Article

Analysis of fuel prices in Malaysia, Indonesia, and Singapore, by determining every pivotal factor that influence each price component

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Abstract: Rising gasoline and diesel prices have been a major source of concern around the world. A variety of factors influence fuel prices in Malaysia, Singapore, and Indonesia. This paper will discuss some of the most important factors influencing fossil fuel prices, as well as each pivotal component that affects that factor. The emerging Asia and Pacific region may be especially vulnerable to rising oil prices. It is a big net importer of oil, and oil meets a significant percentage of its rapidly increasing energy needs. While producing 11% of the world's crude oil, emerging Asia consumes more than 20%, and the gap is widening. Asia's emerging economies consume nearly as much energy as most industrialized nations and are substantially less energy efficient. The region has done well economically. However, just because these countries are developing does not make it immune to rising oil prices. Inflation is growing, fuel subsidies are having an influence on some budgetary forecasts, and high oil costs may become a significant factor, slowing the region's already sluggish investment demand. In fact, stress symptoms are beginning to surface. Therefore, an Analysis of fuel prices in Malaysia, Indonesia and Singapore is very important in order to understand how every country is being affected by the price components and how every price component is being affected directly by every pivotal factor.

Keywords: Fuel Prices; Price component; Analysis; pivotal factor

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1. Introduction

A fuel is any substance that, when burned, produces heat and energy. Typically, the energy released is in the form of chemical or thermal energy. This heat energy that fuels emit is used for cooking in addition to being used in heaters and many industrial and manufacturing activities. An engine is used when we need to convert heat energy into mechanical energy. comparable to when we fill up our cars The oil used as fuel in an engine is known as fuel oil. liquid Fuel, these are the fuels used to generate kinetic and mechanical energy. The majority of liquid fuels, including crude oil, are produced by subjecting fossilized plant and animal fragments to high heat and pressure. Following that are liquid biofuels such as ethanol and hydrogen fuel. These fuels are fairly easy to use and transport. Algae and plants coexisted in shallow oceans millions of years ago. The organic matter decomposed, sunk to the seafloor, mixed with other sediments, and was buried. Over millions of years under high pressure and temperature, the remains of these animals were transformed into what we now call fossil fuels. Under comparable conditions, fossil fuels such as coal, natural gas, and petroleum were produced.

Petroleum can currently be found in vast underground reservoirs that were once ancient seas. Petroleum reservoirs exist beneath the surface of the land or the water. Their crude oil is extracted using massive drilling equipment.[3]
Although it can be yellowish, reddish, tan, or even greenish in color, crude oil is usually black or dark brown. Color variations represent the distinct chemical compositions of several crude oil suppliers. Lighter petroleum typically contains less metal or sulfur (sometimes nearly clear).

Petroleum is used to make gasoline, a necessity in our daily lives. It is also processed and used in a variety of other items, including tires, refrigerators, life jackets, and anesthetics.

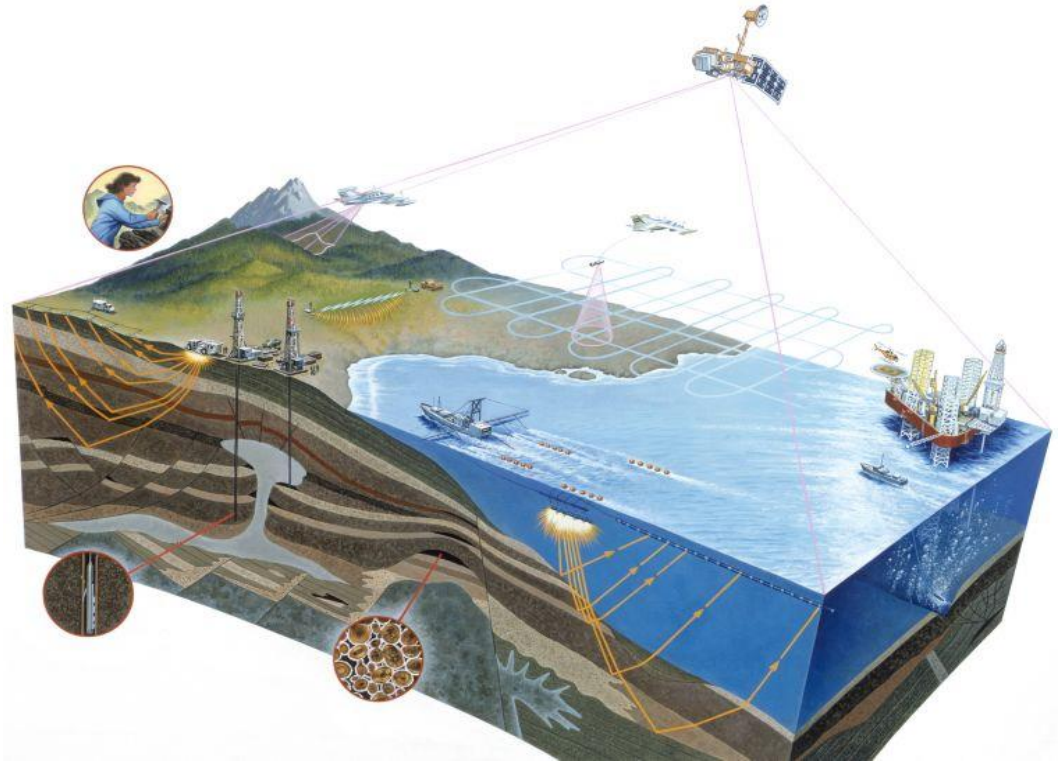

Figure 1. Oil location engineers use high-tech instruments such as satellites to find potential oil reserves beneath the earth's or ocean's surface. [3]

Massive amounts of petroleum can be discovered beneath the Earth's surface and in tar pits that bubble to the surface. Petroleum can be found in even the deepest wells dug to obtain it. A drilling rig or an oil rig, also known as a drilling rig, can be used to drill for oil on land. An offshore oil platform drills for oil. Primary Production, the bulk of current wells use a 24 hour per day air rotary drilling rig. Throughout this technique, engines drive a drill bit. A drill bit is a type of cutting tool used to create a circular hole. In air rotary drilling rigs, hollow steel drill bits with tungsten rods are utilized to cut rock. A petroleum drill bit's diameter can reach 36 centimeters (14 inches). While the drill bit revolves and drills through the soil, rock bits are chipped off. A powerful air flow enters the hollow drill's center and leaves through the drill bit's bottom. Then, a surge of air returns to the surface, carrying little rock fragments with it.

On-site geologists can study these crushed rock particles to determine the various rock strata that the drill encounters. When the drill strikes the oil, some of it spontaneously rises from the ground, going from a high-pressure region to a low-pressure region. The sudden release of oil, which can be a "gusher," flying dozens of meters into the air, is one of the most dramatic extraction procedures. A blowout preventer is a piece of technology that redistributes pressure to prevent a gusher like this. Pumps are used in oil extraction. The two major types of pumps found on oil rigs are mud pumps and extraction pumps. The drilling fluid known as "mud" is used to create boreholes in order to extract oil and natural gas. Mud pumps are used to circulate drilling fluid. Petroleum refining is the process of converting crude oil or bitumen into more useful goods such as fuel or asphalt.

Figure 2. Oil refinery. [5]

When crude oil is recovered from the soil, impurities such as sand and sulfur are present. These components must be separated. To do this, the crude oil is heated in a distillation tower using trays and temperatures set at various degrees. Because metals and hydrocarbons have different boiling points, vapors from the various components rise to different levels of the tower before condensing back into liquid on the tier-like trays when heated. Therefore, Oil Prices are being Influenced by Factors as oil is a highly sought-after global commodity, significant price changes might have a significant impact on the economy. The two main factors influencing the price of oil are as follows:

- Supply and demand
- Cost of production
- Market sentiment

And we will be talking more in depth in this paper about the minor (or the pivotal) factors that influence these major factors focusing more on Malaysia, Singapore and Indonesia.

