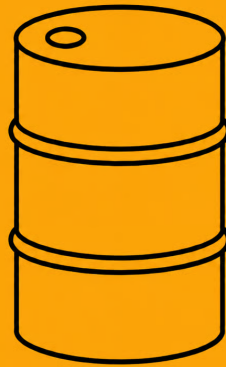


Finance

A Primer on Oil Markets: Spot and Forward Markets

Crude oil is one of the most valuable commodities in the world. In part one of a new three-part series unpacking how oil is bought and sold, we take a deep dive into the oil spot and forward markets.



Emmanuel Awosika ■ 3 September 2026 ■ 11 min read

What is crude oil?

Crude oil, also known as petroleum, is an unrefined fossil fuel usually found in underground rock formations. It is created by the effect of heat and pressure on the remains (fossils) of marine microorganisms buried beneath ancient sea floors. As temperature and pressure increase, the organic matter formed from the mixture of animal remains and sediment turns into a waxy substance known as *kerogen*. Kerogen later breaks down into a yellowish-black liquid chemical mixture at specific temperatures (between 60°C and 120°C). We call this liquid chemical mixture “crude oil”.

Crude oil is extracted from the ground by drilling through layers of caprock and salt domes that trap the liquid beneath the surface. After extraction, producers must deliver the oil to refineries for processing into various end-products, including gasoline, diesel, jet fuel, feedstocks, and other petroleum products. The fuels and chemicals derived from crude oil are crucial in transportation, manufacturing, construction, power generation, and many other areas.

Today, we rely on oil products to fuel cars, power ships, produce plastics, heat homes, pave roads, generate electricity, lubricate industrial machinery, and a lot more. In 2025, roughly 103 million barrels of oil per day were consumed per day, and oil fuels supplied 33% of the world's energy.¹ These stats won't thrill environmental activists, but they show how important oil is to the modern economy. We won't have crude oil forever, as it is a non-renewable resource, but it will surely continue to play a critical role in our world for the foreseeable future.

An introduction to oil markets

Like any other resource or asset, crude oil is subject to the laws of demand and supply. Over time, crude oil markets have developed to connect buyers with sellers, balance the flow of supply with demand, and ensure efficient price discovery. Crude oil trading is a multi-trillion dollar market with a global footprint, diverse set of participants, sophisticated financial instruments, complex demand-and-supply dynamics, and many other characteristics that set it apart from other resource markets.

Although crude oil is universally demanded, crude oil reserves are heavily concentrated in a handful of regions, which creates a severe mismatch between where oil is found and where it is consumed. Also, demand for crude oil is “inelastic”, meaning consumers cannot easily switch to alternatives if prices rise.² This gives suppliers significant pricing power and also increases the geopolitical and economic leverage that oil-rich countries wield in international relations.

Due to the aforementioned factors, control of crude oil reserves and supply routes has often been a source of geopolitical tension and international conflict. Those factors also explain why crude oil prices tend to be volatile. Crude oil markets exist because the underlying product has proven value, but market participants are never fully certain about future supply, especially when most of it is sourced from regions with a history of prolonged, armed conflict and political instability. While volatile prices are not ideal for consumers, they offer opportunities for speculation: traders and investors profit by accurately predicting upswings and downswings in oil markets, using everything from simple “buy low, sell high” strategies to more sophisticated financial instruments, like oil futures.

We'll try to understand how markets for buying and selling crude oil work in this article series, starting with **spot markets** and **forward markets** for crude oil. Although we will take care to highlight the important parts of each oil market, the series is meant to be a general primer, not an exhaustive treatment. Crude oil markets have evolved from simple mechanisms to match buyers with sellers into very complex structures with many moving parts. However, we hope readers get a good sense of how each type of market for trading oil between buyers and sellers works at a high level at the end of the series.

Oil spot markets

An oil spot market is a venue for buying and selling crude oil, and refined crude oil products (e.g., gasoline, diesel, jet fuel), at the current market rate. Spot transactions in oil markets involve real, physical cargo, such as oil stored in tanks and vessels, with near-immediate delivery. Once the transaction settles and the buyer's payment is confirmed, the seller has to deliver the oil to a physical location specified by the buyer, usually within a few weeks after the transaction. Delivery is a massive logistical endeavor that typically requires large ocean-going vessels, such as VLCCs (Very Large Crude Carriers)³ for maritime transportation, pipelines for pumping crude directly to inland distribution hubs, and tank farms for bulk storage.

Spot markets are different from other oil trading mechanisms because they involve buying and selling oil “on the spot” for near-immediate physical delivery with cash. Forward contracts and futures markets do not require oil bought and sold by market participants to change hands immediately, even if payment happens on the spot, nor do they require immediate financial settlement. In a spot market, transactions occur over the counter, meaning counterparties transact directly or via designated third-party representatives (e.g., brokers) instead of going through a centralized exchange.

