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Introduction to Derivatives and the Commodity Futures Trading Commission

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SUMMARY

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Introduction to Derivatives and the Commodity Futures Trading Commission

Derivatives are financial instruments that come in several different forms, including *futures*, *options*, and *swaps*. A derivative is a contract that derives its value from some underlying asset at a designated point in time. The derivative may be tied to a physical commodity, a stock index, an interest rate, or some other asset. The overall size of the derivatives market is quite large and highly internationally connected. Contracts on heavily traded indexes (such as interest rates for bonds in major currencies, for example) are highly liquid.

The Commodity Futures Trading Commission (CFTC), created in 1974, administers the Commodity Exchange Act (CEA) of 1936 and oversees the derivatives markets. The CFTC's mission is to promote the integrity, resilience, and vibrancy of the U.S. derivatives markets through sound regulation. Although most derivatives trading now relates to financial variables, congressional oversight remains vested in the House and Senate Agriculture Committees in part because of the market's historical origins in agricultural commerce. The Securities and Exchange Commission (SEC) regulates a smaller slice of the derivatives markets related to securities, such as equity options and, since 2010, securities-based swaps. The CEA contains a sunset provision, meaning Congress must periodically reauthorize appropriations to carry out the CEA. Although the underlying authority in the CEA to administer programs does not expire, the last CEA reauthorization by Congress was passed in 2008 as part of the Food, Conservation, and Energy Act (P.L. 110-246), which included authorization of appropriations through FY2013. Historically, the reauthorization process has often been used to modify the CFTC's regulatory authority and evaluate the efficacy of its regulatory programs. For some in Congress, the reauthorization process may be an opportunity to try to make changes to derivatives regulation.

The CFTC has for decades regulated futures and options, which were required under the CEA to trade on regulated exchanges, for which related clearinghouses collected margin, or collateral (usually as cash or certain securities). But prior to passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act (P.L. 111-203) in 2010, most swaps traded "over-the-counter" (OTC)—that is, between two counterparties—and were not regulated, centrally reported, or required to be cleared through a clearinghouse, which involves posting margin to cover any potential losses as they accumulate. OTC derivatives played a role in the 2008 financial crisis in a variety of ways. The unmonitored buildup of derivatives positions in the OTC market led many major financial institutions into large financial losses. Also, because no reporting trail existed, this created uncertainty during the crisis over the web of exposures to large derivatives losses.

In response to the 2008 financial crisis, the Dodd-Frank Act brought the swaps market into a regulatory framework like that of the futures and options markets. Among other changes, all swaps were required to be reported to a database to give regulators a clearer picture of the market. Security-based swaps tied to equities or narrow-based credit indexes were placed under the jurisdiction of the SEC within a similar framework. The Dodd-Frank Act also gave the CFTC, along with the SEC and the Federal Reserve, certain authorities over *financial market utilities* (FMUs), or multilateral systems that transfer, clear, or settle payments, securities, or other financial transactions such as derivatives.

In recent years, the use of artificial intelligence (AI) in derivatives markets has ballooned, raising questions about the market impacts of the widespread use of algorithmic trading models. Observers note that AI offers positive value by potentially automating certain processes such as risk management; surveillance; fraud detection; and the identification, execution, and back-testing of trading strategies. A 2024 CFTC study also flagged some risks, particularly from generative AI, which may interest policymakers and Congress through its oversight role. One effect of AI and algorithmic trading has been to increase the speed of reaction to information. The CFTC report flagged that high-speed algorithmic trading, in cases where humans have been "out of the loop" and an algorithm was faulty, has at times resulted in market disruptions and market instability.

Commodity price volatility in recent years has also posed challenges to the derivatives markets. Events such as the Russian invasion of Ukraine; the COVID-19 pandemic's and, more recently, the avian flu's effects on supply chains; and climate-related events such as droughts, hurricanes, and wildfires have exacerbated volatility in various commodity prices. Such price volatility in the underlying spot commodities led to large and frequent margin calls in derivatives markets. A 2024 Financial Stability Board (FSB) report noted that such unanticipated margin calls due to price volatility led some traders to avoid trading derivatives on exchanges with affiliated clearinghouses and gravitate instead toward more opaque, bilateral OTC trading, wherein daily margin posting is not mandatory.

The question of what role, if any, the CFTC should play in potential cryptocurrency or digital assets regulation may also interest the 119th Congress in the wake of a number of bills introduced on this topic in the 118th Congress. Since 2015, the CFTC has relied on the anti-fraud provision in the CEA to combat fraudulent conduct in connection with sales of certain crypto assets. While the CEA gives the CFTC authority over derivatives linked to cryptocurrency, the CFTC lacks broader statutory authority to regulate trading in spot (in contrast to derivative) markets, apart from its powers to police against fraud and manipulation.

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Background on Derivatives

Derivatives are financial instruments that come in several different forms such as *futures*, *options*, and *swaps*. A derivative is a contract that derives its value from some underlying asset at a designated point in time. The derivative may be tied to a physical commodity, a stock index, an interest rate, or some other asset. A derivative's price fluctuates over the duration of the contract as the underlying asset's rate or expected future price changes, until the settlement of the contract at maturity. Durations can vary significantly, from short term, such as a day, to longer term, such as several years. Neither a buyer nor a seller of a derivative needs to own the underlying asset upon which the derivative is based. For detailed examples of derivatives, see **Appendix A** and **Appendix B**.

Many firms use derivatives to manage risk. For example, a firm can protect itself against potential increases in the price of a commodity that it uses by entering into a derivative contract that will gain value if the price of the commodity rises. A notable instance of this type of hedging strategy was a derivatives position taken by Southwest Airlines that allowed it to buy jet fuel at a low price in 2008 even as energy prices reached record highs.[1] When used to hedge risk, derivatives can protect businesses (and sometimes their customers) from unfavorable price shocks.

By contrast, *speculators* use derivatives to seek profits by betting on the direction various market prices may move. Such speculation adds liquidity (i.e., the ease to enter into and out of transactions) to the marketplace—speculators assume risks that hedgers wish to avoid. Some observers believe that the growth of speculative derivatives trading has increased market volatility, whereas others argue that such speculation adds liquidity and that more liquid derivatives markets are more efficient, with easier trading and more accurate price discovery.[2]

Although derivatives trading has its origins in agriculture,[3] today most derivatives are linked to financial variables, such as interest rates, foreign exchange rates, stock prices, and the creditworthiness of bond issuers, as shown in **Figure 1**. The overall size of the derivatives market is quite large, and contracts on heavily traded indexes (such as interest rates for bonds in major currencies, for example) are highly liquid. For example, as of June 30, 2024, the total global notional value of over-the-counter (OTC) derivatives—largely, swaps—was $730 trillion, with nearly 80% of that consisting of contracts based on interest rate movements.[4]

[1] See, for example, Xiao Han, "Hedging Strategy Analysis of Southwest Airlines," in *Proceedings of the 6th International Conference on Economic Management and Green Development*, ed. Xiaolong Li et al. (Springer, 2023), https://doi.org/10.1007/978-981-19-7826-5_63; and David Carter et al., "Fuel Hedging in the Airline Industry: The Case of Southwest Airlines," July 2004, https://ssrn.com/abstract=578663.

