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The Regulation of Equity Index Futures

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The Regulation of Equity Index Futures

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Abstract

Equity index futures are one of the most actively traded derivative instruments in financial markets around the world. Advancements in trading and clearing technologies transformed the marketplace over the past two decades. Regulation drastically changed to keep pace with the market's development. New rules have been implemented covering trading activities, risk management, market surveillance, and customer protection. Legal literature on the regulation of this important financial instrument is surprisingly antiquated. Existing papers were written decades ago and do not reflect the true metes and bounds of today's regulatory landscape. This paper fills the void. It provides a comprehensive discussion of the contemporary regulatory framework and highlights unresolved issues that remain a challenge to regulators in maintaining an orderly trading environment. The paper lays the foundation for future academic research toward regulatory improvements, and guides practitioners in their provision of legal services in this field.

Contents

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I. Introduction

Equity index futures are futures contracts written on equity indices such as the S&P 500 or the Dow Jones Industrial Average. Their values derive from the values of the underlying indices, so they are a convenient means for market participants to invest broadly in an economic sector or geographical region represented by the indices without taking a position in each constituent stock.[1] Equity index futures contracts are among the most actively traded futures contracts in the world, accounting for about 20% of all futures trading.[2] The S&P 500 index futures, launched by the Chicago Mercantile Exchange (CME) in April of 1982, was the first equity index futures contract traded in the U.S.[3] Today, major U.S. equity index futures contracts include the S&P 500 futures, the E-Mini S&P 500 futures,[4] the Dow Jones E-Mini ($5),[5] the E-Mini NASDAQ 100 futures,[6]

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[1] *See What is an Index Future?* CME GROUP, https://institute.cmegroup.com/courses/introduction-to-equity-index-products/modules/what-is-an-index-future/, *and Introduction to Equity Index Products*, CME GROUP, https://institute.cmegroup.com/courses/introduction-to-equity-index-products/.

[2] The Futures Industry Association compiles data on the monthly trading volume of all futures contracts that are traded on major exchanges around the world. The data shows that equity index futures traded about 260 million contracts globally during March of 2017, accounting for about 18% of the total futures trading. The volume increased to 340 million contracts in March of 2018, accounting for 22% of the global futures trading and surprising interest rate futures as the most actively traded futures products. See March 2018 ETD Volume and Open Interest, Financial Futures Association, available by submitting request to the Association at https://fia.org/categories/exchange-volume.

[3] *See* Scot Warren, *Innovate to Advance: 30 Years of S&P 500 Futures*, OPENMARKETS (May 4, 2012), http://openmarkets.cmegroup.com/3215/innovate-to-advance-30-years-of-sp-500-futures/.

[4] The E-Mini S&P 500 is the mini version of the regular S&P 500 futures as it has just one fifth the contract value of the latter. *See E-mini S&P 500 Future Quotes*, CME GROUP, http://www.cmegroup.com/trading/equity-index/us-index/e-mini-sandp500.html. It was introduced by the CME in 1997 to expand trading from financial powerhouses to firms and individuals with less capital might and from the traditional trading floor to computer terminals. *See* Warren, *supra* note 3.

[5] Dow Jones E-Mini ($5) is a "mini" version of the standard Dow Jones Industrial Average futures as its contract value is a fraction of the latter. *See E-mini Dow ($5) Futures Quotes*, CME GROUP, http://www.cmegroup.com/trading/equity-index/us-index/e-mini-dow.html.

[6] Nasdaq 100 futures contract tracks the Nasdaq 100 index, which includes 100 leading non-financial U.S. large-cap companies. The E-Mini NASDAQ 100 futures is the "mini" version of the standard NASDAQ 100 futures and offers market participants exposures to the index for less capital. *See E-mini Nasdaq-100 Futures Quotes*, CME GROUP, http://www.cmegroup.com/trading/equity-index/us-index/e-mini-nasdaq-100.html.

and the E-Mini Russell 2000 futures.[7] Collectively these futures contracts account for about 99% of all equity index futures trading on U.S. exchanges, with daily volumes exceeding 2 million contracts.[8]

Despite the importance of the equity index futures market, legal scholarship on its regulation is inexplicably scarce and outdated. There are few articles dedicated to this topic, and they date back to the late 1980s and early 1990s.[9] The financial market has experienced substantial changes in the past twenty years. New trading technologies and rules have been implemented to enhance transparency, efficiency, risk tolerance, cross-border cooperation, and investor protection. Today's regulatory landscape is drastically different from that of twenty years ago. To better facilitate policymakers and academic researchers in designing regulatory policies and guide market participants in making legal or business decisions, legal literature should be updated to provide a clear delineation of the current regulatory infrastructure for the equity index futures market and lingering issues. This paper intends to fill this void.

This paper proceeds as follows: Section II introduces the U.S. equity index futures marketplace – its exchanges, important contracts, participants, and common usage. Section III discusses key regulations on trading, risk management, internal control, investor protection, as well as dispute resolution and rule enforcement. It also provides enforcement statistics by causes

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[7] *See Introduction to E-mini Russell 2000 Index Futures Contract,* CME GROUP, https://institute.cmegroup.com/courses/learn-about-e-mini-russell-2000-futures/modules/introduction-to-e-mini-russell-2000 ("The Russell 2000 Index is a broad-based, market capitalization weighted index that tracks 2000 small cap stocks covering a wide variety of sectors of the US economy. The Russell 2000 index is generally considered a key benchmark for small cap U.S. stocks.").

[8] *See Equity Index Products Home*, CME GROUP, https://www.cmegroup.com/trading/equity-index/#featured.

[9] *E.g., Interim Report On Stock Index Futures And Cash Market Activity During October 1987 To The U.S. Commodity Futures Trading Commission,* Comm. Fut. L. Rep. P 23969 (1989), William J. Brodsky, *The Globalization Of Stock Index Futures: A Summary Of The Market And Regulatory Developments In Stock Index Futures And The Regulatory Hurdles Which Exist For Foreign Stock Index Futures In The United States*, 15 Nw. J. Int'l L. & Bus. 248 (Winter, 1994); *and* Christopher L. Culp, *Stock Index Futures And Financial Market Reform: Regulatory Failure Or Regulatory Imperialism?* 13 Geo. Mason U. L. Rev. 517 (1991).

of actions. . Section IV highlights issues and concerns existent within the current regulatory framework. Section V concludes this paper.

II. The Equity Index Futures Marketplace

A. Major Indices and Trading Exchanges

Equity index futures contracts that are traded in the U.S. can be broadly divided into three groups based on whether their underlying indices are broad-based, sector-based, or foreign equity-based. Broad-based indices include stocks in a broad range of economic sectors such as the S&P 500 Index or the Dow Jones Industrial Average. In contrast, sector-based indices include stocks in a particular sector, or sectors, of the economy. For example, NASDAQ Biotechnology is an index that includes only stocks of biotech companies listed on NASDAQ.[10] Foreign equity-based indices include stocks listed on one or more foreign exchanges. For example, FT-SE 100 is an index that includes 100 stocks listed on the London Stock Exchange with the highest market capitalization.[11]

U.S. exchanges that trade equity index futures include the CME, the Chicago Board of Trade (CBOT), and the Intercontinental Exchange. CME and CBOT, in addition to the New York Mercantile Exchange (NYMEX) and Commodities Exchange (COMEX),[12] are owned by the CME Group.[13]

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[10] *See NASDAQ Biotechnology (NBI),* NASDAQ, https://indexes.nasdaqomx.com/Index/Overview/NBI/.
[11] *See FTSE 100*, LONDON STOCK EXCHANGE, https://www.londonstockexchange.com/exchange/prices-and-markets/stocks/indices/summary/summary-indices-constituents.html?index=UKX.
[12] New York Mercantile Exchange and Commodities Exchange trade energy and metal futures and options. *See Designated Contract Markets*, CME GROUP, https://www.cmegroup.com/designated-contract-market.html?redirect=/product-codes-listing/nymex-market.html%23nymex#nymex, *and Designated Contract Markets*, CME GROUP, https://www.cmegroup.com/designated-contract-market.html?redirect=/product-codes-listing/nymex-market.html%23nymex#comex.
[13] *See Clearing Membership,* CME GROUP, http://www.cmegroup.com/company/membership/clearing.html.

Table 1 and Table 2 show the monthly trading volume and open interests[14] of major U.S. equity index futures contracts during the months of December 2017 and 2018.[15] The data represents the aggregate trading volume and open interests across all maturity dates for each contract. Broad-based index futures account for almost all of the index futures trading (about 97% of the total monthly trading volume and 94-95% of the total monthly open interest). Among broad-based index futures contracts, the E-mini S&P 500 futures is the most actively traded (about 64-67% of the total monthly trading volume and 66-67% of the total open interests). The E-mini NASDAQ 100 has the second highest monthly trading volume (14-18% of the total volume), while the E-mini Russell 2000 has the second highest open interest (12-13% of the total open interest). All contracts except for the E-mini Dow ($5) are traded on the CME. The E-mini Dow ($5) is traded on CBOT, which also belongs to the CME Group; and the contract accounts for about just about 6-9% of the total monthly trading volume and 2-3% of the monthly open interest.

[14] Open interest is the total number of outstanding contracts that have not been settled.
[15] Trading volume data is retrieved from CMEG Exchange Volume Report – Monthly, *CMEG Exchange Volume Report – Monthly*, CME GROUP, http://www.cmegroup.com/daily_bulletin/monthly_volume/Web_Volume_Report_CMEG.pdf. Open interest data is retrieved from CME Group Exchange Open Interest Report – Monthly, *CME Group Exchange Open interest Report – Monthly*, CME GROUP, https://www.cmegroup.com/daily_bulletin/monthly_volume/Web_OI_Report_CMEG.pdf.

Table 1 Equity Index Futures Monthly Trading Volume (CME)

	Trading	Dec-18			Dec-17		
	Exchange	# contracts	% of subtotal	% of total	# contracts	% of subtotal	% of total
Broad-based U.S. Equity Index							
E-MINI S&P500	CME	53,070,695	66.0%	64.1%	30,603,961	69.1%	66.8%
E-MINI NASDAQ 100	CME	14,656,971	18.2%	17.7%	6,526,135	14.7%	14.2%
E-mini ($5) Dow	CBOT	6,929,713	8.6%	8.4%	2,849,052	6.4%	6.2%
E-MINI RUSSELL 2000	CME	4,896,602	6.1%	5.9%	3,548,925	8.0%	7.7%
E-MINI MIDCAP	CME	614,553	0.8%	0.7%	457,169	1.0%	1.0%
S&P 500	CME	144,441	0.2%	0.2%	194,543	0.4%	0.4%
E-MINI RUSSELL 1000 VALUE	CME	35,797	0.0%	0.0%	30,029	0.1%	0.1%
E-MINI RUSSELL 1000	CME	27,234	0.0%	0.0%	23,955	0.1%	0.1%
S&P 500/VALUE	CME	21,643	0.0%	0.0%	16,492	0.0%	0.0%
E-MINI RUSSELL 1000 GROWTH	CME	10,949	0.0%	0.0%	20,573	0.0%	0.0%
S&P 500/GI	CME	20	0.0%	0.0%	34	0.0%	0.0%
Subtotal		80,408,618	100.0%	97.1%	44,270,868		96.7%
Sector-based U.S. Equity Index							
DJ US REAL ESTATE	CBOT	112,926	13.5%	0.1%	63,323	15.4%	0.1%
S&P TECHNOLOGY SECTOR	CME	97,993	11.7%	0.1%	32,316	7.9%	0.1%
S&P FINANCIAL SECTOR	CME	92,312	11.0%	0.1%	86,359	21.0%	0.2%
S&P HEALTH CARE SECTOR	CME	89,265	10.6%	0.1%	20,910	5.1%	0.0%
BITCOIN FUTURES	CME	80,055	9.5%	0.1%	9,503	2.3%	0.0%
S&P INDUSTRIAL SECTOR	CME	76,665	9.1%	0.1%	14,148	3.4%	0.0%
S&P ENERGY SECTOR	CME	75,832	9.0%	0.1%	29,863	7.3%	0.1%
S&P UTILITIES SECTOR	CME	67,098	8.0%	0.1%	64,712	15.8%	0.1%
S&P CONSUMER STAPLES SECT	CME	66,281	7.9%	0.1%	46,454	11.3%	0.1%
S&P MATERIALS SECTOR	CME	30,159	3.6%	0.0%	14,656	3.6%	0.0%
E-MINI S&P REAL ESTATE SELE	CME	28,494	3.4%	0.0%	10,805	2.6%	0.0%
S&P CONSUMER DSCRTNRY SE	CME	20,610	2.5%	0.0%	17,509	4.3%	0.0%
NASDAQ BIOTECH	CME	1,668	0.2%	0.0%	198	0.0%	0.0%
Subtotal		839,358	100.0%	1.0%	410,756		0.9%
Foreign Equity Index							
NIKKEI 225 (YEN) STOCK	CME	1,162,176	74.4%	1.4%	753,757	67.3%	1.6%
NIKKEI 225 ($) STOCK	CME	384,949	24.6%	0.5%	348,348	31.1%	0.8%
YEN DENOMINATED TOPIX	CME	7,631			0	0.0%	0
FTSE Emerging	CME	3,528	0.2%	0.0%	215	0.0%	0.0%
E-mini FTSE China 50	CME	1,038	0.1%	0.0%	2,422	0.2%	0.01%
FT-SE 100	CME	989	0.1%	0.0%	1,126	0.1%	0.002%
IBOVESPA INDEX	CME	749	0.0%	0.0%	1,310	0.1%	0.0%
E-mini FTSE 100 (USD)	CME	748	0.0%	0.0%	958	0.1%	0.0%
NIFTY 50	CME	0	0.0%	0.0%	11,288	1.0%	0.02%
Subtotal		1,561,808	100.0%	1.9%	1,119,424	100.0%	2.4%
Total		82,809,784		100.0%	45,801,048		100.0%

Table 2 Equity Index Futures Monthly Open Interest

	Trading	Dec-18			Dec-17		
	Exchange	# contracts	% of subtotal	% of total	# contracts	% of subtotal	% of total
Broad-based U.S. Equity Index							
E-MINI S&P500	CME	2,694,397	69.8%	65.8%	3,014,101	69.8%	66.5%
E-MINI RUSSELL 2000	CME	471,020	12.2%	11.5%	588,495	13.6%	13.0%
S&P 500	CME	251,104	6.5%	6.1%	82,695	1.9%	1.8%
E-MINI NASDAQ 100	CME	208,461	5.4%	5.1%	280,720	6.5%	6.2%
E-mini ($5) Dow	CBOT	73,850	1.9%	1.8%	146,087	3.4%	3.2%
E-MINI MIDCAP	CME	69,805	1.8%	1.7%	90,498	2.1%	2.0%
S&P 500/VALUE	CME	64,970	1.7%	1.6%	93,090	2.2%	2.1%
E-MINI RUSSELL 1000 VALUE	CME	18,895	0.5%	0.5%	10,350	0.2%	0.2%
E-MINI RUSSELL 1000	CME	7,644	0.2%	0.2%	7,141	0.2%	0.2%
E-MINI RUSSELL 1000 GROWTH	CME	2,678	0.1%	0.1%	3,815	0.1%	0.1%
S&P 500/GI	CME	10	0.0%	0.0%	13	0.0%	0.0%
Subtotal		3,862,834	100.0%	94.3%	4,317,005	100.0%	95.3%
Sector-based U.S. Equity Index							
DJ US REAL ESTATE	CBOT	32,375	21.3%	0.8%	17,918	14.9%	0.4%
S&P UTILITIES SECTOR	CME	18,940	12.5%	0.5%	0	0.0%	0.0%
S&P HEALTH CARE SECTOR	CME	17,465	11.5%	0.4%	7,227	6.0%	0.2%
S&P FINANCIAL SECTOR	CME	16,003	10.5%	0.4%	34,087	28.4%	0.8%
S&P CONSUMER STAPLES SECT	CME	14,599	9.6%	0.4%	20,018	16.7%	0.4%
S&P INDUSTRIAL SECTOR	CME	13,978	9.2%	0.3%	4,058	3.4%	0.1%
S&P ENERGY SECTOR	CME	11,865	7.8%	0.3%	10,287	8.6%	0.2%
S&P TECHNOLOGY SECTOR	CME	8,537	5.6%	0.2%	11,131	9.3%	0.2%
E-MINI S&P REAL ESTATE SELE	CME	5,938	3.9%	0.1%	4,506	3.8%	0.1%
S&P MATERIALS SECTOR	CME	5,442	3.6%	0.1%	5,321	4.4%	0.1%
BITCOIN FUTURES	CME	3,708	2.4%	0.1%	728	0.6%	0.0%
S&P CONSUMER DSCRTNRY SE	CME	2,891	1.9%	0.1%	4,531	3.8%	0.1%
NASDAQ BIOTECH	CME	0	0.0%	0.0%	99	0.1%	0.0%
Subtotal		151,741	100.0%	3.7%	119,911	100.0%	2.6%
Foreign Equity Index							
NIKKEI 225 (YEN) STOCK	CME	61,919	74.3%	1.5%	53,534	56.1%	1.2%
NIKKEI 225 ($) STOCK	CME	20,465	24.6%	0.5%	40,638	42.6%	0.9%
E-mini FTSE China 50	CME	343	0.4%	0.0%	182	0.2%	0.00%
YEN DENOMINATED TOPIX	CME	274	0.3%	0.0%	0	0.0%	0.0%
IBOVESPA INDEX	CME	195	0.2%	0.0%	388	0.4%	0.0%
FTSE Emerging	CME	56	0.1%	0.0%	5	0.0%	0.0%
FT-SE 100	CME	29	0.0%	0.0%	44	0.0%	0.001%
E-mini FTSE 100 (USD)	CME	2	0.0%	0.0%	1	0.0%	0.0%
NIFTY 50	CME	0	0.0%	0.0%	574	0.6%	0.01%
Subtotal		83,283	100.0%	2.0%	95,366	100.0%	2.1%
Total		4,097,858		100.0%	4,532,282		100.0%

B. Financial Intermediaries in the Equity Index Futures Market

An intermediary is a person who acts on behalf of another person in connection with investing in financial products such as futures. Intermediaries, as defined in the Commodity Exchange Act[16] and by the Commodities Futures Trading Commission, include: futures commission merchants, introducing brokers, commodity pool operators, commodity trading advisors, and floor brokers.

A futures commission merchant solicits or accepts orders for trading on an exchange. In connection with such solicitation or acceptance of orders, the futures commission merchant accepts money, securities, or property (or extends credit in lieu thereof) for securing the performance of any contracts that may result.[17] An introducing broker also solicits or accepts orders, but is not allowed to accept any money, securities, or property (or extend credit in lieu thereof) in conjunction with the solicitation or acceptance.[18] An introducing broker is typically a small brokerage firm that deals directly with clients, but without access to trade execution and back office work. The introducing broker executes trades through the facilities of a futures commission merchant and pays a fee for this usage. The majority of a futures commission merchant's business comes from introducing brokers.[19] A commodity pool operator operates a fund that invests in futures and options. A commodity trading advisor advises others, either directly or indirectly through research reports or other publications, as to the value of any futures or options contract or the advisability of trading in it.[20]

[16] Commodity Exchange Act, 7 U.S.C. §§ 1 – 26 (2015).
[17] *See Intermediaries*, U.S. COMMODITY FUTURES TRADING COMMISSION, https://www.cftc.gov/IndustryOversight/Intermediaries/index.htm.
[18] *See Id*.
[19] *See* Melinda H. Schramm, *The Complete IB Handbook*, (2018), https://www.cmegroup.com/education/files/IBhandbook.pdf.
[20] *See supra* note 17.

A floor broker**,** also known as a pit broker, is a brokerage firm employee who executes orders on the floor of a stock or commodity exchange on behalf of clients for a fee.[21] A floor broker is different than a floor trader. Although floor traders also work on the floor of the exchange, they make trades as a principal for their own account.[22] At times, floor brokers also handle large volume trades on behalf of floor traders.

