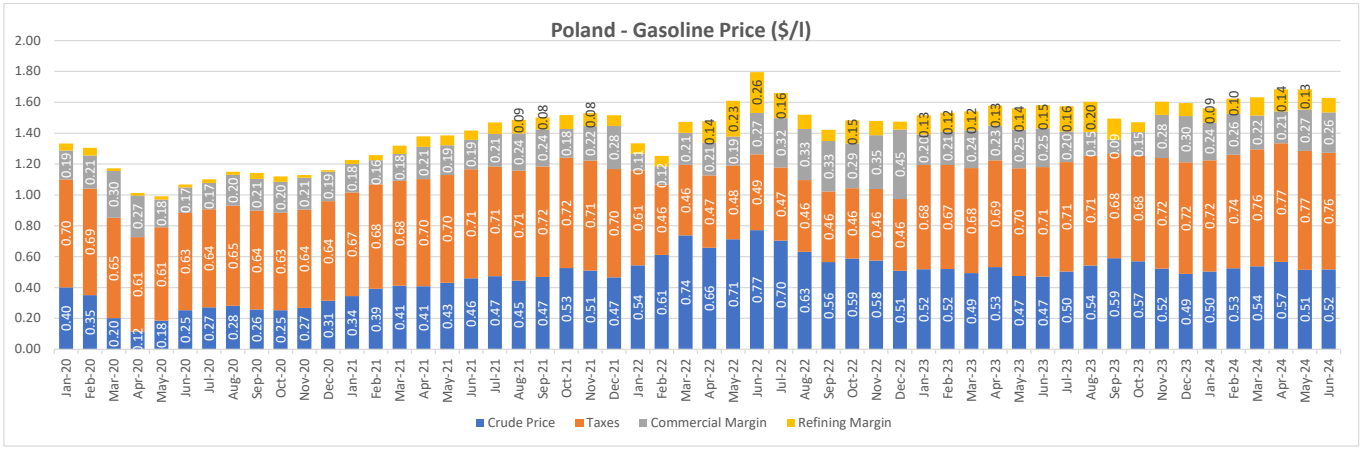

Malta - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

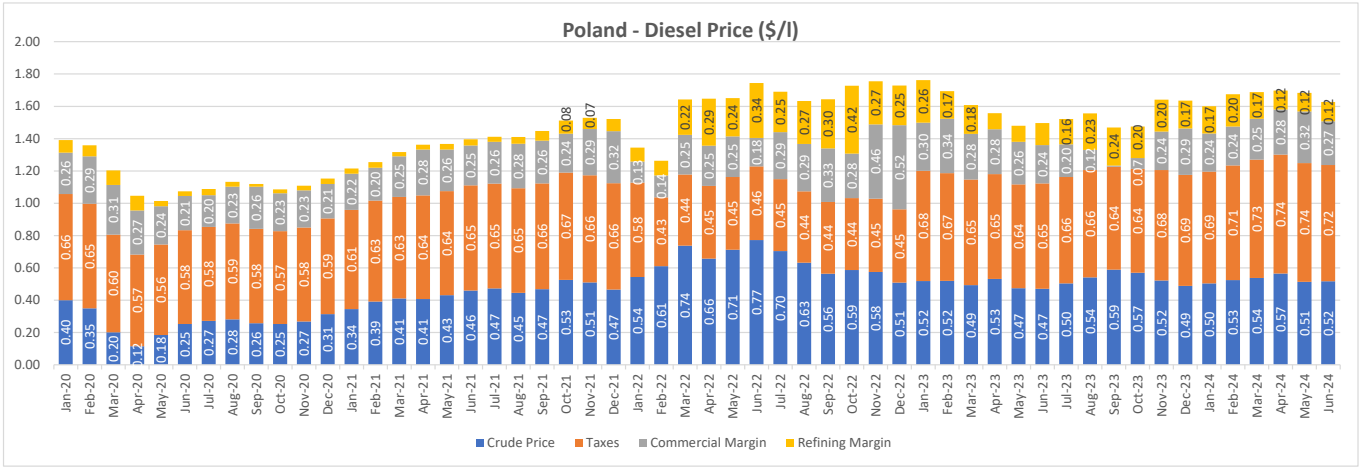

Netherlands - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

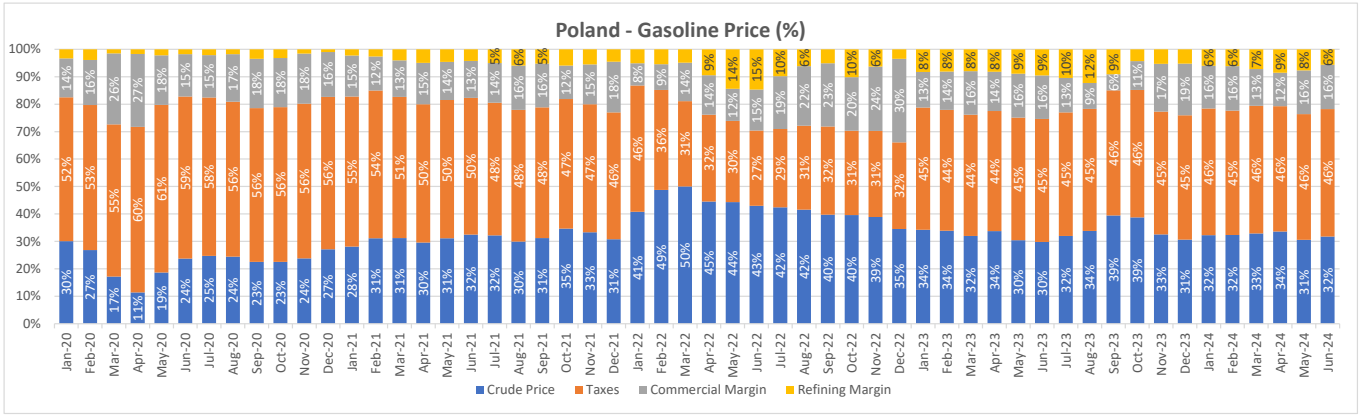

Netherlands - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

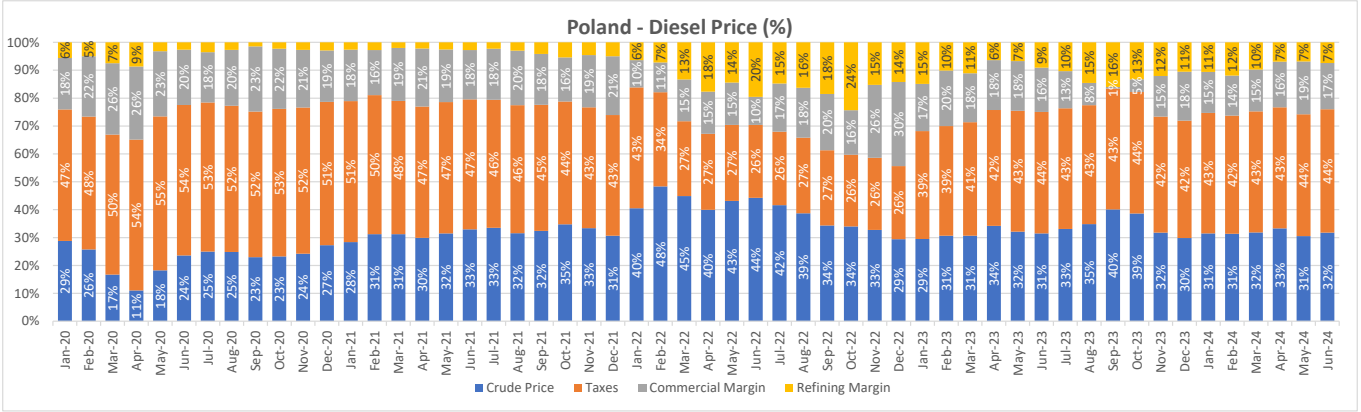

Netherlands - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

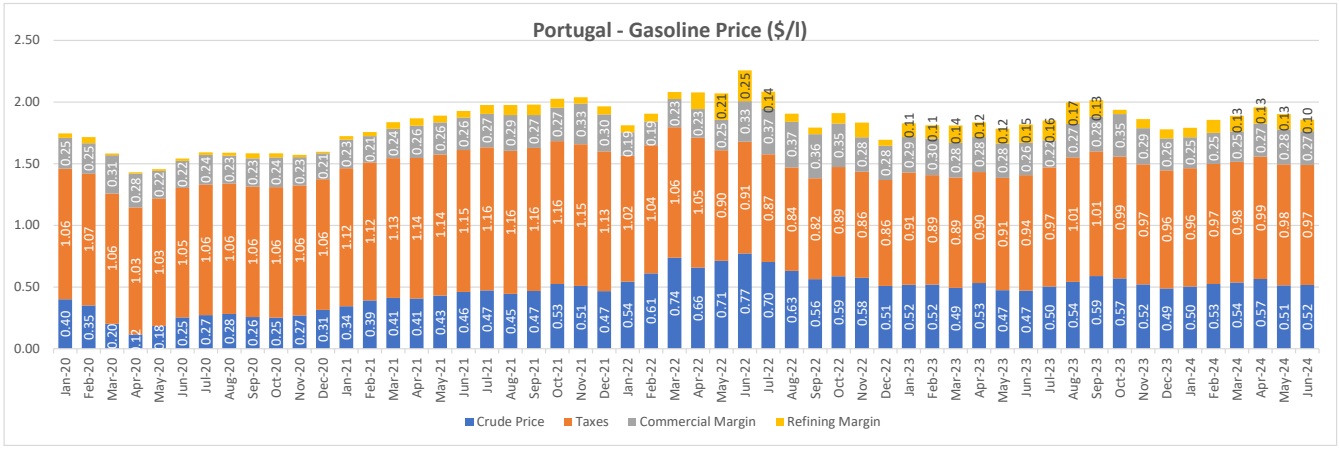

Netherlands - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

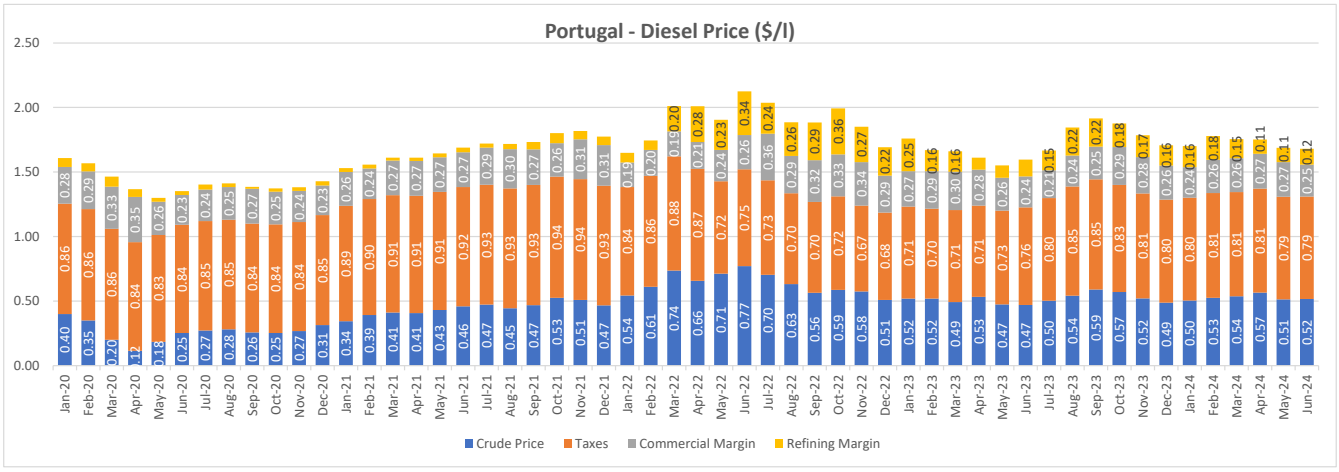

Poland - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

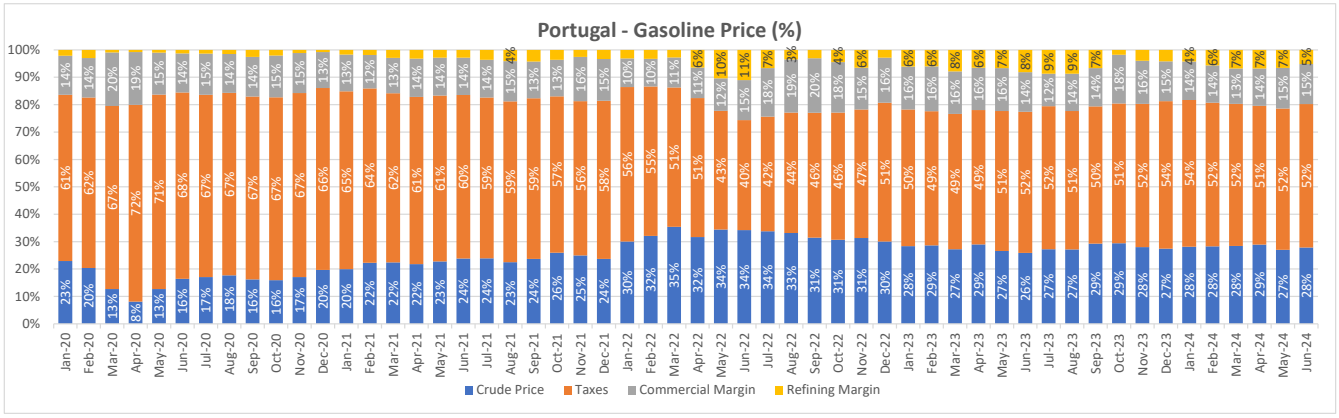

Poland - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

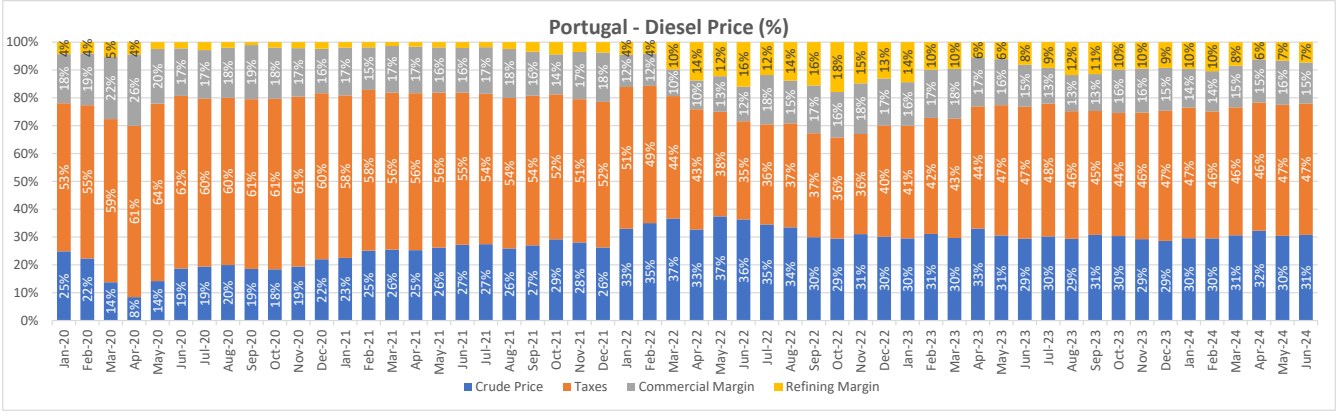

Poland - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

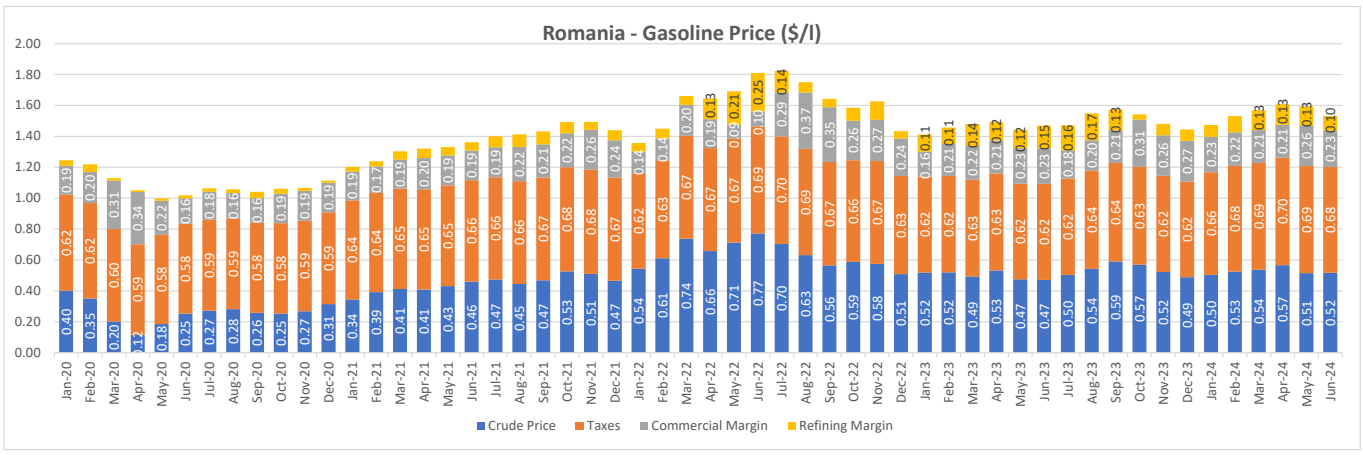

Poland - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

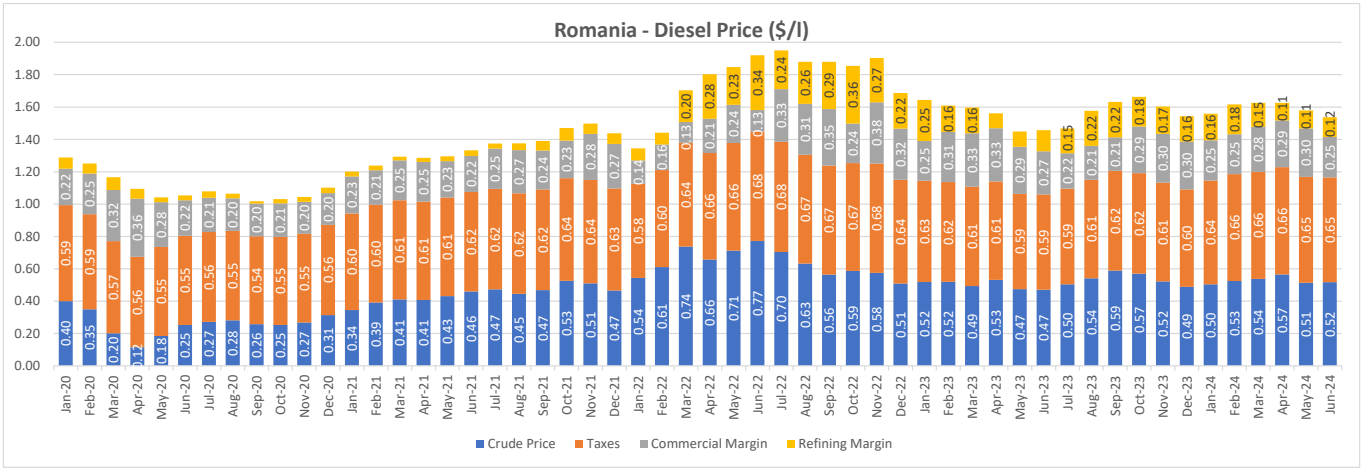

Portugal - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

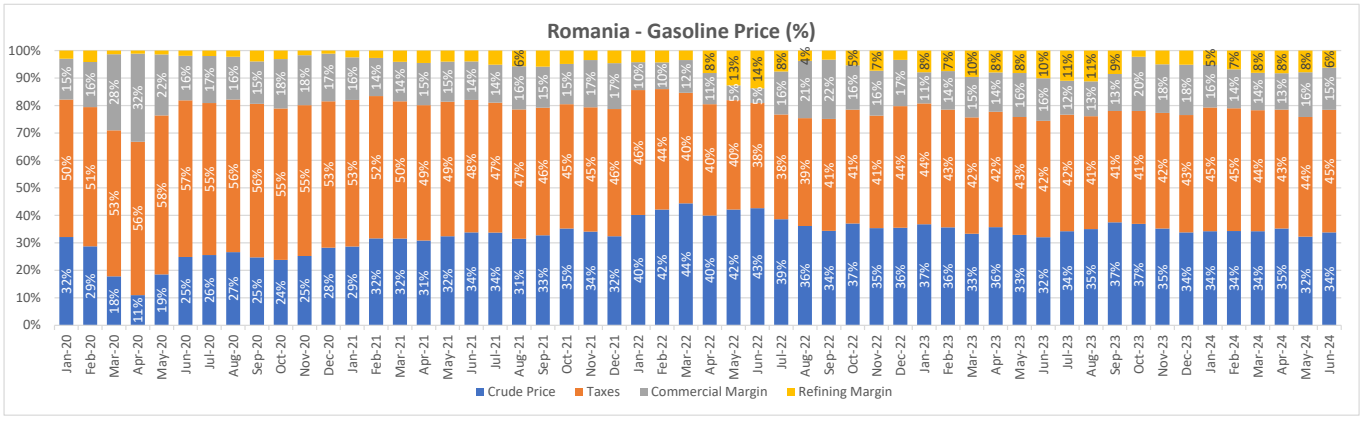

Portugal - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

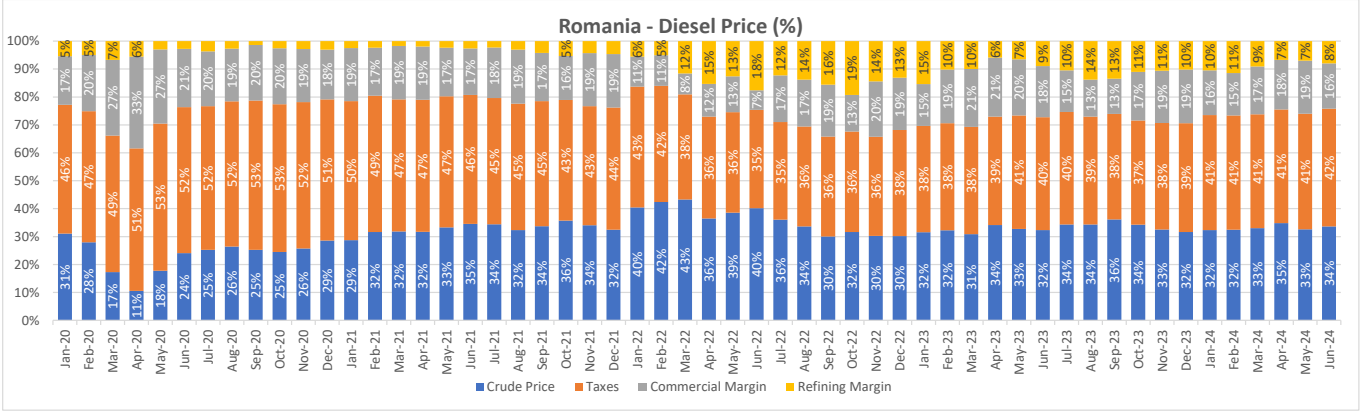

Portugal - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

