

Introduction to Financial Services: Derivatives

Background

A derivative is a contract that derives its value from an underlying asset at a designated point in time. For example, derivatives may be tied to physical commodities (such as wheat, cattle, oil, or gold), stock indices, or interest rates. A derivative's value fluctuates as the underlying asset's value or expected future price changes. Buyers and sellers of derivatives are not required to own the underlying assets. Derivatives come in several different forms, including *futures*, *options*, and *swaps*. This In Focus provides an overview of the uses and policy issues pertaining to derivatives.

Many firms use derivatives to manage risk. A hedger can protect against, for example, commodity price increases by entering into a derivative contract that gains value if the commodity's price rises. Southwest Airlines used such derivatives to implement a price hedging strategy in 2008 that allowed it to buy jet fuel at a low fixed price even as energy prices reached record highs. When used to hedge risk, derivatives can protect businesses (and sometimes their customers) from unfavorable price shocks.

Speculators use derivatives to seek profits by betting on future price movements. Speculators assume price risks that hedgers seek to avoid. Such speculation may add liquidity to the market but may also concentrate risk (discussed below). Distinguishing between hedgers and speculators may be difficult, because a trade may encompass both speculative and hedging purposes.

Although derivatives trading has its origins in agriculture, many derivatives traded today are linked to financial variables such as interest rates, foreign exchange, stock indices, the creditworthiness of bond issuers, and, more recently, the price of certain cryptocurrencies. In June 2022, the Bank for International Settlements reported a \$632 trillion global notional value (i.e., the face value of the underlying assets) linked to *over-the-counter* derivatives.

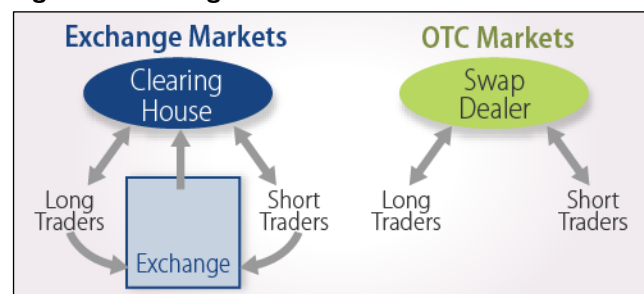
Market Structure and Regulation

Futures, options, and certain swaps are traded on exchanges regulated by the Commodity Futures Trading Commission (CFTC) or the Securities and Exchange Commission (SEC), depending on the underlying asset. Swaps were traded *over-the-counter* (OTC)—meaning between parties in absence of formal exchanges—until 2010 following passage of the Dodd-Frank Act (P.L. 111-203).

Exchanges are centralized marketplaces where buying and selling of various derivatives contracts occurs. Traders who want to buy (or take long derivatives positions) interact with those who want to sell (or take short derivatives positions), making deals and reporting the agreed-upon prices throughout the day. In the OTC market, contracts are

made bilaterally. Since the Dodd-Frank Act, such OTC derivatives must also be reported to swap data repositories overseen by the CFTC. **Figure 1** shows the differences.

Figure 1. Exchange-Traded Versus OTC Derivatives



Source: CRS.

Derivatives can be volatile contracts with a high degree of leverage, which can result in big gains and losses. The exchanges mitigate credit risk through clearinghouses. Once a trade is made on an exchange floor (or electronic network), a clearinghouse guarantees payment to both parties. Traders' worries about counterparty default risk are reduced as the clearinghouse stands behind all trades. The clearinghouse ensures that it can meet its obligations by collecting daily margin—such as cash or Treasury securities—from trading counterparties if potential losses accumulate. The intended effect of margin is to prevent paper losses large enough to damage the clearinghouse in case of default. It is certainly possible for a trader to lose large amounts of money trading on the exchanges—but only on a “pay as you go” daily basis.

In the OTC market, a network of dealers (rather than a centralized exchange) stand ready to take long or short positions on behalf of clients and profit by charging a *spread*, or fee, on each trade. The dealer absorbs the credit risk of its client's default—and the client faces the risk of dealer default. The OTC market has been dominated by a dozen or so large financial firms—generally, the largest U.S. banks—and their foreign counterparts. In the OTC market, some contracts require collateral or margin. Contract terms are negotiable.

Risk Buildup and the Financial Crisis

Prior to the 2008 financial crisis, there was no universal, mandatory system of margin in the OTC derivatives markets. This allowed large, uncollateralized losses to build up. For example, AIG, a major U.S. and international insurance firm, wrote about \$1.8 trillion worth of derivatives, including credit default swaps, which guaranteed payment if certain mortgage-backed securities defaulted or experienced other “credit events.” As the financial crisis worsened, AIG was subject to contract-based margin calls that it could not meet. To avert a disorderly failure with associated widespread damage to

financial markets, the Federal Reserve and the Treasury provided tens of billions of dollars to AIG, much of which went to its derivatives counterparties. AIG eventually repaid these funds with interest.