C. Common Usage in Hedging, Speculation, and Arbitrage

Hedging for Stock Holdings: Since the value of an equity index futures contract derives from the value of the underlying index, it is an effective tool for hedging risky positions in the constituent stocks of the underlying index. The CME illustrates this hedging through the following example: assume a portfolio manager is holding $10 million worth of stocks of a large number of U.S. companies included in the S&P 500 index. He is concerned about a possible market-wide downturn, and would like to reduce his loss in case that happens. A short position in the E-mini S&P 500 index futures serves that purpose. Ideally, he would like the hedging position to completely offset his portfolio loss, but in reality hedging incurs costs, so a complete hedge is seldom economically efficient. Therefore, he designs a hedging strategy that reduces the portfolio loss by 10%. At the moment of his hedging decision, the E-mini S&P 500 futures contracts are priced at $2,185, and the value of one contract is this price multiplied by $50, i.e., $109,250. The portfolio manager pays a fraction of the contract value equal to the initial margin[23] upon entering the futures position. Since the goal is to offset any loss on $1 million of portfolio with gain on the

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[21] *See CFTC Glossary*, U.S. COMMODITY FUTURES TRADING COMMISSION, https://www.cftc.gov/ConsumerProtection/EducationCenter/CFTCGlossary/glossary_f.html.
[22] *See Floor Trader (FT) Registration*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/registration-membership/who-has-to-register/ft.html.
[23] For discussions on initial margin, *see infra* p. 57.

equity index futures position, the portfolio manager sells roughly nine futures contracts (i.e., hedge ratio = $1 million/$109,250). Now suppose the U.S. stock market plummets and the S&P 500 index declines by 3% from 2,185 to 2,119.50 (i.e., 65.5 index points). The portfolio manager's stock holdings decline by 3% or $300,000, but his short position in futures profits by $29,475 (i.e., 65.5 x $50 per contract x 9 contracts). The net loss to the portfolio is $300,000 - $29,475. Therefore, the hedge reduces the portfolio loss by 10%.[24]

Hedging by Equity Swap Dealers: In an equity swap, two parties to the transaction agree to exchange their future cash flows periodically during the life of the swap. One leg of the swap is linked to the return of a portfolio of stocks; the other leg is linked to a rate of return on a predetermined notional value, with the rate of return either fixed or floating. For example, a fund manager manages a portfolio of stocks to track the return on the S&P 500 index. The fund manager has a bearish outlook for the U.S. stock market and wants to avoid the anticipated loss without selling all or substantially all his stocks. He can accomplish this by entering into an equity swap with another party, which usually is a financial institution active in the equity swap market as a dealer. [25]

Hypothetically the terms of the swap can be set in the following way: The notional value of the swap is $100 million. If the return on the S&P 500 index is positive, the fund manager pays the returns on S&P 500 index to the swap dealer, and the swap dealer pays 5% annually of the notional value to the portfolio manager. If the return on the S&P 500 index is negative, the fund manager does not pay anything to the dealer, but the dealer is required to pay the fund manager

[24] *E.g.*, *Hedging and Risk Management for Equity Index Futures*, CME GROUP, https://institute.cmegroup.com/modules/hedging-and-risk-management-for-equity-index-futures.
[25] *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-17-607, FINANCIAL REGULATION, PERSPECTIVES ON THE SWAP PUSH-OUT RULES (Sept. 2017), https://www.gao.gov/assets/690/686903.pdf ("Equity swaps are transactions in which payments referenced to the return on a certain equity index (e.g., S&P 500) or an equity and an interest rate are exchanged and are usually based on a fixed notional amount. End-users of equity swaps include money managers, hedge funds, insurance companies, corporations, and finance companies.").

the loss on the index plus 5% of the notional value. This exchange of payments occurs every six months during the term of the swap. An equity swap converts a stock portfolio into a fixed income position because the portfolio manager earns 5% annualized return on the notional value regardless of the performance of the stock market. The swap dealer earns a fee for providing this service.

Assume that when the parties make this equity swap arrangement, the S&P 500 index is at 3000, and that six months later the index rises to 3210 (i.e., a 7% increase). The portfolio manager pays the swap dealer $7 million (i.e., $100 million x 7%), and the swap dealer pays the portfolio manager $2.5 million (i.e., $100 million x 5%/2).[26] If the index declines to 2790 (i.e., a 7% decrease), the portfolio manager pays nothing to the swap dealer; rather the swap dealer pays the portfolio manager $7 million to cover the loss, plus the regular $2.5 million.

The swap dealer hedges his stock market risk by taking a short position in equity index futures. Given that the index level is 3000, which gives a contract value of $150,000 (i.e., 3000 x $50), the swap dealer sells roughly 667 (i.e., $100 million/$150,000) E-mini S&P 500 futures contracts. When the index declines to 2790, the futures position gains roughly $7 million (i.e., (3,000 – 2,790) x $50 x 667). This gain offsets the swap dealer's obligation to cover the portfolio manager's stock market losses under the equity swap arrangement.

Speculation: Market participants use equity index futures to make directional bets on the overall performance of the stock market. The advantage of speculating through the futures market is convenience because it eliminates the need to trade each constituent stock in the index and requires an initial capital outlay that is just a fraction of trading the constituent stocks. Equity index futures are traded at an initial margin when positions are first entered, but are subject to daily (and sometimes intraday) marked-to-market by the trading exchanges.[27] For example, an investor who

[26] The 5% rate is annualized rate, so the six-month rate is 2.5%.
[27] For discussions on initial margin, *see infra* p. 57.

buys five contracts of E-mini S&P 500 futures at the index level of 3000 incurs a position value of $750,000 (i.e., 3000 x $50 x 5), but he is required to pay an initial margin of $6,160 per contract for a total of $30,800. [28] That is only 4.1% of the contract value. However, the investor would be required to deposit more money with the trading exchange on the next day if the S&P 500 index closes at below 3000.

Index Arbitrage: The fair value of an equity index futures contract is based on the aggregate values of the stocks included in the index, taking into account any interest to be earned[29] and dividend foregone for holding the futures position rather than the underlying stocks. Specifically, the fair value is given by the formula Fair Value = Aggregated Stock Values x (1+ r) - Dividend, where r is the interest rate during the term of the futures contract. Transaction costs (e.g., brokerage fees, exchange fees) are also factored in the consideration. If the prices of the underlying stocks and the futures deviate from the above relationship, arbitrage opportunities exist to permit risk-free profits. For example, a bit of bad news infiltrates the market and is instantaneously reflected in the E-mini S&P 500 futures market because of the efficiency of the futures market in the price discovery. However, due to delayed or infrequent trading in some stocks in the S&P 500 index, some stocks' prices have not reflected the negative news. The stocks are overpriced relative to the futures. An arbitrageur can take advantage of this temporary mispricing by selling the stocks[30] (i.e., the overpriced leg) and buying the futures (i.e., the normal or underpriced leg), thereby locking in a profit. He can consummate the arbitrage without owning any of the S&P 500 stocks

[28] *See Futures Margin Rates*, TRADESTATION, https://www.tradestation.com/pricing/futures-margin-requirements/.
[29] A position in the index futures allows the trader to closely track the performance of the index without taking any position in the constituent stocks. Since the futures position requires only the initial margin upfront, it requires less capital than trading the constituent stocks. The money saved can be deposited in a bank to earn interest under the prevailing rate.
[30] Traders can also use arbitrage strategies on exchange-traded funds (ETFs) that track the index in the same way. Because most ETFs do not trade as actively as major stock index futures, chances for arbitrage are plentiful.

in the first place, as long as he is able to borrow the stocks from other people. He can use part of the proceeds from selling the stocks to finance the initial margin payment for his futures contracts, the stock borrowing costs and transaction costs. So, he deploys no significant upfront capital. Subsequently when the stock prices fully reflect the bad news and decline, he enters the market to buy back the stocks at lower prices and return the stocks to the person who lent them. In the situation of stock prices moving up against the arbitrageur's prediction, forcing him to buy back the shares from the market at a higher cost, the extra cost is offset dollar-for-dollar by his gain from holding the long index futures contracts.

Index arbitrage is typically carried out by large financial institutions. They are equipped with sophisticated computer trading programs capable of detecting minuscule price discrepancies and automatically placing large quantities of trades simultaneously in the stock market and the futures market. Arbitrage increases the demand for the relatively underpriced financial products (whether it is the futures or the underlying stocks) and the supply for the relatively overpriced products, thereby aligning the prices back to their equilibrium levels.

D. Contract Specifications

Equity index futures are standardized instruments with key terms such as contract values, expiration months, minimum price ticks, delivery methods, and settlement prices fixed by the trading exchange.

Contract Value: The value of a futures contact is the price at which a trade is executed times a multiple set by the exchange. For S&P 500 futures, a contract value is $250 times the index point.[31] For E-mini S&P 500 futures, the contract value is $50 times the index point.[32] If the S&P 500 futures is trading at 3000, the value of one contract is $750,000 for the S&P 500 futures and $150,000 for the E-mini. [33]

Contract Months: The contract month is also called the expiration month. It indicates the month in which a futures contract expires. For example, a June 2018 S&P 500 futures is a futures contract based on the S&P 500 index that expires in June 2018 (specifically, the third Friday in June). Major U.S. broad-based equity index futures contracts typically have March quarterly expiration cycles with contracts on the nearest 4 – 5 quarters available for trading. For example, in February 2018, traders can trade the E-mini S&P 500 futures that expire in March, June, September, and December of 2018, as well as March of 2019.[34]

Minimum Tick: The exchange on which a futures contract is traded sets the minimum intervals (or ticks) at which prices can move, either up or down. For example, the minimum tick for the S&P 500 futures contract is set by the CME to be $0.10 index point, which means prices quoted on this contract increase or decrease by an increment of $0.10 or its whole multiples. Since the contract value is the price multiplied by $250 for S&P 500 futures, the minimum tick has a value of $25. A calendar spread trade, which involves simultaneous buying and selling the same futures contract but with different expiration months, has a lower minimum tick of $0.05 index

[31] *See S&P 500 Futures Contract Specs*, CME GROUP, http://www.cmegroup.com/trading/equity-index/us-index/sandp-500_contract_specifications.html?ds_medium=cpc&ds_medium=cpc&gclid=CjwKCAjw3cPYBRB7EiwAsrc-uUj3zdp93Mvb7X-ShvqGtBr9rInmBK5ncx35wCoOinQ3C3OuyjHZzBoCJiwQAvD_BwE&gclsrc=aw.ds/.
[32] *Id*.
[33] *Introduction to Equity Index Products, Discover Equity Index Notional Value & Price*, CME GROUP, https://institute.cmegroup.com/courses/introduction-to-equity-index-products/modules/discover-equity-index-notional-value-and-price.html/.
[34] *See E-mini S&P 500 Future Quotes, supra*. note 4.

point (equal to $12.5 per spread).[35] There is empirical evidence showing that a lower minimum tick reduces trading costs by narrowing the bid-ask spread.[36]

Daily Settlement Price: After establishing a long or short position, market participants are subject to a normal "mark-to-market" (MTM) on a daily, and often intraday, basis until the final settlement of the contract at expiration. Daily losses are collected by the exchange to be forwarded to the winning side of the trade. For example, if an investor buys one June 2019 E-mini S&P 500 futures contract at 3000, and the price drops to 2990 at the end of the trading day, he is required to pay the exchange $500 (i.e., $50 x 10) for this loss. The exchange will forward this payment to an investor who has sold the same contract. The market price used in the daily mark-to-market typically is the volume weighted average price during a short time interval close to the end of the trading day. If the contract is not actively traded during this time interval, the exchange may in its discretion use the midpoint of the bid and ask or set a daily settlement price if the prescribed methods do not reflect the market condition.[37]

Final Settlement: Settlement of equity index futures contracts does not require the delivery of the constituent stocks included in the index. Delivering actual stocks would be quite a cumbersome process to the extent that the index may have hundreds or even thousands of

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[35] Chicago Mercantile Exchange, CME RULEBOOK, ch. 351 (2016) [hereinafter CME RULEBOOK], https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/IV/350/351/351.pdf/.
("[Rule] 35102.C. Price Increments: Bids and offers shall be quoted in Index points. The minimum price increment shall be 0.10 Index points, equal to $25.00 per contract, except for intermonth spreads executed pursuant to Rule 542.A. for which the minimum price increment shall be 0.05 Index points, equal to $12.50 per intermonth spread.")

[36] Charles J. Cuny, *Why Derivatives on Derivatives? The Case of Spread Futures*, 15 J. of Fin. Intermediation 132-159 (Jan. 2006), *and* Alexander Kurov & Tatyana Zabotina, *Is it Time to Reduce Minimum Tick Sizes of the E-Mini Futures?* 25 J. of Futures Mkts. 79, 79 – 104 (Jan. 2005).

[37] For example, for the nearest expiration contract month, CME uses a volume weighted average price during the time of 15:14:30 – 15:15:00 Central Time; if no trades occur during this period, CME uses the mid-point of the bid and ask during this period; if no trade nor bid – ask occurs during this period, CME uses the underlying index level and the cost-of-carry formula to determine the price. *See Electronic Platform Information Console, Standard and Poor's 500 futures*, CME GROUP, https://www.cmegroup.com/confluence/display/EPICSANDBOX/Standard+and+Poors+500+Futures. *See also* CME RULEBOOK *supra* note 35 at ch. 8, r. 813, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

constituents. Instead equity index futures are cash settled. Positions that have lost value from the previous mark-to-market pay the loss to the exchange, and positions that have gained in value receive payment from the exchange.[38]

The final settlement price is a special opening quotation of the index determined on the third Friday of the contract's expiration month. It is based on the opening prices of the constituent stocks; or if a stock does not trade on the final settlement day, the last sale price of such stock.[39] If an abnormal settlement price results from this methodology, the exchange has the discretion to set a settlement price that is reflective of market conditions. Settlement price cannot be adjusted after ten business days for any reason, not even for a calculation error incurred in the process of determining the settlement price.[40]

III. Regulatory Framework

A. Overall Regulatory Structure

Regulatory Authorities: The Commodity Futures Trading Commission (CFTC) is the federal regulatory agency responsible for regulating the equity index futures market. It was established in 1974 by Congress through the enactment of the Commodity Futures Trading Commission Act.[41] The agency has authority to regulate the commodity futures markets, including the futures on agricultural products, energy (such as crude oil, heating oil and gasoline), metals

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[38] CME RULEBOOK *supra* note 35 at ch. 351, r. 35103, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/IV/350/351/351.pdf.

[39] *Id.* at ch. 351, r. 35103.A., https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/IV/350/351/351.pdf. *See also Dow Jones Futures*, CME GROUP, https://www.cmegroup.com/confluence/display/EPICSANDBOX/Dow+Jones+Futures for CBOT traded Dow ($5) Mini Futures final settlement price determination.

[40] CME RULEBOOK *supra* note 35 at ch. 8, r. 812, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

[41] Commodity Futures Trading Commission Act of 1974**,** Pub. L. No. 93-463, 88 Stat. 1389 (1974).

(such as copper, gold, and silver), and financial products (such as interest rates, equity indices and foreign currencies).[42] In the aftermath of the 2008 financial crisis, which was caused in part by the unregulated $400 trillion swaps market, the CFTC's regulatory authority was extended to that market as well. The CFTC has the authority to create new regulations and impose civil penalties for their violations.[43]

The Commodity Futures Trading Commission Act also authorized the creation of the futures industry's self-regulatory organization - the National Futures Association (NFA). The NFA began operations in 1982. Every person conducting business on U.S. futures exchanges must register with the NFA. As of June 30, 2019, the NFA has 3,529 members and 47,906 associates.[44] The NFA has the authority to make rules to implement the best practices of the futures industry. These rules are subject to the CFTC's approval.[45] The NFA also has the authority to take disciplinary actions against any firm or individual member who violates its rules.[46] These actions range from warning letters for minor rule infractions to formal complaints. Penalties resulting from complaints include expulsion, suspension, and fines up to $250,000 per violation.[47] The NFA frequently collaborates with the CFTC, the FBI, the exchanges, and other law enforcement agencies in the course of prosecutions.[48]

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[42] *See Mission & Responsibilities: CFTC Responsibilities*, U.S. COMMODITY FUTURES TRADING COMMISSION, https://www.cftc.gov/About/MissionResponsibilities/index.htm.
[43] *Id.*
[44] *See NFA Membership Totals: as of June 30, 2019*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/registration-membership/membership-and-directories.html.
[45] *See Rulemaking*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/about/rulemaking.html.
[46] *See Enforcement and Registration Actions*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/news/EnforceRegActionsSimple.aspx.
[47] *See About NFA*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/investors/investor-resources/files/intro-to-NFA.pdf.
[48] *Id.*

Applicable Statutes: The Commodity Exchange Act of 1936 (CEA)[49] establishes the statutory framework under which the CFTC operates to regulate the futures markets. The CEA has been amended multiple times to incorporate the Commodity Futures Trading Commission Act of 1974,[50] the Commodity Futures Modernization Act of 2000,[51] and the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010.[52] The 1974 amendment created the CFTC, the 2000 amendment removed the restrictions on trading single stock futures, and the Dodd-Frank was an overhaul of the financial market regulation with a focus on swaps.

CFTC Regulation: The mandates of the CEA are implemented through detailed rules made by the CFTC, the NFA, and the trading exchanges. The CFTC rules consist of forty parts regulating a wide range of issues, from mandatory registration, to periodic reporting, to order entries, to disciplinary proceedings. [53]

NFA Rules: The NFA, being the self-regulatory organization of the futures industry, has also established an extensive set of rules to implement the CEA and CFTC regulations, as well as the best practices that the NFA has identified. The rules include detailed requirements on members' financial strengths, membership registration process, and dispute resolutions.[54]

Exchange Rules: The CME and the CBOT, where most equity index futures are traded in the U.S., have their own set of rules that must be followed by their members. Since both exchanges belong to the CME Group, their rules are substantially harmonized to provide parallel structures, rule numbering, as well as language where possible.[55] These rules regulate key aspects of trading,

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[49] Commodity Exchange Act, *supra* note 16.
[50] Commodity Futures Trading Commission Act of 1974, *supra* note 41.
[51] H.R. 5660, 106th Cong. (1st Sess. 2001).
[52] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111–203, 124 Stat. 1376 (2010).
[53] *See* Commodity Futures Trading Commission, 17 C.F.R. ch. 1 (2019).
[54] *See Rulebook Table of Contents,* NATIONAL FUTURES ASSOCIATION, t https://www.nfa.futures.org/rulebook/index.aspx.
[55] *See Rulebooks, Exchange-Specific Rules for CME, CBOT, NYMEX, and COMEX*, CME GROUP, https://www.cmegroup.com/market-regulation/rulebook.html.

clearing, client relationships, surveillance, enforcement, dispute resolution, and international cooperation.[56]

B. The Registration Requirement

CFTC Rules on Registration: CFTC requires registration before any person can function as a futures commission merchant, introducing broker, commodity trading advisor, or commodity pool operator; unless the person qualifies for an exemption.[57] The CFTC has delegated the authority to administer the registration to the NFA.[58] Registration is effective until revoked by regulatory authorities or withdrawn by the registrant. An introducing broker's registration also ends within thirty days of the termination of the guarantee agreement with the sponsoring futures commission merchant.[59]

Exemptions to registration apply to brokerage firms handling transactions only for proprietary persons (such as the firm itself, affiliates, officers, or directors). Non-U.S. firms with only non-U.S. customers are also exempt from registration, if they submits all trades for clearing to futures commission merchants.[60]

NFA Rules on Registration: The NFA determines an applicant's fitness to engage in business as a futures professional in the registration process. Registration will be granted only if

[56] For a list of the CME rules, *see* CME Rulebook, *supra* note 35, https://www.cmegroup.com/rulebook/CME/. For a list of the CBOT rules, *see* Board of Trade of the City of Chicago, CBOT Rulebook (2013), https://www.cmegroup.com/rulebook/CBOT/.