2. Main Factors

2.1. Supply And Demand

The Low Demand Elasticity:

The oil market's most noticeable feature is its low-price elasticity of demand. As a result, demand for oil is not very sensitive to price variations.

When you consider your own life, this becomes clear. Regardless of petrol prices, most people who own a car continue to go to work, visit friends, and go shopping. Your demand for oil does not change dramatically in reaction to price, as it does for others. With high humidity from 62% to 95%.

Even among people who consume less of it, demand for oil is relatively inelastic. Someone who takes public transportation or lives close to their place of employment is unlikely to buy a gas-guzzling SUV and relocate to the suburbs simply because the price of oil has reduced. In the short run, lower gasoline prices will almost certainly encourage people to travel more. Oil prices have a considerable impact on airline tickets and the expense of cross-country driving.

Customers and businesses can gradually acclimatize to fluctuating oil prices. It is feasible that firms will respond more quickly to improve the energy efficiency of their operations. Consumers must be at the right time in their life to make changes. When a person is ready to make a purchase a new car, fuel efficiency becomes more important in times of high oil prices.

The low-price elasticity of oil demand is notable in comparison to the desire for other goods and services, including alternate forms of energy. Higher natural gas prices, for example, may result in increasing usage of solar, coal, and oil for electricity generation.

The Low Elasticity of Supply:

Supply often reacts to price changes more slowly than demand. Even by supply curve criteria, the supply of oil is relatively inelastic.

To begin, consider why supply is often less elastic than demand, especially in the short run. Because there is a fixed supply of things at any one time, demand must adjust. For example, an unanticipated increase in house workers during the coronavirus epidemic resulted in a consumer paper goods shortage in 2020.

Previously, people received paper towels, facial tissues, and toilet paper from various businesses while they were at work. In the short term, consumers needed to reduce their demand.

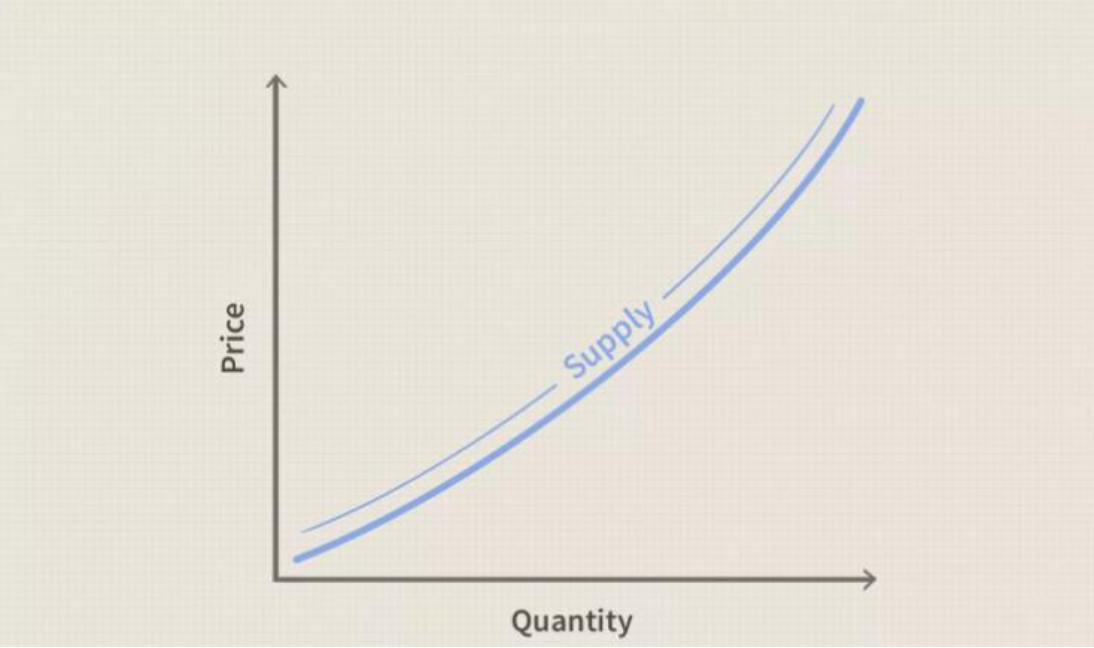

Figure 3: How a supply curve works Image by Julie Bang © Investopedia 2019

Oil's supply is significantly less elastic than the bulk of other products due to the specialized investments that are typically required to extract oil. When prices shift, much of the equipment used to mine gold or silver can be swapped over to mine platinum or palladium, but expensive equipment used for hydraulic fracturing and offshore drilling is typically inoperable.

As a result, when oil prices are high, it may take oil corporations years to develop oil fields. Furthermore, because the equipment is useless for anything else, they are frequently forced to continue producing oil even when prices fall.

2.2. Cost of Production

a. For the Project Capital Expenditure, several stages of expenditure are involved:

❖ Exploration [pre discovery] ➢ geology ➢ geophysics ➢ drilling
❖ Appraisal [pre commercial decision] ➢ geology ➢ geophysics ➢ drilling ➢ well-testing
❖ Field Development ➢ drilling ➢ production wells ➢ production facilities ➢ export facilities
❖ Field Modifications ➢ more wells ➢ injection facilities ➢ artificial lift
❖ Abandonment ➢ seal off wells ➢ removal of facilities

b. Project Opex It is often called Operating Cost. Opex may include the following costs:
➢ Lease of facilities. ➢ Platform operation, maintenance and transportation cost.
➢ Workover operations on wells. ➢ Insurance and administration, such as salary.

c. Petroleum Taxation Why?
➢ The petroleum industry is a popular target for government.
➢ Petroleum industries are subject to a wide range of fiscal systems.
➢ Therefore, it is important to understand the impact of taxation on project economies.

Licensing is the legal process by which the owner (government) of subsurface mineral rights grants permission to a company to explore for and to produce petroleum from a specific area. There are a number of styles of licensing agreement, which have been applied within the petroleum industry. The most common are as follows: -

i. Concession [old style]
ii. Production License [new concession]
iii. Production Sharing Agreement iv. Joint Venture v. Service Contract

lifting costs:

The expenses incurred by wells, associated machinery, and facilities for each barrel of oil equivalent (boe) of oil and gas produced by those facilities following the discovery, acquisition, and development of hydrocarbons for production are referred to as lifting costs. Total production expenses are divided by oil and natural gas production in boe, less production taxes, to compute direct lifting costs (and also less royalties in foreign regions). Total lifting costs are the sum of direct lifting expenses and manufacturing taxes. [7] In 2009, global total lifting expenses for FRS companies fell by $1.19 per boe to $11.51 per boe, reversing a nearly decade-long upward trend (Table 10). Total lifting costs decreased in all FRS areas except Canada, where they climbed by $2.49 due to the advent of oil sands in that country in 2009. The FRS regions of the United States Offshore, the Middle East, and the Other Eastern Hemisphere continued to see overall lifting costs fall by $3.83, $2.91, and $2.61 dollars, respectively.

Production taxes were a substantial factor to the decrease in total lifting costs. In 2009, they fell by $0.84 per boe globally, accounting for 70% of the drop in overall lifting costs. Production taxes often rise and fall in tandem with variations in the pricing of oil and natural gas, both of which declined in 2009. Except for Canada, where the increase was minor, all FRS regions saw a decrease in production taxes in 2009, with the Middle East and the Other Eastern Hemisphere experiencing the greatest decreases. With a little reduction, the United States became the highest-production-tax region for FRS firms. Canada and the former Soviet Union had the lowest production tax rates in 2009, as they had in 2008.