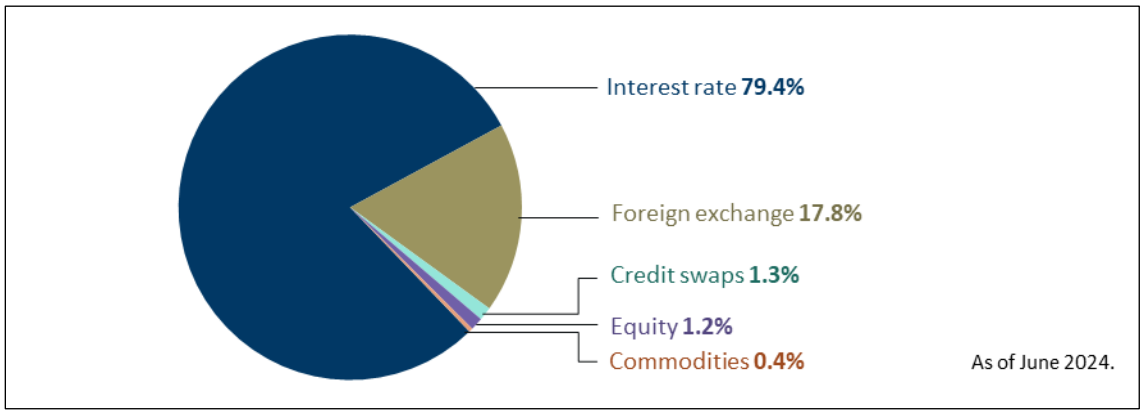
[2] For an analysis of both sides of this argument see, for example, Keith Sill, "The Economic Benefits and Risks of Derivative Securities," Federal Reserve Bank of Philadelphia, *Business Review* (January/February 1997), https://www.philadelphiafed.org/-/media/frbp/assets/economy/articles/business-review/1997/january-february/brjf97ks.pdf. For additional background and analysis on this issue, see, for example, Benjamin H. Cohen, "Derivatives and Asset Price Volatility: A Test Using Variance Ratios," Bank for International Settlements (BIS), January 1996, https://www.bis.org/publ/confp01b.pdf.

[3] Steve Kummer and Christian Pauletto, "The History of Derivatives: A Few Milestones," EFTA Seminar on Regulation of Derivatives Markets, Zurich, May 3, 2012, https://www.researchgate.net/profile/Christian-Pauletto/publication/349485381_The_History_of_Derivatives_A_Few_Milestones/links/6032c655a6fdcc37a8424883/The-History-of-Derivatives-A-Few-Milestones.pdf.

[4] BIS, "OTC Derivatives Statistics at End-June 2024," June 30, 2024, https://www.bis.org/publ/otc_hy2411.htm.

Figure 1. Over-the-Counter (OTC) Contracts by Underlying Interest

June 2024



Source: Bank for International Settlements. Figure created by CRS.

Note: Figure describes global OTC derivatives market as of June 30, 2024.

The market for exchange-traded derivatives, such as futures and options, is also vast, although it is measured differently. As of September 30, 2024, the average daily turnover for futures globally was $12.83 trillion, of which $12.65 trillion was for interest rate derivatives and $185 billion in foreign exchange derivatives.[5] The derivatives market is also highly international in nature. Most of the largest derivatives dealers globally tend to be systemically important financial institutions, many of which are large, internationally active banks.[6]

In the runup to the 2008 financial crisis discussed below, growth in derivatives markets was explosive. From 2000 until the end of 2008, the volume of derivatives contracts traded on exchanges, such as futures exchanges, and the notional value of total contracts traded in the OTC market grew by 475% and 522%, respectively. Following the 2008 financial crisis, the total notional value of OTC derivatives globally fell by about 13% between June 2008 and December 2008 but then crept upward again.[7] Over the longer term, total global notional values outstanding for OTC derivatives fell from $684 trillion as of June 2008[8] to $553 trillion as of June 30, 2015,[9] and further to $493 trillion as of December 30, 2015.[10] The drop in OTC trading was stimulated partly by the movement of derivatives trading onto formal exchanges following the crisis.[11]

[5] BIS, "Exchange-Traded Futures and Options, by Location of Exchange," https://data.bis.org/topics/XTD_DER/tables-and-dashboards/BIS,XTD_D1,1.0.

[6] Sally Davies, "Cross-Border Derivatives Exposures: How Global Are Derivatives Markets?," BIS, *IFC Bulletin No. 31*, July 24, 2009, https://www.bis.org/ifc/publ/ifcb31n.pdf.

[7] See BIS, *Statistical Release: OTC Derivatives Statistics at End-December 2011*, May 2012, http://www.bis.org/publ/otc_hy1205.pdf. Total notional values fell from $684 trillion in June 2008 to $592 trillion in December 2008, representing a decline of 13%, before increasing again to $648 trillion by December 2011. For additional details on over-the-counter (OTC) derivatives market trends over time, see BIS's chart on page 2.

[8] See BIS, *Statistical Release: OTC Derivatives Statistics at End-December 2011*. For additional details on OTC derivatives market trends over time, see their chart on page 2.

[9] See BIS, *Statistical Release: OTC Derivatives Statistics at End-June 2015*, November 2015, p. 2, http://www.bis.org/publ/otc_hy1511.pdf.

[10] See BIS, *Statistical Release: OTC Derivatives Statistics at End-December 2015*, May 2016, p. 2, http://www.bis.org/publ/otc_hy1605.pdf.

[11] See BIS, *Statistical Release: OTC Derivatives Statistics at end-December 2015*, p. 2.

Trading derivatives on exchanges is also associated with "trade compression"[12]—a process that allows an economically redundant derivative trade to be terminated early without changing each participant's net position. Trade compression and greater use of clearinghouses have contributed to the gradual drop in notional value.

The financial crisis led to intense debate about whether the rapid growth in derivatives markets had contributed to structural instability in U.S. and global financial systems. The reasons for the crisis are still the subject of debate, but most observers believe a major factor behind the severe market turmoil was derivatives exposures, which could not be readily quantified, thus exacerbating panic and uncertainty about the true financial condition of other market participants and contributing to the freezing of credit markets.[13] In 2010, passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act, P.L. 111-203) incorporated collateral and other risk mitigation requirements for financial firms, such as the posting of *margin* (e.g., cash) into accounts set aside to pay for potential losses from derivatives.

Since the Dodd-Frank Act passed in 2010, one of its lasting effects has been to promote a shift in derivatives markets toward centralized clearing and exchange trading, particularly for swaps, which has also provided more regulatory oversight and price transparency. A 2021 paper by the International Swaps and Derivatives Association (ISDA), a trade group, concluded that this shift toward central clearing since 2010 had contributed to lessened stress in derivatives markets during the first half of 2020's COVID-19 crisis, as compared to the 2008 financial crisis.[14] ISDA noted that the shift toward central clearing "decreases counterparty credit risk through a combination of collateralization and multilateral netting. Central clearing also reduces the interconnectedness of market participants and mitigates systemic risk by lowering the likelihood of contagious (knock-on) defaults that could spread from one counterparty to others."[15] The share of credit derivatives globally that are centrally cleared has increased significantly since the Dodd-Frank Act, to about 65% of the total, as of the end of December 2023, up from about 10% at the end of June 2010.[16] Meanwhile, the share of centrally cleared interest rate derivatives has grown to about 76% of the total, according to the Bank for International Settlements,[17] up from about 16% at the end of December 2007, according to the ISDA.[18]

Market Structure and Regulation

Futures and options in the United States have long been traded on regulated exchanges, whereas swaps were traded in the OTC market prior to the 2010 passage of the Dodd-Frank Act. A *futures*

[12] Trade compression is sometimes referred to as "netting" of trades, though trade compression is more extensive than netting. Netting combines offsetting trades between two parties, while trade compression involves consolidating multiple offsetting derivative contracts across multiple parties into fewer deals on paper.