[57] 17 C.F.R. § 3.12, para.(a) (2019). ("It shall be unlawful for any person to be associated with a futures commission merchant, retail foreign exchange dealer, introducing broker, commodity trading advisor, commodity pool operator or leverage transaction merchant as an associated person unless that person shall have registered under the Act as an associated person of that sponsoring futures commission merchant, retail foreign exchange dealer, introducing broker, commodity trading advisor, commodity pool operator or leverage transaction merchant in accordance with the procedures in paragraphs (c), (d), (f), or (i), of this section or is exempt from such registration pursuant to paragraph (h) of this section.")

[58] 17 CFR §3.2, para. (a) (2019).

[59] 17 CFR §3.12, *supra* note 59 at para. (b).

[60] *Id.*

the applicant meets financial, operational, interior control, and professional proficiency requirements.[61] Financially, a futures commission merchant must have an Adjusted Net Capital[62] no less than $1 million or 8% of the firm's performance bond requirement for customers,[63] whichever is greater. Moreover, if the Adjusted Net Capital exceeds the minimum but is less than $2 million, the futures commission merchant is required to have at least $6,000 for each remote operating location.[64] To become an introducing broker, the applicant's Adjusted Net Capital must be no less than $45,000, and at least $6,000 for each office operated by the applicant.[65] For a Leverage Transaction Merchant, defined as a person who can trade commodities through margin accounts under the CEA,[66] the Adjusted Net Capital requirement is $20 million, plus 5% of all liabilities owed to leverage customers.[67] Futures commission merchants and introducing brokers must file a financial report with the NFA every month and every six months, respectively.[68] In addition, futures commission merchants and introducing brokers must submit a copy to the NFA

[61] *See Registration and Membership*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/NFA-registration/index.html.
[62] Adjusted Net Capital is calculated as Current Assets – Liabilities – Charges against Capital. *See Financial Requirements FAQs*, NATIONAL FUTURES EXCHANGE, https://www.nfa.futures.org/faqs/members/financial-requirements.html. See also 17 C.F.R. § 1.17, para. (c) (2019) for details on how to calculate Adjusted Net Capital.
[63] For discussions on performance bond, *see infra* p. 57.
[64] *See* NATIONAL FUTURES EXCHANGE, NFA RULEBOOK, ch. Financial Requirements § 1 Futures Commission Merchant Financial Requirements (2016) [hereinafter NFA Rulebook], https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%201&Section=7.
[65] *See Id.* at ch. Financial Requirements, § 5 Introducing Broker Financial Requirements, https://www.nfa.futures.org/rulebook/rules.aspx?Section=7.
[66] *See* 11 U.S.C. §761, para. 13 – 4 (2019) ('"leverage transaction means' agreement that is subject to regulation under section 19 of the Commodity Exchange Act, and that is commonly known to the commodities trade as a margin account, margin contract, leverage account, or leverage contract; 'leverage transaction merchant' means person in the business of engaging in leverage transactions").
[67] *See* NFA Rulebook supra note 64 at ch. Financial Requirements, § 6 Leverage Transaction Merchant Financial and Reporting Requirements, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%206&Section=7.
[68] *See Id.* at ch. Financial Requirements, §§ 1, 5., https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%201&Section=7, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%205&Section=7.

of any report that they file with the CFTC or any other regulatory authority.[69] Additional information must also be promptly provided to the NFA upon its request.[70]

For internal control, the NFA requires all applicants to have in place a business continuity and disaster recovery plan for emergency situations.[71] Applicants must also have an anti-money laundering program with established policies, procedures, and designated compliance officers overseeing its daily operation.[72]

To insure proficiency, individuals applying for registration as an Associated Person[73] of a futures commission merchant must have passed National Commodity Futures Examination (Series 3) on a date which is no more than two years prior to the application. Alternatively, the applicant may show that there has been no period of two consecutive years during which the applicant has not been either registered as a floor broker, Associated Person, or principal of a future commission merchant.[74] The passing of Series 31 or Series 33 test can be used in lieu of Series 3 to meet the proficiency requirement.[75] An applicant who is not a U.S. person must also agree to make its books and records available for inspection by the NFA and other U.S. regulatory authorities for purposes of determining compliance with the U.S. regulation. The failure to produce books and records may

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[69] *Id*.

[70] *See Id.* at ch. Financial Requirements, § 8 Information Requests, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%208&Section=7.

[71] *See Id.* at ch. Compliance Rules, pt. 2, r. 2-38 Business Continuity and Disaster Recovery Plan, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%202-38&Section=4.

[72] *See Id.* at ch. Compliance Rules, pt. 2, r. 2-9 Supervision, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%202-9&Section=4.

[73] *See Associated Person (AP) Registration*, NATIONAL FUTURES ASSOCIATION, https://www.nfa.futures.org/registration-membership/who-has-to-register/ap.html ("An associated person (AP) is an individual who solicits orders, customers or customer funds (or who supervises persons so engaged) on behalf of a futures commission merchant (FCM), retail foreign exchange dealer (RFED), introducing broker (IB), commodity trading advisor (CTA) or commodity pool operator (CPO). An AP is, in effect, anyone who is a salesperson or who supervises salespersons for any of these categories of individuals or firms.").

[74] See NFA Rulebook *supra* note 64, ch. Registration Rules, pt. 400, r. 401. Qualification Testing Requirement, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%20401&Section=8.

[75] *Id.*

be grounds for disciplinary sanctions, including the revocation of registration.[76] The foreign applicant must also agree to provide to the NFA copies of any audits or disciplinary reports related to the applicant for registration with any non-U.S. regulatory authority, and any required notices that the applicant provides to any non-U.S. regulatory authority.[77] The NFA may refuse to register or register conditionally any application.[78]

The NFA also requires each registered member to file an annual registration update.[79] An NFA registration may be suspended, terminated, or restricted in scope for cause and with due notice.[80] The process starts with the NFA issuing a disqualification notice to the registrant that states the basis for disqualification. The registrant may challenge in writing the decision within twenty days of the service of the notice. Failure to submit a written challenge results in a waiver of the right to challenge the accuracy of the statement of facts upon which the NFA's suspension or termination decision is based.[81] A registrant subject to disqualification is entitled to a hearing,[82] and the NFA must prove its case by preponderance of evidence.[83]

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[76] *Id.* at ch. Registration Rules, pt. 800, r. 802. Certifications, Acknowledgements, Agreements And Representations, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%20802&Section=8.

[77] *Id.*

[78] *See Id.* at ch. Registration Rules, pt. 500, r. 501. Authority To Deny, Condition, Suspend and Revoke Registration, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%20501&Section=8.

[79] *See Id.* at ch. Registration Rules, pt. 200, r. 204 Registration Of Futures Commission Merchants, Notice Futures Commission Merchants, Retail Foreign Exchange Dealers, Floor Trader Firms, Introducing Brokers, Notice Introducing Brokers, Commodity Pool Operators, Commodity Trading Advisors and Leverage Transaction Merchants and Confirmation of Exemption From Registration Pursuant to Commission Regulation 30.5, para. (d)(1), https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%20204&Section=8.

[80] *See Id.* at ch. Compliance Rules, pt. 3, r. 3-15. Member or Associate Responsibility Actions, para. (a), https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%203-15&Section=4. *See also Id.* at ch. Registration Rules, pt. 500, r. 504 Procedures Governing Applicants and Registrants Disqualified from Registration Under Section 8a(2), 8a(3) or 8a(4) of the Act, para. (a), https://www.nfa.futures.org/rulebook/rules.aspx?Section=8&RuleID=RULE%20504.

[81] *Id.* at ch. Registration Rules, pt. 500, r. 504. Procedures Governing Applicants and Registrants Disqualified from Registration Under Section 8a(2), 8a(3) Or 8a(4) of the Act, para. (b), https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=RULE%20504&Section=8.

[82] *Id.* at ch. Registration Rules, pt. 500, r. 504. Procedures Governing Applicants and Registrants Disqualified from Registration Under Section 8a(2), 8a(3) or 8a(4) of the Act, https://www.nfa.futures.org/rulebook/rules.aspx?Section=8&RuleID=RULE%20504.

[83] *Id*. at ch. Registration Rules, pt. 500, r. 507. Decision of Membership Committee or a Designated Subcommittee, para. (a), https://www.nfa.futures.org/rulebook/rules.aspx?Section=8&RuleID=RULE%20507.

CME Membership: the CME is the exchange where the vast majority of trading in equity index futures takes place. It has three types of membership: (1) clearing, (2) corporate, and (3) individual. Clearing members are members of CME Clearing, which is the clearing house for trades executed on CME. It functions as the counterparty to each trade so as to minimize credit risks from defaults by trading counterparties.[84] Clearing members maintain accounts at the clearing house for purpose of settling trades they have executed for themselves or their customers. Trades of a non-clearing member must be settled through the account of a clearing member. [85] No member can trade on CME's facilities unless it is a clearing member or qualified by a clearing member that is willing to carry the trades for the non-member.[86] CME membership can be purchased for one lump sum amount or subscribed on a monthly basis at a subscription fee.[87]

To obtain membership at the CME, applicants must meet the exchange's financial, operational, and internal control requirements. That means clearing members must deposit at least $500,000 to the clearing house's Guaranty Fund.[88] The minimum amount is subject to change as CME Clearing deems appropriate.[89] In addition, clearing members are required to maintain an Adjusted Net Capital[90] of at least $5 million in order to clear futures products.[91] Clearing members must submit to the exchange a monthly financial report and yearly audited financial statements.[92]

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[84] *See Clearing*, CME GROUP, http://www.cmegroup.com/clearing.html.
[85] *Id.*
[86] *See* CME Rulebook *supra* note 35 at ch. 5, r. 511 Qualified Traders and Brokers, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[87] *See CME Corporate Membership*, CME GROUP, at *Membership Interest Sales*, and *Reported Lease Information – New Leases*, https://www.cmegroup.com/company/membership/corporate/cme.html#pricing.
[88] For discussions on the Guaranty Fund, *see infra* p. 68.
[89] *See* "Summary of Requirements for CME, CBOT, NYMEX and COMEX Clearing Membership And OTC Derivatives Clearing Membership (January 2019)", 5, CME Group, http://www.cmegroup.com/company/membership/files/summary-cme-group-clearing-membership-requirements.pdf
[90] For the definition of Adjusted Net Capital, *see supra* note 62.
[91] *See supra* note 89.
[92] *See* CME Rulebook *supra* note 35, ch. 9, r. 970, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

Clearing members that are banks must have Tier One Banking Capital[93] of at least $5 billion.[94] A clearing member must notify the exchange timely when its capital falls below the requirement, changes its fiscal year or a public accountant.[95] In addition, a clearing member must report within two business days if its Adjusted Net Capital falls by 20% or more.[96] Clearing members that are banks must also file financial reports with the banking regulator at least on a quarterly basis.[97] The CME can impose additional financial and operational requirements on clearing members.[98] A clearing member's status can be suspended or revoked if it fails to meet the financial requirements or furnish a statement to the exchange upon the latter's request.[99]

CME Clearing members are required to have written policies on risk management and account monitoring. The policies must provide for stress testing, intraday monitoring of risks, and monitoring of position limits upon trade entrance.[100] Clearing members must have a disaster recovery and continuity plan to ensure they are able to perform certain basic operational functions in the event of a significant internal or external interruption in their operations. CME requires the plan to, at the minimum, provide for the duplication of critical systems and information, periodic testing of disaster recovery, and designation of key personnel responsible for overseeing disaster

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[93] Under the Basel Accord, a bank's capital consists of Tier 1 capital and Tier 2 capital. Tier 1 capital is the core measure of a bank's financial strength from a regulator's point of view. It is the primary source of funds that a bank uses to continue servicing its customers. It consists of the most reliable and liquid assets of the bank. Tier 1 capital measures the strength of the bank in financial emergencies. In contrast, Tier 2 capital is a measure of a bank's financial strength with regard to the second most reliable forms of financial capital, from a regulator's point of view. *See Basel III definition of capital – Frequently asked questions*, BANK FOR INTERNATIONAL SETTLEMENTS (Sept. 2017), https://www.bis.org/bcbs/publ/d417.pdf.

[94] *See* CME Rulebook *supra* note 35 at ch. 9, r. 970, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[95] *Id.*

[96] *See Id.* at ch. 9, r. 972, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[97] *See* Requirements *supra* note 89 at p. 7.

[98] *See* CME Rulebook *supra* note 35, ch. 9, r. 970, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[99] *See Id*. at ch. 9, r. 974, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[100] *See Id.* at ch. 9, r. 982, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

recovery.[101] Like the NFA, the CME requires its members to establish anti-money laundering programs that comply with regulation and provide for means of independently testing for compliance.[102]

The CME requires a twenty-day waiting period between CME's receipt of a membership application and membership approval, so that anyone with a claim against the seller of the membership can notify the exchange of its claim.[103] CME has complete discretion in deciding whether or not to grant any membership. And the applicant, upon submitting the application, agrees not to seek any recourse against CME in the event his application is rejected.[104] A rejected applicant may appeal to the exchange's Membership Committee, whose decision on the matter is final.[105]

CME membership can only be sold in accordance with the exchange's rules. An intent to sell must be filed with the exchange. The transferee must have arranged for clearing and be qualified by a clearing member to trade through the account of the clearing member.[106] The CME terminates memberships upon the member's conviction of fraud or dishonest conduct by a regulatory authority.[107] The CME also revokes membership when a regulatory agency with authority over the member has requested for a sale of the membership at the CME, or when the member has defaulted on its obligations under the rules of the exchange.[108] A sale of membership triggered by the member's default can be redeemed if the member remedies the default within

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[101] *See Id*. at ch. 9, r. 983, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[102] *See Id.* at ch. 9, r. 981, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[103] *See Id.* at ch. 1, r. 105, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/1/1.pdf.
[104] *Id.*
[105] *See Id*. at ch. 1, r. 109, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/1/1.pdf.
[106] *See* CME Rulebook *supra* note 35 at ch. 1, r. 106.D, para. 8, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/1/1.pdf.
[107] *See Id.* at ch.1, r. 131, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/1/1.pdf.
[108] *See Id.* at ch.1, r. 133, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/1/1.pdf.

thirty days of the order of sale.[109] Upon the suspension or termination of a clearing member, the exchange may transfer all open positions of such member to another clearing member for the purpose of liquidating those positions.[110]

C. Regulations of Trading Activities

Trading Hours: Equity index futures contracts are traded almost around the clock. At the CME, trading for equity index futures occurs mostly on its electronic trading platform, GLOBEX, which operates from 6:00 PM to 5:00 PM (Eastern Standard Time) on the following day from Sunday to Friday each week.[111] Some contracts, such as the S&P 500 futures, are traded both on GLOBEX and at the pit through the traditional open outcry system. The trading pit operates from 9:30 AM – 4:15 PM (Eastern Standard Time) from Monday to Friday, except for U.S. national holidays.

Clearing Arrangement: In order to submit trades to the CME trading pit or GLOBEX, a trader must either be a clearing member of the exchange or have made clearing arrangements with a clearing member. A non-clearing member cannot place trades directly to the exchange's trading facilities, and must instead place trades through a clearing member.[112] Clearing members guarantee their clients' connectivity to GLOBEX, and must suspend or terminate a client's access if the continued access violates the law or exchange rules or otherwise jeopardizes the integrity of the

[109] *Id.*
[110] *Id.*
[111] Trading hours for specific equity index futures contracts can be obtained at *S&P Futures Contract Specs, supra* note 31.
[112] *See* CME Rulebook *supra* note 35 at ch. 5, r. 511, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

exchange.[113] In addition, a clearing member may voluntarily choose to stop carrying the trades of a non-clearing member without advance notice.[114]

Audit Trail and Record-Keeping Requirement: The CME issues a unique identification code to each terminal that has access to GLOBEX, so that any trade that is entered into the system can be traced back to the terminal (and its owner) that placed the trade.[115] Each trade must be time-stamped, and persistent violations of this requirement are a cause for disciplinary actions.[116] The audit trail requirement allows the exchange to reconstruct trading sequences for the purpose of enforcing regulations, such as prohibition against trading ahead of customers by brokers.[117]

CME members are required to keep full and complete records for all trades, including electronic records, together with all pertinent data and memoranda in accordance with CFTC Regulation 1.35.[118] The CFTC's record-keeping regulation applies to all futures commission merchants and introducing brokers that have generated more than $5 million in revenue in the aggregate in the past three years.[119] These financial intermediaries must keep records of "all orders (filled, unfilled, or canceled), trading cards, signature cards, street books, journals, ledgers, canceled checks, copies of confirmations, copies of statements of purchase and sale, and all other records, which have been prepared in the course of its business of dealing in commodity interests…"[120] Financial intermediaries must also document "all oral and written communications provided or received concerning quotes, solicitations, bids, offers, instructions, trading, and prices

[113] *Id.* at ch. 5, r. 574, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[114] *Id.* at ch. 5, r. 511 & 511. A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[115] *See Point of Order Origination*, CME GROUP, https://www.cmegroup.com/confluence/display/EPICSANDBOX/Point+of+Order+Origination.
[116] CME Rulebook *supra* note 35 at ch. 5, r. 536. F, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[117] *See* Jerry W. Markham, *Prohibited Floor Trading Activities Under the Commodity Exchange Act, 58 Fordham L. Rev. 1, 2* (1989).
[118] Records of commodity interest and related cash or forward transactions, 17 C.F.R. § 1.35 (2019).
[119] *Id.*
[120] *Id.* at para. (a)(1)(i).

that lead to the execution of a transaction in a commodity interest … whether transmitted by telephone, voicemail, facsimile, instant messaging, chat rooms, electronic mail, mobile device, or other digital or electronic media…”[121]

Written and electronic records must be retained for a minimum of five years in permanent form. Records of oral communications must be retained for a minimum of one year past the date on which the oral communication occurred.[122] For trades executed at the pit, all headset communications used in and around trading pits on the trading floor must be voice recorded.[123] All records required to be retained must at all times be open to inspection by the exchange and regulatory authorities.[124]

Exchange's Power to Deny Access to Trading System: The CME may deny, with immediate effect, any member's access to its trading system upon good faith determination that such denial is in the best interest of the integrity of the market.[125] The member may at any time petition the exchange to reconsider the denial based on materially changed circumstances. [126]

The Global Messaging Efficiency Program – Volume Ratio: To discourage excessive messaging and control expenses incurred by members for maintaining an efficient trading infrastructure, the CME has established a messaging efficiency criteria called the daily volume ratio. Each message entered into the exchange's trading system by a firm is assigned a messaging score. A member's volume ratio for any product group is calculated by dividing its aggregate

[121] *Id.* at para. (a)(1)(iii).
[122] CME Rulebook *supra* note 35 at ch. 5, r. 536.H, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[123] *Id.* at ch. 5, r. 536 G, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[124] *See Id.* at ch. 5, r. 536.H, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[125] *Id.* at ch. 4, r. 413.A., https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[126] *Id.* at ch. 4, r. 413.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.

messaging score for that product by its trading volume.[127] If the firm's volume ratio exceeds the CME's benchmark, the firm will pay a fine of $1000 per day for that product group.[128]

Open and Competitive Bidding Rules: To ensure trading occurs in an open and competitive environment, CME sets stringent rules on pre-arranged trades, intra-association trading, exchange for physicals, and block trades.