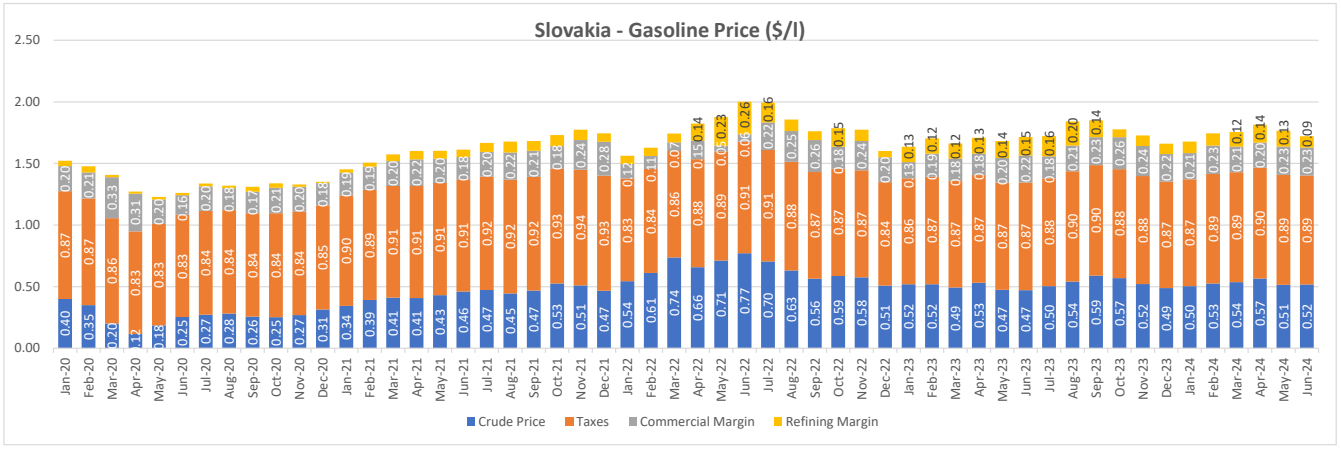

Portugal - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

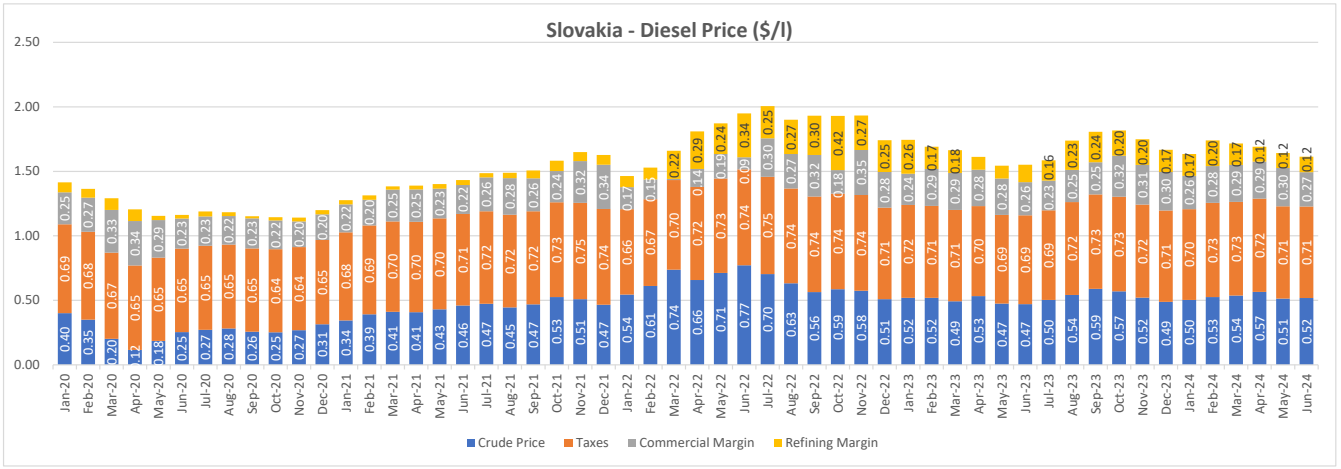

Romania - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

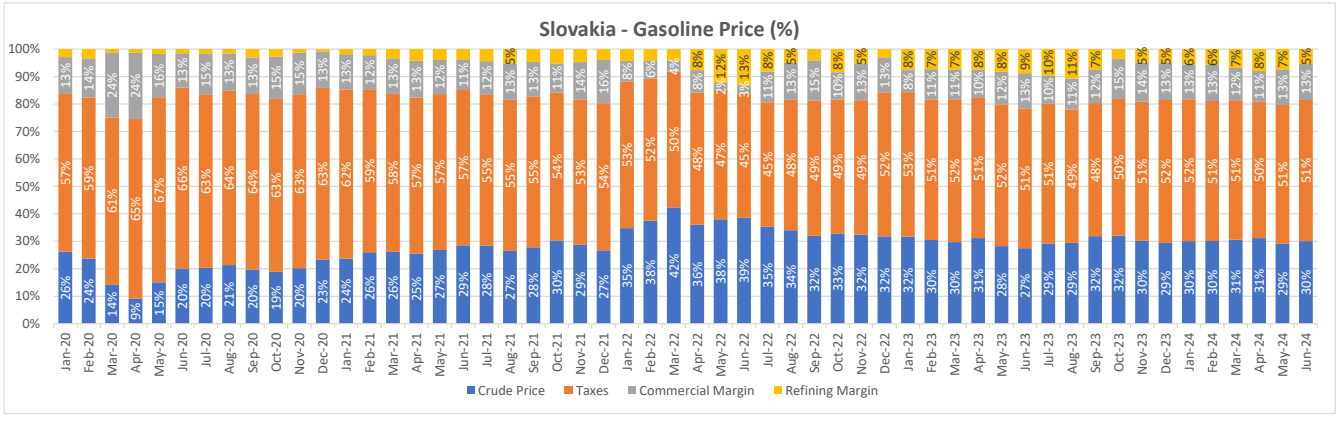

Romania - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

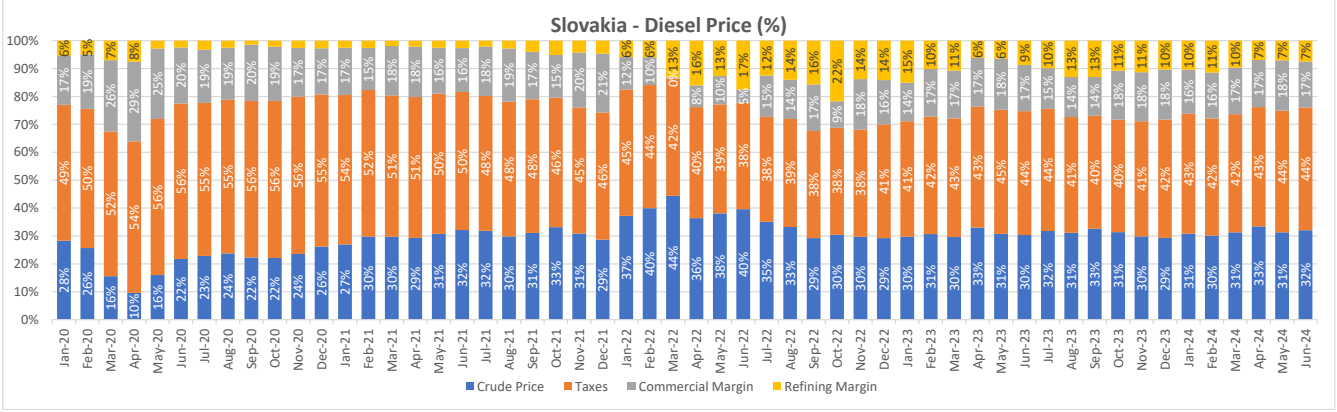

Romania - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

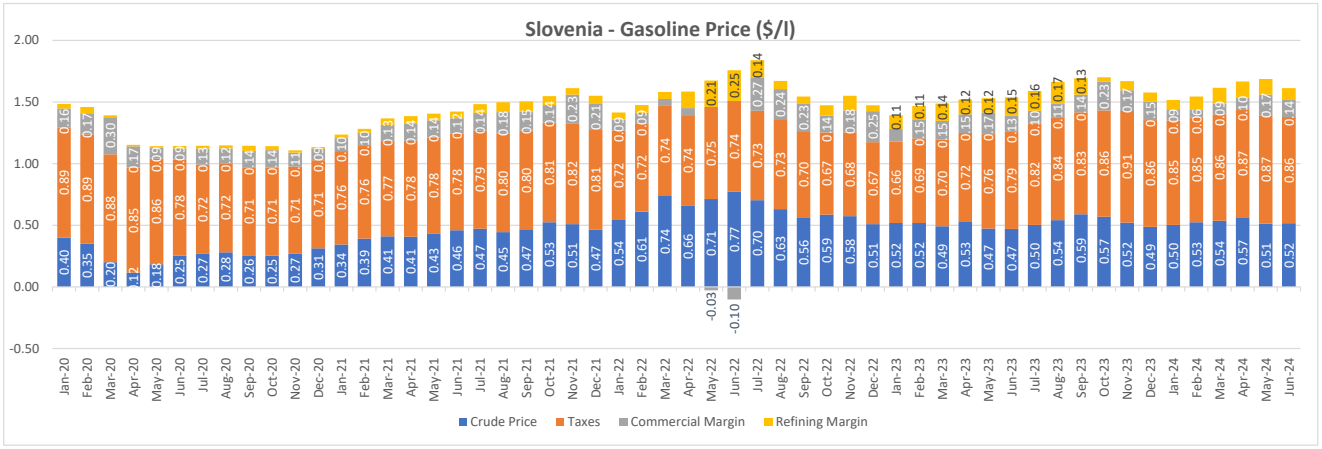

Romania - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

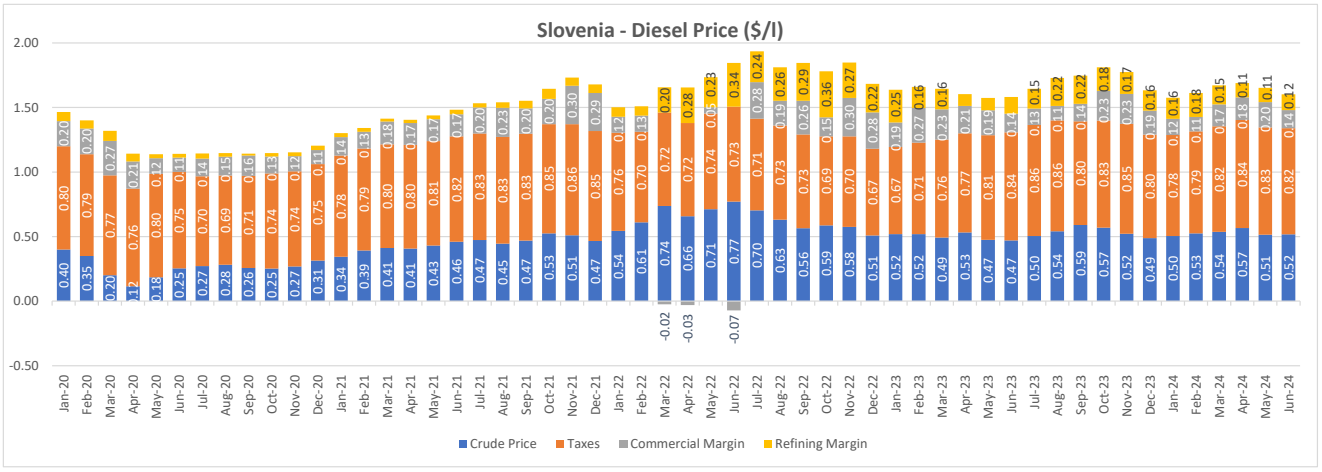

Slovakia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

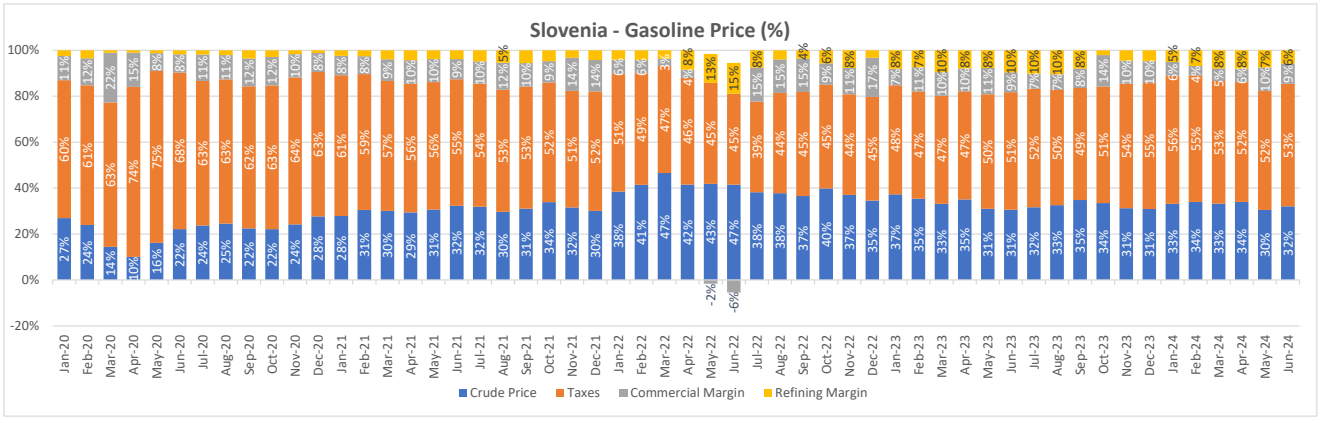

Slovakia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

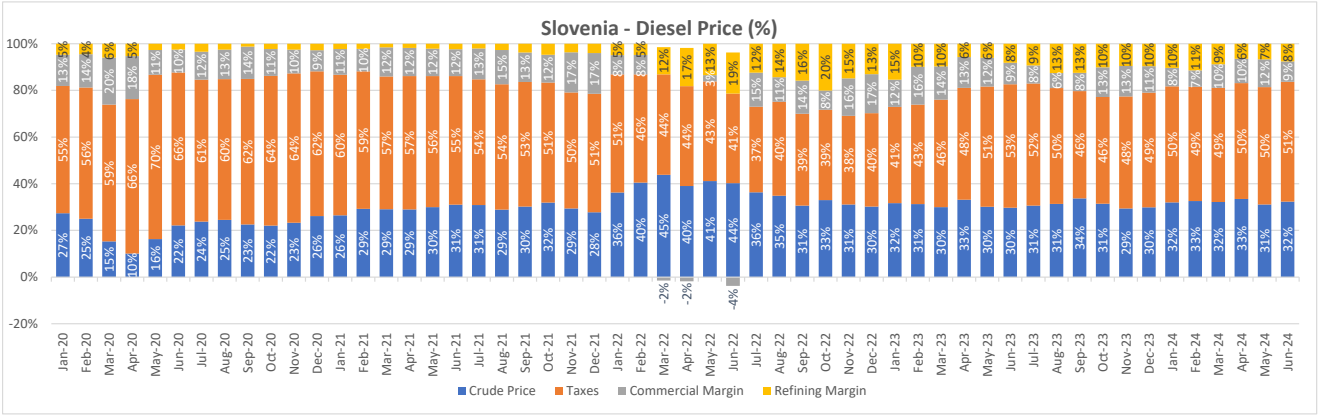

Slovakia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

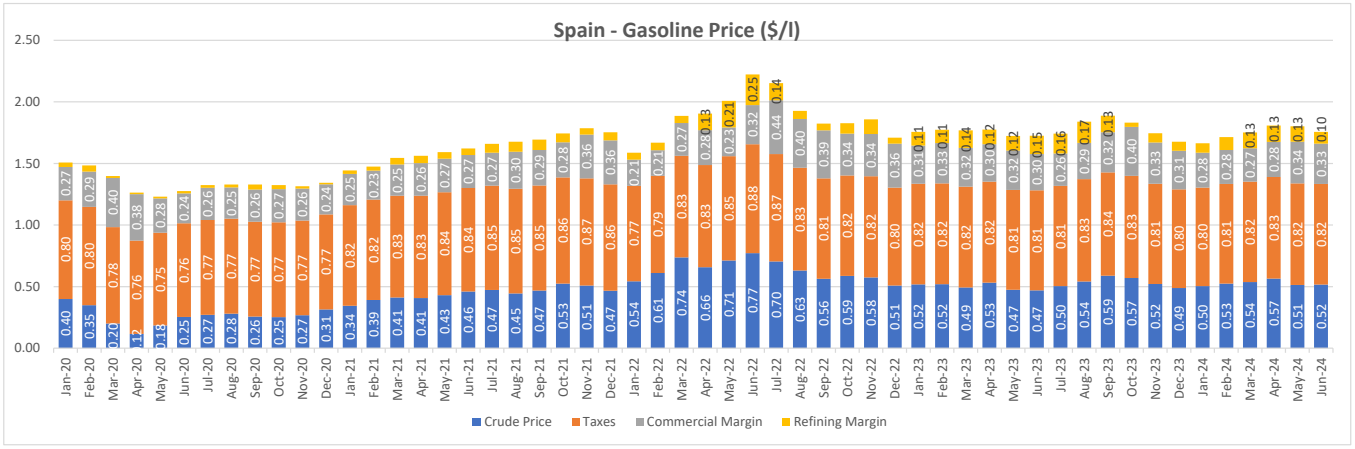

Slovakia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

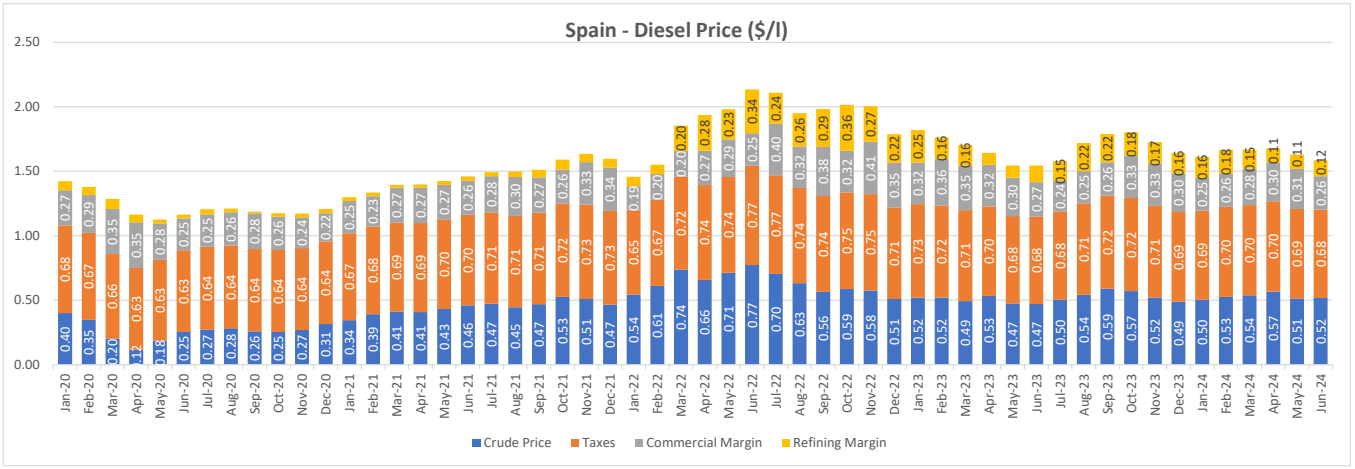

Slovenia - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

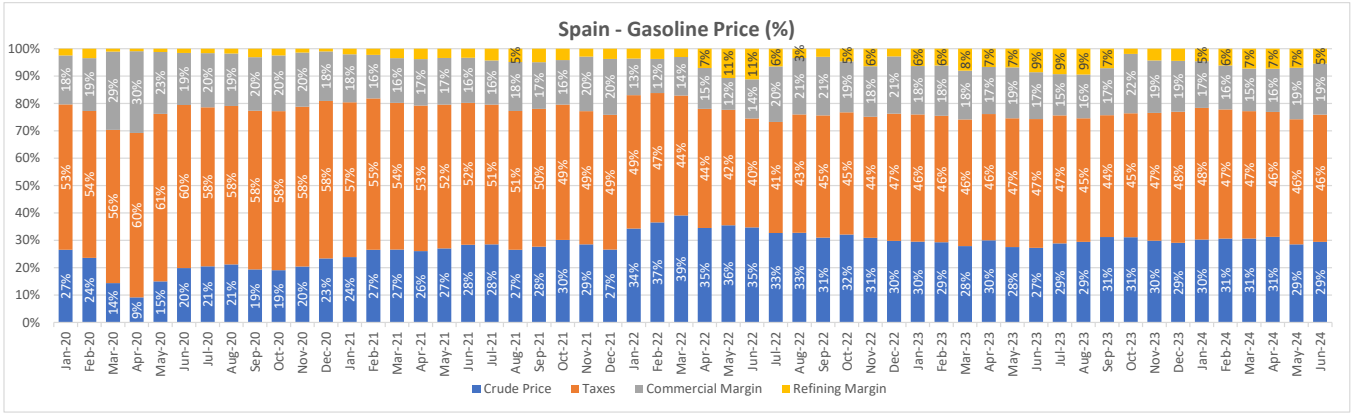

Slovenia - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

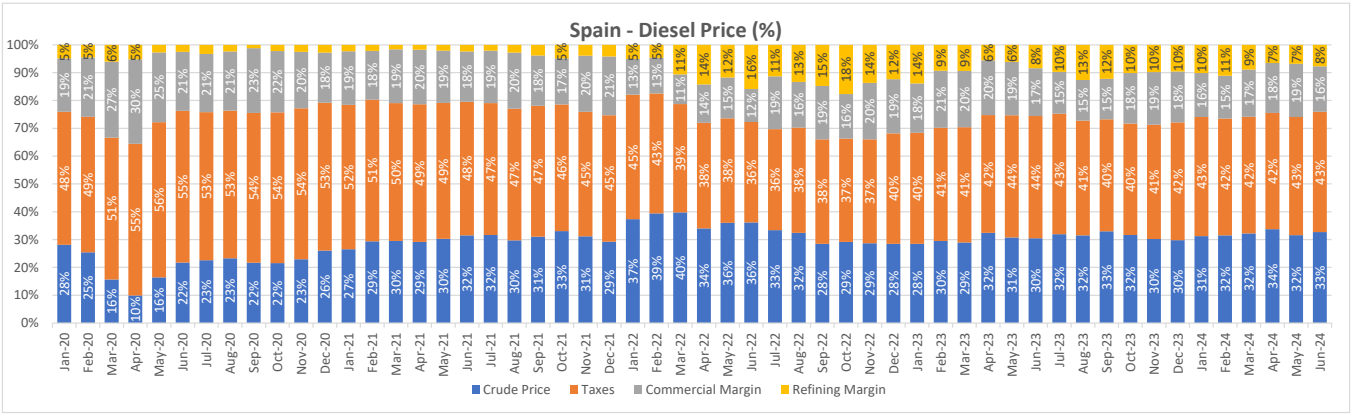

Slovenia - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