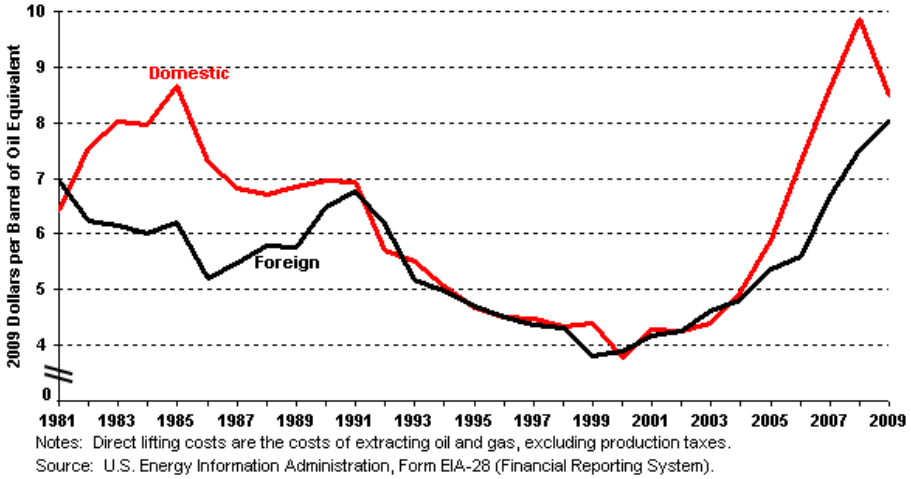

Figure 4: Direct Oil and Gas Lifting costs for FRS companies 1981-2009

Finding Prices:

The discovery cost is the average cost of expanding proved reserves of oil and natural gas through exploration, development, and the purchase of potentially reserve-rich properties. These costs are represented in USD per barrel of oil and natural gas combined. Finding costs should ideally include all expenses incurred in determining any specific proved reserves (regardless of when they were incurred or documented on a company's books) (not including the purchases of already discovered reserves). Specifically, and as detailed below.[8]

The ratio of exploration and development spending to prove reserve additions over a specific time period is used to calculate finding costs (excluding net purchases of proved reserves). This ratio includes unproved land expenditures but excludes expenditures on proven acres. Finding expenses are frequently assessed as a weighted average over a three-year period in Performance Profiles based on a three-year weighted average.[8]

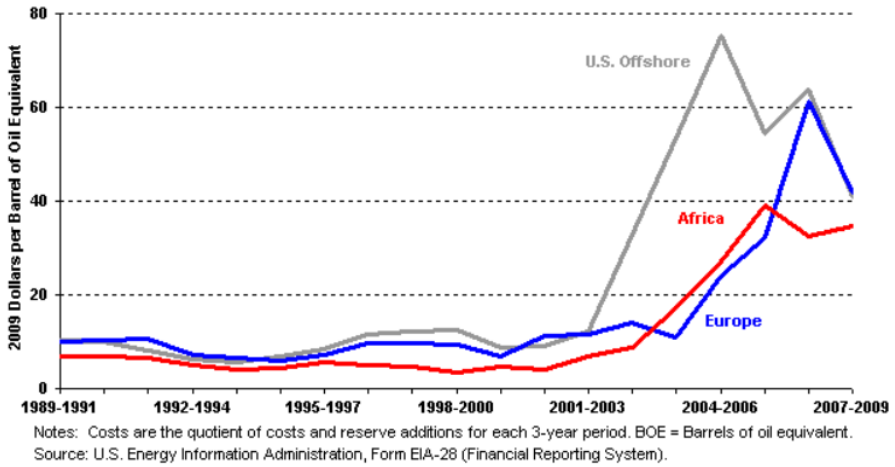

Figure 5: Finding costs for FRS companies 1989-1991 to 2007 -2009

In the 2007-2009 year, the average global finding expenses for FRS companies declined $5.79 per boe of reserves created when compared to the 2006-2008 period. With the exception of the Former Soviet Union, Africa, and the Middle East, all FRS regions had a decrease in finding costs. In 2007-2009, finding costs in Europe declined dramatically, from the highest of the overseas FRS areas in 2006-2008 to $19.66 per boe, although rising to the highest amount globally. Because the United States Offshore, which had previously held the distinction of highest cost region, witnessed the greatest drop in costs ($23.02) from 2007 to 2009, it lost that title. Canada experienced a large drop, which was most likely driven by the addition of oil sands in 2009. The Former Soviet Union witnessed the most increase in finding prices across all areas, with a $3.38 increase.[8]

Upstream costs:

Total upstream expenses include the costs of finding and lifting. In recent years, assessments of upstream costs have been substantially affected by discovery costs, which have often been significantly higher than lifting costs. Upstream expenditures for FRS enterprises reduced by about $5 per boe between 2007 and 2009. Upstream expenses increased only in the Former Soviet Union and Africa, where they were $4.26 per boe and $3.07 per boe, respectively, while they decreased in the United States Offshore, Europe, and Canada.[8]

2.3 Market sentiment

The Refinitiv MarketPsych index:

The Refinitiv MarketPsych index (RMI), which incorporates a variety of asset types, can improve trade strategy in three ways:

The RMI allows for detailed segmentation of various asset groups. The volatility index VIX, for example, is also known as, but is not meant for, crude oil or other specific commodities. If investors want to analyze the sentiment surrounding crude oil, the MarketPsych index provides more valuable data. [9]

It can also bring new information by offering a different explanation of an existing economic foundation. For example, contemporary studies may use the RBOB-WTI spread or EIA crude oil inventories to estimate crude oil demand. The MarketPsych index may directly and visibly measure the emotion associated with the use of petroleum goods.

When it comes to event-driven data requirements, the RMI can help. Because event-driven data is often low-frequency and high-latency, its value in data mining is limited. People's reactions to these occurrences, on the other hand, are high-frequency and low-latency. The MarketPsych index could change the dataset's unavailability into a ready-to-use resource for quant strategy.

Another feature of the MarketPsych index is its capacity to evaluate other market signals such as "fear" and "violence" and get an advantage from them. [9]

The fear Index:

In his book Trading on Sentiment: The Power of Minds Over Markets, Richard Peterson discusses "fear" and "uncertainty" in the investment industry. According to him, a sudden "flight to quality" (a euphemism for fear) among traders who exhibit the same safety-seeking behavior at the same time usually triggers currency price swings. These currency value patterns, which are based on variations in consensus price expectations and uncertainty, can be represented using new and novel currency information flow sources. In layman's terms, fear of a prospective outcome may motivate investors seeking safety to enter or exit the market at the same moment, resulting in the establishment of a risk premium. The graph below depicts the simulated outcome of using MarketPsych's fear Index of MarketPsych as a short-term trending following signal. [9]

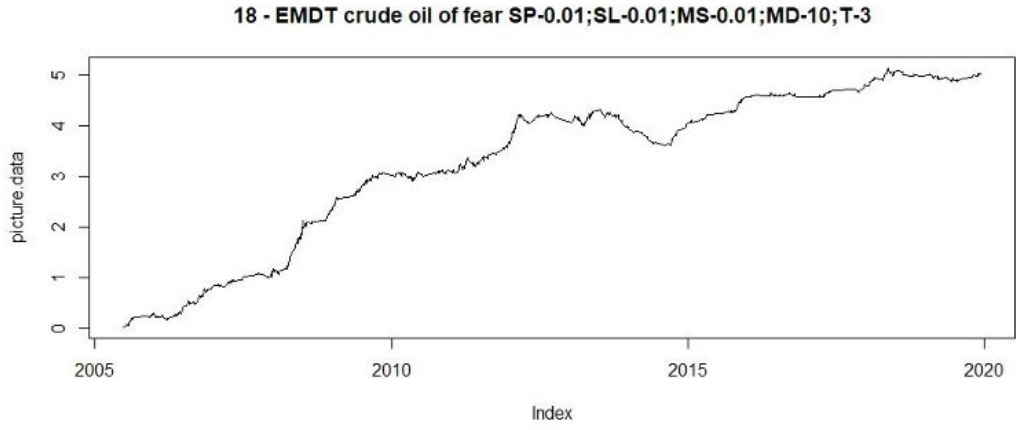

Figure 6: EMDT crude oil of fear SP

The violence index:

Violence is a factor of the event type. Because most event-driven factors incorporate low-frequency and high-latency data, applying them to the real world can be difficult. For example, macroeconomic statistics are issued quarterly with a 10–20-day delay, making this type of data difficult for quant trading. The market factors influencing crude oil prices extend beyond production capacity and output and are frequently more complex. The link between OPEC and the United States, Russia, and other OPEC countries should also be considered, because the Middle East's political, economic, and military condition has a direct impact on the market.