[13] For a broad look at causes of the financial crisis, including derivatives, see, for example, James Crotty, "Structural Causes of the Global Financial Crisis: A Critical Assessment of the 'New Financial Architecture,'" *Cambridge Journal of Economics*, vol. 33, no. 4 (2009), pp. 563-580, http://cje.oxfordjournals.org/content/33/4/563.full.pdf+html.

[14] International Swaps and Derivatives Association (ISDA), "Evolution of OTC Derivatives Markets Since the Financial Crisis," January 2021, https://www.isda.org/a/8jjTE/Evolution-of-OTC-Derivatives-Markets-Since-the-Financial-Crisis.pdf.

[15] ISDA, "Evolution of OTC Derivatives Markets Since the Financial Crisis," p. 25.

[16] Philip Wooldridge, "Central Clearing Predominates in OTC Interest Rate Derivatives Markets," BIS, December 11, 2016, https://www.bis.org/publ/qtrpdf/r_qt1612r.htm.

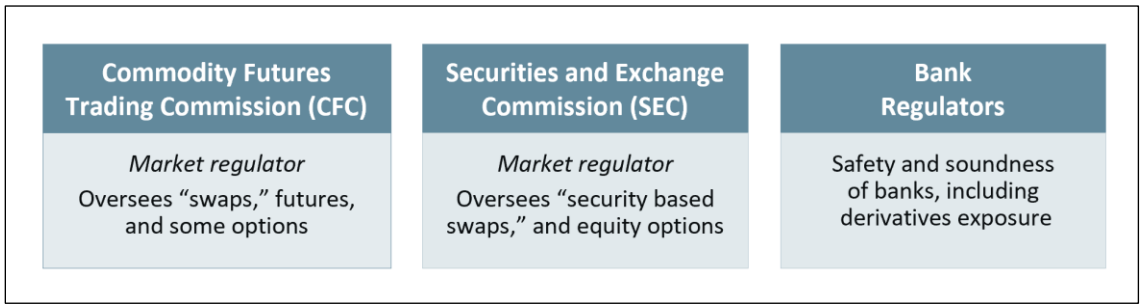
[17] BIS, *OTC Derivatives Statistics at End-December 2023*, May 16, 2024, p. 5, https://www.bis.org/publ/otc_hy2405.pdf.

[18] ISDA, "OTC Derivatives Market Analysis," January 2015, p. 4, https://www.isda.org/a/FPDDE/otc-derivatives-market-analysis-interest-rate-derivatives-final.pdf.

contract is an agreement to buy or sell a commodity or asset at a predetermined price at a future date. An *option* is a contract that gives the holder the option, but not the obligation, to buy or sell an asset or commodity at a future date at a predetermined price. *Swaps* are generally agreements between two parties to exchange different cash flows over a set period of time. Although swaps, futures, and options operate differently, they are generally somewhat fungible in the sense that similar investment outcomes can be achieved by employing any one or combination of these types of derivative instruments.

Prior to passage of the Dodd-Frank Act, OTC markets were largely unregulated, whereas futures and options were regulated by the Commodity Futures Trading Commission (CFTC) or the Securities and Exchange Commission (SEC). The Dodd-Frank Act made certain changes to the regulatory landscape, and the current framework is broadly illustrated in **Figure 2**, and discussed in more detail below.

Figure 2. Regulatory Oversight of Derivatives Under the Dodd-Frank Act



Source: CRS.

Futures contracts and most types of options contracts are traded on exchanges regulated by the CFTC, and the CFTC oversees most swaps markets. Stock options are traded on exchanges under the SEC, and the SEC oversees security-based swaps. The SEC and CFTC also jointly regulate futures on narrow-based security indexes and on single securities.[19] CFTC and SEC regulation of exchanges is generally broadly similar: Federal law requires both securities and commodity exchanges to make and enforce rules to ensure fair and orderly trading and to protect public investors from fraud. Many classes of market professionals, as well as the exchanges themselves, are required to register with a federal agency or a self-regulatory organization.[20] Data on price and trading volumes must be publicly available on exchanges. The regulators may amend exchange rules and approve rule changes. Both the SEC and the CFTC have their own enforcement powers and staff.

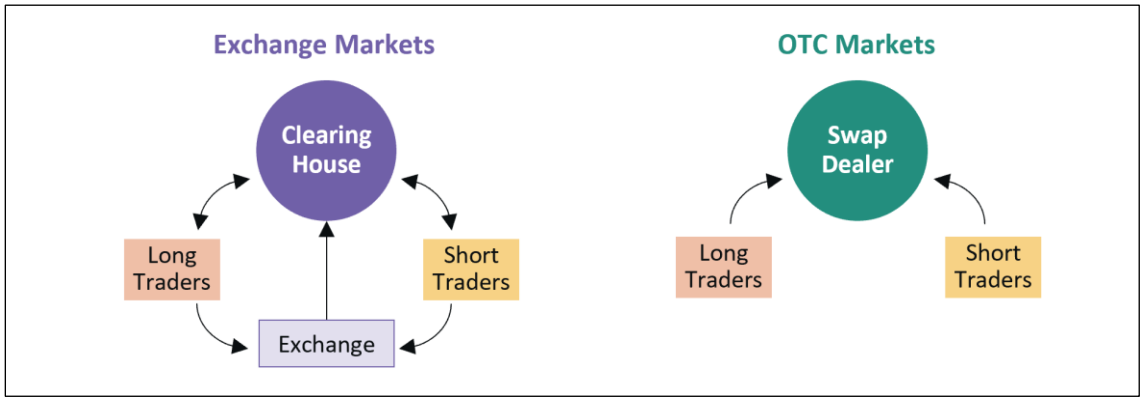
Exchanges are centralized markets, where buying and selling interests come together. Traders who want to buy, or take a long position (*longs*)—who benefit if prices of the commodity or asset rise—interact with those who want to sell, or go short (*shorts*). Shorts benefit when prices of the commodity or asset fall. On formal exchanges, deals between those on the short and long sides of trades are reported throughout the day. In the OTC market, however, contracts are made bilaterally, typically between dealers and end users. Prior to the Dodd-Frank Act, the OTC market generally had no requirement that the price, the terms, or even the existence of a contract had to be disclosed to a regulator or to the public. The Dodd-Frank Act required OTC derivatives—most

[19] These futures on narrow-based security indexes and on single securities are referred to as security futures products.

[20] Federal securities and commodities laws permit the regulatory agencies to delegate registration and certain other functions to private groups, called self-regulatory organizations (SROs). In securities, the major SRO is the Financial Industry Regulatory Authority (FINRA). In futures, it is the National Futures Association.

of which were swaps—to be reported to swap data repositories, further discussed below.[21] Some derivatives trades occur in the OTC market for underlying assets or contracts with more unique, non-standard terms or for which exchanges do not offer trading. **Figure 3** shows the differences between exchange-traded and OTC derivatives.

Figure 3. Exchange-Traded vs. OTC Derivatives



Source: CRS.

Derivatives can be volatile contracts characterized by a high degree of leverage, which can result in big gains and losses among traders. The exchanges have dealt with credit risk through clearinghouses, which can be either affiliated with the exchanges or third-party clearinghouses. But the credit risk remains: How does the clearinghouse ensure that it can meet its obligations? Clearinghouses depend on a system of *margin*, also referred to as collateral. Before the trade, both the long and short traders deposit initial margin payments with the clearinghouse to cover potential losses. Then, at the end of each trading day, all contracts are repriced, or *marked to market*, and those who have lost money (because prices moved against them) must post additional margin (called *variation* or *maintenance margin*) to cover those losses before the next trading session. This process is known as a *margin call*: Traders must make good on their losses immediately, or their brokers may close out the traders' positions when trading opens the next day. The margin system prevents traders from building large paper loss that could damage the clearinghouse in case of default. It is possible to lose large amounts of money trading on the futures exchanges but only on a pay-as-you-go basis. Procedurally, the trade is made on the exchange floor (or electronic network) and is then sent to the clearinghouse, which guarantees payment.

