OTC Product Model

The OTC Product Model describes the types of products traded in the OTC market. This section includes basic definitions and examples of these products.

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OTC Derivatives

A **derivative** is a financial instrument whose value is derived from that of an underlying asset (e.g., the price of an equity, bond, or commodity) or market variable (e.g., an interest rate, an exchange rate, or a stock index). A derivative is either traded on an **organized exchange/SEF (Swap Exchange Facility)** or agreed upon directly with dealers in what is known as the **over-the-counter** (OTC) market. An **OTC derivative** is tailor-made to fit specific risk management needs of investors. The two primary types of OTC contracts are the forward and the swap:

- Forward - requires a *single* future payment.
- Swap - involves a *series* of future payments.

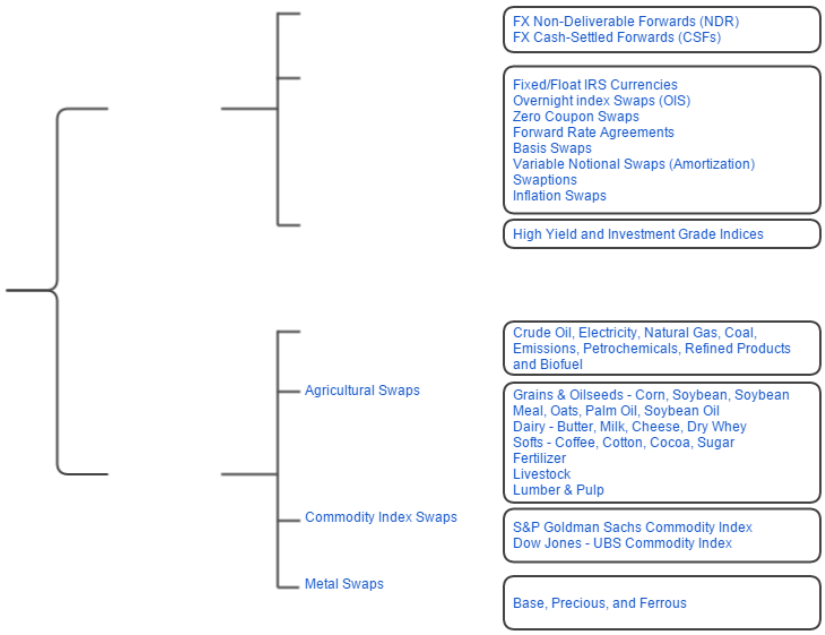
OTC Markets

Traditionally the **OTC market** was characterized by a two-sided contract between counterparties, with a counterparty taking on the credit risk of the other party. The bilateral nature of these contracts creates a complex web of mutual dependence between counterparties. Because the markets were nontransparent, the situation was difficult for market participants and regulators to assess the true nature and level of risk.

Formerly, there were many derivatives that were traded in the OTC markets and were subject to less regulation than was true for exchange-traded derivatives. In the United States, the Dodd-Frank financial reforms have made significant changes in this area. An increasing number of derivatives are now cleared through CCPs (Central Counterparties) and traded on recognized exchanges/SEFs.

OTC Product Hierarchy

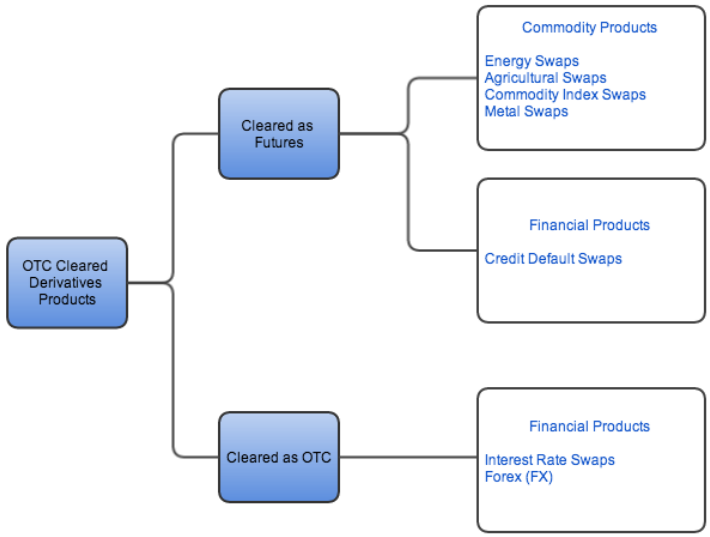
The figure illustrates the hierarchy of the OTC product model at CME Group. The product hierarchy consists of Financial and Commodity products.