Because "violence" can be used to assess the mood of military events, some of these connections may be detected by our RMI data. We believe the RMI could generate data about event-driven aspects and help fill in the gaps. The chart below depicts a simulation of using MarketPsych's "violence" index as a mid-term trend following indicator.

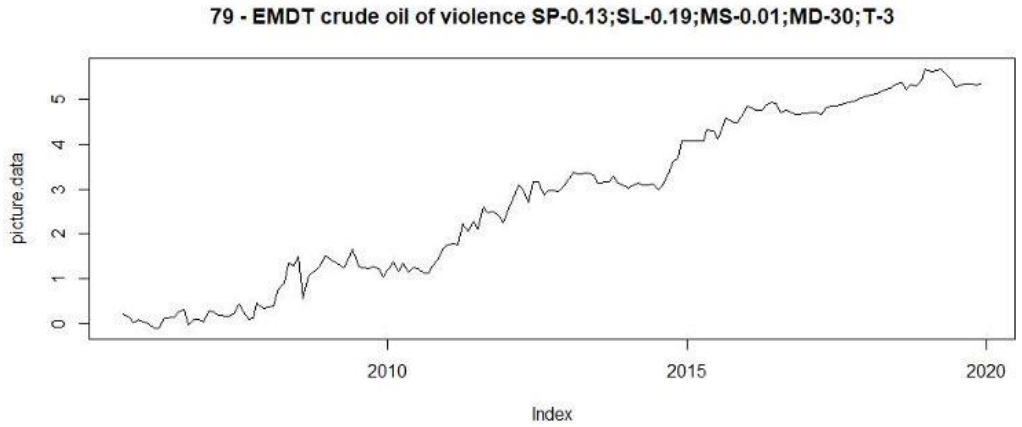

Figure 7: EMDT crude oil of Violence SP

3.Fuel Prices Analysis in Malaysia, Singapore, and Indonesia

3.1 Fuel Prices Analysis in Malaysia:

3.1.1 supply and demand:

Malaysia's most important mineral resources are petroleum and natural gas deposits. Liquefied natural gas, refined petroleum, and crude oil account for a considerable portion of the country's commodity export profits. Almost majority of the important offshore oil and gas deposits are located off the east coast of the peninsula, the northeast coast of Sarawak, and the west coast of Sabah. Petroleum resources are the primary energy source for Malaysia, which generates all of its own energy. Because mining coal and peat is unprofitable, the country's proven coal and peat deposits have mostly gone untapped. In metropolitan areas, bottled gas has replaced previously common residential fuels such as wood and charcoal. [10]

Hydroelectric power plants, particularly on the peninsula, generate a modest portion of Malaysia's power. Because of the abundant rainfall and steep gradients of the rivers, the interior highlands of Peninsular and East Malaysia hold great potential for further hydroelectric development; in Sarawak, construction of a large hydroelectric dam on the Balui River began in the 1990s and continued into the twenty-first century. Malaysia has also begun producing biodiesel from palm oil.

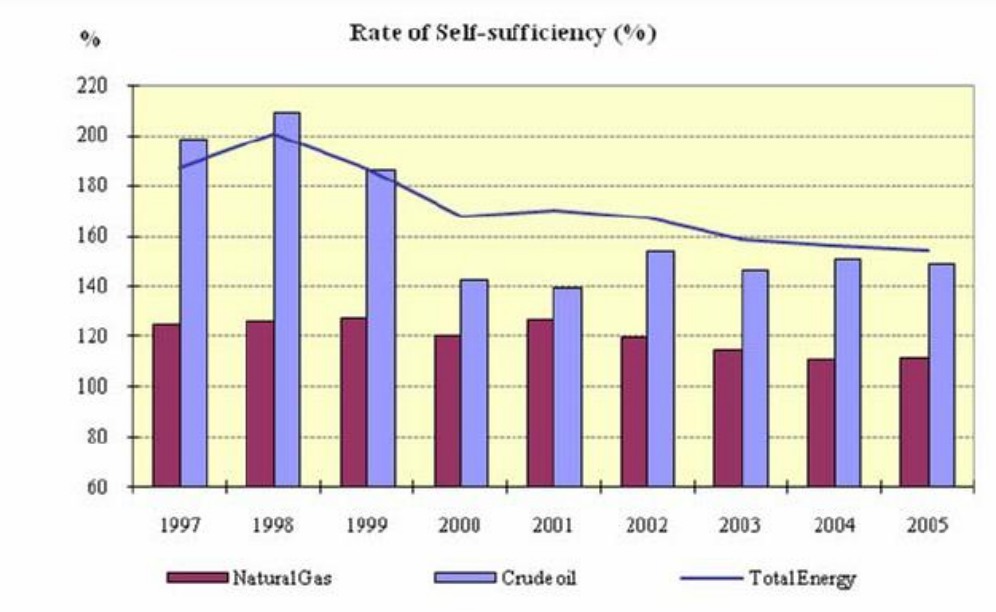

Figure 8: Rate of self Sufficiency in Malaysia

Crude Oil Production in Malaysia increased to 513 BBL/D/1K in June from 484 BBL/D/1K in May of 2022. **source:** **U.S. Energy Information Administration**

Malaysia's crude oil output averaged 654.59 BBL/D/1K from 1993 to 2022, with highs of 791 BBL/D/1K in October 2004 and 461 BBL/D/1K in October 2021.[11]

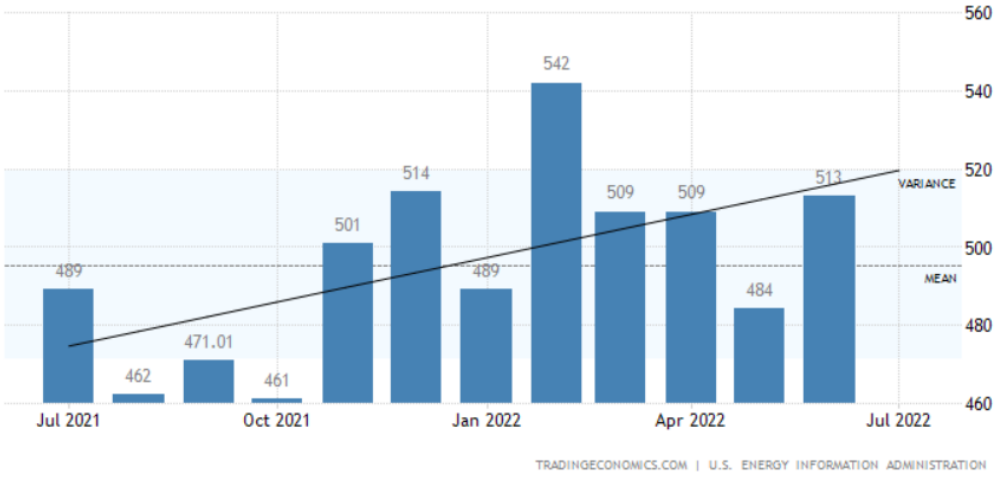

Figure 9: Malaysia Crude Oil Production Jul 2021 to Jul 2022

The planning of the gasoline price is one part of getting cheap fuel. The Ministry of Domestic Trade and Consumer Affairs and the Ministry of Finance jointly announce the fuel price once each week in accordance with the Managed Floating System (MFS) Policy. To ensure that the fuel budget is optimized, transport owners, pump station managers, and other petroleum fuel players would want to forecast the fuel price. The fuel price can be modelled using the formula (1) based on the MFS policy.