1) *Pre-Arranged Trades*: The CEA provides that it is unlawful for any person to enter into any transaction involving any commodity if the transaction is used to cause a non-bonda fide price to be reported and recorded.[129] To implement this statutory requirement, the CFTC requires that all bids and asks be entered into the exchange's trading system in an open and competitive manner.[130] To implement this requirement, the CME has established rules designed to safeguard against collusive transactions. With limited exceptions, CME rules require that all trading in CME contracts occur on or through the exchange's facilities. Transactions may take place only at the best price available on the open market at the time the trade occurs.[131] Cross trades, also called pre-arranged trades, are strictly regulated. Cross trades involve an agreement or understanding by multiple traders that when one party places an order into the trading system the other party or parties will take the opposite side of the order. These prior negotiated trades violate CME rules unless they satisfy stringent conditions ensuring that the order is made available to the open market first before the pre-arrangement can be executed. [132] These conditions are as follows:

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[127] *See CME GLOBEX Messaging Efficiency Program FAQ*, CME GROUP, http://www.cmegroup.com/GLOBEX/trade-on-cme-GLOBEX/messaging-efficiency-program.html.
[128] *Id.*
[129] Commodity Exchange Act, 74 P.L. 675, 49 Stat. 1491, 74 Cong. Ch. 545, §4c(a).
[130] Trading Standards, 17 C.F.R. pt. 155 (2019).
[131] CME Rulebook *supra* note 35 at ch. 5, r. 521, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[132] *See Id.* at ch. 5, rs. 520 & 539, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

First, if the order is for a customer, the customer must have authorized the broker to cross trade for his orders.[133] Cross trades can benefit clients because securities are moved among client accounts without having to expose the security to the market, thereby saving transaction costs that would otherwise be paid to financial intermediaries. However, these prior negotiated transactions also pose substantial risks to clients of having orders executed not at the market's best prices. For example, a customer instructs his broker to sell all his open positions in E-mini S&P 500 futures at market price. The best bid for the contract when the order reaches the broker is 2,700. If the broker crosses the order with the account of a favored client who has instructed the broker to buy the E-mini S&P 500 at 2,695, the selling order is deprived of an opportunity to be executed at a higher price. Due to the risk of conflict of interest, the CME requires the broker to obtain his clients' consent before he can cross trade his clients' orders.

Second, in order to guard against collusive trading, a trader may not disclose his orders before the orders have been submitted to the market. And, parties to cross-trades cannot disclose to non-parties the details of the terms of the trades.[134] Moreover, a broker cannot take advantage of customers' information conveyed during pre-trade communications by trading ahead of customers' orders.[135]

Third, there is a mandatory waiting period after one leg of a pre-arranged trade is entered into the market before it can be crossed with the pre-arranged counterparty. The waiting period varies from five to thirty seconds, depending on the type of the order.[136] This time gap provides

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[133] *Id.* at ch. 5, r. 539.C (1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[134] *See Id.* at ch. 5, r. 532, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[135] *See* Markham *supra* note 118 at 36 ("[T]he CFTC has apparently equated this desirable goal with a requirement that there be no discussion or 'shopping' of orders before their entry into the pit.")
[136] *See* CME Rulebook *supra* note 35 at ch. 5, r. 539.C. (3), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

other market participants an opportunity to act upon the order before the pre-arrangement takes effect.

Fourth, the CME prohibits cross trading at the open outcry pit. All open outcry transactions must be made openly and competitively in the pit. No bid or offer can be specified for acceptance by a particular trader in the pit. [137] When a broker is in possession of both buy and sell orders for different clients for the same product, he must first bid and offer by open outcry three times at the same price, stating the number of contracts. If neither the bid nor the offer is accepted by other brokers, the orders may be matched in the presence, and with the approval, of a designated CME official.[138] The broker making such transactions must clearly identify all such transactions on his trading card or other similar records made at the time of the execution. The broker must also report the transaction information to CME staff responsible for entering the prices of cross trades into the exchange's price reporting system. Failure to identify the transaction to the exchange's price reporting staff as a cross trade constitutes a violation of the exchange's rules.[139]

2) *Intra-Association Trading Restriction*: To further prevent collusive trading, traders for a brokerage firm are prohibited from sharing with one another profits or losses associated with their trading activities.[140] In addition, the exchange limits the volume that individuals within a brokerage firm may execute orders against one another to be 15% of the each individual's monthly trading volume. The volume that affiliated brokerage firms execute orders against each other is capped at 25% - 30% of the firm's monthly trading month.[141] Violation of the limits results in fines

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[137] *See Id.* at ch. 5, Rule 521, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[138] *Id.*
[139] *Id.* at ch. 5, r. 533, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[140] *Id.* at ch. 5, r. 515.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[141] *See* CHICAGO MERCANTILE EXCHANGE, *Market Regulation Advisory Notice*, CME RA 1602-2 1, 2 (Apr. 1, 2016), https://www.cmegroup.com/rulebook/files/cme-ra1401-2-rule-549.pdf.

ranging from $5000 to $10,000 for each incident.[142] In calculating these percentages, transactions between individuals and members within the same brokerage association are disregarded if at the time the trade is executed one member is the best and only bid, and the other member is the best and only offer. However, CME requires such market conditions to be documented in order for the intra-broker association trades to be excluded from the calculation of the volume limit.[143] Failure to meet the documentation requirement may result in disciplinary actions and fines levied on the traders or firm by the CME.[144]

3) *Exchange for Physical (EFP)*: In an EFP transaction involving index futures contracts, two parties exchange the futures contract with the underlying shares (or a related exchange traded fund) that have equivalent values. Each EFP has two constituent contracts: (1) a contract in the futures and (2) a contract in the underlying equity. One party is the buyer of futures and the seller of the underlying equity, and the other party takes the opposite positions. The trades are bilaterally negotiated off-exchange.[145] EFP transactions are permitted as exceptions to the regulatory requirement that all futures trades to be executed openly and competitively. However, all consummated EFP transactions must be reported to the exchange.[146]

Financial institutions use EFPs as a tool for inventory management, index arbitrage, and stock lending. For example, when an index arbitrage firm believes that the stocks underlying the

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142 CME Rulebook *supra* note 35 at ch. 5, r. 515.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
143 *See supra* note 141.
144 *See, e.g.,* CHICAGO MERCANTILE EXCHANGE, *CME Notice of Disciplinary Action*, CME-16-0369-BC-2 (June 22, 2017), https://www.cmegroup.com/notices/disciplinary/2017/06/CME-16-0369-BC-2-PHILLIP-MANSFIELD.html#pageNumber=1 (Brokerage firm was fined $77,500 by CME for failure to maintain documents as resulting from "best and only bids and offers", and for retroactive endorsement of trading documents as such after the firm had received notice that it exceeded the monthly limit of intra-association order executions.)
145 *See* INTERCONTINENTAL EXCHANGE INC. FUTURES U.S, *EFRP FAQs* (Nov. 20, 2017), https://www.theice.com/publicdocs/futures_us/EFRP_FAQ.pdf.
146 *See* CME GROUP, *Exchange for Physical (EFP) Transactions* (July 14, 2016), http://www.cmegroup.com/trading/equity-index/exchange-for-physical-efp-transactions.html.

S&P 500 futures are relatively underpriced, it simultaneously buys the stocks and sells the E-mini S&P 500 futures to lock in the profit. However, the firm is reluctant to carry the open futures positions on its books and thereby incur margin obligations. The firm can use EFPs to exchange its stock holdings for long positions in the E-mini S&P 500 futures of equivalent value. As a result of the EFP, the firm no longer holds the stocks, but holds a short position in E-mini S&P 500 futures from the original arbitrage trade, and a long position in the same futures contract from the EFP. The long and short positions collapse and cancel each other out. The firm in essence sold the futures contract at a higher price in the arbitrage, and bought it back at a lower price in the EFP. The firm pockets the difference and nets out all positions efficiently.

EFPs also facilitate stock lending. If a broker senses an increase in the demand for borrowing the component stocks of an index, he can source additional lendable stocks by buying stocks and selling index futures. If the price at which he sells the futures is low enough, he encourages long holders of the stocks to exchange those for futures, giving the broker additional shares to lend out. This process allows long holders who cannot lend shares directly, to benefit from the increased stock loan value of their inventory.

EFP transactions serve legitimate market functions, but are also prone to collusion for sham transactions for the true purpose of money laundering (by shifting cash from one party to the other) or tax evasion. Therefore, the CME requires that all EFPs be executed at a commercially reasonable price conforming to the minimum tick increment for the relevant exchange contract.[147] EFPs may not be priced off-market with the intent to shift substantial sums of cash from one party to another, to evade taxes, to circumvent financial controls by disguising a firm's financial condition, or to accomplish other unlawful purposes.[148] EFPs executed at off-market prices are

[147] *Id.*
[148] *Id.*

more likely to be examined by the exchange to determine the purpose for the pricing.[149] There is also a quantity equivalence requirement that the quantity of the related position component of the EFP be approximately equivalent to the quantity of the exchange component of the EFP. Appropriate hedge ratios between the exchange and related position components of the EFP may be used to establish equivalency.[150] This means, for example, one futures contract cannot be exchanged for disproportionally more shares of stocks than the quantity of shares used in determining the index value. The hedge ratio between index futures and the underlying index is 1 – 1.[151]

To guard against collusive trading, the CME requires the two sides of an EFP transaction to be independently controlled with different beneficial ownership. Or, if the accounts belong to the same beneficial ownership, the accounts must be either independently controlled by separate legal entities or independently controlled in separate business units within the same business entity.[152] In addition, parties to an EFP transaction must maintain all records, including order tickets (records customarily generated in accordance with relevant market practices), records reflecting payments, as well as any other records required by regulatory authorities. Brokers who facilitate EFP transactions must maintain all records corresponding to their facilitation of the transactions. Such records must be provided to the exchange upon request.[153]

4) *Block Trades*: A block trade is a privately negotiated trade and is exempt from the competitive bidding requirement of the regulation.[154] It is permitted because the size of the order

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[149] *See supra* note 145.
[150] CME Rulebook *supra* note 35 at ch. 5, r. 538.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[151] *See supra* note 146.
[152] CME Rulebook *supra* note 35 at ch. 5, r. 538.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[153] *Id*. at ch. 5, r. 538.H, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[154] *Id.* at ch. 5, r. 539.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

is big and likely disruptive to normal trading by driving down prices disproportionally in illiquid markets.[155] Although privately negotiated and executed outside the exchange's normal trading process, block trades are nonetheless cleared through the exchange's clearing house that offers the benefit of counterparty risk reduction through novation.[156]

A block trade must be for a quantity that is at or in excess of the minimum threshold set by the exchange. Since a block trade is not executed through competitive bidding, a broker may not execute any order by means of a block trade for a customer unless such customer has specified that the order be executed as a block trade. The price at which a block trade is executed must be fair and reasonable in light of the size of the trade, the prevailing market conditions for the products subject to or influential to the trade (e.g., the underlying cash market condition for the index futures).[157]

Block trades can only be executed according to the exchange's procedures. Each block trade must be reported to the exchange. The report must include detailed information about the terms of the transaction and time of execution.[158] Clearing members who undertake clearing the trades must also inform the exchange of the risk limits they set for the parties of the block trade.[159] The exchange promptly publishes block trade information separately from the reports of transactions in the regular market.[160] Clearing members and brokers involved in the execution of block trades must maintain a record of the transaction.[161] Block trades are cleared on the same day

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[155] *See* Markham *supra* note 118 at 37. ("Block trades are large orders entered by institutions that may have an undue effect on market prices if entered in the trading pit without being previously positioned with an opposite buyer or seller.")
[156] *See Block Trades*, CME GROUP, http://www.cmegroup.com/clearing/trading-practices/block-trades.html.
[157] CME Rulebook *supra* note 35 at ch. 5, r. 526, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[158] *Id.*
[159] *Id*. at ch. 8, r. 808.G, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[160] *Id.* at ch. 5, r. 526, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[161] *Id.*

if they are submitted to the exchange prior to the cutoff time.[162] Block trades are first routed through the exchange's credit check system to determine whether they are authorized by the clearing members responsible for clearing the trades and within the risk limits set by the clearing members.[163] Once a block trade has been submitted to the exchange, neither the buyer nor the seller can unilaterally reject the trade terms. However, in order to correct an error resulting from the good faith actions of the broker or exchange staff, and upon mutual consent of the parties to the transaction, the transaction may be voided within three business days of the time of the initial submission.[164]

Trade Matching: Orders received by the exchange are executed according to their price and time priority. To prevent brokers in the trading pit from giving undue priority to discretionary orders (i.e., orders for accounts over which brokers have trading discretion) at the expense of non-discretionary customer orders, the exchange rule prohibits brokers from executing a discretionary order while in possession of an executable non-discretionary customer order.[165]

Trading Price: The CME sets the daily opening price for futures contracts, lets the market take its own price discovery path afterwards, but reserves the right to make price adjustments to avoid execution at prices that would be detrimental to the market's integrity.

1) *Daily Opening Price*: The CME's designated staff determines the opening price that results in the largest matching volume.[166] For GLOBEX trading, if more than one price has the same trade volume and the same unmatched volume at that price, the equilibrium price is the one nearest the previous day's settlement price.[167]

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[162] *Id.* ch. 8, r. 808.K, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[163] *Id.* at ch. 8, rs. 808.I, 808.J & 808.L, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[164] *Id.* at ch. 8, r. 808.H, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[165] *Id.* at ch. 5, r. 548, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[166] *Id.* at ch. 5, r. 546, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[167] *Id.*

2) *Price Adjustment*: The CME may review a trade based on the exchange's independent analysis of market activities or upon request for review by a member.[168] Upon such review, and in its absolute and sole discretion; the CME may decide to adjust trade prices or cancel any trade if it believes that allowing the trade to be executed could have a material adverse effect on the integrity of the market. All decisions of the exchange in this regard are final. If a price adjustment occurs, with the approval of the exchange, parties to a trade may mutually agree to cancel the trade.[169] A party entering an order that results in a price adjustment or trade cancellation is responsible for realized losses incurred by the other party. However, a claimant is not entitled to compensation for losses incurred as a result of the claimant's failure to take reasonable actions to mitigate the loss. Any claim for loss must be submitted to the exchange. Failure to file the claim in a timely basis results in the rejection of the claim. To the extent that liability is admitted, payment must be made within ten business days. To the extent that liability is denied, the dispute must be resolved by arbitration. The request for arbitration must be submitted to the exchange within ten business days of the denial of liability.[170] Members of the exchange cannot hold the exchange liable for losses resulting from price adjustments or trade cancellations.[171]

Trade Discrepancy Resolution: The CME has established detailed rules on resolving discrepancies (also called "outtrade") in trade price, quantity as well as contract months. The rules' focuses are orderly resolution of discrepancies and customer protection.

1) *Price Discrepancy*: When a trade discrepancy exists due to a price discrepancy, members making the trade may choose to resolve the discrepancy by electing either of the two

[168] *Id.* at ch. 5, r. 588.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[169] *Id.* at ch. 5, r. 588.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[170] *Id.* at ch. 5, r. 588.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[171] *Id.* at c. 5, r. 588.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

prices in question.[172] If an outtrade involves a price discrepancy between a local[173] and a broker, and they cannot agree on the price of execution; the price recorded by the broker is used to clear the trade.[174] If an outtrade between locals or an outtrade between brokers involves a price discrepancy, and the members cannot agree on the price of execution, the buyer's price is used to clear the trade.[175]

2) *Quantity Discrepancy*: When an outtrade exists due to a quantity discrepancy, members making the trade may choose to resolve the discrepancy by electing either of the two quantities in question. If an outtrade between locals or between brokers involves a quantity discrepancy, and they cannot agree on the quantity that was executed; the higher quantity is used to clear the trade.[176] If a floor broker discovers that all or some portion of a customer's order was executed, but cannot be cleared; the broker is required to either re-execute the order in the market or take the opposite side of the uncleared portion in his own error account.[177] If he re-executes the order at a different price, either better or worse than the original customer orders, the customer is entitled to the better price.[178]

3) *Contract Month Discrepancy*: When an outtrade exists due to a contract month discrepancy, the counterparties making the trade may agree to clear either trade or both trades. If the order was entered on behalf of a customer, any losses incurred by the customer as a result of the delay in execution must be adjusted by the broker.[179]

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[172] *Id.* at ch. 5, r. 527.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[173] Locals are traders on trading floors of the exchange who mostly buy and sell for their own accounts rather than for customer accounts. Locals differ from actual traders in that they are not members of the exchange but are able to trade on the floor for their own accounts by leasing the floor space from a member.
[174] *See* CME Rulebook *supra* note 35 at ch. 5, r. 527.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[175] *Id.*
[176] *Id.*
[177] *Id.*
[178] *Id.*
[179] *Id.*

Dual Trading Restriction for Floor Brokers: The term "dual trading" means a broker trades both for his own account as well as for the account of a client during the regular trading session. His “own account” includes an account in which he has a direct or indirect financial interest or an account which he controls.[180] A broker is prohibited from engaging in dual trading in any contract month which is deemed a mature liquid contract[181] unless exemptions apply. [182]

The dual trading restriction intends to prevent a broker from placing trades ahead of large customer orders that the broker has received, to benefit from the anticipated market movement.[183] However, the restriction cannot root out illicit front-running completely, as it is often consummated in collusion with a confederate. For example, a customer places a market order to purchase 100 June S&P 500 futures contracts. The floor broker who receives the order knows that such a large buy order is likely to cause an upward movement of the price, so he signals to a confederate that a large buy order is coming. The confederate immediately purchases 100 contracts, also a large contract. The order likely triggers a cascade of buy orders as other brokers at the trading pit sense the likely direction of price movement and trade accordingly. Due to the increased number of buy orders, the price rises to a new level before the customer’s order is executed. The customer pays substantially more for his order when it is executed. The confederate shares the profit with the broker or implicitly promises to repay the broker with a similar favor in

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[180] *Id.* at ch. 5, r. 552.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CBOT/I/5/5.pdf. *See also* 7 U.S.C. §6j (2019), *and* CFTC Regulations, 17 C.F.R. §155.2 (2019).

[181] CME Rulebook *supra* note 35 at ch. 5, r. 552.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CBOT/I/5/5.pdf. (“The term ‘mature liquid contract’ means a contract month by position in relation to the front month contract at any given point in time that has had during the prior six calendar months an average daily pit-traded volume of 10,000 or more contracts; provided, however, that the Board of Directors may exempt from or include in this definition specific contracts and hours of trading during which such contracts will be deemed not to be mature liquid contracts, taking into account any market conditions which, in the Board's opinion, would justify such action.”).

[182] *See supra* note 180.

[183] *See* H.R. Rep. No. 93-975, at 50-51 (1974). *See also* Craig S. Donohue, *Dual Trading in the Commodity Futures Markets: Should It Be Banned?*, 21 Loy. U. Chi. L. J., Fall 1989, at 45.

the future. The rules cannot root this behavior out even though it violates the intention of the regulations.