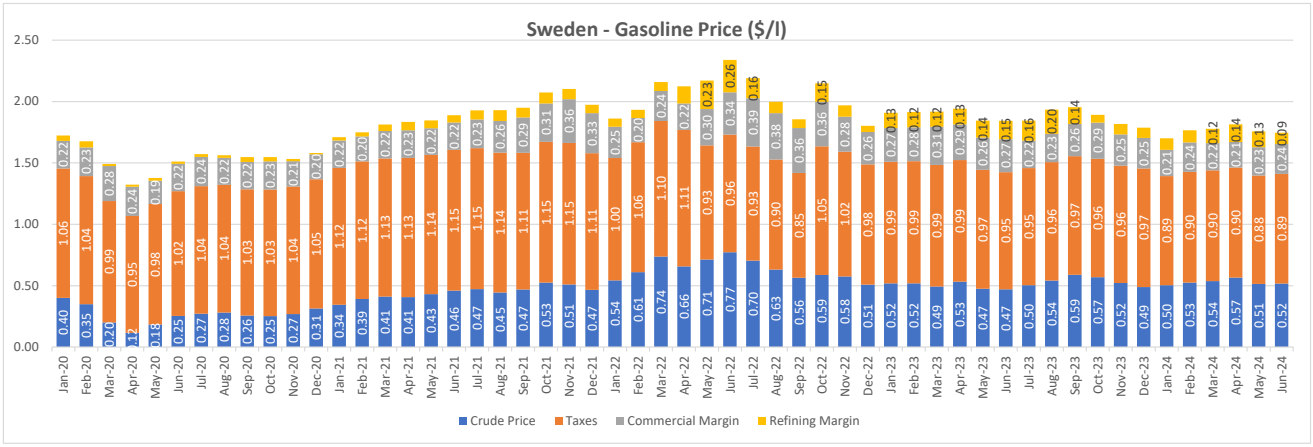

Slovenia - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

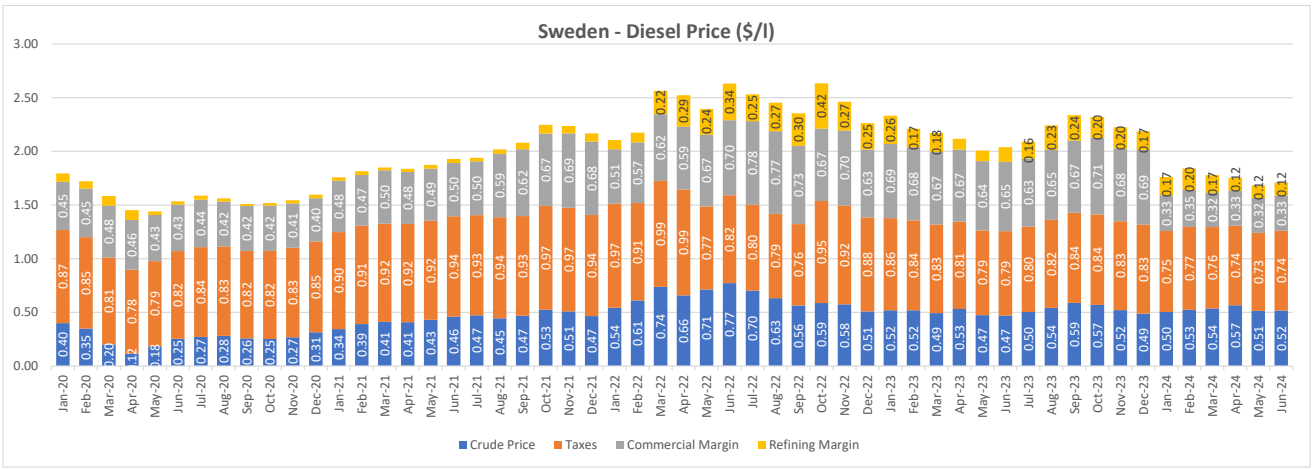

Spain - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

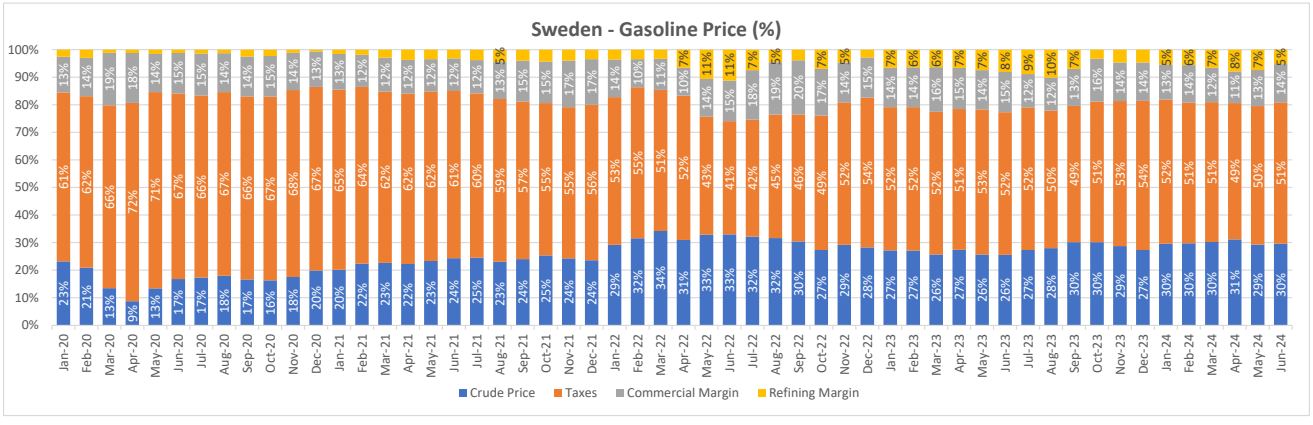

Spain - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

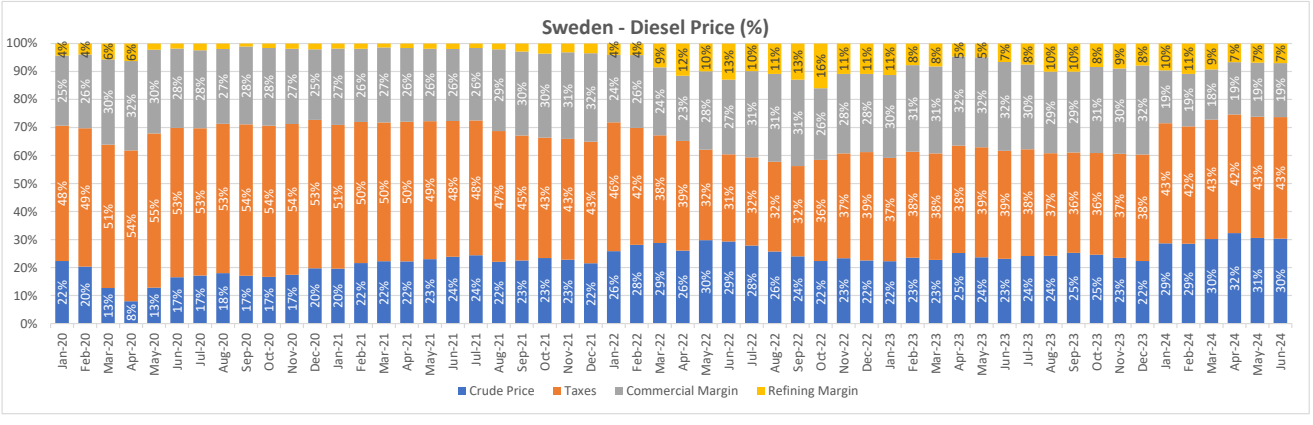

Spain - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

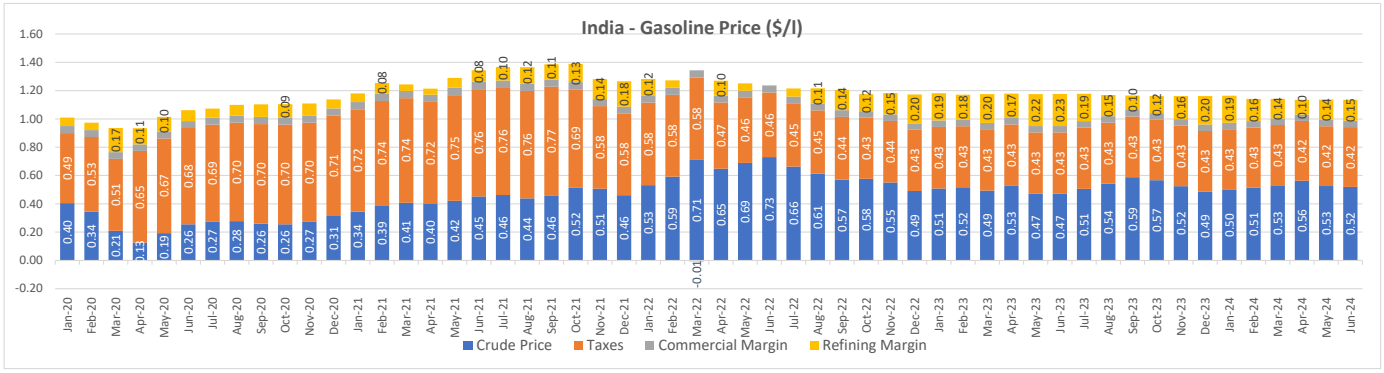

Spain - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

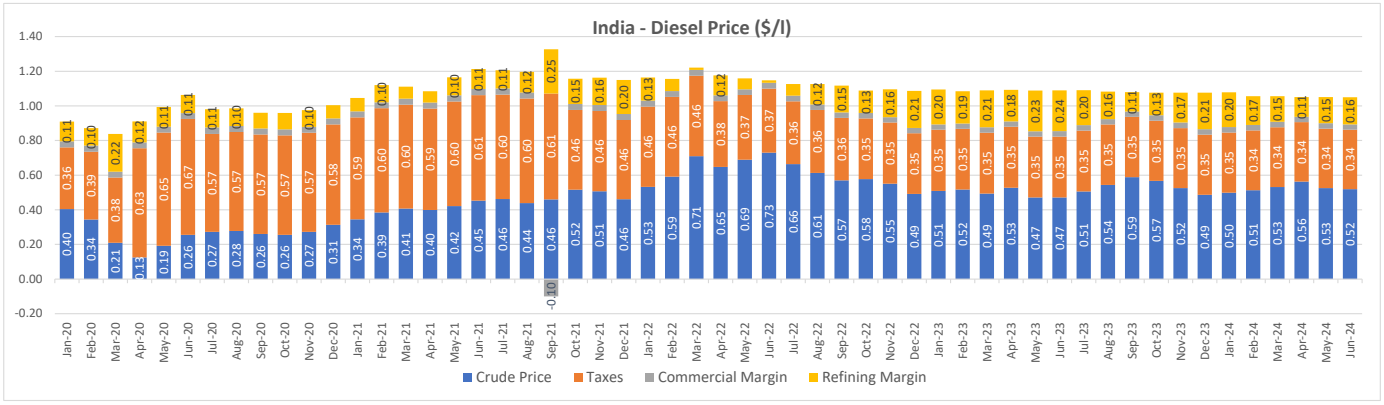

Sweden - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

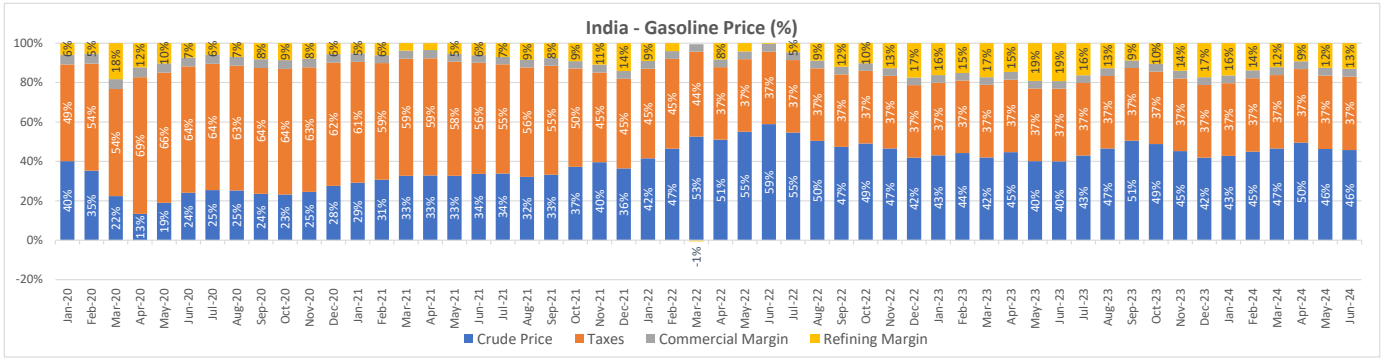

Sweden - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin

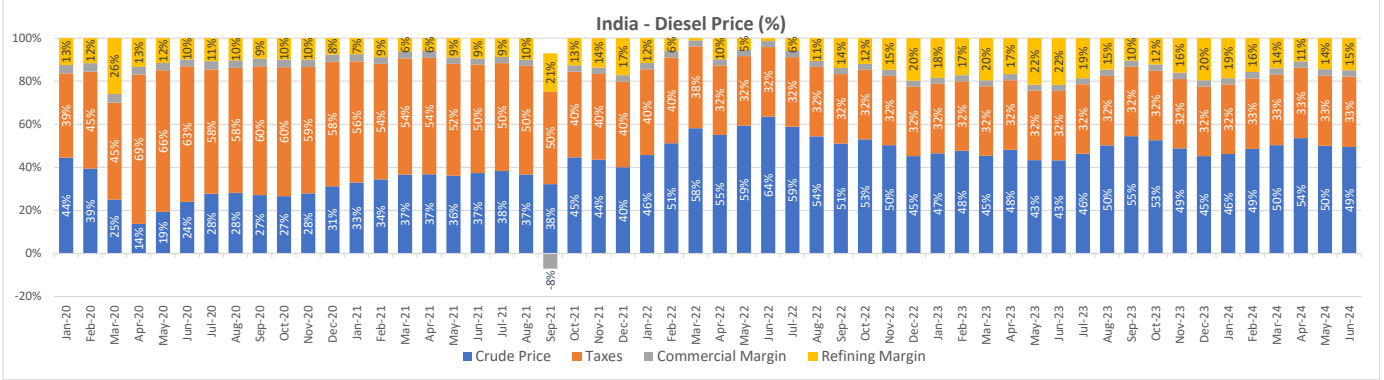

Sweden - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin


Sweden - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin


India - Gasoline Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin


India - Diesel Price ($/l)
Crude Price
Taxes
Commercial Margin
Refining Margin


India - Gasoline Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin


India - Diesel Price (%)
Crude Price
Taxes
Commercial Margin
Refining Margin

Annex 2

Data Collection Methodology by Country or Region