$$P = A + B + C + D + E + F \qquad (1)$$

According to Platts [7], the refined fuel price displayed below is the Mean of Platts Singapore (MOPS). (B) indicates the difference between the MOPS and the actual price paid to the refinery's firms. Expenditures include tax/subsidy (C), operational costs at bulk storage (D) for transportation and advertising, bulk distribution company margin (E), and fuel station margins (F). Because the MOPS numbers are not available to all, utilizing the formula (1) is costly, time-consuming, and complicated. (A) MOPS is a subscription-based time series. Medium

to small scale and entities are unwilling to subscribe to it due to the financial requirement and hassles associated with its Assessment Methodology.

3.1.2 Cost of production in Malaysia:

➢ Petroleum exploration in Malaysia started at the beginning of the 20th century in Sarawak.
➢ Oil was first discovered in 1909 and first produced in 1910.
➢ A national oil company, PETRONAS, was incorporated to serve as the Government's instrument to take charge of petroleum matters and to exercise, on behalf of the country, its sovereign rights over its own oil and gas resources.
➢ PETRONAS opted to adopt the Production Sharing mechanism to manage the exploration, development and production of the nation's petroleum resources.
➢ Prior to 1975, petroleum concessions were granted by state governments, where oil companies have exclusive rights to explore and produce resources. The companies then paid royalties and taxes to the government.

Licensing Agreements:

Production Sharing Agreement & Joint Venture:
➢ A PSA is based on the principle that produced oil is shared or split between the company and government [or its NOC] in agreed proportions.
➢ Approved expenditure may be reclaimed from part of production, designated as "Cost Oil", the remaining part for sharing being called "Profit Oil".
➢ The company may also be liable for-profit tax on its share of Profit Oil.
➢ In some cases, the company and the NOC form a separate company for the purpose of development. This arrangement is a form of Joint Venture.

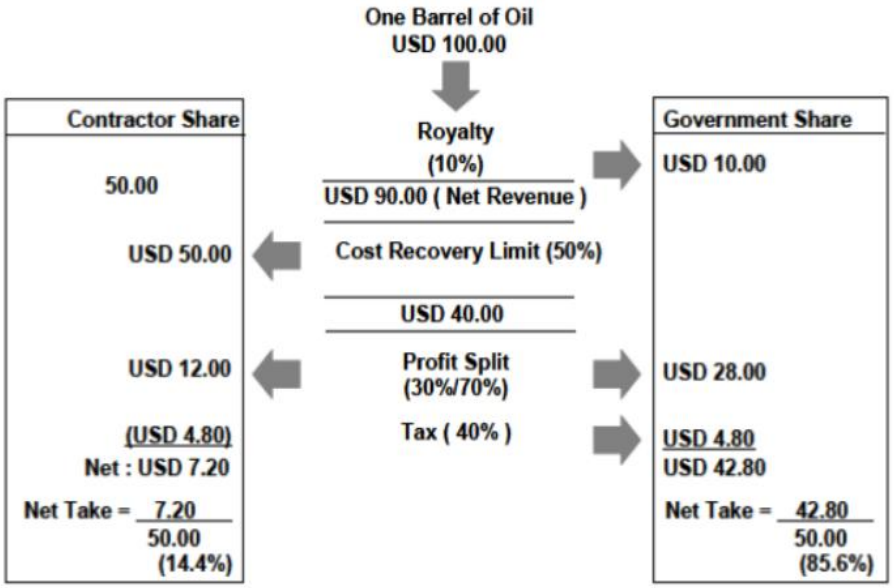

Figure 10: Licensing Agreement in Malaysia

➢ Profit oil is the remaining revenue after cost recovery and royalty.
▪ Assume that cost recovery ceiling is set at 50% of gross revenue.
▪ Total Profit = USD 40
▪ Profit Split = 30/70 ▪ 40% tax rate on taxable income
▪ Contractor's Entitlement = USD 62 (50+12)
▪ Contractor's Net Profit After Tax = USD 7.2 (0.6*12)
▪ Net Take by Government = USD 42.8 (10+28+4.8)

3.1.3.Market sentiment in Malaysia in 2022:

Malaysia (September 1): The Bursa Malaysia Energy Index, which tracks the share prices of companies in the oil and gas (O&G) industry, entered negative territory on Thursday, 1st September

2022 , as oil prices continued to fall amid pessimistic market mood.Petroliam Nasional Bhd (Petronas) has been unable to change this despite reporting a 140% growth in earnings after tax year on year for the second quarter of this year.The Energy Index's drop of 2.36% was the second-largest among all Bursa Malaysia indexes, trailing only the Plantation Index's decline of 2.74%. At the time of writing, US West Texas Intermediate (WTI) crude oil had down 1.33% to US$88.35 per barrel, while Brent crude had fallen 1.45% to US$94.30 per barrel. Among the largest losers were Petron Malaysia Refining & Marketing Bhd (-5.9%), Dialog Group Bhd (-5.35%), and Hengyuan Refining Company Bhd (-2.06%). "The [down in the Energy] Index was mostly due to a drop in the crude oil price, which has also declined." Even though the price of crude oil has doubled since the outbreak and is now 60% more than it was before, the cost of drilling rigs and related support services has yet to materialize. This suggests that oil producers have gained the most benefits, albeit several Malaysian listed rigs and support service providers, such as Sapura Energy Bhd, Velesto Energy Bhd, and Icon Offshore Bhd, have yet to realize the full benefits. This suggests that oil producers have gained the most benefits, albeit several Malaysian listed rigs and support service providers, such as Sapura Energy Bhd, Velesto Energy Bhd, and Icon Offshore Bhd, have yet to realize the full benefits. According to Choo Swee Kee, chief investment officer of TA Investment Management, investors are still concerned about their financial safety. "Oil prices are high, but they are not rising. Given the ongoing confrontation between Russia and Ukraine, he believes that large declines in oil prices are unlikely.

By the conclusion of this quarter, experts and Trading Economics' global macro models predict Malaysia's crude oil production will be 630.00 BBL/D/1K. In the long run, it is anticipated that Malaysian crude oil production will trend toward 600.00 BBL/D/1K in 2023.