The dual trading restriction applies only to trading on the trading floor and not to trades entered into any electronic trading system (e.g., GLOBX).[184] This asymmetric restriction is because floor brokers have more control over the execution of orders submitted to the floor than those entered into an electronic system. [185] Specifically, a floor broker holding a customer order controls not only the timing of order entry, but also the price of execution and the counterparty of the trade. A broker holding a customer order for entry into an electronic trading platform that matches bids and offers automatically only can control the timing of order entry. Once the order is entered into the system, an algorithm determines the price and counterparty of the execution.[186]

Despite the risk of brokers' front-running customer orders, dual trading has the benefit of increasing trading volume when customer order flows are low. Low trading volume makes hedging difficult and also increases the bid-ask spread.[187] Thus, dual trading is permitted in limited situations:

First, Correction of Errors: Brokers can engage in dual trading for the purpose of offsetting trading errors incurred from the execution of customer orders.[188] The broker must clearly indicate that the dual trading is for the purpose of correcting trade errors and time-stamp his trades to the nearest minute on his trading card.[189]

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[184] *See* Proposed Regulation to Restrict Dual Trading in Security Futures Products, 66 Fed. Reg. 36218, 36219 (proposed July 11, 2001) (to be codified at 17 C.F.R. pt. 41).
[185] *Id.* at 36220.
[186] *Id.*
[187] See Peter R. Locke, Asani Sarkar & Lifan Wu, *Market Liquidity and Trader Welfare in Multiple Dealer Markets: Evidence from Dual Trading Restrictions*, 34 J. OF FIN. & QUANTITATIVE ANALYSIS 57 (1999).
[188] 17 C.F.R. §155.2 (2019).
[189] CME Rulebook *supra* note 35 at ch. 5, r. 552.B, 552.C para. 3, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

Second, per CFTC Special Exemptions: The CFTC may permit dual trading based on the special characteristics of an exempted contract upon application by the trading exchange.[190] In determining whether or not to grant an exemption, the CFTC pays close attention to the accuracy of the exchange's trade execution records and ensures they have at least 90% of accuracy on the timing of all trades entered for floor execution. An accurate time sequence of trades helps regulators detect front-running retroactively and hence deters this illicit practice.[191] Pursuant to this exemption, the CME petitioned the CFTC for the exemption of the S&P 500 futures contract on the grounds that the CME maintains a trade monitoring system that includes an audit trail, recordkeeping, and is capable of detecting and deterring all types of violations attributable to dual trading. The CFTC granted the petition in Nov. 1997, and that exemption has continued as of this date. [192]

Prohibition on Wash Trades: A wash trade is a form of fictitious order which is placed into the market with an intent to give a false appearance of trading but without an intent for bona fide execution. Wash trades typically take place through the collusion of two or more traders. The conspirators take both size of the transaction without incurring any real change in the beneficial ownership of the traded security. Wash trades are often used to manipulate the market or to launder illicit money.[193] Wash trades are prohibited by the CEA and CME rules.[194] The intent to engage

[190] 17 C.F.R. §155.10 (2019).
[191] *See* Petition Notice, Chicago Mercantile Exchange Petition for Exemption from the Dual Trading Prohibition Set Forth in Section 4j(a) of the Commodity Exchange Act and Commission Regulation 155.5, 62 Fed. Reg. 60870, 60871 (Nov. 13, 1997), https://www.govinfo.gov/content/pkg/FR-1997-11-13/pdf/97-29894.pdf.
[192] *See Id.* at 60870-71.
[193] *See* Yi Cao, Yuhua Li, Sonya Coleman, Ammar Belatreche & Thomas Martin McGinnity, *Detecting Wash Trade in Financial Market Using Digraphs and Dynamic Programming*, 27 IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS 2351, 2351 (Nov. 2016).
[194] Commodity Exchange Act, *supra* note 16, *and* CME Rulebook *supra* note 35 at ch. 5, r. 534, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

in wash trades can be inferred from the structure and timing of the trades.[195] When a broker receives simultaneous buy and sell orders placed by another party, the broker has an independent duty to inquire about the propriety of such orders. The inquiry must be sufficient to determine whether the orders are for accounts with common beneficial ownership. Without such an inquiry, the broker accepting the orders may be found guilty of wash trades if the execution of the orders produces a wash result.[196] If the buy and sell orders are for an omnibus account, the broker has a duty to ascertain as to whether the orders are for different account owners within the omnibus account.[197] The broker may refuse to accept the order if he cannot determine whether a common beneficial owner is on both sides of the transaction.[198] Accepting or executing simultaneous buy and sell orders without such assurances exposes the broker to potential liability if the orders are a wash.[199] In case a broker receives buy and sell orders for the same beneficial account, but for legitimate purposes, the broker must enter the order sequentially rather than simultaneously, so the second order is entered only after the first order is executed. This will ensure that the orders are not executed opposite each other.[200] The broker must maintain a clear audit trail with respect to the entry and execution of the orders. An immediate timestamp upon receiving and executing the order is required as proof that the orders are not executed simultaneously.[201]

CME GLOBEX Self-Match Prevention is an optional functionality that allows a broker to prevent the matching of orders for accounts with common ownership, even across different firms. Brokers who opt for this functionality will submit an identification number on each quote and

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[195] *See* CHICAGO MERCANTILE EXCHANGE, *Market Regulation Advisory Notice: Wash Trades Prohibited*, CME Group RA1308-5 1, 2 (Nov. 19, 2013), https://www.cmegroup.com/rulebook/files/cme-group-ra1308-5.pdf.
[196] *Id.*
[197] *Id.*
[198] *Id.* at 3.
[199] *Id.*
[200] *Id.*
[201] *Id.*

order submitted to prevent trading against an opposite side of the order with the same identification number. When CME's GLOBEX detects a buy order and a sell order with the same identification number at the same executable price level, it automatically cancels one of the orders.[202] This is the case even if the orders are entered at different trading sessions.[203] The use of the Self-Match Prevention functionality is optional. Each firm can tailor its use in ways that are appropriate for its business.[204]

Upon detecting possible wash trades, the exchange has the power to take any appropriate action to protect the integrity of the market. These actions include, without limitation, suspending trading and/or canceling unfilled orders and cancelling or adjusting the trade prices of transactions that were directly or indirectly caused by wash trades. The exchange may also direct the clearing member carrying positions resulting from such transactions to liquidate the positions in a commercially reasonable manner.[205] The clearing members must liquidate the positions within thirty minutes of receiving such notification, or within thirty minutes of the time the clearing firm knew or should have known that it had been assigned transactions resulting from wash trades, whichever is sooner.[206] The exchange, in its sole discretion, may waive the thirty-minute liquidation requirement if it determines that such requirement may have a material, adverse impact on the integrity of the market.[207]

Regulation on Cross-Border Trading: The international financial markets are an interconnected whole. To facilitate cross-border trading, the U.S. allows foreign security

[202] *See CME GLOBEX Self-Match Prevention*, CME GROUP, https://www.cmegroup.com/confluence/display/EPICSANDBOX/CME+GLOBEX+Self-Match+Prevention.
[203] *See CME GLOBEX Self- Match Prevention Functionality - Frequently Asked Questions*, CME GROUP, http://www.cmegroup.com/GLOBEX/trade-on-cme-GLOBEX/self-match-faq.html.
[204] *See Id.*
[205] CME Rulebook *supra* note 35 at ch. 5, r. 588, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[206] *Id.*
[207] *Id.*

exchanges to place trading terminals on its soil, subject to the CFTC's approval through a registration process. In addition, the CME has implemented a Mutual Offset System with the Singapore Futures Exchange, which system permits orders entered in one exchange to be settled in the other.

1) *Registration by Foreign Exchanges*: Dodd-Frank has amended CEA Section 4(b). This amendment allows the CFTC to adopt regulations requiring registration by a foreign exchange that wishes to provide persons located in the U.S. with direct access to foreign trading facilities.[208] This direct access is different from submitting an order by a U.S. person through an intermediary (such as a brokerage firm) located outside the U.S. for further action before passing on to the foreign exchange's trading system. The latter does not require registration with the CFTC.[209] The CFTC has adopted rules implementing Dodd-Frank's registration requirement.[210] Prior to the effectiveness of the rules, the CFTC responded through no-action letters to requests by foreign exchanges that sought to establish trading terminals in the U.S.[211]

The registration requirement intends to give the CFTC an opportunity to determine that the foreign contracts are actually futures, option, or swap contracts over which the CFTC, as opposed to the SEC, exercises regulatory authority.[212] The registration also allows the CFTC to determine whether any foreign contract is linked to or may otherwise impact the trading of contracts listed on a U.S. exchange.[213] The foreign exchange's registration constitutes a knowing consent to the CFTC's jurisdiction and the authority of the CFTC and other appropriate U.S. regulatory authorities to access relevant books, records, and trading premises of the foreign exchange located

[208] 7 U.S.C. §6(b)(1), (2019).
[209] Registration of Foreign Boards of Trade, 76 Fed. Reg. 80674 (proposed Dec. 23, 2011) (to be codified at 17 C.F.R. pt. 48).
[210] Registration of Foreign Boards of Trade, 17 C.F.R. pt. 48.
[211] Registration of Foreign Boards of Trade, *supra* note 209.
[212] *Id.*
[213] *Id.*

in the U.S.[214] The registration requirement is not unique in the U.S., but rather a common practice of regulatory authorities in other countries and regions.[215]

In order for a foreign exchange to be registered, it must demonstrate that it is subject to regulations comparable to the CFTC's rules. However, the CFTC does not perform a ‘‘line by line’’ examination of the foreign jurisdiction's rules; rather the review will be principles-based with a focus on determining if the foreign regime supports and enforces regulatory objectives in the oversight of the foreign exchange and the clearing organization that are substantially equivalent to the regulatory objectives supported and enforced by the CFTC.[216] The U.S. is a member of the International Organization of Securities Commissions (IOSCO), which is an organization of the world's financial market regulators. The IOSCO sets broad standards and principles to be followed by its members for regulating their domestic financial markets. The CFTC requires that foreign exchanges demonstrate in the registration process that their home jurisdictions follow the IOSCO's principles and directives, as a way of ensuring homogenous standards on trade execution and clearing risk management.[217] The CFTC also requires that the clearing house of the applicant foreign exchange be in good regulatory standing in its home country. A foreign exchange applicant must also have sufficient resources and capability to detect, investigate, and sanction persons who violate its rules.[218]

The CFTC imposes additional conditions in approving the application of any foreign exchange that lists "linked contracts."[219] A linked contract is a contract whose settlement is based

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[214] *Id.* at 80689.
[215] *Id.* at 80679 ("The Commission finds it particularly noteworthy that other countries that permit direct access, including the UK, Japan, Singapore, Hong Kong, Germany and Australia, among others, do so under a registration or licensing scheme. Accordingly, the Commission believes that the establishment of the FBOT registration regime in the final rule is generally consistent with international practices.").
[216] *Id.* at 80680.
[217] *Id*. at 80681-82.
[218] *See Id.* at 80682.
[219] *Id.* at 80685.

on the price of one or more instruments traded on a U.S. domestic exchange.[220] For example, if a foreign exchange applies to set a terminal in the U.S. with direct access to trading its own version of the S&P 500 futures, such a contract would be considered a linked contract because it is settled against the S&P 500 index whose constituent stocks are traded on U.S. exchanges. Linked contracts impose a higher risk to the U.S. market because discordance on the foreign exchange can spill over to the U.S. through the linkage. The additional conditions that foreign exchanges must satisfy before giving U.S. investors direct access to linked contracts include: (1) The foreign exchange must publish daily trading information regarding the linked contract that is comparable to the daily trading information published by U.S. exchanges for the corresponding U.S. contract; (2) The foreign exchange must adopt position limits for the linked contract that are comparable to the position limits adopted by the U.S. exchange for the corresponding U.S. contract; (3) The foreign exchange has the authority to require or direct any market participant to limit, reduce, or liquidate any position; (4) The foreign exchange agrees to promptly notify the CFTC of major changes with respect to the linked contract; (5) The foreign exchange agrees to provide information to the CFTC regarding large trader positions in the linked contract that is comparable to the large trader position information collected by the CFTC for the corresponding U.S. contract; and (6) The foreign exchange agrees to provide the CFTC such information as is necessary to publish reports on aggregate trader positions for the linked contract that are comparable to such reports on aggregate trader positions for the corresponding U.S. contract.[221] The CFTC also reserves the power to impose additional conditions on the registered foreign exchange that are deemed necessary by the CFTC to carry out its market surveillance responsibilities.[222]

[220] *See Id.* at 80684.
[221] *See Id.* at 80684.
[222] *Id.*

2) *The Mutual Offset System:* CME has set up a Mutual Offset System (MOS) with the Singapore Futures Exchange (SGX) to allow traders to open a futures position on one exchange and settle it on the other. Currently MOS offers four contracts, two of which are equity index futures: the Nikkei 225 Index Futures and the E-mini Nifty 50 Index Futures.[223] To do an inter-exchange transfer, the trader must first designate a trade as a MOS trade before it is executed, and then specifies whether the position will be carried by the CME or the SGX. For example, a customer could initiate a MOS trade of a Nikkei 225 futures contract at the CME and specify that this is a MOS trade for execution at SGX. The CME forwards the trade to the SGX and upon the latter's acceptance, the position is deemed having been liquidated on the originating trader's account. It becomes a new position on the accepting trader on the SGX's end. The position is transferred at the original price without any added administrative fee, and is marked against the daily settlement price of the SGX.[224] The originating trader at the CME end is responsible for settling the trade with the CME's clearing house until the trade is accepted by the SGX. After the acceptance, the originating firm has no further responsibility to the CME's clearing house. The same is true if the MOS is originated from the SGX.[225] Non-discretionary customer orders for execution on the CME cannot be transferred to another exchange that participates in MOS without the customer's authorization.[226]

MOS customers can benefit from cross margining for positions maintained at participating exchanges. The cross-margining allows these positions to be considered together when the accepting exchange assesses performance margins. For example, a trader enters into a long

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[223] *See Mutual Offset System (MOS)*, CME GROUP, http://www.cmegroup.com/clearing/operations-and-deliveries/accepted-trade-types/mutual-offset-system.html.
[224] *See Id*.
[225] CME Rulebook *supra* note 35 at ch. 8A, r. 8A77.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8A/8A.pdf.
[226] 17 C.F.R. §166.2 (2019), *and* CME Rulebook *supra* note 35 at ch. 8A, r. 8A74, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8A/8A.pdf.

position in Nikki 225 futures at the CME and a short position in options on the Nikki 225 at the SGX. The CME position is specified for MOS. The effect would be the same as if the long futures position were placed on the SGX to reduce the risk generated by the short options. This risk reduction is taken into account when the SGX assesses the trader's overall margin. The potential cost saving can be considerable for market participants. Additionally, MOS offers trading opportunities through international time zones. MOS users need not be concerned about two different sets of rules for the CME and the SGX. Market participants may actually regard the two exchanges as providing a single marketplace for MOS contracts.[227]

Exchange's Power in Emergency: CME rules define emergency broadly to include any circumstance which may have a severe, adverse effect upon the functioning of the exchange. Such circumstances include, but are not limited to, any actual or threatened market manipulation or market squeeze; any action by a domestic or foreign regulatory authority that impacts trading at the CME; and the actual or threatened failure of a member to perform obligations to its customers or the exchange due to adverse financial conditions or restraints by domestic or foreign regulatory authorities.[228]

In the event that the CME makes a good faith determination that an emergency exists, it may take any action that it deems appropriate to deal with the emergency.[229] The actions may include, but are not limited to: (1)restricting, suspending, or terminating trading in any or all contracts; (2)restricting, suspending, or terminating a trader's access to the trading facility; (3) limiting trading to liquidation of contracts only; (4)establishing the settlement price at which

[227] *See Mutual Offset System (MOS), supra* note 233.

[228] CME Rulebook *supra* note 35 at ch. 4, r. 402.C, para. 1, https://www.cmegroup.com/content/dam/cmegroup/rulebook/NYMEX/1/4.pdf.

[229] *Id.* at ch. 4, r. 402.C, para. 2, https://www.cmegroup.com/content/dam/cmegroup/rulebook/NYMEX/1/4.pdf.

contracts are to be liquidated; (5) modifying position limits;[230] (6) setting trading price range or modifying price limits;[231] (7) modifying trading days or hours, conditions of delivery, and performance bond requirements.

D. Risk Management

Position limits: Position limits are trading levels which cannot be exceeded by an exchange member in a specified period unless he benefits from an exemption.[232] Position limit is distinguishable from position accountability level and position reportable level.

Position accountability level is a trading volume level that, if exceeded, will trigger the exchange member's obligation to provide more information about the position to the exchange upon the latter's request. Such information includes, but is not limited to, the nature and size of the position, the trading strategy employed with respect to the position, and any hedging information. Failure to supply the requested information may prompt the exchange to order a reduction in such positions and initiate disciplinary actions.[233] In addition, the exchange may require a market participant who has exceeded the position accountability level to refrain from further increasing the positions and to reduce positions that exceed the accountability level.[234]

Reportable level is a position level that triggers an exchange member's duty to report its trading positions to the exchange. A person who is reportable in a particular product must report all open positions in all futures contracts regardless of size.[235]

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[230] *See* discussion below on position limits.
[231] See infra page ___ for discussion on price limits.
[232] CME Rulebook *supra* note 35 at ch. 5, r. 559, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[233] *See* CHICAGO MERCANTILE EXCHANGE, *Market Regulation Advisory Notice: Position Limits and Accountability Levels*, CME Group RA 1703-5 1, 2 (Apr. 10, 2017), https://www.cmegroup.com/rulebook/files/mran-ra1703-5.pdf.
[234] *Id.*
[235] *Id.*

As of June 30, 2019, the position limit for S&P 500 futures contracts for all expiration months in the aggregate is 60,000 contracts.[236] This number includes net open positions held across all contract months.[237] For example a market participant is long 20,000 in June 2019 contracts, long 30,000 in September 2019 contracts, and long 20,000 in March 2020 contracts. He has a total of 70,000 net long positions and thus has exceeded the exchange's position limit. For the purpose of applying the position limit, positions held in the name of a member, all positions subject to his direct or indirect control, and positions in accounts in which he holds 10% or more interest are aggregated.[238]

A clearing member may impose more stringent position limits than the exchange-mandated minimum on its customer accounts if the clearing member believes such additional limits are warranted by the risk profile of the accounts. A clearing member may suspend a customer's account and attach a claim to funds in the account if the customer exceeds the limit or otherwise trades in a reckless manner inconsistent with just and equitable principles of trade.[239]

The CME requires clearing members to liquidate a customer's positions that exceeds the customer's position limit.[240] A clearing member is not deemed in violation of the position limit if it carries positions for its customers in excess of the applicable position limits for such reasonable period of time necessary for the clearing member to discover and liquidate the excess positions. A reasonable period of time is generally no more than one business day.[241] By exchange rules, each

[236] CHICAGO MERCANTILE EXCHANGE, *Accountability and Reportable Level Table*, CME Group, http://www.cmegroup.com/rulebook/files/position-limits-cme.xlsx.
[237] CME Rulebook *supra* note 35 at ch. 5, r. 559.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[238] *Id.*
[239] *Id.* at ch. 9, r. 904, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[240] *Id.* at ch. 5, r. 562, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[241] *Id.*

clearing member must have procedures to ensure that customers carried in an omnibus account do not exceed their respective position limit.[242]

A member may petition the exchange for an exemption from the position limit on the ground that the positions are for bona fide hedging, risk management, or arbitrage purposes.[243] The application for the exemption must explain the trading strategies and position exposures; provide any financial information requested by the exchange; and submit any supplemental information if there is any material change to information previously provided in an application for exemption from position limits. In addition, the applicant must agree to comply with conditions imposed by the exchange for granting the exemption, and agree to liquidate positions in a timely and orderly manner upon the exchange's revocation of the exemption.[244] The application for exemption must be filed within five business days after the establishment of the positions exceeding the limit, but the exchange has the power to require a member to file the application prior to the fifth business day.[245] In the event the application is denied, the applicant and its clearing firm are in violation of the exchange's position limits for the period of time in which the excess positions remained open (including the days prior to exemption application). The exchange in its sole discretion determines whether exemptions should be granted based on any relevant factor. These factors include, but are not limited to, the applicant's hedging needs and financial status, as well as whether the positions can be established and liquidated in an orderly manner in light of characteristics of the positions seeking exemption.[246] A person who is granted an exemption must file an annual update on

[242] *Id.* at ch. 9, r. 960.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[243] *Id.* at ch. 5, r. 559, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[244] *Id.*
[245] *Id.*
[246] *Id.*

information relevant to the exemption, and a failure to file an updated application will result in the expiration of the exemption. [247]

Large Trader and Beneficial Owner Reporting Requirements: The exchange's position limits are monitored and enforced through reporting by clearing members on their open interests and trading volumes in a reportable contract.

1) *Open Interest Reporting*: Clearing members are required to file a daily large trader position report if their open interests in a futures contract are large enough to meet the reporting threshold set by the exchange from time to time. [248] For an account with reportable positions in a particular contract, all positions – regardless of size – in any contract month and in any contract that aggregates with that contract must be reported. Clearing members must also file a beneficial owner report on CFTC Form 102A ("Identification of Special Accounts") to identify the beneficial owners and controllers of the accounts as well as any additional information required for each reportable account.[249] The report must be filed within three business days of the first day that the account in question becomes a reportable account.[250]

2) *Volume Threshold Reporting*: A trader is also required to report to the CFTC if he has traded a large volume of a contract exceeding the specified amount in a single trading day in addition to reporting large open interests that exceed the regulatory threshold,.[251] Currently, any trading account with a trading volume of fifty contracts during a single trading day in a particular expiration month of a futures contract is a reportable volume threshold account. [252] The clearing

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[247] *Id.*
[248] CME Rulebook *supra* note 35 at ch. 5, r. 561.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[249] *Id.*
[250] *Id.*
[251] 17 C.F.R. §15.04 (2019).
[252] CME Rulebook *supra* note 35 at ch. 5, r. 561.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

member who carries the trade is required to file the CFTC Form 102B ("Identification of Volume Threshold Accounts"). The clearing member must accurately identify the owners, name the controllers, and provide any additional information required by the report. This report must be filed within three business days of the first day that the account in question has reached the threshold amount. [253] Notwithstanding the three business day submission requirement, on the first day that an account becomes reportable, the exchange may request information on the owner or controller of the account from clearing members.[254] The CME also requires an updated report for accounts with material changes that cause the information previously submitted to be inaccurate. The updated reports are required to be submitted within three business days of such changes becoming effective.[255]

Price Limit: Price limits are a series of price fluctuation limits set by the exchange based on a reference price. If the price fluctuates beyond the pre-set limit, the exchange may temporary suspend trading or implement other risk reduction measures. In the case of E-mini S&P 500 and S&P 500 futures, the reference price is based on the previous trading day's volume-weighted average price (VWAP) of the lead month E-mini S&P 500 futures contract determined between 2:59:30 PM - 3:00 PM Central Time.[256] If no transactions occur during this period, the reference price takes the average of the midpoints of each bid/ask spread in the E-mini S&P 500 futures contract during the same time period. If the reference price cannot be determined pursuant to the

[253] *See* CHICAGO MERCANTILE EXCHANGE, *Market Regulation Advisory Notice: Daily Submission of Large Trader, Ownership/Control Reports, and Open Interest Data,* CME Group RA 1606-5R 1, 2 (Jan. 10, 2017), https://www.cmegroup.com/rulebook/files/mran-ra1606-5r.pdf.

