Understanding Futures

Futures overview

Futures contracts are standardised contracts that represent the value of a commodity for a specific volume, quantity, location, and point in time. These contracts are traded on many futures exchanges all around the world, and each trade different commodities. Some of the largest exchanges include the Chicago Mercantile Exchange (CME), InterContinental Exchange (ICE), European Energy Exchange (EEX), and Euronext. Each exchange will trade more than one commodity, and each commodity traded on the exchanges will have its own specifications.

Futures differ from physical contracts in many ways. Physical contracts to trade a commodity are highly bespoke, where the buyer and seller can dictate a particular quality and specification, as well as a volume, location, and delivery date of their choosing. By contrast, futures contracts are highly standardised, with all these elements being defined by the exchange itself.

A futures contract can be used for several purposes. For most market participants who buy or sell a physical commodity, a futures contract can be used for hedging (explained below). They can also be used by speculators – these are people who have no commercial interest in trading physical commodities, and who buy and sell futures contracts to profit from price movements and volatility.

As the name “futures” implies, every futures contract specifies a delivery period at some point in the future. Different commodities, and indeed different exchanges, will nominate months throughout the year to launch futures. Some commodities may have one contract per month (12 per year), while some commodities may only have four or five contracts per year. This decision will be made based on the seasonal availability and buying patterns of a particular commodity, as well as how much volume is likely to trade with each.

When all these futures contracts for a particular commodity are discussed as a whole, it is referred to as the **forward curve**. The forward curve shows the relation between price levels across all the contract months (an explanation of this relationship is found below). The length of the forward curve, and thus the number of contracts trading at any one time, varies based on the commodity. For example, oil futures can trade up to five years in advance; with many agricultural commodities, however, the forward curve may only run out for two years or less.

When a futures contract expires, it settles. For example, a contract dated September 2023 will likely settle at some point during that month. Futures are a kind of **derivative**, so their underlying value is derived from the value of the commodity itself. Buyers and sellers trade futures to establish a market price for that commodity at that delivery point in the future. At the time of settlement, the contract must reflect the value of that commodity at that point. There are generally two ways in which settlement takes place:

- **Physical delivery:** One way to reflect the value of that commodity is by taking delivery of it. Someone who has bought a futures contract and carried it to settlement will receive a physical delivery of that commodity to the grade and volume specified by the exchange. Conversely, someone who has sold [shorted] a contract and held that position until expiry has an obligation to deliver that volume of the commodity to certified exchange warehouses.

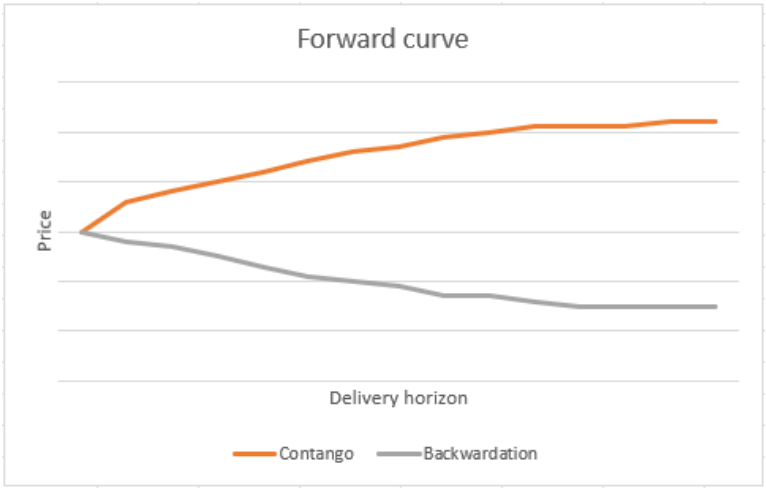
- **Cash settlement:** To avoid some of the logistical costs and challenges associated with physical delivery, most newer futures contracts will instead use a reference price of the cash market at that point in time, such as a Mintec Benchmark Price. This is less complicated, as the value of that contract will simply revert to that settlement price.

Most players will not let their open positions run to settlement, particularly in contracts that are physically delivered. Instead, they will unwind their positions. Those who are long (holding contracts that they bought) will simply sell the equivalent number of contracts back. Those who are short (holding a position based on contracts that they sold) will buy back an equivalent number of contracts to offset that position. For those market players hedging their physical commodity exposures, most will unwind those positions when they buy or sell the physical commodity. For example, a buyer may take a view that prices are going up for a particular commodity and will therefore buy futures contracts throughout that time. When they buy the physical commodity from their suppliers, they will sell an equivalent number of contracts to unwind that position.

Market participants buy and sell contracts on the exchange through **brokers**. The exchange matches up buyers to sellers to create the traded price. Individual market participants almost never know who the other party to the transaction is. Therefore, another benefit of futures contracts is that they greatly lessen the risk of counterparty default. With a standard physical contract for a commodity, buyers and sellers may still default during adverse events. However, with futures, the exchange itself essentially acts as the counterparty to both buyers and sellers and takes on that risk.

The prices are quoted by the exchanges on an intra-day basis (in Mintec Analytics the price relates to the end of day settlement value). The contracts tend to trade at various levels, with contracts for later months generally trading higher than nearby months, a situation termed **contango**. This reflects the extra costs involved, such as storage and interest costs, under normal market conditions.

However, from time to time, **backwardation** can occur. This is when later contracts are trading lower than nearby months. Backwardation is the opposite of contango. Backwardation typically happens when supply is tight and where buyers are willing to pay an extra high price right now to secure the goods. This is typically seen as a short-term supply problem and the market is only willing to pay this extra price for a short while. As such, the futures contracts trading further months out are trading at a lower price as the supply problem is perceived as likely being solved by then.