The Financial products include Interest Rate Swaps (IRS), and FX. The Commodity products include Energy swaps, Agricultural swaps, Commodity Index swaps and Metal swaps.

OTC Product Types

OTC products, cleared by CME Group, can be classified in two categories: Cleared as Futures and Cleared as OTC products.



OTC Asset Classes

Financials

Interest Rate Swaps

In an **Interest Rate Swap (IRS)**, two counterparties agree to exchange one stream of interest payments for another over a period of time. The interest rate is typically based on an index such as Libor rate.

IRS Example

A company takes out a floating-rate loan with the base rate adjusted to the three-month Libor rate. Since the actual interest amount will depend on the three-month Libor rate, the interest amount will vary. To hedge this variability in the interest payments, the company swaps the floating-rate loan with a counterparty swap for a fixed-rate loan, which would provide a constant interest rate during the life of the loan. Suppose the swap has a two-year maturity; then, an exchange of the current two-year swap rate for the market's three-month Libor rate will occur every three months for the next two years.

Other IRS Derivative Contracts

There are other types of derivative contracts that are useful to hedge risk and include the following:

- **Overnight Index Swap (OIS)** is an interest rate swap based on a specific currency where fixed rate interest payments are exchanged for floating rate payments based on a notional swap principal at regular intervals over the life of the swap contract. The floating rate is based on a specified published index of the daily overnight rate for the OIS currency. For swaps based on the United States dollar (USD), the referenced floating rate is the daily effective federal funds rate.
- **Zero Coupon Swap** is where the floating interest rate payment is made periodically, but the fixed-rate payment is made as a lump-sum payment when the swap reaches maturity rather than over the life of the swap. The fixed payment is based on the swap zero coupon rate.
- **Forward Rate Agreement (FRA)** is a contract between parties that determines the rate of interest or the currency exchange rate, paid or received beginning at a future start date. FRAs are paid once at maturity rather than at regular intervals like a swap.
- **Basis Swap** is a floating-floating interest rate swap.
- **Variable Notional or Amortizing Swap** is usually an interest rate swap in which the notional principal for the interest payments changes during the life of the swap. This swap is used by bank customers who want to manage the interest rate risk involved in predicting funding requirements or investment programs.
- **Swaption** is an option on a swap.
- **Inflation Swap** is a contract which transfers inflation risk from one counterparty to another.

Forex (FX)

Foreign Currency Cash-Settled Forwards (FX CSFs)

The primary difference between a deliverable contract and a cash-settled contract (same currency pair, same value date) is that the deliverable provides a continuous exposure which the cash-settled contract stops the FX exposure at the fixing.

Foreign Currency Non-Deliverable Forwards (FX NDFs)

An FX NDF is a U.S. dollar cash-settled, short-term forward contract on a traded currency with a fixing date and a settlement date. The fixing date is the date at which the difference between the prevailing market exchange rate and the agreed upon exchange rate is calculated. The settlement date is the date by which the payment of the difference is due to the party receiving payment.

Commodities

Products from the commodity groups are traded in the OTC market as swaps. A **commodity swap** is an agreement between two parties to exchange cash flows across multiple periods (series of forwards) with one party agreeing to pay a fixed payment which the other pays a floating payment. The floating payment is based on the price of a commodity or level of a commodity index.