[254] CME Rulebook *supra* note 35 at ch. 5, r. 561.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

[255] *Id.* at ch. 5, r. 561.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf, *and* CHICAGO MERCANTILE EXCHANGE *supra* note 253.

[256] *See S&P 500 Price Limits: Frequently Asked Questions*, CME GROUP, http://www.cmegroup.com/trading/equity-index/faq-sp-500-price-limits.html.

foregoing methods, a designated exchange staff member will consider any other information deemed relevant to determine the reference price.[257]

What happens if the price limit is exceeded? The CME's response depends on whether the New York Stock Exchange (NYSE) has halted trading due to price fluctuation in the S&P 500 index beyond the NYSE's pre-determined limits. NYSE Rule 80B provides for three levels of circuit-breaker trading halt corresponding to 7% (Level 1), 13% (Level 2), or 20% (Level 3) decline from the preceding day's closing value in the S&P 500 index during regular trading hours. NYSE suspends trading for all stocks for 15 minutes if Level 1 or Level 2 halt is reached, and suspends trading for the rest of the day if Level 3 is reached.[258] The purpose of the trading halt is to give investors time to reflect on the market condition and assimilate incoming information before making trading decisions during periods of high market volatility.[259] Corresponding to the NYSE 80B circuit breaker, the CME also has three levels of price limits (i.e., 7%, 13% and 20%) for index futures contracts. If the NYSE Rule 80B halt is triggered, the CME will halt trading for E-mini S&P 500 and S&P 500 futures. However, if the index futures price has declined to the price limit, but the NYSE 80B halt has not been triggered, futures trading would not be suspended. Still, futures trading would continue within the applicable price limits, and any order entered with a price below the prevailing down limit would be rejected. For instance, if the E-mini S&P 500 futures price has reached Level 1 (7%) limit but NYSE 80B is not enacted, any futures order below the 7% down limit will not be accepted by the CME's trading system. The order will be accepted, however, when the price limit is expanded to Level 2 (13%) after a 15-

[257] CME Rulebook *supra* note 35 at ch. 358, r. 35802.I, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/IV/350/358/358.pdf.
[258] THE NEW YORK STOCK EXCHANGE, NYSE RULES, r. 80B, para. (a) (Sept. 28, 2015), http://wallstreet.cch.com/nysetools/PlatformViewer.asp?SelectedNode=chp_1_2&manual=/nyse/rules/nyse-rules/.
[259] *See NYSE Trading Information*, THE NEW YORK STOCK EXCHANGE, https://www.nyse.com/markets/nyse/trading-info.

minute halt, provided that it is offering at higher than the 13% limit.[260] Following the declaration of a Level 3 (20%) trading halt in the NYSE, there would be no trading in E-mini S&P 500 futures and S&P 500 futures until trading resumes on the NYSE on the next trading day.[261]

Margins (Performance Bonds): Margins, also known as performance bonds, are deposits that clearing members maintain at the clearing house, for the purpose of ensuring the members' performance of settlement obligations. It is one of the important tools that clearing houses use to manage default risks. In turn, clearing members are required to collect margins from their customers. Margin levels vary by product and depend on market volatilities.262 For index futures traded on the CME, CME Clearing sets the minimum margin with the approval of the CFTC.

1) *Different Types of Margins*: There are two types of margins – initial margin and maintenance margin. Initial margin is the up-front payment made when a purchase order is first entered in the exchange's trading system.[263] Margin requirements for index futures are stated in absolute dollars per contract as opposed to a percentage of the contract's value.[264] Bona fide hedging positions are not subject to initial margins; only speculative positions are due to their higher risk of loss. [265]

In addition to paying the initial margin, clearing members must maintain enough equity in the account throughout the time when the position is open. This amount of equity is called

[260] *See S&P 500 Price Limits supra* note 269.
[261] CME Rulebook *supra* note 35 at ch. 358, r. 35802.I, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/IV/350/358/358.pdf.
[262] *See Performance Bonds/Margins*, CME GROUP, http://www.cmegroup.com/clearing/risk-management/performance-bonds-margins.html.
[263] *See Performance Bonds/Margins FAQ*, CME GROUP, http://www.cmegroup.com/clearing/cme-clearing-overview/performance-bonds.html.
[264] *See* Peter Fortune, *Margin Requirements Across Equity-Related Instruments: How Level Is the Playing Field?* NEW ENG. ECON. REV., 31, 40 (2003).
[265] See CME GROUP, CME CLEARING RISK MANAGEMENT AND FINANCIAL SAFEGUARDS 11 (2018), https://www.cmegroup.com/clearing/files/financialsafeguards.pdf.

maintenance margin.[266] Maintenance margin is assessed at least daily and often multiple times a day. The amount is based on either the individual value of the position or the joint value with other correlated positions. [267] When the equity of a clearing member's account falls below the maintenance margin level, the clearing house will issue a margin call for the replenishment of additional equity to the level of the initial margin.[268]

As of August 1, 2019, the E-mini S&P 500 futures has a maintenance margin of $6,300 per contract.[269] The Standard Portfolio Analysis of Risk (SPAN) is the official margin calculation mechanism used by more than fifty exchanges, clearing organizations, and regulatory authorities throughout the world. It evaluates the possible losses or gains of financial products over a period of time (typically one trading day) under different assumptions of price changes and volatility moves, all based on historical data from the past sixty, one-hundred and twenty, and three-hundred and sixty days.[270] Maintenance margin is assessed based on the risk scenario representing the maximum likely loss.[271] In the course of risk evaluation, SPAN groups together financial instruments with the same underlying securities for analysis. For example, futures and options on the same equity index would be grouped together.[272] Prices of securities within each group are assumed to be perfectly correlated, while across-class correlations are treated as zero, except in limited circumstances.[273]

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[266] *See Performance Bonds/Margins supra* note 262.
[267] *See* Fortune *supra* note 264 at 36. *See also Performance Bonds/Margins FAQ supra* note 276.
[268] *Id.*
[269] *See E-mini S&P 500 Margins*, CME GROUP, https://www.cmegroup.com/trading/equity-index/us-index/e-mini-sandp500_performance_bonds.html#sortField=exchange&sortAsc=true&clearingCode=ES&sector=EQUITY+INDEX&exchange=CME&pageNumber=1.
[270] *See CME SPAN Methodology Overview*, CME GROUP, http://www.cmegroup.com/clearing/risk-management/span-overview.html.
[271] *See* CME GROUP, CME SPAN: STANDARD PORTFOLIO ANALYSIS OF RISK 7 (2019), http://www.cmegroup.com/clearing/files/span-methodology.pdf.
[272] *Id.* at 9.
[273] *See* Fortune *supra* note 264 at 42.

The clearing house's margin calls must be satisfied within the next banking hour after the demand or at such time as may be specified by the clearing house. If the clearing member cannot meet the margin call, the clearing member may be required to transfer a portion of his open positions to the books of another clearing member.[274]

2) *Margin Requirements for Customers of Clearing Members:* Non-clearing members are subject to the same minimum level of initial and maintenance margins as clearing members. Clearing members are responsible for collecting and safekeeping the margins of their clients who clear through them. Under the CME's rules, clearing members must issue margin calls against the client within one business day after the equity in the client's account falls below the maintenance margin level to bring the equity back to the initial margin level. Clearing members may call for additional margins on any customer based on the latter's creditworthiness.[275] In addition, the clearing house in its sole discretion has the authority to require clearing members to collect additional margins from specific account holders.[276] Moreover, by rules of the NFA, futures commission merchants that are not clearing members but are managers of customer accounts have the same responsibility in collecting margins from customers as clearing members do.[277] Clearing members can only reduce/cancel a margin call through the receipt of margin deposits, or inter-day favorable market movements, and/or the liquidation of positions such that the customer's equity equals or exceeds the initial margin level.[278] Subject to exceptions granted by the CME, clearing

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[274] CME Rulebook *supra* note 35 at ch. 8, r. 824, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

[275] *Id.* at ch. 9, r. 930.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf. *See also* Richard Heckinger, Robert T. Cox & David Marshall, *Cleared Margin Setting at Selected CCPs*, 40 ECON. PERSP.no. 4, Apr. 2016, at 1, 4.

[276] CME Rulebook *supra* note 35 at ch. 9, r. 930.L, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[277] NFA Rulebook *supra* note 64 at ch. Financial Requirements, § 7, https://www.nfa.futures.org/rulebook/rules.aspx?Section=7.

[278] CME Rulebook *supra* note 35 at ch. 9, r. 930.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

members may only release margin deposits from an account if such deposits are in excess of initial margin requirements.[279]

Clearing members may accept orders for an account only if sufficient margin is deposited in the account or forthcoming within a reasonable time. For an account that has failed to deposit sufficient equity after the margin call, clearing members may only accept orders that have the effect of reducing the margin requirements on the existing positions.[280] If an account holder fails to comply with a margin call within a reasonable time, the clearing member may close out sufficient contracts in the account so that the remaining positions are commensurate with the margins on deposit.[281] Clearing members may not accept new orders for an account that has been in deficit for an unreasonable time.[282] Clearing members must maintain written records of all margin calls issued and their payment status.[283] If a clearing member fails to enforce margin requirements for any account, the exchange or the clearing house may direct such clearing member to immediately liquidate all or part of the account holder's positions to eliminate the deficiency.[284] Clearing members may not make loans to account holders to satisfy their margin requirements unless such loans are secured.[285]

Clearing members' proprietary positions are margined on their *net* risk exposures, allowing cross-margining among offsetting positions.[286] Customer positions in segregated accounts, however, are margined on a gross basis pursuant to CFTC Regulation 39.13(g)(8)(i)[287] that took effect in 2013. This means one customer's exposures cannot offset another customer's exposures

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[279] *Id*. at ch. 9, r. 930.F, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[280] *Id*. at ch. 9, r. 930.K, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[281] *Id.*
[282] *Id.* at ch. 9, r. 930.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[283] *Id.* at ch. 9, r. 930.E, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[284] *Id*. at ch. 9, r. 930.M, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[285] *Id.* at ch. 9, r. 930.G, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[286] *See* CME GROUP *supra* note 265 at 11.
[287] 17 C.F.R. §39.13(g) (8) (2019).

to reduce margin obligations in segregated accounts. Brokerage firms collect margins from each individual customers based on the customers' own risk exposures.[288] Multiple accounts with the same beneficial owner are margined together as if they are a single account.[289] To assess margin obligations for customer accounts on a gross basis, the clearing house needs to know positions held by clearing members for each client. This in turn requires clearing members to submit data files to the clearing house, identifying positions held by each customer. Clearing members are required to segregates customer positions from their proprietary positions and the positions of their affiliates. [290] Violations of this requirement result in disciplinary actions by the exchange.[291]

3) *Acceptable Collaterals for Margin Payment*: Only liquid assets can be used to satisfy margin obligations.[292] Examples of liquid assets are: cash currencies of any denomination, readily marketable securities, money market funds, and bank letters of credit. All collaterals are valued at least daily and more often as appropriate.[293] CME Clearing sets acceptable collateral levels on a daily basis correlating to prevailing market conditions to avoid over-concentration in collateral types.[294] Unless otherwise permitted by the clearing house, securities that have been issued, sponsored, or otherwise guaranteed by an account holder or an affiliate of the account holder cannot be used to satisfy the account holder's margin obligations.[295] All assets deposited

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[288] *See* CME GROUP *supra* note 265 at 11.
[289] *See* CHICAGO MERCANTILE EXCHANGE, *Customer Gross Margining – Technical Overview* (Dec. 27, 2016), https://www.cmegroup.com/clearing/risk-management/files/CGMTechnicalInformation.pdf.
[290] *See* CME GROUP *supra* note 265 at 14.
[291] *Id.*
[292] *See* CME GROUP, CME CLEARING: PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES DISCLOSURES 51 (Nov. 2017) [hereinafter CME CLEARING], http://www.cmegroup.com/clearing/risk-management/files/cme-clearing-principles-for-financial-market-infrastructures-disclosure.pdf.
[293] *Id*. at 52.
[294] *See Id*. at 51.
[295] *Id.*

by account holders to meet margin requirements must be, and remain, unencumbered by third-party claims.[296] The clearing house holds a first priority lien against any margin collateral.[297]

4) *Haircut to Non-cash Collaterals*: In valuing the margin collaterals, cash currency is usually given full market value, while other assets are valued at a discount (i.e., haircut). The percentage of discount depends on the types of assets.[298] Haircuts are determined using extreme price movements in the previous twelve-month period. Additional quantitative and qualitative data based on current market conditions and over the last four years is also included in the analysis.[299] CME Clearing reviews haircut policies at least once a month and more often if warranted by market conditions.[300] The clearing house has the authority to value the collaterals as it deems appropriate.[301]

Guarantee from Controlling Persons and Cross-Guarantee: The CME requires each clearing member to provide a written guarantee from each person owning 5% or more of the equity securities of the clearing member for the performance of all obligations arising from the member's proprietary positions.[302] If the guarantor is a corporate entity, the written guaranty must be signed by a corporate officer with appropriate authority. The corporate resolution granting the officer such authority must also be submitted to the clearing house.[303] For an additional layer of assurance, the clearing house may, in its discretion, require each person owning 5% or more equity securities of

[296] CME Rulebook *supra* note 35 at ch. 9, r. 930. C. (1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[297] *Id*. at ch. 8, r. 819, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[298] CME Rulebook *supra* note 35 at ch. 9, r. 930.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[299] *See* CME CLEARING *supra* note 292 at 52.
[300] *Id.*
[301] CME Rulebook *supra* note 35 at ch. 8, r. 820, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[302] *Id*. at ch. 9, r. 901(L), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[303] *Id*.

the corporate guarantor to also execute the guaranty.[304] A clearing member who fails to provide the required guaranty will lose his membership.[305] In addition, the CME also imposes a cross-guaranty mechanism that requires any clearing member holding or controlling, directly or indirectly, 10% or more of interest of another clearing member to guarantee the latter's obligations to the clearing house.[306]

Clearing House's Liquidity Management: In the event of default by a clearing member, the clearing house must settle defaulting member's trades. The clearing house will use cash deposited in the member's account, and if that is not enough to satisfy the member's obligations, the clearing house will sell the non-cash collateral. If non-cash collaterals cannot be sold quickly, the clearing house will resort to committed funding arrangements such as the member's line of credit. If liquidity is still needed, the clearing house may substitute *any* clearing member's cash deposited to the Guaranty Fund[307] with U.S. government securities in the defaulting member's account. The government security will be subject to a haircut in the substitution. The non-defaulting clearing members who are impacted in the substitution may request the clearing house to return the cash within twenty-nine days of the substitution. But, the clearing member making such a request bears the risk of the value of the U.S. government securities declining during this time period.[308]

CME Clearing maintains a fully secured line of credit with a consortium of domestic and international banks. The credit line serves the purpose of providing liquidity to the clearing house in case it suffers from a temporary liquidity squeeze that would prevent it from settling trades with clearing members. The CME's document shows that as of Dec. 31, 2017, the line of credit was $7

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[304] *Id.*
[305] *Id.*
[306] *Id*. at ch. 9, r. 901(G), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[307] The Guaranty Fund will be discussed in detail under "Default Management", *see infra* p. 68.
[308] *Id*. at ch. 8, r. 822.A.(1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

billion, expandable to $10 billion."[309] In addition, the CME requires clearing members to set credit limits on their customers and respond to the clearing house's advice that any credit limit appears to be inadequate.[310]

Clearing Members' Risk Management Policies: The CME requires all clearing members to have written risk management policies. The format and scope of these policies are determined by each member in accordance with the member's specific circumstances, but the policies must in the minimum allow the member to: (1) monitor the credit risks of customers and set automated credit controls, (2) monitor risks associated with proprietary trading, (3) perform stress testing, (4) set automatic position limits, (5) monitor account activity on an intraday basis, (6) have clearly defined liquidity sources in case of increases in settlement obligations, and (7) satisfy any other risk management requirements of the exchange.[311] Each clearing member must promptly provide to the exchange and the clearing house, upon request, information and documents regarding its risk management policies, procedures, and practices.[312]

E. Internal Control Policies and Procedures Against Money Laundering

Financial derivatives are susceptible to being used for money laundering due to the often complex nature of derivative transactions. Money launderers may attempt to open two accounts that take fictitious opposite positions, with the "loss" side paying the "gain" side to launder the dirt off the money earned through illicit activities. Financial institutions must establish compliance program to detect and report money-laundering activities by statute as well as rules of self-

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[309] *See* CME GROUP *supra* note 265 at 13.
[310] *Id*. at 7. *See also* CME Rulebook *supra* note 35 at ch. 9, r. 949, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[311] CME Rulebook *supra* note 35 at ch. 9, r. 982, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[312] *Id.*

regulatory organizations. The Bank Secrecy Act (BSA), initially adopted in 1970, establishes the basic framework for anti-money laundering obligations of financial institutions.[313] Rule 17a-8 under the Securities Exchange Act of 1934 (Exchange Act) requires broker-dealers to comply with the reporting, recordkeeping, and record retention rules adopted under the BSA.[314] The Financial Crimes Enforcement Network (FinCEN), a bureau under the Secretary of Treasury, has the regulatory responsibilities of administering the BSA.[315]

In 2001, Congress enacted the USA Patriot Act in response to the Sept.11, 2001 terrorist attacks.[316] The USA Patriot Act amended and strengthened the BSA to require financial institutions, including broker-dealers, to establish written customer identification programs.[317] These programs must include, at a minimum, procedures for: (1) obtaining customer identifying information from each customer prior to account opening; (2) verifying the identity of each customer, to the extent reasonable and practicable, within a reasonable time before or after account opening; (3) maintaining a record of information relating to identity verification; (4) determining within a reasonable time after account opening or earlier whether a customer appears on any list of known or suspected terrorist organizations designated by the Treasury Department; and (5) providing each customer with adequate notice, prior to opening an account, that information is being requested to verify the customer's identity.[318]

The USA Patriot Act also imposes special due diligence requirements on financial institutions managing private banking accounts in the United States for non-US persons.[319] Broker-

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[313] 31 U.S.C. § 5311 (2019).
[314] 17 C.F.R. § 240.17a-8 (2019). *See also Anti-Money Laundering (AML) Source Tool for Broker-Dealers*, SEC (Oct. 4, 2018), https://www.sec.gov/about/offices/ocie/amlsourcetool.htm#1.
[315] *See Mission*, FINANCIAL CRIMES ENFORCEMENT NETWORK, https://www.fincen.gov/about/mission.
[316] USA Patriot Act**,** Pub. L. No. 107-56, 115 Stat. 272 (2001).
[317] *Id*. at §326.
[318] *Id.*
[319] *Id.* at §312.

dealers servicing private banking accounts must take reasonable steps to determine upon the establishment of the account and on an on-going basis: (1) the identity of all nominal and beneficial owners of the accounts; (2) whether any such owner is a senior foreign political figure who is subject to enhanced scrutiny for foreign corruption; (3) the source of funds deposited into the private banking account and the purpose and use of such account.[320] Financial institutions must keep records of fund transfers (such as wire transfers) of $3,000 or more. The record must show information relating to the transfer such as name, address, account number of client, date and amount of wire, payment instructions, name of recipient institution, and name and account information of wire payment recipient.[321] These fund transfer rules are designed to help law enforcement agencies detect, investigate, and prosecute money laundering and other financial crimes by preserving an information trail about persons sending and receiving funds through funds transfer systems.