United States of America (U.S.)

Step 1: Download the data.

- Visit the U.S. Energy Information Administration's website for Gasoline and Diesel data:
    - Gasoline: Gasoline Pump Components History (https://www.eia.gov/petroleum/gasdiesel/gaspump_hist.php).
    - Diesel: Diesel Pump Components History (https://www.eia.gov/petroleum/gasdiesel/dieselpump_hist.php).
- Download the relevant datasets in Excel or CSV format.

Step 2: Convert gallon prices to liters.

Since 1 gallon equals 3.785 liters, you'll need to divide the prices per gallon by 3.785 to get prices per liter.

For example, if the price is $3/gallon for gasoline:

Price per liter = 3/3.785 = $0.792/l.

Step 3: Apply the percentages.

Use the provided component percentages from the website and apply them to the calculated price per liter. This can be done by multiplying the respective percentages for each component (e.g., taxes, distribution) by the price per liter.

Example calculation for gasoline:

- Suppose the distribution and marketing component is 10% of the total price, and the total price per liter is $0.792:

Distribution cost per liter = 0.10 × 0.792 = $0.792/l.

European Union

Step 1: Collect raw data on retail prices with taxes and without taxes.

- Website: The European Commission (https://energy.ec.europa.eu/data-and-analysis/weekly-oil-bulletin_en).
- Action: Download two separate files of the *Weekly Oil Bulletin:* For prices with taxes, download the file "Prices with taxes latest prices (xlsx)". For prices without taxes, download the file "Prices without taxes latest prices (xlsx)".
- Note: For earlier dates, download the database "Price developments 2005 onwards (xlsx)" from the same page. It contains data both with and without taxes.

Step 2: Retrieve the data on retail prices with and without taxes.

- Action: Open the downloaded files.
    - For gasoline, use data in column B (named "Euro-super 95 (l)").
    - For diesel, use data in column C (named "Gas oil automobile Automotive gas oil Dieselkraftstoff (l)").

Step 3: Obtain distribution costs, marketing costs, and crude costs.

- Website: Fuels Europe (https://www.fuelseurope.eu).
- Action: Go to the section "Resources," select "Publications," and download the statistical report for the year that you are interested in. Find two figures called "Breakdown of automotive diesel prices" and "Breakdown of automotive gasoline prices." Retrieve the number from the bar called "Product" for each country.

Step 4: Convert all obtained data in EUR to USD.