The spot market price of crude oil is often calculated as a differential to a regional benchmark. A benchmark is a specific type of crude oil whose price is taken as the reference standard for all oil trades in a market. Crude oil types differ on density (light vs. heavy) and sulfur content (sweet vs. sour) and attract different prices. The three primary global benchmarks are West Texas Intermediate (WTI) for the Americas, Brent Crude for Europe, and Dubai Crude for the Middle East and Asian markets.⁴

Who buys and sells in oil spot markets?

- **Commercial producers:** Oil companies use the spot market to monetize excess oil production by selling what they have left after delivering oil barrels promised to long-term buyers.⁵
- **Refineries:** Refineries buy crude oil on the spot market for processing into gasoline, diesel, and other products. If a refinery has excess inventory, it may sell oil on the spot market.
- **Trading houses:** Trading houses buy and sell large amounts of oil on the spot market to profit from supply shortages and disparities in the price of oil across different geographic regions.⁶
- **Speculators:** Speculators buy physical oil on the spot market and hold it in storage to profit from price increases over time (i.e., buying low and selling high).⁷
- **Arbitrageurs:** Arbitrageurs exploit temporary mismatches between the spot price and futures price of crude oil: they buy physical oil on the spot market and simultaneously lock in a higher sale price by selling forward or futures contracts.⁸
- **Governments:** Governments use spot markets to buy oil for strategic reserves, sell oil to generate revenue, and stabilize prices by auctioning oil reserves during supply shortages.

- **Commercial consumers:** Airlines, fuel distributors, shipping fleets, and other commercial end-users buy refined oil products (including jet fuel, diesel, and gasoline) for their operations from refineries in the spot market.

Oil forward markets

A forward contract is an agreement between a buyer and a seller to buy or sell an asset or commodity at a predetermined price on a future date. An *oil forward contract* is an agreement between two parties stipulating the purchase or sale of a fixed amount of crude oil by some agreed-upon point in the future. Unlike spot markets, oil forward markets does not involve immediate payment for and delivery of oil. No money or oil changes hands until the designated delivery date, at which point the buyer pays cash and the seller delivers the oil cargo.

Forward contracts are fully customizable: counterparties can decide the exact quality and quantity of oil as well as the preferred delivery location and duration of the agreement. The average forward contract lasts anywhere between one to six months, but long-dated oil forwards can last for 1-10 years. In standardized forward markets, like the Brent forward market, counterparties to a forward contract agree on a generic delivery month rather than a specific date; moreover, buyers may not know which type of crude oil will be delivered, though in the case of Brent forwards, sellers have to deliver oil from a basket consisting of specific crude oil types.⁹

Oil forward contracts are directly negotiated between buyers and sellers over the counter (OTC), so terms can be flexible and bespoke. However, once both parties sign the agreement, the terms are fixed and the exchange goes through regardless of fluctuations in oil prices during the waiting period. This makes oil forwards useful for hedging uncertainty around the price of oil: buyers gain protection from upswings in oil prices and sellers gain protection from downswings.

That said, oil forwards involve significant counterparty risk. A counterparty may default or go bankrupt before or during the delivery window, leaving the other counterparty unable to collect payment or take delivery of the cargo.¹⁰ Additionally, oil forwards are strictly bilateral agreements between two parties and cannot be traded on a secondary market, which makes them harder to exit and reduces liquidity.¹¹

The price of an oil forward contract is calculated by adding the spot price of oil to the cost of carry. Physical oil has to be stored during the waiting period: cost of carry is how much the seller incurs in storage, financing, and insurance costs before oil is delivered to the buyer of an oil forward contract. The forward price formula includes these holding costs in the price of a contract. Forward oil prices are usually higher than spot prices in normal market conditions, but sudden shifts in demand and supply can cause spot prices to rise higher than forward prices.¹²

Who buys and sells in oil forward markets?

- **Commercial producers:** Oil companies sell forward contracts to lock in profitable prices for crude oil supplies even before production starts and de-risk investments in oil exploration, drilling, and production.
- **Commercial consumers:** Airlines, refineries, fuel distributors, and other commercial entities that need raw crude oil, or fossil fuels, use forward contracts to hedge against volatility in oil prices and guarantee predictable profits (i.e., by controlling the cost of a critical input).
- **Speculators:** Speculators buy and sell forward contracts to profit from changes in the price of oil during the long waiting period, often without holding or taking delivery of physical oil.¹³
- **Arbitrageurs:** Arbitrage traders buy physical spot oil and simultaneously sell higher-priced oil contracts on the forward market to profit from short-term differences between spot and forward prices after accounting for carrying costs.
- **Trading houses:** Trading houses buy and sell oil forwards to coordinate long-distance movement of oil between regions to meet demand and profit from price mismatches.¹⁴

Conclusion

Spot and forward markets solve different problems for those who want to buy and sell crude oil. Spot markets allow oil suppliers to sell inventory at market value and get paid in cash for near-immediate, physical delivery of crude oil. Buyers transact in a spot market when they need to own physical oil immediately and are willing to purchase it at the current market price. Spot markets are the foundation of crude oil trading and represent the most basic exchange between oil traders.