The USA Patriot Act added a safe harbor provision to the BSA encouraging financial institutions to share client information helpful to law enforcement.[322] The safe harbor provision protects financial institutions, including broker-dealers, from liabilities in connection with sharing information with other financial institutions for the purposes of identifying and reporting activities that may involve terrorist acts or money laundering activities. To protect the privacy of consumers, financial institutions that intend to share information must: (1) file an annual notice with FinCEN, (2) maintain procedures to protect the security and confidentiality of the information, and (3) take

[320] 31 C.F.R. § 1010.620 (2019). *See also*: 31 C.F.R. § 1010.605 (2019).
[321] 31 C.F.R. § 1010.410(e) (2019). 31 C.F.R § 1010.410(f) (2019). *See also* U. S. DEP'T OF THE TREASURY FIN. CRIMES ENF'T NETWORK, *Guidance for Financial Institutions on the Transmittal of Funds "Travel" Regulations*, FINCEN ADVISORY 3, 3 (Jan. 1997), https://www.sec.gov/about/offices/ocie/aml2007/fincen-advissu7.pdf.
[322] USA Patriot Act *supra* note 328 at §314 (b).

reasonable steps to verify that the financial institutions with which information is shared have filed notices with FinCEN.[323]

FINRA (Financial Industry Regulatory Authority) also has rules on anti-money laundering. Broker-dealers can satisfy the statutory anti-money laundering requirements by establishing a program that complies with FINRA's rules in this regard. In September 2009, the SEC approved FINRA Rule 3310, which requires member organizations to establish risk-based anti-money laundering compliance programs that are reasonably designed to detect and report money laundering activities.[324] FINRA rules also require broker-dealer firms to have designated officers monitoring the day-to-day operations and internal controls of the program, train employees to follow the anti-money laundering policies and procedures; and provide for an annual testing of the effectiveness of the program.[325] The NFA and the CME have similar requirements for their respective members.[326] Persistent failure to follow the policies and procedures of anti-money laundering programs by a broker-dealer will result in disciplinary actions by regulatory authorities.[327]

F. Default Management

[323] *See* DEPARTMENT OF TREASURY FINANCIAL CRIMES ENFORCEMENT NETWORK, *Guidance on the Scope of Permissible Information Sharing Covered by Section 314(b) Safe Harbor of the USA PATRIOT Act*, FIN-2009-G002 (June 16, 2019), https://www.fincen.gov/sites/default/files/shared/fin-2009-g002.pdf.

[324] FINANCIAL INDUSTRY REGULATORY AUTHORITY, FINRA MANUAL §3310 Anti-Money Laundering Compliance Program, http://finra.complinet.com/en/display/display_main.html?rbid=2403&element_id=8656.

[325] *Id.*

[326] *See* NFA Rulebook *supra* note 64 at pt. 2, r. 2-9(c), https://www.nfa.futures.org/nfamanual/NFAManual.aspx?RuleID=9045&Section=9. *See also* CME Rulebook *supra* note 35 at ch. 9, r. 981, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

[327] *See* In the Matter of Pinnacle Capital Mkts., LLC and Michael A. Paciorek, Securities Exchange Act Of 1934 Release No. 62811 (Sept. 1, 2010), (A small broker-dealer firm with more than 99% of customers residing outside the United States was fined for its failure to comply with the reporting, recordkeeping and record retention requirements in regulations implemented under the Bank Secrecy Act, and for failure verify the identities of many of its account holders from 2003 – 2009 as required by its written procedures); *and* In the Matter of Ronald S. Bloomfield, Robert Gorgia, Victor Labi, John Earl Martin, Sr., and Eugene Miller, Securities Exchange Act of 1934 Release No. 71632 (Feb. 27, 2014), (broker-dealer firm sanctioned for failure to take any action after receiving multiple warnings about the possibility of illegal activities in customer accounts and for failure to conduct a reasonable inquiry into the source of customers' stocks).

Procedures upon a Clearing Member's Default: The CME defines default as an event in which a clearing member fails to discharge any obligation to the clearing house in a timely manner; or is in bankruptcy, reorganization, insolvency, or other similar proceedings under U.S. federal or state law.[328] Upon default, the clearing member's collateral will be applied to discharge any loss the default has caused the clearing house. These losses also includes costs arising from liquidating, transferring, and managing the defaulting member's positions. [329] The defaulting clearing member has previously agreed, upon becoming a member, not to take any action such as obtaining a court order that would interfere with the clearing house's usage of the collateral for the above purposes.[330] If the defaulting clearing member's collateral is not sufficient to satisfy its liability to the clearing house, the clearing house can seek satisfaction from other assets of the member in accordance with law.[331] To the extent valuation is needed for positions held in the defaulting member's account, the clearing house will use market prices prevailing at the liquidation of the positions. If market prices are not available or the market is not functioning normally, the clearing house will in good faith adopt reasonable valuation methods as substitutes.[332]

The Guaranty Fund: In addition to the payment of margins, all clearing members are required to contribute to the Guaranty Fund of the product group in which they trade. Guaranty Funds are mutualized pools of resources to cover losses beyond the margins collected in extreme market conditions. The CME's clearing house maintains two Guaranty Funds: (1) the Base Guaranty Fund for futures, options, and options on futures; and (2) the IRS Guaranty Fund for swap products and any positions commingled with swaps.[333] Consistent with CFTC Regulation

[328] CME Rulebook *supra* note 35 at ch. 8, r. 802.A.(1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[329] *Id*. at ch. 8, r. 802.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[330] *Id*. at ch. 8, r. 802.B.(11), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[331] *Id*. at ch. 8, r. 802.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[332] *Id.* at ch. 8, r. 818.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[333] *See* CME GROUP *supra* note 265 at 3.

39.33(a),[334] each Guaranty Fund is sized to cover the potential loss caused by the simultaneous default of two clearing members and their affiliates that would give rise to the largest credit exposure to the CME within the asset class. This is commonly referred to as "Cover Two".[335] The size of each Guaranty Fund is determined through daily stress testing of numerous extreme but plausible scenarios of market movement. These stress tests may be more frequent than daily if market conditions warrant. Results of the stress tests are analyzed by the risk management team and reported to the clearing house's internal Stress Testing Committee.[336] The amount each clearing member contributes to the Base Guaranty Fund is the greater of $500,000 or the results of a risk-based formula. The formula takes into account the clearing member's proportional share in the aggregate margin requirements and trading volume during the previous three months.[337]

The Guaranty Funds are re-sized at least on a monthly basis, although the clearing house maintains the ability to re-size on an ad hoc basis as market conditions warrant. These conditions include when the Cover Two size is greater than eighty percent of the Guaranty Fund's size. The CME has the right to call for additional guaranty fund contributions from all clearing participants outside the scheduled contribution recalculation dates. The fundamental stress testing assumptions and Guaranty Fund sizing methodologies are independently validated by external expertise at least on an annual basis.[338] The Base Guaranty Fund and the IRS Guaranty Fund have $4.1 trillion in the aggregate as of Dec. 31, 2018.[339]

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334 17 C.F.R. § 39.33 (2019).
335 *See* CME GROUP *supra* note 265 at 20.
336 *See* CME CLEARING *supra* note 292 at 47.
337 CME Rulebook *supra* note 35 at ch. 8, r. 816, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf, *and* CME Rulebook *supra* note 35 at c. 8-G, r. 8G07, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8G/8G.pdf. *See also* CME GROUP *supra* note 265 at 20.
338 *See* CME GROUP *supra* note 265 at 48.
339 *See* CME Clearing's Financial Safeguard System, CME GROUP, https://www.cmegroup.com/clearing/cme-clearing-overview/safeguards.html.

The Financial Safeguard Waterfall: The clearing house has a layered defense system called the financial safeguard waterfall to deal with the default of one or multiple clearing members. The waterfall has the following resources that are used sequentially upon a clearing member's default: (1) Defaulter's resources such as margin collaterals and his contribution to the Guaranty Fund are sold. (2) The clearing house uses its own capital up to $100 million (CME Contribution) if the defaulter's resources are insufficient. The clearing house takes the first-loss before utilizing non-defaulting clearing members' Guaranty Fund contributions so as to align the clearing house's incentives with its clearing members. (3) The Guaranty Fund contributions of non-defaulting clearing members are used. In this regard, the clearing house may only utilize the appropriate Guaranty Fund(s) in which the defaulter participates, but may not use those in which the clearing member does not participate.[340] Thus, funds in the Base Guaranty Fund cannot be used to offset a default by a clearing member who participates only in the IRS Guaranty Fund. In the event that the Guaranty Fund is drawn after a default, each clearing member (including non-defaulting members) must replenish its contributions by the close of the business day following the day of the payment.[341] (4) If all prior layers are insufficient to cure the losses of the default, the clearing house has the power to request additional contributions from clearing members.[342] A clearing member that has paid in full its obligations toward the Guaranty Fund and the clearing house's additional assessment may provide notice to the clearing house of its decision to terminate its membership to avoid additional payments.[343]

[340] *See* CME GROUP *supra* note 265 at 19.
[341] CME Rulebook *supra* note 35 at ch. 8, r. 802.F, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[342] *See Financial Safeguards System*, CME GROUP, https://www.cmegroup.com/clearing/risk-management/financial-safeguards.html.
[343] CME Rulebook *supra* note 35 at ch. 8, r. 802.B.(5), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

The Ultimate Wind-Down Plan: In the apocalyptic scenario in which a deluge of defaults exhausts the clearing house' resources and inhibits its continued performance of settlement responsibilities, the clearing house must wind down its operation. The CME's ultimate wind-down plan has been developed in accordance with CFTC regulations. In this situation, the clearing house conducts a final close-out netting process and determines the amount it will pay to and collect from clearing members in a manner to minimize further disruptions to the market.[344] In case the amount that the clearing house owes to its members exceeds the amount it collects, the clearing house first solicit voluntary capital contributions from its members, and if delinquency still remains, it will prorate its payment obligations to equalize them with available funds.[345] By exchange rules, clearing members renounce any claim against the exchange and its clearing house for any loss resulting from the latter's exercising its powers according to the default procedural rules, but may seek recovery from clearing members whose defaults have caused the wind-up of the clearing house.[346] In the event the CME is facing financial distress, unrelated to any clearing member's default, the assets of clearing members and their customers are bankruptcy remote from the CME's estate.[347]

G. Regulation of Client Relationships

Anti-Fraud Provision: NFA rules prohibit members from using fraudulent and manipulative practices by making false or misleading representations to customers, bucketing customer orders, or embezzling customer funds.[348] The NFA also prohibits members from

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[344] *Id.* at ch. 8, r. 802.B.(7)(ii), *and Id.* at ch. 8, r. 802.B.(7)(iii), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[345] *Id.* at ch. 8, r. 802.B.7.(v), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[346] *Id.* at ch. 8, r. 802.B.(11), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[347] *See* CME GROUP *supra* note 265 at 20.
[348] NFA Rulebook *supra* note 64 at r. 2-2. Fraud and Related Matters.

accepting orders from any person who is subject to a prohibition from trading by the CFTC.[349] The CME further prohibits its members from making fraudulent or high-pressure sales communications in the course of offering or selling services to customers.[350]

The Suitability Rule: Financial intermediaries who recommend financial products and trading strategies to any customer must have reasonable grounds to believe that their trading recommendations are suitable for the customer. These grounds should be based on the customer's investment objectives, financial capability and any other information known by the intermediaries.[351] Financial intermediaries must reasonably believe that the customer is mentally capable of evaluating and financially capable of bearing the risks of the recommended transaction. The NFA requires financial intermediaries with discretion over a customer account not to effectuate transactions that are excessive in size or frequency in view of the customer's investment objectives and financial situation.[352]

Information Gathering: The NFA requires financial intermediaries to collect certain information about customers who are not Eligible Contract Participants when the financial intermediaries first open accounts for the customers.[353] Eligible Contract Participants are defined in the CEA to include financial institutions, financial market professionals, insurance companies, commodities pools, corporate entities, partnerships, and wealthy individuals.[354] The customers subject to this information gathering are all those not listed in the proceeding sentence. These

[349] *Id*.
[350] CME Rulebook *supra* note 35 at ch. 9, r. 952, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[351] NFA Rulebook *supra* note 64 at r. 2-30. Customer Information and Risk Disclosure.
[352] *Id.*
[353] *Id.* at r. 2-30. Customer Information and Risk Disclosure, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4.
[354] 7 U.S.C. § 1a (18), (According to this section, Eligible Contract Participants are mostly financial institutions, insurance companies, commodity pools, corporations, partnerships, financial market professionals (e.g., brokers, dealers, and wealthy individuals). These participants are generally classified as professional investors, and are authorized to trade a wider range of financial products than would be available to a typical retail investor.).

consumers are also called retail customers. The information collected from retail customers must include, but is not limited to, the customers' annual income, net worth, and investment experience. Financial intermediaries are entitled to rely on the information submitted by customers.[355] In case a customer refuses to provide the information, the intermediary must retain a record of such refusal.[356] Financial intermediaries must also update information of retail customers at least once a year.[357]

Risk and Fee Disclosures: Risk disclosures provided to customers about futures trading must comply with CFTC Regulations 1.55[358], 4.34[359], and 4.35.[360] These regulations impose detailed requirements in regard to the content, format, and timing of disclosures. Under these regulations, broker-dealers must alert customers about the risk of: (1) losses beyond invested capital, (2) forced liquidations if they are unable to meet margin calls, and (3) currency exchange risks if they trade products on foreign trading platforms. Financial advisors must also disclose historical gains and losses of funds under their management. In addition, the NFA requires commodity pool operators to disclose upfront fee structures and provide break-even analysis, so that customers are informed about how fees and expenses impact on the profitability of their investments.[361] Moreover, whenever a customer notifies the broker-dealer carrying the customer's account of any material changes to the information previously submitted, a determination must be

[355] NFA Rulebook *supra* note 64 at r. 2-30.(f) Customer Information and Risk Disclosure, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4.
[356] *Id.* at r. 2-30.(g) Customer Information and Risk Disclosure, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4.
[357] *Id.* at r. 2-30.(b) Customer Information and Risk Disclosure, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4.
[358] 17 C.F.R. § 1.55 (2019).
[359] 17 C.F.R. § 4.34 (2019).
[360] 17 C.F.R. § 4.35 (2019).
[361] NFA Rulebook *supra* note 64 at r. 2-13 CPO/CTA Regulations, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-13.

made as to whether an additional risk disclosure should be provided to the customer based on the new information.[362]

Promotional Materials: Promotional materials must comply with NFA Rule 2-29.[363] The rule prevents members from distributing promotional materials that contain material misrepresentations or misleading statements. Any statement of opinion in promotional materials must have a reasonable basis in fact. Any statement of profits made in promotional material must be accompanied by statements of the risk of loss, and any reference to past gains must be accompanied by warning that the past is not necessarily indicative of the future. Advertisements for services stating a specific account's statistics (including rate of returns) can only be used if they are representative of reasonably comparable accounts during the same time period. Testimonials can be used only if they are representative of all reasonably comparable accounts and are accompanied by a prominent statement that the people giving the testimonials are paid (if applicable) and not necessarily indicative of future performance.

In addition, if hypothetical results are included in the promotional materials, they must be accompanied by a statement that the results have been calculated with the benefit of hindsight and are not a guarantee for similar performances in the actual future trading.[364] If the customer account manager has less than one year of experience in proprietary trading or directing customer account trading, the hypothetical results must also be accompanied by a prominent statement that the promoter has no or insubstantial experience in actual trading for itself or for customers, and that there are not sufficient actual trading results to compare to the hypothetical performance.[365]

[362] *Id.* at p. 2, r. 2-30. Customer Information and Risk Disclosure, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-30.
[363] *Id.* at p. 2, r. 2-29. Communications with the Public and Promotional Material, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-29.
[364] *Id.*
[365] *Id.*

Moreover, if the hypothetical results are provided to illustrate what a multi-advisor account portfolio could have achieved in the past if assets had been allocated among particular trading advisors, the promotional materials must include an NFA prescribed disclaimer. The disclaimer must state that the pertinent trading advisors have not been trading together in a manner shown in the hypothetical, that asset allocations change from time to time so the hypothetical allocation may not represent true allocation in the future, and that the hypothetical asset allocation has been made with hindsight and not under real market conditions.[366] The foregoing disclaimer rules do not apply when the recipients of the promotional materials are sophisticated investors referred to as "Qualified Eligible Persons" under CFTC Regulation 4.7.[367]

All promotional materials circulated must be approved in writing by supervisors of the promoter and filed with the NFA. [368] A promoter must keep a record of all promotional materials used for the period of time specified by CFTC Regulation 1.31.[369] Radio or television promotional materials must be submitted to the NFA for review if the materials make specific trading recommendations or refer to past profits as representative of the future.[370] In addition to meeting the NFA's requirements, clearing members of the CME must keep a copy of all written and electronic promotional material at their principal place of business and make such promotional material available for inspection upon the CME's request.[371]

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[366] *Id.*

[367] *Id*., *and* 17 C.F.R. § 4.7(a)(2), (Qualified Eligible persons include mostly investment professionals).

[368] NFA Rulebook *supra* note 64 at p. 2, r. 2-29. Communications with the Public and Promotional Material, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-29.

[369] 17 C.F.R. § 1.31(b) (2019), (pursuant to this section, records of oral communications in regard to index futures transactions must be retrained for no less than one year from the date of the oral communication; records of written communications must be retained for no less than five years from the date on which the record was created).

[370] NFA Rulebook *supra* note 64 at p. 2, r. 2-29. Communications with the Public and Promotional Material, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-29.

[371] CME Rulebook *supra* note 35 at ch. 9, r. 953, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

Discretional Accounts: Financial institutions and associates may only exercise discretion over a customer account with the customer's written authorization except when discretion is with regard to time and price only.[372] Financial institutions must maintain records that clearly identify customer accounts over which they are authorized to exercise discretion.[373] In order to exercise discretion over a customer account, the financial intermediary must have been registered with the NFA for at least two years and have been working in such registered capacity for that period of time. This requirement may, in NFA's discretion, be waived upon a showing of equivalent experience.[374] Discretional account activities must be regularly reviewed by senior officers of the financial institution. The review must be reasonably designed to identify inappropriate activities such as excessive trading relative to the size of the account. Written records of the review must be made.[375]

Protecting Assets in Customer Accounts: Pursuant to CFTC Regulation 1.20, financial intermediaries are required to segregate customer funds from the intermediaries' own funds and clearly identify customer funds as such.[376] They are also required to obtain a written acknowledgement from each institution with which they have deposited customer funds, unless the depository is a clearing house subject to the regulation of the CFTC.[377] Margins deposited with a brokerage firm cannot be used to satisfy margin obligations of other customers. If there is

[372] NFA Rulebook *supra* note 64 at pt. 2, r. 2-8(a) Discretionary Accounts, https://www.nfa.futures.org/nfamanual/NFAManual.aspx?RuleID=RULE%202-8&Section=4.
[373] *Id.*
[374] *Id.* at pt. 2, r. 2-8(c) Discretionary Accounts, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-8.
[375] *Id.* at pt. 2, r. 2-8(b) Discretionary Accounts, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-8. *See also* CME Rulebook, and CME Rulebook *supra* note 35 at ch. 9, r. 956.C.(1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[376] 17 C.F.R. § 1.20(a) (2019).
[377] 17 C.F.R. §1.20(d) (2019). *See also* CME Rulebook *supra* note 35 at ch. 9, r. 973, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

any deficiency in margins deposited by a customer, the brokerage firm must use its own funds to cover the deficiency rather than using any excess margins deposited by other customers.[378] In settling trades executed at the CME, a clearing member's obligation to the clearing house is netted against any payment to be received from the clearing house. For this purpose, the clearing member's proprietary positions are separated from customer positions, so there is no cross-netting between the proprietary account with a customer account. For example, a customer entitled to receive $1,000 will not be netted against a proprietary obligation of $400 of the clearing member who carries his trade.[379] Upon the default of a clearing member, the CME will attempt to transfer all non-defaulting customers' open positions as quickly as practicable to one or multiple non-defaulting clearing members who have similar or complimentary customer profiles and are well positioned to accept such positions.[380]

In cases of default by a clearing member who has remaining collaterals after the clearing house has liquidated his positions and used the proceeds to satisfy his obligations to the clearing house, the clearing house will apply the residual collaterals to cover losses remaining in the defaulting clearing member's customer accounts. However, collaterals in customer segregated accounts cannot be used to satisfy obligations of the clearing member.[381] If a customer's default triggers the default of the clearing member carrying his trade, the clearing house may liquidate all open positions and collateral deposits of the clearing member in the same account class, including

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[378] 17 C.F.R. § 1.22(a) (2019). See also NFA Rulebook *supra* note 64 at NFA Interpretive Notices, 9066 - NFA Financial Requirements Section 16: FCM Financial Practices and Excess Segregated Funds/Secured Amount/Cleared Swaps Customer Collateral Disbursements (March 29, 2017), https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=9066&Section=9.