The OTC market, as shown on the right side of **Figure 3**, includes a network of dealers rather than a centralized exchange. Firms that act as dealers stand ready to take either long or short positions, and they make money on the volume of trading by charging a *spread*, or fee, on each trade. The dealer absorbs the credit risk of customer default, and the customer faces the risk of dealer default. The OTC market has been dominated by fewer than a dozen firms—institutions such as JPMorgan Chase, Goldman Sachs, Citigroup, and their foreign counterparts. In the OTC market, prior to the Dodd-Frank Act, some—but not all—contracts required collateral or margin. Although the ISDA had published best practice standards for use of collateral, compliance was voluntary. Since the Dodd-Frank Act, regulators have required the posting of margin for OTC a derivative that is not cleared by a clearinghouse.

[21] Section 727 of the Dodd-Frank Act added Section 2(a)(13)(G) to the Commodity Exchange Act, which required all swaps, whether cleared or uncleared, to be reported to swap data repositories.

Background on the Commodity Futures Trading Commission

The CFTC was created in 1974 through the enactment of the Commodity Futures Trading Commission Act to regulate commodities futures and options markets.[22] At the time, these markets were poised to expand beyond their traditional base in agricultural commodities to encompass contracts based on financial variables, such as interest rates and stock indexes. The CFTC's mission is to promote the integrity, resilience, and vibrancy of the U.S. derivatives markets through sound regulation.[23] The agency administers the Commodity Exchange Act (CEA), which was passed in 1936.[24] Prior to the CFTC's creation, trading in agricultural commodities regulated by the CEA was overseen by the Commodity Exchange Administration, an office within the U.S. Department of Agriculture that also formed in 1936.

Although most derivatives trading in today's market relates to financial variables (e.g., interest rates, currency prices, and stock indexes), congressional oversight remains vested in the House and Senate Agriculture Committees in part because of the market's historical origins in agricultural commerce. Appropriations for the CFTC are under the jurisdiction of the House Agriculture Appropriations Subcommittee and the Senate Financial Services and General Government Appropriations Subcommittee.

The CFTC oversees industry self-regulatory organizations (SROs)—such as the futures exchanges and the National Futures Association—and requires the registration of a range of industry firms and personnel, including futures commission merchants (or brokers), floor traders, commodity pool operators, and commodity trading advisers. The Dodd-Frank Act significantly expanded the CFTC's jurisdiction to include OTC derivatives—primarily swaps. As a result of Dodd-Frank, major participants in the swaps markets must now register with the CFTC, and certain swaps must be cleared by clearinghouses and traded on electronic trading platforms similar to exchanges.[25] Newly regulated swap market participants include swap dealers, major swap participants, swap clearing organizations, swap execution facilities, and swap data repositories. These entities are subject to business conduct standards contained in the statute or promulgated as CFTC rules. Similar to the SEC, the CFTC generally does not regulate the safety and soundness of individual firms, with certain exceptions—such as swap dealers and major swap participants—for which the CFTC was instructed to set up capital standards pursuant to the Dodd-Frank Act.

The Dodd-Frank Act, in Title VIII, also gave the CFTC, along with the SEC and the Federal Reserve Board, certain authorities over *financial market utilities*, or FMUs.[26] The Dodd-Frank Act introduced the term *financial market utility* for multilateral systems that transfer, clear, or settle payments, securities, or other financial transactions such as derivatives among financial institutions or between an FMU and a financial institution.[27] Title VIII also recognized the criticality of FMUs to the stability of the financial system and established a framework for

[22] P.L. 93-463.

[23] See Commodity Futures Trading Commission (CFTC), "The Commission," https://www.cftc.gov/About/AboutTheCommission.

[24] P.L. 74-765, 7 U.S.C. §§1 et seq.

[25] These platforms are called swap execution facilities.

[26] Dodd-Frank Act, Title VIII.

[27] CRS Report R41529, *Supervision of U.S. Payment, Clearing, and Settlement Systems: Designation of Financial Market Utilities (FMUs)*, by Marc Labonte.

enhanced supervision of FMUs designated as systemically significant by the Financial Stability Oversight Council.[28] The Dodd-Frank Act's Section 805(a)(2) granted the CFTC and SEC the authority to prescribe risk-management standards for a designated FMU that is, respectively, a derivatives clearing organization (DCO) registered under Section 5b of the CEA or a clearing agency registered under Section 17A of the Securities Exchange Act of 1934.[29] It also granted the Federal Reserve similar authority over designated FMUs under its primary jurisdiction as a prudential regulator.[30] Currently, there are eight designated FMUs. Two of the largest futures exchanges are under the CFTC's jurisdiction: the Chicago Mercantile Exchange and ICE Clear Credit.[31] On July 1, 2024, the CFTC announced results of its fourth stress-testing exercise of 11 DCOs (i.e., more DCOs than the two designated FMUs under the CFTC's purview).[32] The CFTC reported its finding that the DCOs examined held sufficient financial resources to withstand extreme or implausible price shocks.[33]

Organizationally, the CFTC is led by five commissioners appointed by the President, with the advice and consent of the Senate, to serve staggered five-year terms. No more than three commissioners at any one time may be from the same political party. The President designates one commissioner to serve as chair. The agency is organized around 14 operating offices and divisions, though its regulatory oversight is centered around five main divisions:[34]

1. **Clearing and Risk**, which oversees DCOs and other major market participants;
2. **Enforcement**, which investigates and prosecutes alleged violations of the CEA and CFTC regulations;
3. **Market Oversight**, which conducts trade surveillance and oversees trading facilities (such as futures exchanges and swap execution facilities) and swap data repositories;
4. **Market Participants**, which oversees derivatives market intermediaries including commodity pool operators, commodity trading advisors, futures commission merchants, introducing brokers, retail foreign exchange dealers, swap dealers, and major swap participants, as well as designated SROs; and
5. **Data,** which is responsible for the CFTC's data architecture, storage and governance.[35]

Derivatives and the 2008 Financial Crisis

Little consensus exists about the relative importance of the potential causes[36] of the 2008 financial crisis, including the role of derivatives. However, derivatives played a role in

[28] Federal Reserve System, "Financial Market Utilities, Final Rule," 89 *Federal Register* 18750, March 15, 2024, https://www.govinfo.gov/content/pkg/FR-2024-03-15/pdf/2024-05322.pdf.

[29] 12 U.S.C. §5464(a)(2).

[30] 12 U.S.C. §5462(8).

[31] See Department of the Treasury, "Financial Market Utility Designations," https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/fsoc/designations.

[32] CFTC, *Supervisory Stress Test of Derivatives Clearing Organizations: Reverse Stress Test Analysis and Results*, June 2024, p. 6, https://www.cftc.gov/media/10801/cftcstresstest061724/download.

[33] CFTC, *Supervisory Stress Test of Derivatives Clearing Organizations*.

[34] See CFTC, "CFTC Organization," https://www.cftc.gov/About/CFTCOrganization/index.htm.

[35] See CFTC, "CFTC Organization," https://www.cftc.gov/About/CFTCOrganization/index.htm.