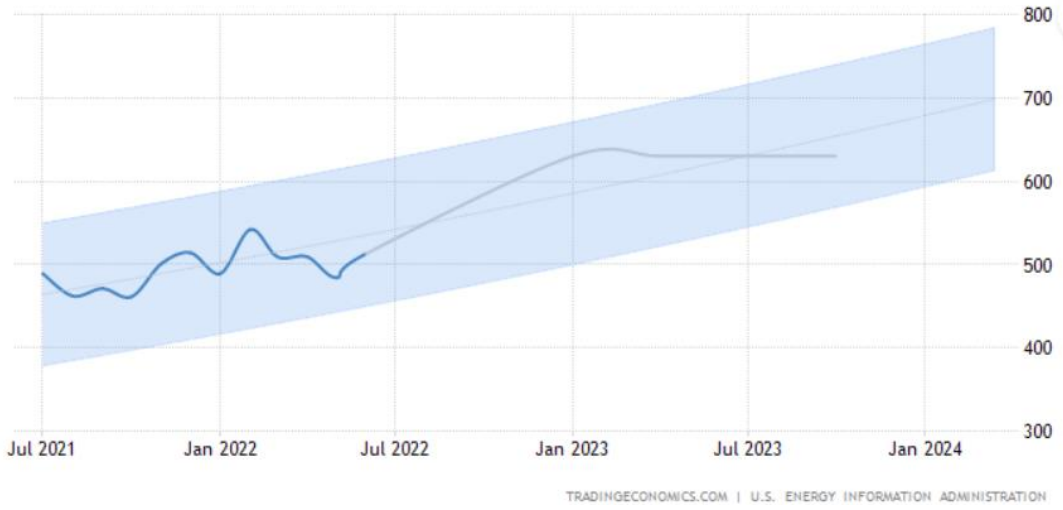

Figure 11: Malaysian markets oil production expectations

3.2 Fuel Prices Analysis in Singapore:

3.2.1 supply and demand:

Singapore consumes 1,357,000 barrels per day **(B/d) of oil as of the year 2016.**
Singapore ranks 16th **in the world for oil consumption, accounting for about** 1.4% **of the world's total consumption of 97,103,871 barrels per day.**
Singapore consumes 10.08 gallons of oil per capita **every day (based on the 2016 population of 5,653,634 people), or** 3,680 **gallons per capita per year (**88 barrels). ***[1 barrel = 42 US Gallons]***

Oil Imports
Singapore imports 76% of its oil consumption **(1,029,925 barrels per day in 2016).**

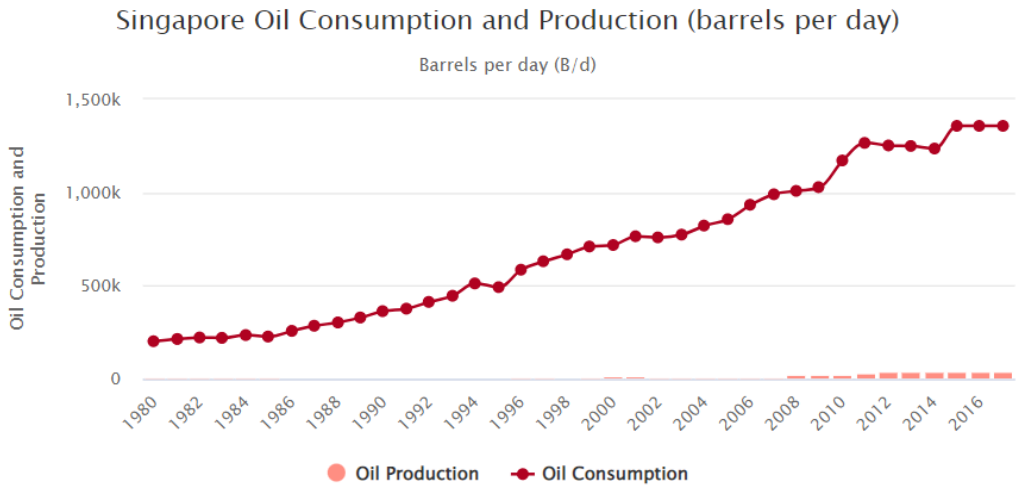

Figure 12: History of Oil Production in Singapore

Singapore's oil exports dropped from 12852.50 SGD million in August to 11385.86 SGD million in September 2022. Exports of Oil in Singapore averaged 7416.12 SGD Million from 2014 until 2022, reaching an all-time high of 13532.85 SGD Million in July of 2022 and a record low of 2225 SGD Million in May of 2020.

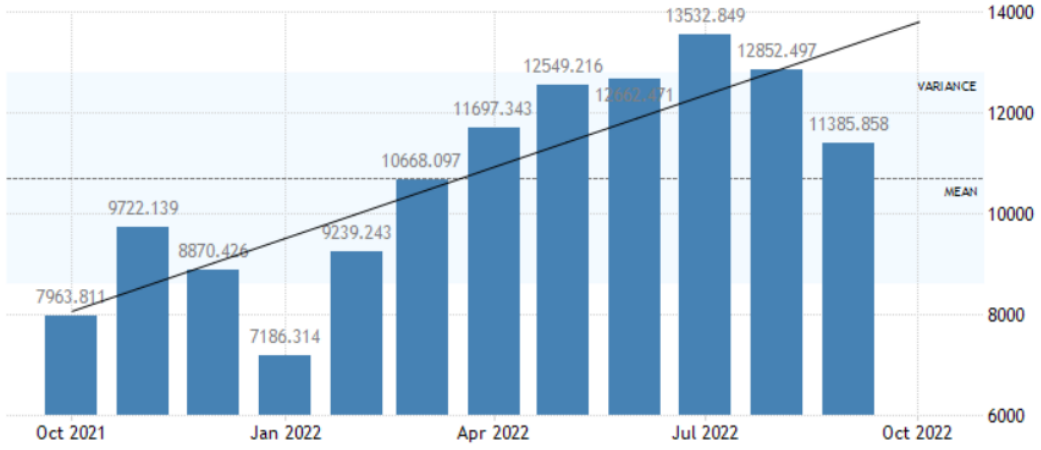

Figure 13: Historical data for Singapore Exports of Oil

Singapore has developed to be one of the most important shipping ports in Asia, with a total crude oil refining capacity of 1.5 million barrels per day (bbl/d) and is generally considered as one of the top three oil trading and refining hubs worldwide. Singapore also acts as the regional headquarters for the majority of the sector's key players and leads the market for high-end FPSO conversions and jack-up rigs.

The output of this country's oil, gas, and petrochemical sectors was estimated at US$60 billion in previous years, but it is expected to fall because to fluctuating oil prices, unforeseen diseases, and international geopolitical challenges. However, American enterprises may still find export opportunities in Singapore and the surrounding area. Due to the changing landscape of the business, companies will need to make major investments in new technologies such as digitization in order to better define and develop viable reservoirs while preserving output for mature areas. Despite ongoing economic uncertainty, Asia is expected to exceed other regions in terms of energy consumption in the next years.

As a result of the long-term need for petroleum and petrochemical products, numerous refining, hydrocarbon and gas processing, and petrochemical projects are now under construction or planned throughout Asia. Chemical engineering systems, LNG equipment, oil and gas processing equipment, and pipeline engineering are expected to be among the most promising technologies in the next years.

Government policy:

Singapore has lately adopted a diversification plan to avoid relying entirely on one source for gas imports. To lessen its dependency on Indonesia and Malaysia for all of its gas needs, the government is building an LNG import terminal. Importing LNG is also better because numerous countries, like Australia and Qatar, are also doing it, making Singapore less vulnerable to outages. Furthermore, because LNG contracts are locked in for longer periods of time than piped gas contracts, which are largely based on fuel oil prices, LNG offers greater price stability than piped gas.

The terminal's first shipment of LNG from Qatar landed in 2013, signifying the terminal's completion. Slow progress is being made to improve the station's overall capacity as demand dictates.
Singapore has the potential to become a big regional natural gas hub for Southeast Asia due to its ideal location. International links exist or are being established between Indonesia and Singapore, Malaysia and Thailand, and Myanmar. Countries are attempting to reduce their dependency on crude oil since Asia is expected to use two-thirds of the world's LNG supply by 2025, up from its present usage of approximately 50%. As a result, global LNG output is expected to increase by more than 80% to around 280 million (metric) tons per year throughout the forecast period.

3.2.2 Costs of production in Singapore:

Singapore, a significant Asian hub for oil and gas (O&G) equipment and services, is home to over 3,000 recognized onshore and offshore engineering enterprises. Our excellent capabilities and connectivity are attracting more business people to take advantage of Asia's strong economic potential.