Sellers that can wait for future payment and buyers who wait for future delivery trade oil in the forward market. Forward markets allow buyers and sellers to enter into legally binding forward contracts that require the buyer to buy a fixed amount of oil at an agreed-upon price in the future and the seller to deliver a fixed amount of oil at the agreed price in the future. In ideal situations, forward contracts are useful for hedging volatility in demand and supply of crude oil and reduce exposure to sharp changes in market prices.

The next article in the series will introduce **futures markets** for crude oil and explore how they work. Futures markets allow buyers and sellers to enter contracts that require buying and selling crude oil at a predetermined price in the future. Although similar to oil forwards, oil futures have unique characteristics, such as being traded on regulated exchanges instead of directly between buyers and sellers over-the-counter, and settled by physical delivery of oil or via cash settlement.

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Footnotes

1. The United States is the world's biggest consumer and producer of oil. Per the Energy Institute's report, the US consumed 19.4 million barrels of oil (19% of global consumption) and produced 21.1 million barrels of oil (21% of global production). Over 37% of energy consumed in the US in 2025 came from gasoline and other petroleum products according to the Energy Information Administration (EIA). ↩
2. Crude oil supply is also inelastic because new reserves cannot be instantly brought online. Large-scale oilfield projects require billions of dollars in upfront investment, and oil fields take an average of 15 years from discovery to start production. This makes it difficult, if not impossible, for suppliers to ramp up production if oil prices spike (unless they already have reserves). ↩
3. AVLCC can carry between 200,000 to 320,000 deadweight tonnes (DWT), which around two million barrels of oil. ↩
4. For example, WTI is a "light-sweet" oil that attracts premium pricing because it flows easily and is cheap to refine into gasoline and other fossil fuels. If a refinery wants to buy "heavy-sour" oil (which is thicker and more expensive to refine) in a US spot oil market, the spot price is calculated by applying a discount (i.e., a negative differential) to the price of WTI crude. ↩
5. Selling excess oil also helps oil-producing companies avoid expensive storage fees. ↩
6. For example, a trading house may buy oil where it is cheap (e.g., an oil-rich country) and sell it where it is expensive (e.g., an oil-poor country with high demand). ↩
7. Speculation comes with risk: a fall in demand will crash oil prices and force speculators to accept losses on their investment. ↩
8. The *spot price* is the cost of buying oil at the current market rate for near-immediate physical delivery, while the *futures price* is the cost of buying oil for delivery at a later date. Higher futures prices mean buyers pay more to have oil delivered in the future than instantly: arbitrageurs take advantage by buying oil cheaply today and selling it at a premium for future delivery. ↩
9. The Brent forward market uses the BFOET basket which contains **B**rent, **F**orties, **O**sberg, **E**kofisk, and **T**roll crude oil grades. A buyer on the Brent forward market can get any one of these types of oil delivered in the delivery month. ↩
10. This problem appears because oil forward contracts are often negotiated directly over the counter (OTC). In exchange transactions, the exchange acts as a clearinghouse and makes sure the buyer pays and the seller delivers. OTC transactions are not cleared by an exchange, so there's no one to enforce terms agreed (over the counter) by parties to an oil forward agreement. ↩
11. For example, a buyer cannot sign a forward contract in May for 100,00 barrels of oil at \$70 per barrel to be delivered in August and sell the contract elsewhere unless the seller agrees. Even though money hasn't changed hands, the buyer has to secure credit in advance for the final payment and cannot deploy that credit line elsewhere if a more lucrative opportunity appears before the settlement date (at least not without running the risk of a default). Daisy chains are a complicated workaround but create even more counterparty risk. ↩

12. A market is in *contango* when forward oil prices are higher than spot oil prices and *backwardation* when the spot price of oil rises above the forward price. Markets enter backwardation when demand for near-immediate delivery of oil is higher than demand for future delivery. For example, a geopolitical crisis in the Middle East might trigger fears of an oil shortage and motivate efforts among buyers to stockpile crude. The market enters backwardation because buyers are willing to pay more for oil to be delivered in the near-term as opposed to waiting longer to receive it. ↩

13. Although oil forwards cannot be sold, forward markets permit buyers to “nominate” someone else to take delivery of the oil before the delivery window. When the delivery date is set, the original seller delivers the physical oil to the final buyer, but participants in the transaction must settle payments with their direct counterparty. A speculator can make profit by buying an oil forward from a supplier (e.g., an oil company) and selling a higher-priced forward to another buyer (e.g., a refinery) without having to take delivery of the oil cargo. The oil company delivers directly to the refiner, but the speculator pays the oil company and the refinery pays the speculator. A “daisy chain” appears when buyers keep nominating someone else to take delivery prior to the delivery window: the intermediate transactions are settled in cash and only the final buyer in the chain receives the actual product. ↩

14. For example, a refinery in Asia that wants WTI crude can buy a WTI forward from a trading house that operates in the US region. The trading house makes a profit if the forward price of oil is higher than the current spot price plus the cost of storing the oil and shipping it to the buyer's destination. ↩