[36] See CRS Report R40173, *Causes of the Financial Crisis*, by Mark Jickling (available to congressional clients upon request).

transmitting financial shocks from firm to firm and from market to market. A formal study by the Financial Crisis Inquiry Commission[37] concluded that derivatives contributed to the 2008 financial crisis in three major ways, and other relevant aspects of these markets for the crisis are further discussed in the text box below.

First, credit-default swaps were instrumental in fueling the securitization of mortgages and mortgage-backed securities and in the subsequent housing bubble. Second, credit-default swaps were essential in creating synthetic *collateralized debt obligations*, or financial instruments that served as bets on the performance of real mortgage-backed securities. These instruments amplified the losses from the collapse of the housing bubble by allowing multiple bets on the same securities and helped to spread the losses throughout the financial system. Third, once the housing boom ended, derivatives were at the center of the crisis due to (1) concerns that losses associated with derivatives would trigger cascading losses throughout the global financial system and (2) the lack of transparency concerning the overall size of the derivatives market and the extent of derivatives transactions between systemically important financial institutions, which directly added to uncertainty and panic in global financial markets.

Derivatives in the 2008 Financial Crisis

Several aspects of derivative finance may have contributed to the 2008 financial crisis:

- **Complexity.** At the peak of the housing boom, home mortgage loans were packaged, repackaged, and repackaged again into highly complex securities, many of which incorporated derivatives to increase yield or to obtain AAA bond ratings. As mortgage losses began to grow, no one could be sure what the real values of these securities were. As a result, the true financial condition of banks and other holders of these securities became uncertain, and interbank lending slowed, creating the conditions for panic.
- **Opacity.** In addition to the complexity of structured financial instruments, the nature of derivatives markets is to create a web of risk exposures among a wide range of markets and firms. Fears about insolvency in individual financial institutions were amplified by the knowledge that those firms might owe billions to derivatives counterparties: The default of a single derivatives dealer had the potential to trigger cascading losses throughout the banking system. But no information about the extent or distribution of such potential losses was available, especially where unregulated OTC derivatives were involved.
- **Leverage.** In the post-2000 low-interest-rate environment, many market participants sought to boost investment returns through the use of leverage—supplementing their own capital with debt or derivatives. Because all derivatives trading is done on margin, a relatively small initial investment may generate a large return (or loss). Thus, the losses in U.S. mortgage lending were magnified into much greater losses throughout the global financial system.
- **Excessive Speculation.**[38] The above factors combined to produce catastrophic losses at a number of systemically important firms that had amassed large speculative derivatives positions. A good example is insurance giant American International Group (AIG), which sold billions of dollars in credit-default swaps and had to be rescued by the government, thus preventing massive losses to AIG's counterparties that could have exacerbated the downward global financial spiral.[39]

[37] The Financial Crimes Inquiry Commission was established in 2009 as part of the Fraud Enforcement and Recovery Act (P.L. 111-21) to examine the financial crisis in the United States. The commission was composed of a 10-member panel of private citizens with experience in such areas as housing, economics, finance, market regulation, banking, and consumer protection. The commission issued its final report in January 2011. See Financial Crimes Inquiry Commission, *Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*, January 2011, pp. xxiv-xxv.

[38] The Commodity Exchange Act does not specifically define the term *excessive speculation*. However, Section 4a(a) of the act (7 U.S.C. §6a(a)) holds that excessive speculation in a commodity traded for future delivery may cause "sudden or unreasonable fluctuations or unwarranted changes in the price of such commodity." See CFTC, "Speculative Limits," https://www.cftc.gov/IndustryOversight/MarketSurveillance/SpeculativeLimits/speculativelimits.html.

[39] See CRS Report R40438, *Federal Government Assistance for American International Group (AIG)*, by Baird Webel (available to congressional clients upon request).

Two aspects of OTC markets were central to derivatives reform. First, in a market with mandatory clearing and margin, there is a stronger possibility that an institution suffering losses would run out of money and exit the market long before the size of its derivatives position could grow to the massive proportions seen in the crisis.

Second, because most OTC contracts were not reported to regulators prior to 2010, the Federal Reserve and the Treasury lacked information in the crisis about which institutions were exposed to AIG and the size of those exposures. Uncertainty among market participants about the size and distribution of potential derivatives losses flowing from the failure of a major dealer was a factor that exacerbated the "freezing" of credit markets during the peak of the crisis.

One basic theme of derivatives reform proposals in the run-up to the Dodd-Frank Act was to change the OTC market to act more like the exchange-traded futures market—in particular, to have bilateral OTC swaps cleared by third-party clearing organizations (or DCOs affiliated with the exchange). Clearing was expected to reduce counterparty risk and increase transparency. At the same time, borrowing costs can be associated with a clearing regime that requires participants to post margin.

Firms that use derivatives to hedge business risks often take positions that move in the opposite direction from the underlying market. Such commercial businesses argued that the costs of posting margin would prevent them from hedging. Nonfinancial commercial firms were ultimately exempted from the clearing and exchange-trading requirements in the Dodd-Frank Act.

Dodd-Frank Reforms

The Dodd-Frank Act derivatives reforms were broadly aimed at bringing the swaps market under a regulatory regime more closely resembling that of the futures markets. Dodd-Frank added five broad requirements for swaps, with certain exceptions:

1. Most swaps are required to be cleared through a clearinghouse, which involves posting margin to cover any potential losses as they accumulate.
2. These swaps are also required to be traded on exchanges or exchange-like electronic platforms called *swap execution facilities* (SEF), with the goal of promoting pre-trade and post-trade price transparency. However, a swap in which one counterparty is a nonfinancial firm (e.g., a farmer, energy company, or airline) is not subject to these clearing and exchange-trading requirements.
3. Third, each swap must be reported to a database called a *swap data repository* (SDR) to give regulators a clearer picture of the market.
4. Fourth, financial firms that trade swaps heavily must register with the CFTC or the SEC (the latter if the firms trade swaps related to securities) as *swap dealers* or *major swap participants* (MSPs), so as to promote more regulatory oversight of major market players.
5. Fifth, swaps that remain uncleared, or OTC, are subject to margin and capital requirements set by the regulators to prevent large uncollateralized exposures from accumulating.

The next section discusses some of these requirements in more detail.

Clearing and Trading Requirements

The Dodd-Frank Act requires that most derivatives contracts formerly traded exclusively in the OTC market be cleared and traded on exchanges. Traders in these products are now required to post margin to cover potential losses as they accumulate on a daily basis. However, the act does not require all derivatives contracts to be traded in this way. The Dodd-Frank Act presumed that some derivatives contracts will still be traded in the OTC market, but it granted regulators broader powers to obtain information about these derivatives and to impose margin and capital requirements on them.

Clearing Requirement

Title VII of the Dodd-Frank Act creates largely parallel clearing and exchange-trading requirements for swaps and security-based swaps as those terms are defined by Title VII and further clarified by the CFTC and the SEC in a joint rulemaking.[40] Section 723 creates the clearing and exchange-trading requirements for swaps, over which the CFTC has jurisdiction.[41] Section 763 creates largely parallel requirements for security-based swaps, over which the SEC has authority.[42] By 2015, about 75% of swap transactions in the United States were cleared through derivatives clearinghouses,[43] with most of the cleared transactions being interest-rate and credit-default swaps—up from about 15% of all swaps in 2007.[44]

Exchange-Trading Requirement

With certain exceptions, swaps and security-based swaps that are required to be cleared must also be executed on a regulated exchange or a trading platform defined in the act as either a SEF or a security-based SEF. Such a facility must permit multiple market participants to trade by accepting bids or offers made by multiple participants in the facility.