- Website: https://www.macrotrends.net/2548/euro-dollar-exchange-rate-historical-chart.
- Action: Use monthly exchange rate statistics to convert EUR to USD.

Step 5: Retrieve data on crude price (in USD).

- Website: Energy Information Administration (EIA) (https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=rbrte&f=m).
- Action: Download the data titled "Europe Brent Spot Price FOB (Dollars per Barrel)" for the period under analysis and on the date corresponding to the Fuels Europe Statistical report data.

Step 6: Convert crude prices into USD/liter.

- Action: Convert the retrieved monthly Brent Spot price from USD/barrel into USD/liter by dividing the retrieved number by the constant equal to 158.987294928.

Step 7: Calculate taxes.

- Action: Calculate taxes by subtracting retail prices without taxes from retail prices with taxes.

Step 8: Calculate commercial margin.

- Action: Calculate commercial margin by subtracting crude price on the month of the Fuels Europe Statistical Report data from the distribution costs, marketing costs and crude costs (retrieved from the "Product" number in the annual Fuels Europe Statistical Report and converted to USD).

Step 9: Retrieve refining margin from S&P.

- Action: Download refining margin from S&P (paid subscription). Convert the value from USD/barrel into USD/liter by dividing the former by the constant equal to 158.987294928.
- Note. Use the Northern European margin for the following countries: Austria, Belgium, Czechia, Denmark, Estonia, Finland, Germany, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Slovakia, Sweden.
- Use the South European margin for the following countries: Bulgaria, Croatia, Cyprus, France, Greece, Hungary, Italy, Malta, Portugal, Romania, Slovenia, Spain.

Japan

Step 1: Download gasoline and diesel pump components history from the METI website.

- Website: METI Gasoline and Diesel Pump Components History (https://www.enecho.meti.go.jp/statistics/petroleum_and_lpgas/pl007/results.html).

Step 2: Download Gasoline and Diesel Subsidies History from METI website

- Website: Gasoline and Diesel Subsidies History (https://nenryo-gekihenkanwa.go.jp/).

Step 3: Currency Rate Change of USD to Japanese Yen (JPY)

- Website: OFX Historical Exchange Rates (https://www.ofx.com/en-us/forex-news/historical-exchange-rates/).
- Action:
    - Access the website.
    - Input the relevant time range for USD to JPY exchange rates.
    - Download or record the historical data to calculate average or specific exchange rates required for the analysis.