Energy

A crude oil producer has a contract to sell 10,000 barrels each month. The producer wishes to guarantee their crude oil revenue from this volume for the next 2 months will be $1,000,000 per month. As a result, they enter into a NYMEX calendar WTI crude oil fixed-float index swap with a client whereby each month they receive a negotiated fixed price of $100/barrel multiplied by 10,000 barrels from the client. In return, they agree to pay the client the monthly average price multiplied by 10,000 barrels.

Agricultural

Agricultural Swap Example

A farmer is interested in managing the price risk of selling his corn crop while an ethanol plant, which needs to buy corn to produce ethanol, is also interested in managing the price risk of buying corn. These two business operations could manage their respective risks by entering a commodity swap. In this example, the ethanol producer agrees to pay the farmer a fixed price of $5 per bushel, and the farmer agrees to pay the ethanol producer a variable price for corn, such as the settlement price of the May Corn futures, on the day the swap expires. Assuming this May swap expires on April 30, the ethanol producer will pay the farmer $5 per bushel for corn and the farmer will pay the ethanol producer the May Corn futures settlement price on that day.

Assume on April 30, the May Corn futures contract settles at $6 per bushel. The ethanol producer is obligated to pay the farmer the fixed price of $5 per bushel and the farmer is obligated to pay the ethanol producer the variable price of $6 per bushel. In actuality, this swap would be settled with the farmer paying the ethanol producer the difference in obligations or $1 per bushel ($6 - $5 = $1) on the swap expiration day. Commodity swaps, which are usually financially settled products, can be used to hedge the eventual physical (cash market) transactions. Therefore, the farmer in this example would still need to sell the physical corn to a local buyer (grain elevator) and the ethanol plant would still need to purchase physical corn from a local supplier.

In this example, the commodity swap fulfilled its purpose. When the farmer sells corn in the local cash market, the physical corn is now based off of the $6 per bushel May Corn futures settlement price on April 30, which was used to price the variable side of the swap. Although the farmer is obligated to pay $1 per bushel to the ethanol producer in settlement of the swap, the physical corn sale is based on the higher current value of $6 per bushel. The farmer has effectively locked-in $5 per bushel for his corn crop – the initial objective when he entered the swap.

The ethanol producer has similar results. The purchase of physical corn is based on the current $6 per bushel May Corn futures settlement price. However, to offset the higher cash market purchase price, the ethanol producer receives a $1 per bushel payment from the farmer as settlement of the swap. Thus, the ethanol producer has also effectively locked-in a purchase price of $5 per bushel for corn.

Commodity Index Swap Example

A swap on a commodity index might involve a pension fund seeking buy side exposure in commodities that is matched with a dealer willing to offer the exposure. The dealer will sell a swap contract linked to a commodity index that will ensure that the pension fund's investment will match the return on the commodity index. Periodic payments (usually quarterly) will be made to account for any change in the index versus the agreed-on fixed price. In entering the swap, the dealer is effectively short the index and manages the risk by establishing long positions in the futures contracts that are included in the index. Both the dealer and the fund bear a risk that the counterparty may not honor its commitment to pay. For the dealer, this risk can be significant because it may enter into swaps with many opposite parties. Further, entering an opposite OTC swap transaction with a different counterparty does not typically offset the swap, leaving the dealer exposed to credit risk. One of the key benefits of using CME Group cleared OTC swaps is the ability to reduce the amount of capital necessary to be deposited for margins when the swaps are offset with a basket of positions in the underlying component futures as compared to the levels that would be incurred if the associated futures positions were margined independently.

Metals Swap Example

A manufacturer knows they will need 100 metric tons of aluminum for every month in a given year. The manufacturer can exchange the floating price of that aluminum for a fixed price by purchasing a swap for each month for the same amount of tons (in this case, 25-ton aluminum lots would mean the hedger would buy four swaps for each month in the calendar). At the end of each month, if the average price is higher than the swap purchase price, the hedger's gain on the long swaps will offset the higher price paid for the physical aluminum. Trades in swaps will reference the underlying metal prices.