The goal of the trading requirement is "to promote pre-trade price transparency in the swaps market."[45] Because the old OTC market was notably opaque, with complete price information available only to dealers, swaps customers were limited in their ability to shop for the best prices or rates. The expectation is that as price information becomes more widely available, competition will produce narrower spreads by lowering prices.

End-User Exception

Sections 723 and 763 of the Dodd-Frank Act provide exceptions to the clearing requirement for swaps and security-based swaps when one of the counterparties to a transaction (1) is not a financial entity, (2) is using the transaction to hedge or mitigate its own commercial risk, and (3) notifies the relevant agency "how it generally meets its financial obligations associated with

[40] CFTC and SEC, "Further Definition of 'Swap,' 'Security-Based Swap,' and 'Security-Based Swap Agreement'; Mixed Swaps; Security-Based Swap Agreement Recordkeeping," 17 *Federal Register* 48208, August 13, 2012, http://www.cftc.gov/ucm/groups/public/@lrfederalregister/documents/file/2012-18003a.pdf.

[41] P.L. 111-203, §723 (codified at 7 U.S.C. §2).

[42] P.L. 111-203, §763(a) (codified at 15 U.S.C. §§78a et seq.).

[43] Testimony of CFTC Chairman Timothy G. Massad in U.S. Congress, House Committee on Financial Services, 114th Cong., 1st sess., December 8, 2015, http://www.cftc.gov/PressRoom/SpeechesTestimony/opamassad-36.

[44] Ibid.

[45] P.L. 111-203, §723 (new §5h(e) of the Commodity Exchange Act codified at 7 U.S.C. §7b-2).

entering into non-cleared swaps."[46] This provision has been widely referred to as the *end-user exception*, because it applies only to a transaction in which at least one counterparty is "not a financial entity."[47]

A *financial entity* for the purposes of this section is defined as a swap dealer, security-based swap dealer, MSP, major security-based swap participant, commodity pool, private fund, employee benefit plan, or person predominantly engaged in activities that are in the business of banking or are financial in nature.[48] A prime example of an entity that is not a financial entity but may engage in swaps trading as a necessary part of its business is an airline that regularly trades in fuel derivatives to offset potential volatility in the market for jet fuel.[49]

Major Swap Participant and Swap Dealer Definitions

A basic theme in Dodd-Frank is that systemically important financial institutions should maintain capital cushions above and beyond what specific regulations require to compensate for the risk that their failure would pose to the financial system and the economy. In addition to the margin requirements that apply to individual derivatives contracts, major participants in derivatives markets became subject to prudential regulation in Title VII. Two categories of regulated market participants are enumerated: swap dealers and MSPs (together with their security-based swap equivalents). Because the OTC dealer market is highly concentrated, and most dealers are large financial institutions, the proposal that swap dealers be subject to additional prudential regulation generated less opposition relative to other reform proposals. A few dozen of the largest financial institutions were presumed to be affected.

Reporting of Swaps and Security-Based Swaps

The Dodd-Frank Act requires all swaps to be reported.[50] Swaps must be reported to registered SDRs or to the CFTC.[51] Security-based swaps must be reported to registered security-based SDRs or to the SEC.[52] Whereas, in the fall of 2008, virtually no swaps transactions were reported, currently all swaps transactions—whether they are cleared through clearinghouses or remain uncleared—are reported to SDRs.[53]

On April 3, 2012, the CFTC issued a final rule describing reporting, recordkeeping, and daily trading records obligations for swap dealers and MSPs.[54] The CFTC's final rule followed a proposed rule released on December 23, 2010.[55] The final rule calls for electronic reporting to an

[46] P.L. 111-203, §§723(a)(3) (7 U.S.C. §2(h)(7) [swaps]) and 763(a) (codified at 15 U.S.C. §§78a et seq. [security-based swaps]).

[47] Ibid.

[48] Ibid.

[49] Ben Protess, "In New Rules to Shine Light on Derivatives, Regulators Also Allow Exceptions," *DealBook* (blog), *New York Times*, July 10, 2012, https://archive.nytimes.com/dealbook.nytimes.com/2012/07/10/in-new-rules-to-shine-light-on-derivatives-regulators-also-allow-exemptions/.

[50] P.L. 111-203, §727.

[51] P.L. 111-203, §723(a)(3) (7 U.S.C. §2(h)(5)).

[52] §763(a) of the Dodd-Frank Act (15 U.S.C. §§78a et seq.).

[53] CFTC, "Keynote Remarks of Chairman Timothy Massad Before the Risk USA Conference," October 22, 2015, http://www.cftc.gov/PressRoom/SpeechesTestimony/opamassad-31.

[54] CFTC, "Swap Dealer and Major Swap Participant Recordkeeping, Reporting and Duties Rules," 77 *Federal Register* 20128, April 3, 2012, http://www.cftc.gov/ucm/groups/public/@lrfederalregister/documents/file/2012-5317a.pdf.

[55] CFTC, "Swap Data Repositories: Registration and Regulatory Requirements," 75 *Federal Register* 80897, December 23, 2010.

SDR of swap data from each of two important stages of the existence of a swap: the creation of the swap and the continuation of the swap over its existence until its final termination or expiration. The purpose of this requirement appears to be to create an electronic audit trail of all stages of the swap.[56] The final rule requires swap dealers and MSPs to maintain records of all activities related to their business, regardless of whether they also have prudential, or banking, regulators with separate recordkeeping requirements.

Selected Issues for Congress

Several derivatives market issues may prove relevant for the 119th Congress, some of which are discussed below.

CFTC Reauthorization

As previously enacted, the CEA included an authorization of appropriations for a limited number of fiscal years. Authorizations of appropriations provide a procedural guideline for future funding legislation.[57] The CFTC was last reauthorized in 2008 as part of the Food, Conservation, and Energy Act (P.L. 110-246), which included authorization of appropriations through FY2013.[58] Although the underlying authority in the statute—the CEA—to administer programs does not have an explicit expiration, the authorization of appropriations applied only to fiscal years through FY2013. House and Senate rules concerning appropriations legislation assume that further authorizations of appropriations will be enacted for future years, but it is not uncommon for Congress to continue to fund programs and activities, such as the CFTC, for several years beyond the expiration of a previous authorization of appropriations.

Historically, the reauthorization process has often been one of the principal vehicles for modifying the CFTC's regulatory authority and evaluating the efficacy of its regulatory programs. Congress has used the reauthorization process as a vehicle to consider a wide range of issues related to the regulation of derivatives trading. The current CFTC reauthorization process is the first since the Dodd-Frank Act's passage brought the more than $400 trillion U.S. swaps market under regulatory oversight.[59] For some in Congress, the reauthorization process may be an opportunity to make changes to derivatives regulation that industry or regulators themselves had sought.

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[56] See CFTC, "Swap Dealer and Major Swap Participant Recordkeeping, Reporting and Duties Rules," 77 *Federal Register* 20128, April 3, 2012, p. 20212.

[57] For further background, see CRS Report R46497, *Authorizations and the Appropriations Process*, by James V. Saturno.

[58] An authorization may generally be described as a statutory provision that defines the authority of the government to act. The primary purpose of authorization statutes or provisions is to provide authority for an agency to administer a program or engage in an activity. For further information, see CRS Report R42098, *Authorization of Appropriations: Procedural and Legal Issues*, coordinated by Edward C. Liu.