Step 4: Crude Oil Price

- Crude Price Used: Dubai monthly crude price (in USD per barrel).
- Source: Global S&P Platts data, with the results assessed by KAPSARC.
- Action: Use the assessed crude price in your analysis, without disclosing proprietary or original values due to legal constraints.

Step 5: Refining Margins

- Gasoline Product: 95 RON gasoline (Singapore refined product FOB price).
- Diesel Product: 50 ppm diesel (Singapore refined product FOB price).
- Action: Calculate refining margins by subtracting the Dubai crude oil price (in USD per liter) from the Singapore refined product FOB price for both gasoline and diesel.
- Source: Global S&P Platts data, with the results assessed by KAPSARC.

Canada

Step 1: Download gasoline and diesel pump components history from the Kalibrate website.

- Website: Kalibrate Gasoline and Diesel Pump Components History (https://charting.kalibrate.com/Charting/Margins).
- Action:
    - Visit the Kalibrate website.
    - Select Canada (Volume Weighted) as the region.
    - Choose the required date range for gasoline and diesel components data.
    - Download or note the data for each price component:
        - Retail Price: The total price paid by consumers at the pump.
        - Taxes: Calculated as the difference between the Retail Price and the Retail Price Excluding Taxes.
        - Commercial Margin: Calculated as the difference between the Retail Price Excluding Taxes and the Wholesale Price.
        - Refining Margin: Calculated as the difference between the Wholesale Price and the Crude Price.

Step 2: Currency rate change from Canadian Dollar (CAD) to USD.

- Website: Bank of Canada Monthly Exchange Rates (https://www.bankofcanada.ca/rates/exchange/monthly-exchange-rates/).
- Action:
    - Visit the Bank of Canada website.
    - Navigate to the Monthly Exchange Rates section.
    - Select the appropriate date range and download the historical exchange rates between CAD and USD.
    - Use this data to convert prices from CAD to USD, if necessary.

Brazil

Step 1: Download gasoline and diesel pump components history from the ANP website.

- Website: ANP - Gasoline and Diesel Pump Components History (https://www.gov.br/anp/pt-br/assuntos/precos-e-defesa-da-concorrencia/precos/composicao-e-estruturas-de-formacao-dos-precos).
- Action:
    - Visit the website and navigate to the section on fuel price composition.
    - Select the data for Regular Gasoline and Diesel Oil S500.
    - The data is organized by month, so you will need to download or extract the information from each monthly archive.

Step 2: Download the price of oil from the ANP website.

- Website: ANP - Oil Reference Price (https://www.gov.br/anp/pt-br/assuntos/royalties-e-outras-participacoes/preco-de-referencia-do-petroleo).
- Action:
    - Navigate to the section on oil reference prices.
    - Select the relevant oil price data for each month.
    - The data is also structured by month, so you will need to extract the oil price from each archive.
    - Adjust the oil price for 0.73 liters, as only 73% of each liter of biofuel contains oil, with the remainder being biofuel.

Step 3: Calculate the refining margin.

- Refining Margin: The refining margin is the difference between the price of gasoline or diesel at the refinery and the price of oil.
- Action:
    - For each month, subtract the price of oil from the gasoline or diesel price at the refinery.
    - Perform this calculation for both gasoline and diesel prices.

Step 4: Calculate the Commercial Margin

- Commercial Margin: This includes the sum of the distribution margin, resales, and transport costs.
- Action:
    - Add the respective components: distribution margin, resale margin, and transport cost for each month.

Step 5: Currency Rate Change from Brazilian Real (BRL) to USD

- Website: Investing.com BRL to USD Historical Data (https://www.investing.com/currencies/brl-usd-historical-data).
- Action:
    - Visit the website.
    - Download the historical exchange rates for the Brazilian Real (BRL) to USD for the required dates.
    - Use this data to convert prices from BRL to USD as necessary.

United Kingdom

Step 1: Collect raw data.

- Website: Oil and Petroleum Products Monthly Statistics (https://www.gov.uk/government/statistical-data-sets/oil-and-petroleum-products-monthly-statistics).
- Action: Visit the UK Government's website for oil and petroleum product statistics.
    - The file provides monthly data starting from January 1989 and is updated monthly.

Step 2: Retrieve retail prices.

- Action: Open the dataset and go to tab "4.1.1" titled "Typical retail prices of petroleum products and a crude oil price index (monthly)."
    - For gasoline: Use the column "Motor spirit: Premium unleaded / ULSP."
    - For diesel: Use the column "Derv: Diesel / ULSD."

Step 3: Retrieve prices without taxes.

- Action: Go to tab "4.1.2 (excl VAT)" titled "Typical retail prices of petroleum products excluding VAT and duty."
    - For gasoline: Use columns J and K, titled "ULSP (Premium Unleaded): Ex VAT" and "ULSP (Premium Unleaded): Ex VAT & Duty."
    - For diesel: Use columns G and H, titled "Derv (Diesel / ULSD): Diesel / ULSD Ex VAT" and "Derv (Diesel / ULSD): Ex VAT & Duty."

Step 4: Calculate VAT and duties.

- Action: Subtract the "Price without taxes" (from Step 3) from the "Retail price" (from Step 2) to calculate the VAT and duties.

Step 5: Retrieve crude prices.

- Website: EIA Crude Prices (https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RBRTE&f=M).
- Action: Visit the EIA website to collect crude prices in USD per barrel.
- Action: Convert the USD per barrel price to liters using the formula:
    - FUSD per barrel / 158.987294928 = USD per liter.

Step 6: Convert UK pound to USD.

- Website: ONS Exchange Rate Data (https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/timeseries/auss/mret).
- Action: Use monthly exchange rate statistics from the UK's Office for National Statistics (ONS).

Step 7: Estimate refining margins.

- Action: Although specific UK refining margins are unavailable, consult the report "Europe Oil Market Forecast" from the S&P Global. This data allows us to estimate margins from the difference between crude and gasoline or diesel in Europe.
- Note: Multiply the estimated margin by 0.90 to account for transport and other fees (10%).

Step 8: Calculate commercial margins.

- Action: Calculate commercial margins as the residual by subtracting the sum of taxes, crude price, and estimated refining margins from the retail price.

India

Step 1: Collect the raw data on crude oil price, exchange rate, price charged to dealers, excise duty, dealers' commission, VAT and retail price for gasoline and diesel.

- Website: Petroleum Planning & Analysis Cell (PPAC) of India (https://ppac.gov.in).

- Action: Download the report "Snapshot of India's Oil and Gas data" from the section Reports & Studies on the website.

- Note: You will find only the last available report in the section detailed in the previous lines. Reports from previous months can easily be found in the Search option using the words "Snapshot of India's Oil and Gas data" and the respective month/year. Sometimes you may need to use Google to find the report.

Step 2: Retrieving the data from the PDF file.

- Action: Find the section/part F called "Taxes & Duties on Petroleum Products". In this section, you will find the following information:
    - Crude oil (Indian Basket) in USD /barrels (b).
    - Exchange rate (Rs./USD).
    - Gasoline ("petrol") and diesel price buildup in Rs./liter/Cylinder.
    - Price charged to dealers (Excluding Excise Duty and VAT).

Step 3: Converting the data into the final format.

- Action: Convert/calculate the raw data into the final data using the following steps:
    - Convert crude price from USD/barrel into liters per barrel by dividing it with a conversion factor of 158.987294928.
    - Calculate taxes by summing up the Excise Duty and VAT, and convert the result into USD through the exchange rate (Rs./USD) obtained from the downloaded PDF.
    - Calculate the refining margin as the price charged to dealers minus the crude price and convert the result into USD/l. Note: The refining margins can have been negative on many occasions.
    - Convert the retail price into USD/l using the exchange rate provided in the PPAC PDF file.
    - Calculate the commercial margin as the difference between retail price minus the other three components (crude price, taxes, and refining margin).

Endnote

[1] To better understand the four components, we present the following definition: (1) The **price of oil** refers to the cost of crude oil, the raw material used to produce gasoline or diesel. (2) **Taxes** include government-imposed fees such as excise taxes, sales taxes, and environmental levies. These are added to the price at various stages of the supply chain and vary by region or country. Taxes often make up a substantial portion of the retail price. (3) **Refining margin** is the cost associated with converting crude oil into gasoline and other petroleum products. It includes operational expenses of refineries, such as energy consumption, labor, and maintenance, as well as the profit margin for refiners. (4) **Commercial margin** represents the costs and profits of distributors and retailers. It covers expenses such as transportation, storage, retail operations, and marketing, along with the profit margin for companies managing the sale of gasoline to end consumers.

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About the Authors



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Julio is an Economist and Civil Engineer with more than 20 years of experience in the energy field. His experience includes energy policy and data analysis for international organizations, governmental advisory services, and the construction of energy projects. Julio also has a passion for sustainable energy and project management, both supported by his postgraduate studies. Before joining KAPSARC, Julio worked as a Senior Energy Consultant for different organizations. For more than seven years, during his time as an energy policy analyst at OPEC, he was one of the major contributors to the OPEC World Oil Outlook (WOO). His experience in both the governmental and private sectors, in the field and office, allows him to understand the dynamics of the energy sector.



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About the Project

The KAPSARC Oil Market Outlook (KOMO) project aims to provide KAPSARC estimations of the oil supply/demand outlook over the short term (12-24 months) and long term, contributing to a comprehensive analysis based on realistic assumptions derived from the current market fundamentals, including the study of product demand in different regions worldwide. On the demand side, the impact of taxes on the retail price of petroleum products is just one of the many factors considered in KOMO's demand estimation.



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