Licensing Agreements:

The PSC model clearly benefits the state because there is minimal risk involved and no need for the state to commit time or money in order to reap the benefits of its natural resources. In many cases, the State may lack the technology required to search for and/or produce oil and/or gas; thus, cooperating with an IOC who possesses the requisite technology is often required for the State to exploit its natural resources. If exploration is successful, the state will have a long-term supply of oil and/or gas. Because PSCs are long-term, states can estimate future oil and gas quantities for domestic use and plan accordingly.

Production Sharing Agreement & Joint Venture:
➢ A PSA is based on the principle that produced oil is shared or split between the company and government [or its NOC] in agreed proportions.
➢ Approved expenditure may be reclaimed from part of production, designated as “Cost Oil”, the remaining part for sharing being called “Profit Oil”.
➢ The company may also be liable for-profit tax on its share of Profit Oil.
➢ In some cases, the company and the NOC form a separate company for the purpose of development. This arrangement is a form of Joint Venture.

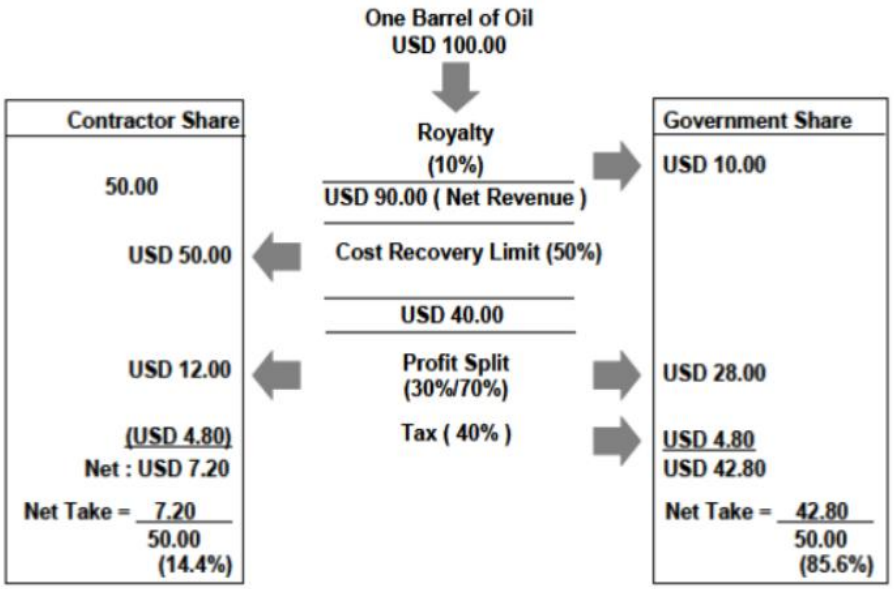

Figure 13: Licensing Agreement in Singapore

➢ Profit oil is the remaining revenue after cost recovery and royalty.
▪ Assume that cost recovery ceiling is set at 50% of gross revenue.
▪ Total Profit = USD 40
▪ Profit Split = 30/70 ▪ 40% tax rate on taxable income
▪ Contractor's Entitlement = USD 62 (50+12)
▪ Contractor's Net Profit After Tax = USD 7.2 (0.6*12)
▪ Net Take by Government = USD 42.8 (10+28+4.8)

3.3.3.Market sentiment in Malaysia in 2022:

According to industry forecasts, over US$5.5 trillion in upstream investment will be required over the next ten years to meet global demand for oil and gas. To keep up with predicted demand growth and assure business continuity over the next 10 years, worldwide spending on offshore oil and gas field development must increase by 20%. Deepwater exploration will be required to replenish depleted conventional supplies. However, as a result of the industry crises over the last three to five years, exploration expenditures were cut by 60% and have failed to recover significantly, despite higher oil prices. Because of its favorable location, Because of its favorable location near the entrance to the Malacca Strait, Singapore has positioned itself to become one of Asia's most important shipping ports. Singapore, with a population of only 5.7 million people, was the United States' eleventh-largest export market and thirteenth-largest trading partner in 2018. Many foreign corporations use Singapore as their entry point into the region, making it a desirable commercial location. There are around 4,300 American enterprises in Singapore, many of which have established their Asia Pacific headquarters. With Southeast Asia's increasing emphasis on gas, a variety of technologies, particularly those related to enhanced oil recovery and drilling fluids, have been identified as possible growth chances for American companies. Additionally, companies with navigation, positioning, hydrographic surveys, underwater inspection services, information systems, and marine forecasting skills are requested.

Other promising prospects include:

Supply of shipbuilding, marine, mechanical, and electrical construction equipment, as well as oxidation additives and other control systems.
Drilling information systems, drilling monitors, mud logging units, mud monitoring systems, weight indicators, deadline anchors, valves/actuators, performance testing, and design control systems are some of the instruments used in oilfield equipment.
Tubular products include casings, tubing, carbon steel line pipes, drill pipes, heavy wall pipes, drill collars, drill stem tubular attachments, and mechanical alloy steel tubes.

According to industry estimates, more than 72,000 wells will be drilled and completed in 2020, a 3% increase over the previous year. However, this figure is expected to level out due to the ongoing flu virus outbreak, which is lowering demand for energy. Offshore production accounts for a modest part of total activity due to the complexity of producing fields at sea, requiring fewer and more effective wells than normal onshore fields. The offshore market has been slow to respond to increasing oil prices, and offshore investments and corresponding drilling activities are not expected to increase until the following year.

The Middle East and Asia will continue to be the most important markets for jackups. Purchases of services are expected to increase by 9% on average over the next three to five years as offshore drilling resumes expansion. Over 100 rigs are now in the works or on order. Following the cancellation of construction contracts, some shipyards found themselves in possession of rigs, and they are already beginning to sell some of the equipment. Borr Drilling, for example, paid $2.2 billion for 14 jackups from Singapore's PPL Shipyard and KeppelFELS, five of which have already been delivered to the contractor. [Indigenous Promotion] Demand for jackups and floating rigs will rise progressively over the next one to two years.

More than 250 rig requirements are still pending award due to an expression of interest, a market survey, or an active rig tender. This would be good news for the two Singaporean firms Keppel and SembCorp, which were formerly industry leaders in FPSO conversions, jack-up rig construction, and exploration and production platform construction. Singapore is also Asia's leading centre for the engineering, manufacturing, and service of specialized oil and gas equipment, such as wellheads, downhole, and production apparatus. Oil is expected to cost US$80-150 per barrel on average between 2022 and 2024, but there is now too much price fluctuation, economic insecurity due to ongoing disease outbreaks, and geopolitical issues.

3.3 Fuel Prices Analysis in Indonesia:

3.3.1 supply and demand:

Indonesia's crude oil production has been steadily declining since the 1990s due to a lack of investment and development in this industry. In recent years, the nation's oil and gas industry has actually hindered national GDP growth. Because mature oil fields provide the vast bulk of the oil, the government's annual oil output targets have been missed for several years in a row. The overall number of oil refineries in Indonesia is now around the same as it was ten years ago, suggesting that little progress has been achieved in the country's ability to produce enough oil to meet domestic demand. As a result of decreased oil output and increased domestic consumption, Indonesia became a net oil importer in 2004 and was forced to quit from OPEC, where it had been a member since 1962. However, Indonesia re-joined OPEC in December 2015. The table below depicts how Indonesian oil production has declined during the last ten years. The table is divided into two production categories: crude oil, shale oil, oil sands, and natural gas liquids in one, and numbers from Indonesia's official oil and gas regulator, SKKMigas, in the other (these figures constitute crude oil and condensate).

Figure 14: Oil production in Singapore 2014-2022

Indonesia's oil production has fallen as a result of a lack of exploration and other investments in this industry due to weak government management, bureaucracy, a confusing regulatory environment, and legal uncertainty surrounding contracts. This creates an unappealing investment climate, especially if it necessitates a large, long-term commitment.