[59] The $400 trillion figure is measured in terms of notional value. See testimony of Timothy G. Massad in U.S. Congress, Senate Committee on Agriculture, Nutrition and Forestry, May 14, 2015, http://www.cftc.gov/PressRoom/SpeechesTestimony/opamassad-22, which says in part, "In addition to the challenges posed by the growth and increasing complexity of the futures and options market, our responsibilities now include overseeing the swaps market, an over $400 trillion market in the U.S., measured by notional amount." Since the Dodd-Frank Act passed, oversight of the swaps market has been divided between the CFTC, which oversees the vast majority of swaps, and the Securities and Exchange Commission (SEC), which regulates a smaller subset of swaps called security-based swaps (SBS). An SBS is a swap based on a single security or loan or a narrow-based group or index of securities (or events relating to a single issuer or issuers of securities in a narrow-based security). See SEC, "Derivatives," https://www.sec.gov/spotlight/dodd-frank/derivatives.shtml.

Commodity Price Volatility

In recent years, events such as the Russian invasion of Ukraine; the effects of the COVID-19 pandemic (and, more recently, the avian flu) on supply chains; and the prevalence of climate-related events such as droughts, hurricanes, and wildfires have exacerbated volatility in various commodity prices, creating a variety of issues for related derivatives and financial markets.[60] Such price volatility in the underlying spot commodities led to large and frequent margin calls in derivatives markets, according to a paper from the Financial Stability Board (FSB).[61] For instance, in 2022, the Ukraine-Russia war and severe weather conditions globally led to exceptionally large price volatility in physical commodity markets, such as energy and agricultural products. The initial margin requirement for European natural gas futures on one exchange more than doubled right after the start of the war. Heavy and unpredicted margin calls at times drained cash and liquid collateral from the financial system and led some commodities traders to borrow more heavily from bank credit facilities to meet margin calls.[62]

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, very large, widespread margin calls can threaten the creditworthiness of clearinghouse members or the clearinghouse itself. For instance, on March 8, 2022, the London Metal Exchange (LME) took the unusual step of halting trading and the even more unusual measure of 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.[63] In subsequent legal filings, the LME revealed that these financial stresses would likely have pushed 12 of its 45 clearing members into default and exhausted its default fund, so LME actions were taken to avoid imperiling the clearinghouse.[64] In late 2024, the U.K. High Court upheld the LME's trade cancellations, but the court decision has spurred some concern that such unusual measures as trade cancellations during extreme price volatility could create future uncertainty for traders at exchanges.[65]

Overall, the FSB report noted that such unanticipated margin calls due to price volatility led some traders to avoid trading derivatives on exchanges with affiliated clearinghouses and gravitate instead toward more opaque, bilateral OTC trading, wherein daily margin posting is not the norm.[66] This raised a risk of reduced trading liquidity and market depth in cleared exchange-traded derivatives. Other risks included reduced visibility into the buildup of derivatives trading positions and discouraging commodities end users from hedging their commodity exposures through derivatives.[67] In addition, the FSB warned that in case of future commodity price

[60] See Financial Stability Board (FSB), "The Financial Stability Aspects of Commodities Markets," February 20, 2023, https://www.fsb.org/uploads/P200223-2.pdf.

[61] FSB, "The Financial Stability Aspects of Commodities Markets."

[62] FSB, "The Financial Stability Aspects of Commodities Markets," p. 13.

[63] By Jack Farchy and Mark Burton, "LME Says It Saved Nickel Market from $20 Billion 'Death Spiral'," *Bloomberg News*, November 28, 2022, https://www.mining.com/web/lme-says-it-had-regulatory-obligation-to-cancel-nickel-trades-in-march/.

[64] See John Heilbron, "Central Clearing and Trade Cancellation: The Case of LME Nickel Contracts on March 8, 2022," Department of the Treasury, Office of Financial Research, December 10, 2024, https://www.financialresearch.gov/working-papers/files/OFRwp-24-09_central-clearing-and-trade-cancellation.pdf.

[65] Heilbron, "Central Clearing and Trade Cancellation," p. 13.

[66] FSB, "The Financial Stability Aspects of Commodities Markets," p. 14.

[67] FSB, "The Financial Stability Aspects of Commodities Markets," p. 25.

volatility, similar spikes in margin calls could strain banks that lend to commodities traders or trade in commodities markets.[68]

Further, economists have long debated whether trading of derivatives itself may exacerbate price volatility in underlying commodities.[69] The 119th Congress may examine derivatives' impact on commodity price volatility and vice versa as well as the wider effects of this volatility.

Artificial Intelligence in Derivatives Markets

The use of artificial intelligence (AI) in derivatives markets has ballooned in recent decades, including in novel ways. As of 2023, 99% of leading financial services firms reported that they had deployed AI in some capacity.[70] An in-depth study of AI in the derivatives markets in 2024 by the CFTC's Technology Advisory Committee (TAC) noted that the question of how AI models are used throughout the financial services sector is highly relevant for the CFTC and the markets it oversees.[71] AI could potentially automate processes in derivatives trading such as risk management; surveillance; fraud detection; and the identification, execution, and back-testing of trading strategies.[72]

The CFTC's TAC study also flagged some risks, particularly from more novel, generative AI, which may interest policymakers and Congress through its oversight role. One of the most notable effects of the adoption of algorithmic trading strategies over the past couple of decades using AI technology such as machine learning has been to increase the speed of reaction to information.[73] The report flagged that high-speed algorithmic trading, in cases where humans have been "out of the loop" and an algorithm was faulty, has at times resulted in market disruptions and market instability.[74] To address this type of risk, the report recommended that certain high-speed algorithmic trading should incorporate having "humans in the loop" (dubbed "HITL") as a best practice.[75] For example, a high-frequency trading system could be structured so as to require a manual human approval or supervision once a monetary threshold is crossed.[76]

Another, newer risk involves the possibility that AI trading algorithms, enhanced with language learning and generative capabilities, could create trading strategies that use manipulation of other peoples' trading expectations, such as by creating and disseminating false information that others

[68] FSB, "The Financial Stability Aspects of Commodities Markets," p. 26.

[69] See Cohen, "Derivatives and Asset Price Volatility."

[70] CFTC, Technology Advisory Committee (TAC), *Responsible AI in Financial Markets: Opportunities, Risks, and Recommendations*, May 2, 2024, p. 9, https://www.cftc.gov/media/10626/TAC_AIReport050224/download.

[71] CFTC, TAC, *Responsible AI in Financial Markets*, p. 17.

[72] CFTC, TAC, *Responsible AI in Financial Markets*, p. 46.

[73] Testimony of Michael P. Wellman in U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, *Artificial Intelligence in Financial Services*, September 20, 2023, p. 2, https://www.banking.senate.gov/imo/media/doc/wellman_testimony_9-20-23.pdf.

[74] The CFTC TAC report cites the example in August 2012 of Knight Capital Group—then a FINRA-registered broker-dealer and formerly one of the largest traders of U.S. equities—which deployed a faulty trading algorithm, which, though not AI-powered, "had consequences that demonstrate more broadly the necessity of human oversight in automated decision-making." The algorithm mistakenly placed approximately $7 billion in orders across more than 150 stocks in less than an hour, ultimately causing $460 million in losses to Knight Capital. See CFTC, TAC, *Responsible AI in Financial Markets*, p. 42.

[75] CFTC, TAC, *Responsible AI in Financial Markets*, p. 43.

[76] CFTC, TAC, *Responsible AI in Financial Markets*, p. 43. For additional background on high-frequency trading, see CRS Report R43608, *High-Frequency Trading: Background, Concerns, and Regulatory Developments*, by Gary Shorter and Rena S. Miller; and CRS Report R44443, *High Frequency Trading: Overview of Recent Developments*, by Rena S. Miller and Gary Shorter.

trade upon.[77] Current laws prohibiting market manipulation tend to require a showing of "intent" to manipulate markets such as derivatives, rendering them problematic to apply to algorithms, which lack human-like "intent."[78] Such gaps could make it especially difficult to constrain such AI-related risks.