Speculation

Speculators take on risk for potential returns. They have no interest in the underlying physical commodity and will never receive or deliver on the contract. Instead, they close out their positions before the contract expires. Because they have no commercial interest in the physical trade of these commodities, they are often referred to as “non-commercials” or, referring to their industry, as “managed money.” Examples of speculators would include hedge funds or investment banks.

Hedging

Hedgers use futures contracts to manage their exposure to risk from future price movements. For example, a miller would protect against a rise in the wheat price by buying futures contracts to cover the quantity of wheat that they expect to buy over that period. Both buyers and sellers hedge and will typically take a position that mimics their physical position. For example, if a miller needs to buy some quantity of wheat in the future, they could buy futures contracts now against those delivery periods. Then, to trade out of that position later, they will sell those futures at the time that they buy the physical wheat. For sellers, such as farmers or producers of raw materials, the opposite is true.

Because the market participants who hedge are doing so to protect against price movements in an actual physical commodity in which they deal, they are often referred to as “producers” or “commercials.”

Hedging Example:

A wheat buyer knows that they need to buy a certain volume of wheat to produce flour in September. In June, the wheat spot price is €171 per metric tonne (mt). The buyer wants to lock a price in as they expect the price of wheat to rise. Therefore, they buy enough September wheat futures contracts to cover this expected volume for €175/mt.

In September, the spot price of wheat has risen to €182/mt. The buyer therefore sells those September wheat futures contracts to exit the futures position for a profit of €7/mt and buys his wheat on the spot market at a price of around €182/mt, because at this point the September futures contract *is* the spot price. If he had not hedged, he would have paid €182/mt for each contract volume and was thus able to take advantage of the September price when it was trading at lower levels in June.

	In June:	In September:
Wheat futures spot price	€171	€182
September wheat futures price	€175	
Buyer’s action	Buy September wheat futures	Sell September wheat futures and buy crop at physical spot price

If in September the price of wheat had fallen, he would have lost money on the futures market transaction. This means a loss at the exchange. On the other hand, he was able to buy physical wheat at a lower price in September, and this discount will at least partially offset the loss on the exchange.

Because futures contracts are so highly standardised, they cannot reflect every quality, specification, or location. Therefore, in the above example, the buyer would have likely purchased his physical wheat on the spot market at a slightly different price than €182/mt. For instance, if the wheat had a higher protein content than specified by the futures contract, it might trade at a constant premium to the futures price. This difference between the futures price and the "real world" is commonly called **basis risk**. However, if the basis in this instance remains constant (for example, +€10/mt), the above hedge would have still been effective, and the buyer would still have made a profit of €7/mt, thus benefiting from the rise in prices.

Margin

Futures traders do not need to pay the full value of a contract that they buy. Instead, they set up a 'margin account' with their broker, effectively borrowing money from him. This essentially magnifies any profit or loss, but allows market participants to trade more contracts than they might otherwise be able to afford. The value of the futures contracts serves as a sort of **collateral**. Because the value of that contract changes at any given point, the overall risk to the broker increases or decreases depending on if the price is getting closer to, or further from, the initial price. For example, for a futures contract bought with a value of $1,000, the buyer may have to put up a margin of 10%, or $100. If the value of that contract increases, the margin requirements would decrease, as the buyer would be able to profit by selling. However, if the value of the contract falls below $1,000, the buyer would have to post additional margin as their contract is now worth less than when they entered.

This is typically calculated at the end of every trading day and is referred to as a **margin call**, where brokers inform their clients whether they need to post additional margin.

Graphing futures within Mintec Analytics

The futures trading structure means that the Mintec Analytics setup must be different to other series.

In Mintec Analytics, data is stored as series. Futures, however, are set up differently. Contracts for each delivery month traded are stored as separate horizons within Mintec Analytics, so that each month has its own line. These months change automatically as the contracts expire.

Within Mintec Analytics, each **delivery horizon** refers to the number of **calendar** months ahead. For example, a horizon of 0 would refer to the current calendar month, whereas a horizon of 3 refers to three months ahead. Therefore, if viewing a futures series in January, the 0 horizon would refer to January, and the month 3 horizon refers to May. As futures contracts on exchanges do not typically contain contracts for each calendar month, the delivery horizon within Mintec Analytics will pull forward from the next available contract. For instance, London Cocoa futures on the InterContinental

Exchange in London trade in March, May, July, September, and December. If looking at the series COCL in Mintec Analytics in January, the delivery horizons 0, 1 and 2 all refer to the March price, as it is the next contract trading. Horizons 3 and 4 refer to May, etc. By viewing prices in this format, you are viewing a historical continuous price, i.e., delivery horizon 0 always shows what the nearby price was at any point in time.

The graphing module will automatically graph the price for delivery 3 months ahead when you select a futures data series.

By contrast, Mintec Analytics also allows you to select specific contracts for viewing on dashboards and on the commodity screen. Instead of always viewing a continuous price history, you can look at the history of an individual contract by selecting the settings icon in the top right of any commodity series and changing from “delivery horizon” to “contract.” Here, you can view the price history of that individual contract, such as December 2023, for example. By viewing by contract, you can see the price history of that specific contract since its launch.

How do I graph series for a specific contract month or delivery horizon?

Once you have graphed a futures series on the Commodities screen, you can select the Delivery Horizon or Contract by clicking on the settings icon at the top of the graph and specifying which month/year combination (e.g., December 2023) or the delivery horizon in the future (e.g., 3, 6, 9).

When adding a series to a line chart widget on a dashboard, there is a Futures section on the Widget properties screen where you can choose which contracts/horizons to show.