The AIG case helped spur calls for OTC derivatives market reform, highlighting two central aspects. In a market with mandatory clearing and daily margin, AIG would have had to post additional cash (and close its position) long before its position size reached \$1.8 trillion. Because most OTC contracts were not reported to regulators prior to 2010, federal bank regulators lacked information in the crisis about which institutions were exposed, and by how much, to AIG (and to Lehman Brothers, a large OTC derivatives dealer that failed in September 2008). This uncertainty exacerbated the “freezing” of credit markets in the crisis.

Dodd-Frank Act Reforms

One basic theme of derivatives reform proposals in the run-up to the Dodd-Frank Act was to get the OTC market to operate more like the exchange market—in particular, to have OTC swaps cleared by derivatives clearing organizations registered with the CFTC. Clearing was expected to reduce counterparty risk and increase transparency. However, posting margin requires cash and securities, which adds to the costs of using derivatives to hedge price movement risks. After commercial (i.e., nonfinancial) businesses argued that the costs of posting margin would prevent them from hedging, they were ultimately exempted from the clearing and exchange-trading requirements in Dodd-Frank.

The Dodd-Frank Act added five broad requirements, with certain exceptions, aimed at bringing the OTC swaps market under a regulatory regime more closely resembling the futures and options markets. First, most swaps involving financial firms were required to be cleared through clearinghouses, which involves posting margin to cover any potential losses as they accumulate. Second, these swaps are also required to trade on exchanges or exchange-like electronic platforms called *swap execution facilities*. Third, all swaps must be reported to a “swap data repository” database. Fourth, financial firms that trade swaps heavily must register with the CFTC or the SEC (the latter if they trade swaps related to securities). Fifth, any swaps not cleared are subject to regulators’ margin and capital requirements.

Selected Issues for the 119th Congress

Crypto. The question of how cryptocurrency and digital assets should be regulated has drawn much congressional attention and has been the subject of a number of bills. The question of what role the CFTC should play in potential crypto regulation may interest the 119th Congress.

The 2022 collapse of global cryptocurrency exchange FTX, along with the disappearance of many of its customers’ funds, sparked renewed calls for oversight of crypto. Since 2015, the CFTC has relied on the anti-fraud provision in the Commodity Exchange Act (CEA) to combat fraudulent conduct in connection with sales of certain crypto assets. The CEA gives the CFTC authority over derivatives linked to cryptocurrency. However, the CFTC lacks broader

statutory authority to regulate trading on spot (in contrast to derivative) markets, apart from its powers to police against fraud and manipulation. For instance, the CFTC lacks authority under the CEA to regulate direct sales of crypto, to require trading platforms for spot crypto sales to register with the CFTC, to segregate customer funds, to regulate such platforms’ capital or risk management practices or investor disclosures, or to examine its records. Certain observers have voiced concerns that the existing CFTC authority is insufficient to combat cryptocurrency risks. For example, former CFTC Chair Rostin Behnam noted in December 2022 testimony, “Limited enforcement authority is no substitute for comprehensive regulation in which trading platforms, dealers, custodians, and other critical infrastructure participants are required to be registered and subject to direct oversight by a regulator. By the time the CFTC is able to exercise its fraud and manipulation authority, it is already too late for defrauded customers.”

Commodity price volatility. In 2024, global commodity prices broadly stabilized following sharp prior volatility. Globally, from February to August, 2024, oil and agricultural commodity prices eased slightly, while natural gas and metals prices rose, according to the International Monetary Fund. This follows sharp volatility in 2022, as the Ukraine-Russia war and severe weather conditions globally led to exceptionally large price swings in many physical commodity markets, particularly for energy and agricultural products. That price volatility in underlying spot commodities led to large and frequent margin calls in derivatives markets. For example, the initial margin requirement for European natural gas futures on one exchange more than doubled right after the start of the war. Higher margin requirements can be costly for derivatives traders, as they must pledge additional liquid assets in order to maintain their positions. In extreme cases, large widespread margin calls threatened the creditworthiness of clearinghouse members or the clearinghouses themselves. For instance, on March 8, 2022, the London Metal Exchange (LME) took the unusual step of halting trading and canceling existing trades in nickel derivatives after the price of nickel jumped 230% in one day. This would have prompted \$20 billion in margin calls. In subsequent legal filings, the LME revealed that seven of its clearinghouse members would likely have defaulted, so LME actions were taken to avoid imperiling the clearinghouse. Further, economists have long debated whether trading of derivatives itself may exacerbate price volatility in underlying commodities. The 119th Congress may examine derivatives’ impact on commodity price volatility and vice versa, as well as wider market effects.

CFTC reauthorization. In the 119th Congress, the House and Senate Agriculture Committees, which have CFTC jurisdiction, may examine derivatives regulatory issues as part of the CFTC reauthorization process. The CFTC’s authorization of appropriations in the CEA last expired September 30, 2013. Congress has continued to fund the CFTC beyond the expiration of its authorization. Prior extensions of the CEA authorization have been used as vehicles to amend other aspects of the CEA.

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