CFTC Authorities over Cryptocurrency

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. On March 6, 2025, the CFTC hosted its first CEO forum on digital assets with a number of senior industry official from the cryptocurrency industry.[79] The CFTC announced the forum in February 2025 to start a "digital asset markets pilot program for tokenized non-cash collateral such as stablecoins."[80]

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 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 for spot crypto platforms, 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 and that regulatory gaps exist.[81] For example, then-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."[82] Others in Congress have expressed a desire for greater clarity in defining the regulatory authorities of the SEC and the CFTC over cryptocurrency and digital assets.

[77] U.S. Senate Committee on Banking, Housing, and Urban Affairs, Hearing on "Artificial Intelligence in Financial Services", Written Testimony of Michael P. Wellman, at p. 5.

[78] See Wellman, testimony in *Artificial Intelligence in Financial Services*, p. 5.

[79] Eleanor Terrett, "CFTC CEO Forum on Digital Assets Concludes with Major Industry Leaders in Attendance," *Blockchain News*, March 6, 2025, https://blockchain.news/flashnews/cftc-ceo-forum-on-digital-assets-concludes-with-major-industry-leaders-in-attendance.

[80] CFTC, "CFTC Announces Crypto CEO Forum to Launch Digital Asset Markets Pilot," press release, February 7, 2025, https://www.cftc.gov/PressRoom/PressReleases/9049-25.

[81] See, for example, Financial Stability Oversight Council, *Report on Digital Asset Financial Stability Risks and Regulation*, 2022, p. 113, https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf.

[82] Testimony of Rostin Behnam, Chairman, CFTC, in U.S. Congress, Senate Committee on Agriculture, Nutrition, and Forestry, *Why Congress Needs to Act: Lessons Learned from the FTX Collapse*, December 1, 2022, https://www.agriculture.senate.gov/imo/media/doc/The%20Honorable%20Rostin%20Behnam%20Testimony.pdf.

Appendix A. Example of Futures Trade

Futures and options are both exchange-traded derivatives. This **Appendix A** provides a detailed, hypothetical example of a futures trade in oil. An oil futures contract represents 1,000 barrels of oil, but neither party to the contract need ever possess the actual commodity. Contracts may be settled by physical delivery, but in practice the vast majority are settled in cash. When a contract is made today, one party (called the "long") agrees to buy oil at a future date from the other (the "short"). Contracts are available with different maturities, designated by expiration months, but the size is always the same. (In oil, a contract expires every month.) The price at which this future transaction is to take place is the current market price. Assuming the price of oil were, say, $55 per barrel, the long trader is committed to buy at that price, and the short is obliged to sell.

Assume that tomorrow the price of oil goes to $60/barrel. The long trader now has the advantage: He is entitled to pay $55 for oil that is now worth $60. His profit is $5,000 (the $5 per barrel increase times the 1,000 barrels specified in the contract). The short has lost the identical amount: She is obliged to sell oil for less than the going price.

If, on the following day, the price goes to $65, the long gains another $5,000. The short, down a total of $10,000, may reconsider her investment strategy and decide to exit the market. She can do this at any time by entering into an offsetting, or opposite, transaction. That is, she purchases a long contract with the same expiration date. Her obligation (on paper) is now to sell 1,000 barrels (according to the first contract) and to buy 1,000 barrels (the second contract) when both contracts expire simultaneously. Whatever price prevails at that time, the net effect of the two transactions will be zero. The short's position is said to be "evened out"—she is out of the market.

The short's decision to exit does not affect the long, who may prefer to ride with the trend. This is because all contracts are assumed by the exchange's clearinghouse, which becomes the opposite party on each trade and guarantees payment. The ability to enter and exit the market by offset, without having to make or take delivery of the physical commodity, permits trading strategies based on short-term price expectations. While some traders may keep long or short positions open for weeks or months, others buy and sell within a time frame of minutes or seconds.

The exchange clearinghouse, which guarantees all trades, also controls traders' funds. Before entering into the trade described above, both long and short would have been required to deposit initial margin payments of between about 5% and10% of the notional value of the contract. For example, if the price of oil per barrel were $55, and the trade is for 1,000 barrels, the notional value would be $55,000, so the initial margin might be 5% of $55,000, or $2,750. (The exact percentage and amount are set by the exchange. Lower margins apply to hedgers and exchange members.) All contracts are priced, or "marked-to-market," each day. The long trader above would have had his $10,000 gain credited to his margin account, while the short would have had to make additional "maintenance" margin payments to cover her losses. It is worth noting that her two-day $10,000 loss represents more than 100% of her original investment—that is, her initial margin deposit of $2,750: The risks of futures speculation are high. When traders exit the market, any funds remaining in their margin accounts are returned. (Other transaction costs, such as brokerage commissions and exchange fees, are not refundable.)

Options on futures are also available for many futures contracts. The holder of an option has the right (but not the obligation) to enter into a long or short futures contract over the life of the option. The option will be exercised only if price movements are favorable to the option buyer—that is, if the underlying futures contract would be profitable. The seller of the option receives a

payment (called a premium) for granting this right. The seller profits if the option is not exercised by the buyer. **Appendix B** has more information on options trading.

Appendix B. Options

In the futures contracts discussed in **Appendix A,** all gains by short traders create equal losses by long traders (or vice versa): Futures trading is a zero-sum game. Traders who wish to limit their potential losses may choose to employ options, where gains and losses are not symmetrical. The key distinction between options and futures is that one party has the right—but not the obligation—to buy an asset in the future at a price determined when the option is purchased. There are two kinds of options: calls and puts. A call gives the holder of the options contract the right to buy an asset at a fixed price, while a put gives the holder the right to sell at a fixed price.

The price at which the underlying asset may be bought or sold is called the exercise price or the strike price. An options contract confers the right to buy or sell for a specified period of time—each option has an expiration date.

On the other side of a put or call is the seller (or writer) of the option. The seller is obliged to buy or sell the asset at the strike price whenever the buyer chooses to exercise the option. In exchange for this right, the seller of the option receives a one-time payment, called the premium. The buyer's risk is limited to the amount of the premium—if prices move contrary to what the buyer expected, he simply lets the option expire unexercised, and the seller keeps the premium. On the other hand, the option buyer's potential profit is unlimited (just as a futures trader's is), because no matter how high or low the market price of the underlying asset may go, the option writer is obliged to buy or sell at the specified strike price.

The price of an option is reflected in the amount of the premium that is charged by the seller. A number of factors affect option prices: first, the relationship between the strike price and the current market price of the asset, which is called the intrinsic value of the option. If, for example, a put option on 100 shares of General Electric (GE) stock has a strike price of $192.00 and the current share price is $190.00, the intrinsic value of the contract to the buyer is $200.00 ($2.00 per share times 100 shares). An option is said to be "in the money" when the holder can exercise at a profit. If GE shares climbed to $194.00, the put option would be "out of the money," or "underwater," because the right to sell a $194.00 share for $192.00 is worthless.

In addition to intrinsic value, an option has time value. If the GE put in the example above is currently out of the money, there is still the chance that the share price will drop below the strike price before the option expires. Time value depends on the length of time to expiration and the price volatility of the underlying asset, which determines the probability of the option coming into the money during the life of the contract.

Options are traded both on securities and futures exchanges and OTC. Underlying assets include stocks, stock indexes, futures contracts, currencies, interest rates, and physical commodities.

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