In the meantime, Indonesia's oil consumption has been steadily increasing. Fuel demand is increasing as a result of a growing population, a developing middle class, and an expanding economy. Indonesia imports approximately 350,000 bpd and 500,000 barrels of petroleum per day from other countries because domestic production cannot meet demand.

In August 2022, Indonesia utilized 2,117.9 thousand barrels of oil per day. Despite the fact that Indonesia's oil consumption has been highly volatile recently, it has tended to fall between September 2021 and August 2022, reaching a low of 2,117.9 thousand barrels per day in August 2022.

3.3.2 Costs of production in Indonesia:

The concept of the government collaborating with enterprises to generate oil and gas as part of a commercial firm originated in Bolivia in the 1950s. Today, the Production Sharing Contract (PSC), initially formed in Indonesia in 1966, is widely used to record agreements for oil and gas exploration and production in over 40 countries, including those in Africa, Central Asia, and South-East Asia.
Outside of the PSC, a state may grant commercial investors oil and gas exploration and production rights. Prior to the establishment of the PSC, most governments managed oil and gas exploration and production through the issuance of licenses or concessions (see paragraph 1.4 below). However, in developing nations, the PSC is currently the most popular mechanism for a state to sanction commercial involvement in the oil and gas industry, and their approval is often influenced by political factors. For example, after Indonesia obtained independence in 1945, nationalist organizations criticized the concessions regime.

Foreign investment in Indonesia's oil and gas industry has decreased as a result of the Indonesian government's final decision to stop awarding new concessions. To reverse this trend, the government enacted new legislation establishing production-sharing partnerships. These agreements, which permitted the government to retain official ownership of the resources while enabling the private sector to exploit them, were often considered as less problematic than the old concessions system.

Typically, the Contractor has the right to recoup its exploration and production costs from available oil production or gross receipts (known as cost oil). Recoverable costs are frequently computed in accordance with "accounting guidelines" (which are typically annexed to the contract), and they are deductible expenses for calculating the Contractor's taxable income. Depending on the country, a variable percentage of expenditures may be recovered; this percentage may extend all the way to full recovery or, more commonly, it may be limited to a certain sum. The majority of the contracts under consideration included annual limits on the amount of available oil and gas that ranged from 70 to 75 percent, with some as high as 80 percent (e.g., Angola, Sao Tome). Burma and India, on the other hand, had recovered completely (although being subject to some limitations, like quarterly caps in Burma). Nonetheless, there were disparities among nations, which may be attributed to the Contractor's negotiation position.

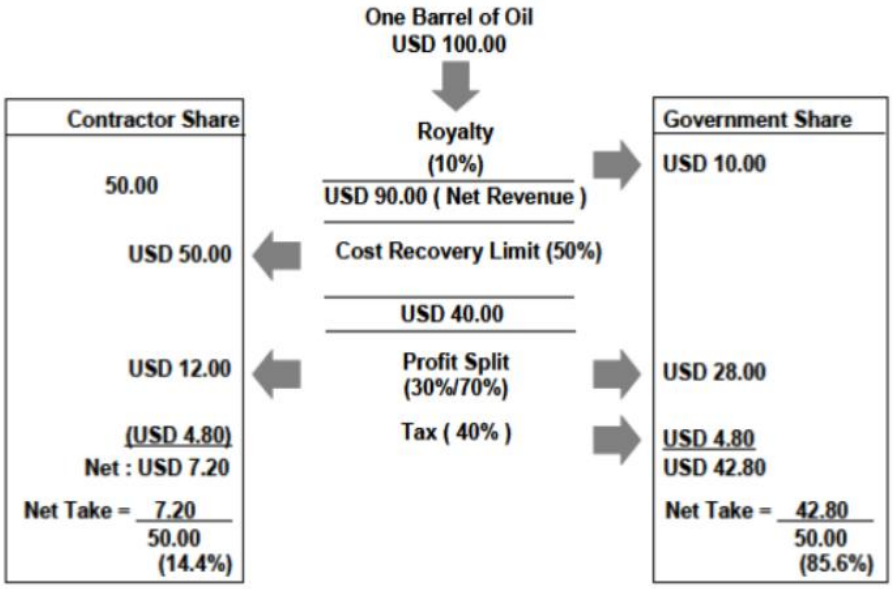

Figure 14: Licensing Agreement in Indonesia

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▪ Net Take by Government = USD 42.8 (10+28+4.8)

3.3.3.Market sentiment in Indonesia:

Market Overview

The Indonesian oil and gas industry is expected to develop at a CAGR of more than 5% between 2022 and 2027. The COVID-19 outbreak had a negative influence on all market groups. The outbreak reduced demand for petroleum products, causing prices to fall and rendering the oil and gas businesses commercially unviable. The market is expected to rebound once the limits imposed to contain the pandemic are eased and demand for gasoline increases. As the local economy grows, there will likely be a rise in demand for petroleum products, which will be accompanied by government efforts to enhance natural gas and crude oil output. Nonetheless, the market may be hampered by the high fluctuation of crude oil prices induced by a range of variables, as well as the expanding usage of renewable energy sources. The upstream sector is expected to grow significantly during the projected period because to increased activity in the offshore region. Indonesia has one of the largest proven oil reserves among Southeast Asian countries. The country is also experiencing tremendous economic growth, which will likely cause future demand for petroleum goods and petroleum-derived things to skyrocket. Such developments are expected to generate significant opportunities for market participants.
The increasing use of renewable energy may restrain the market during the projection period.

In August 2021, the Indonesian oil and gas regulator SKK Migas approved BP and its Tangguh LNG partners' plan to build a carbon capture, utilization, and storage facility at the Tangguh LNG export complex. Front-end engineering and design work is expected to begin in mid-2022, with startup scheduled for 2026.
Energi Mega Persada, an Indonesian oil and gas corporation, inked contracts in August 2021 to acquire shares in two active fields there. The company purchased shares in the Sengkang asset in the onshore territory of South Sulawesi, as well as the Kangean offshore production contract.

4.Conclusion:

In conclusion the Impacts of the Ukraine Conflict on the fuel prices is huge. The report's Special Focus section goes into considerable depth about how the war influenced commodity prices. It also considers how prior occurrences of similar shocks affected commodities prices. According to the analysis, there are at least two reasons why the consequences of the war could linger longer than previous shocks.

First, because price increases have been pervasive across all fuels, there is now less room to substitute alternative fossil fuels for the most affected energy commodities. Second, when the prices of some items rise, so do the prices of others. For example, rising natural gas costs have increased the cost of fertilizer, causing agricultural prices to rise.

The conflict is also making trading patterns more expensive, which may lead to inflation lasting longer. It is expected to drastically divert energy trade. Some countries, for example, are currently seeking for coal deposits in more remote places. Concurrently, several major coal importers may raise their exports from Russia while decreasing their purchases from other major suppliers. According to the report, this diversion is expected to be more expensive because it involves greater transportation distances because coal is large and expensive to carry. Similarly, natural gas and oil are being diverted.

Higher prices threaten to hinder or postpone the transition to greener energy sources in the short term. According to several countries, the output of fossil fuels will be boosted.
The study urges policymakers to act quickly to protect their populations and the global economy. It argues for targeted safety-net programs like as cash transfers, school nutrition efforts, and public works initiatives instead of food and fuel subsidies. Investing in energy efficiency, particularly building weatherization, should be a major priority. It also encourages states to accelerate the development of renewable energy and other low-carbon energy sources.

Finally, increased oil prices will bring resources that net oil exporters can use to accelerate growth. However, if the medium- to long-term usage of oil money is envisaged, a measured approach is essential. To mitigate the risks of building an unequal economic structure, care must be taken to avoid a rapid and excessive real exchange rate appreciation that would draw capital away from non-oil, traded goods industries.

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