[379] CME Rulebook *supra* note 35 at ch. 8, r. 818.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

[380] *Id.* at ch. 8, r. 802.G, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf. *See also* CME GROUP *supra* note 265 at 20.

[381] CME Rulebook *supra* note 35 at ch. 8, r. 802.G(6), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.

the positions and collaterals of non-defaulting customers.[382] Any funds remaining after the liquidation of the clearing member's account will be reserved to satisfy the claims of non-defaulting customers.[383] In addition, brokers cannot directly or indirectly guarantee the execution of an order or any of its terms such as the quantity or price.[384] Financial institutions are prohibited from sharing trading profits and losses with a client without the client's consent.[385]

Retention of Customer Complaint Record: Clearing members must retain a record of all written customer complaints. The record must note the date each complaint was received, the associated person who serviced the account, a general description of the matter complained of, and any action taken by the clearing member regarding the complaint. Clearing members must also have policies whereby people with verbal complaints are directed to place the complaints in writing and submit to the compliance officer of the clearing member. Records of complaints must be maintained at the clearing member's principal place of business.[386]

H. Dispute Resolution

Disputes Subject to Mandatory Arbitration: NFA rules require disputes between its members involving commodities futures transactions to be arbitrated at the NFA unless the dispute qualifies for any of the exceptions from the mandatory arbitration provision. One exception is if all parties to the dispute are members of an exchange that has jurisdiction over the dispute, the dispute can be resolved in accordance with the exchange's rules.[387] CME rules mandates

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[382] *Id*. at ch. 8, r. 802.G(1), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[383] *Id.*
[384] *Id.* at ch. 5, r. 540.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.
[385] NFA Rulebook *supra* note 64 at pt.2, r. 2-3. Sharing in Profits, https://www.nfa.futures.org/nfamanual/NFAManual.aspx?RuleID=RULE%202-3&Section=4.
[386] CME Rulebook *supra* note 35 at ch. 9, r. 954, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[387] NFA Rulebook *supra* note 64 at pt. Member Arbitration Rules, § 2. (a) Arbitrable Disputes, https://www.nfa.futures.org/rulebook/rules.aspx?Section=6.

arbitration as the venue for resolving disputes by members against the CME relating to the latter's systems and facilities.[388] The CME also requires arbitration between members over trades on the exchange and the enforceability of non-compete contracts.[389] However, the mandatory arbitration clause does not prevent members' employees from filing a lawsuit for violation of federal, state, or local employment laws. These include suits pertaining to workplace discrimination, unpaid or under paid wages, or unpaid benefits laws.[390]

Disputes Subject to Voluntary Arbitration: The CFTC prohibits a financial intermediary from forcing a customer into arbitration for disputes with the intermediary. A customer's submission to arbitration must be voluntary, and the intermediary cannot condition the provision of services to the customer upon the customer's signing a pre-dispute arbitration agreement.[391] A narrow exception to the voluntary customer arbitration provision is carved out for financial institutions, business entities, investment professionals, and wealthy individuals who are deemed "Qualified Eligible Person." This term of art is defined in Section 4.7 of CFTC Rules.[392] CFTC rules require that for an arbitration agreement to be enforceable the customer (including "Qualified Eligible Person") must sign the arbitration clause separately if the clause is part of a broader agreement.[393] In addition, CFTC rules explicitly provide that the signing of the arbitration agreement does not waive the customer's rights to reparations under the CEA and the CFTC Rules. Therefore, when dispute arises and the financial intermediary notifies the customer its intention to pursue arbitration, it must advise the customer at the same time in writing about the customer's right to seek reparations via the court system within forty-five days of the notice. The financial

[388] CME Rulebook *supra* note 35 at ch. 6, r. 600.C., r. 621, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[389] *Id*. at ch. 6, r. 600.A., r. 622, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[390] *Id.*
[391] 17 C.F.R. § 166.5(c) (2019).
[392] 17 C.F.R. § 4.7(a)(2) (2019), *and* 17 C.F.R. § 4.7(a)(3) (2019).
[393] 17 C.F.R. § 166.5(c)(2) (2019).

intermediary must also advise the customer, at the time either party notifies the other of an intention to arbitrate, that the customer has a right to choose a qualified forum.[394] The financial intermediary is required to provide a list of the organizations that meet the CFTC's requirements for functioning as arbitrators together with a copy of the rules of each forum listed.[395] The list must include, in most situations, an exchange upon which the transaction giving rise to the dispute was executed (e.g., the CME), a registered futures association (e.g., the NFA), and at least one other organization with a diverse geographical presence. This way, the customer can choose an arbitration site from several major cities that can offer the customer an arbitration panel consisting of at least some panelists who are not associated with a member of the exchange.[396]

NFA Arbitration Procedures: The NFA has a two-year limitation period for an arbitration claim or notice of arbitration to be filed.[397] If the aggregate claim amount does not exceed $100,000, the NFA appoints one arbitrator. This is unless all parties serve a written request on the NFA for three arbitrators by no later than thirty days after the last pleading is due or the sole arbitrator asks the NFA to appoint two additional arbitrators. If the aggregate claim amount exceeds $100,000, the NFA will appoint three arbitrators.[398] Any objection to the person appointed as an arbitrator must be submitted to the NFA in writing with statements of circumstances likely affecting the arbitrator's impartiality.[399] During the course of arbitration, the parties to the arbitration and their representatives cannot contact any member of the arbitration panel regarding the dispute other than inquiries concerning the arbitration status, except at the hearing or in writing

[394] 17 C.F.R. § 166.5(c)(3) (2019).
[395] 17 C.F.R. § 166.5(c)(5) (2019).
[396] *Id.*
[397] NFA Rulebook *supra* note 64 at pt. Code of Arbitration, § 5. Time Period for Arbitration, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5. *See also* NFA Rulebook *supra* note 64 at pt. Member Arbitration Rules, § 4, Time Period for Arbitration, https://www.nfa.futures.org/rulebook/rules.aspx?Section=6.
[398] *Id*. at pt. Code of Arbitration, § 4.(a) Arbitration Panel. https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[399] *Id.* at pt. Code of Arbitration, § 4(c) Arbitration Panel, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.

on notice to the other parties.[400] The NFA will serve the arbitration claim on the respondent, who has twenty days to respond if the claim is for $50,000 or less, and forty-five days to respond otherwise.[401] For counterclaims and cross claims, the response time is ten days or twenty days, depending on whether the claim is for more than $50,000.[402] The higher dollar valuation results in the longer response time. Summary disposition can be granted by vote of the majority of the panel.[403]

Either party may request a hearing by the arbitration panel. At such hearings, the arbitration panel need not follow the technical rules of procedure. However, records and documents of any previous mediation proceeding are not admissible in the arbitration hearing, and mediators cannot be called as witnesses. In other respects, the hearing procedure will be determined by the arbitration panel.[404] If the parties have agreed to waive an oral hearing, or if the claim amount is less than $50,000, arbitration may be conducted through written submissions and without an oral hearing.[405]

NFA arbitration panels function as mandated by the NFA Rulebook. The award is rendered by the majority of the panel.[406] A party to the arbitration whose claim or defense is found to be frivolous or in bad faith during the arbitration process may be required to pay for reasonable costs of the arbitrators, any party, or witness. This includes the possibility of attorney's fee.[407]

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[400] *Id*. at pt. Code of Arbitration, § 4(f) Arbitration Panel, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[401] *Id*. at pt. Code of Arbitration, § 6(e) Initiation of Arbitration, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[402] *Id*. at pt. Code of Arbitration, § 6(f) Initiation of Arbitration, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[403] *Id*. at pt. Code of Arbitration, § 8(f) Pre-Hearing, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[404] *Id*. at pt. Code of Arbitration, § 9(f) Hearing, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[405] *Id*.
[406] *Id*. at pt. Code of Arbitration, § 10(a) Award, Settlement and Withdrawal, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[407] *Id*. at pt. Code of Arbitration, § 12 Arbitration Costs, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.

The panel's award is final, and the parties have no right of appeal from the award.[408] However, the award may be modified by the panel for material, technical errors such as a miscalculation of figures or a mistake in the description of any person, thing, or property referred to in the award. The party requesting the modification to the award must submit a written request, which must be received by the panel within twenty days of the service of the arbitration award on the party. The timely filing of a request for modification will automatically stay the enforcement of the award until the NFA or the panel has made any decision on the request for modification.[409] Any NFA member who fails to comply with the arbitration award within thirty days of the service of the award may summarily lose its membership. Losing the NFA membership would trigger a loss of membership at the CME and other futures exchanges. The only exceptions to loss of NFA membership for not complying with an arbitration award are a pending request to the NFA for modification or a pending petition to the court to vacate or modify the award. If the member qualifies for the exceptions, he must post a bond with the NFA equal to 150% of the award against him or a lower percentage set by the NFA.[410]

If a customer who is not an Eligible Contract Participant[411] has initiated an arbitration proceeding, no party to the arbitration may bring any legal action outside of the arbitration proceeding against any other party that concerns any of the matters raised in the arbitration.[412]

CME Arbitration Procedures: For claims against the CME, the initial claim must be made within ten business days of the occurrence of the incidence giving rise to the claim. If the exchange

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[408] *Id*. at pt. Code of Arbitration, § 10(c) Award, Settlement and Withdrawal, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[409] *Id*. at pt. Code of Arbitration, § 10(d) Award, Settlement and Withdrawal, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[410] *Id*. at pt. Code of Arbitration, § 10(g) Award, Settlement and Withdrawal, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.
[411] For the definition of "Eligible Contract Participant", *see supra* note 354.
[412] *Id*. at pt. Code of Arbitration, § 20 Other Legal Proceedings, https://www.nfa.futures.org/rulebook/rules.aspx?Section=5.

denies the claim within thirty business days of receiving the claim, the claimant must file a written demand for arbitration with the appropriate department of the exchange within ten business days of the denial being sent. The claimant's failure to observe this timeline will result in the dismissal of his claim.[413] In any case, the exchange will not accept a claim for arbitration if there is a stay due to the pendency of a bankruptcy proceeding. Nor will the CME accept a claim for arbitration if there is an existing arbitration or litigation pending based on the same act, transaction, or omission as the arbitration claim. [414] The CME arbitration panel has five arbitrators and one chairman, all of whom are appointed by CME.[415] In case the claim is against the exchange for trading or services, three members of the arbitration panel must be non-members of the exchange.[416] Each party may request the removal of any arbitrator(s) from a panel for good cause, but such request must be made no later than the start of testimony at the first scheduled hearing. A party's failure to make a timely request is deemed a waiver by such party of any further objection to any person serving as the arbitrator.[417] The chairman of the arbitration panel decides in his or her sole discretion whether a person should be removed from the panel.[418] Arbitration decisions on the dispute are made by the majority vote of the arbitration panel and the chairman will vote only to break a tie.[419] Arbitration proceedings are not bound by the formal rules of evidence.[420]

In the CME system, arbitration awards can include punitive damages, interest assessments, indirect or consequential loss (including loss of profits), attorney fees, arbitration fees, and

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[413] CME Rulebook *supra* note 35 at ch. 6, r. 621.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[414] *Id*. at ch. 6, r. 610, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[415] *Id*. at ch. 6, r. 614.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[416] *Id.* at ch. 6, r. 621.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[417] *Id.* at ch. 6, r. 614.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[418] *Id.*
[419] *Id.* at ch. 6, r. 615.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[420] *Id.*

administrative costs of the arbitration proceeding for frivolous claims or defenses.[421] However, no punitive damages, indirect/consequential damages, or loss of profits or loss of use can be assessed against the exchange over the trading system or services, or against the exchange or another member for trade cancellation or price adjustment.[422]

The arbitration panel's decisions on claims against the CME are final, except that a party may move – within three business days of the award – for the correction of any miscalculation or mis-description or other non-substantive errors.[423] Disputes between CME members resulting in a damage award of more than $10,000 can be appealed.[424] In order to appeal a decision, a party must – within ten days of receipt of the notice of decision – file with the exchange a written request stating the grounds for the appeal and deposit the applicable fee established by the exchange. Failure to timely comply with these requirements for appeal, when applicable, constitutes a waiver of any right to appeal and renders the arbitrators' decision final and binding. [425] The appeals panel at the CME consists of three members appointed by the Chairman of CME who have no personal or financial interest in the outcome of the matter.[426]

Regardless of whether an appeal is pending, an arbitration award must be paid by the parties within fifteen days of receipt of the notice of arbitration decision.[427] An individual member who fails to provide proof of payment within the time prescribed will be denied access to the exchange's trading system. An entity member that fails to provide proof of payment in time will forfeit preferred fee treatment for its proprietary trading and may be denied access to exchange's trading

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[421] *Id*. at ch. 6, r. 616.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[422] *Id*. at ch. 6, r. 621.E, *and Id*. at ch. 6, r. 622.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[423] *Id.*
[424] *Id*. at ch. 6, r. 619, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[425] *Id.*
[426] *Id.*
[427] *Id.*

facilities. Any member who fails to pay an arbitration award within the time prescribed may be subject to disciplinary actions by the exchange.[428] In case the exchange is directed to pay arbitration awards, such awards will be prorated among claimants and will be subject to limitation in liability in accordance with the exchange rules. The exchange may delay the payment until such proration and limitation is determined. [429]

I. Surveillance and Enforcement

Reporting Obligations: Both the NFA and the CME impose stringent reporting requirements on their members. The NFA requires futures commission merchants to file a financial report within seventeen business days of the end of each month. The NFA requires introducing brokers to file a copy of any reports due to the CFTC or any other self-regulatory organization with the NFA as well.[430] Moreover, the NFA has the power to collect any additional financial information from its members.[431] The NFA fines any member who fails to submit reports on time $1,000 per day the report is late.[432]

At the CME, the exchange automatically retains all records of trades entered into GLOBEX, but relies on reporting by trading counterparties for trades entered at the pits.[433] Clearing members must also report daily position change data, and when requested by the

[428] *Id*. at ch. 6, r. 618, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[429] *Id*. at ch. 6, r. 621.F, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/6/6.pdf.
[430] NFA Rulebook *supra* note 64 at pt. Financial Requirements, § 1(b) Futures Commission Merchant Financial Requirements, *and* NFA Rulebook *supra* note 64 at pt. Financial Requirements, § 5(b) Introducing Broker Financial Requirements, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%201&Section=7.
[431] *Id.* at pt. Financial Requirements, § 8 Information Requests, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%208&Section=7.
[432] *Id.* at pt. Financial Requirements, § 10 Late Financial Reports, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=SECTION%208&Section=7.
[433] CME Rulebook supra note 35 at ch. 5, r. 528, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/5/5.pdf.

exchange, the identity of account holders.[434] In addition to regular reporting requirements on trades and accounts, the CME requires its members to report significant events. Events that trigger this reporting requirement include the suspension of the member's trading privilege or imposition of a fine in excess of $25,000 by any regulatory authority. CME Members must also report any indictment, conviction, or plea of guilty or nolo contendere by the member or any of its officers to any felony charge or any misdemeanor relating to the purchase or sale of financial instrument or involving fraud. Member are additionally obligate to report any filing of a bankruptcy petition or insolvency, receivership, or upon forming a definite intent to file such proceedings.[435]

CME Clearing members are also required to report any significant business transactions or operations. These significant business transactions or operations include: mergers and acquisitions, sale of substantial business or assets, a direct or indirect change in beneficial ownership of 20% or more, or any change in the system used by the clearing member in processing transactions.[436] In addition, clearing members must report any significant change in the number of clients for whom they carry trades. Any proposal by a clearing member to terminate the business of clearing trades for others must be approved by the exchange, which may withhold the approval for the purpose of maintaining the integrity of the exchange.[437] Each clearing member must submit a current list of every person or entity which is directly, or indirectly through intermediaries, the beneficial owner of 5% or more of any class of equity security of the clearing member.[438] If such person or entity owns the clearing member indirectly through intermediaries, all intermediaries must be listed together with owners of 5% or more of any class of equity security (in case the intermediary is a

[434] *Id.* at ch. 8, r. 811, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/8/8.pdf.
[435] *Id.* at ch. 4, r. 442, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[436] *Id*. at ch. 9, r. 901(H), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[437] *Id.*
[438] *Id*. at ch. 9, r. 901(L), https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.

corporate entity) and contributor of 5% or more of the capital (in case the intermediary is a partnership). If the intermediary's shareholders or partners are not individuals, the clearing member must include the chain of ownership until individuals are listed.[439]

CME's Enforcement Procedures: At the CME, the Market Regulation Department is responsible for investigating potential or alleged rule violations. Investigations and all information and documents obtained during the course of an investigation are confidential, except when disclosure is necessary to further the investigation or as required by law.[440] If the Market Regulation Committee has reasonable grounds to believe that a violation of exchange rules has occurred, it will issues an investigation report to the Probable Cause Committee (PCC) for review. The PCC acts through a panel of five members, two of whom must be non-members of the CME. At least one of the members of the panel must be an exchange member or an employee of a member firm participating in the designated contract market where the case originated. If the PCC, by majority vote, determines that a violation may have occurred that justifies disciplinary actions, it will issue charges. Otherwise the PCC will direct the Market Regulation Committee to drop the case or investigate further.[441]

At the direction of the PCC to proceed with the disciplinary action, the Market Regulation Committee issues notice and a charging memorandum to the member subject to investigation with a brief statement of the basis of the charges and the time/place of the hearing (if known). Unless an extension is granted by the exchange, the respondent has twenty-one days after notice to submit a written answer to the charges.[442] The respondent has a right to be represented, at his own cost, by legal counsel. A respondent may waive his right to a hearing at any time after receipt of the

[439] *Id.*
[440] *Id.* at ch. 4, r. 407, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[441] *Id*. at ch. 4, r. 406, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[442] *See Id.* at ch. 4, r. 407.C. Answer to Charges.

notice of charges. A respondent who elects to waive his right to a hearing on the charges will be notified of the date on which a decision will be made on the charge.[443]

Hearings are conducted by the Business Conduct Committee (BCC), which acts through a panel of five people, two of whom must again be non-exchange members.[444] If the hearing is contested, the Market Regulation Committee will provide the respondent with names of the individuals appointed to the BCC panel at least twenty-eight days in advance of the scheduled hearing date. Within seven days of such notice, the respondent may move to strike any panelist for good cause shown. If a panelist is removed, a replacement will be appointed by the hearing chair. Alternatively, the hearing chair in his sole discretion may direct that the hearing proceed with a reduced panel.[445] The Market Regulation Committee bears the burden of proving guilt on any charge by a preponderance of the evidence. [446] Formal rules of evidence do not apply. The Hearing Panel Chair determines the admissibility of evidence offered and may exclude evidence that he deems irrelevant or cumulative.[447] The respondent may offer to settle the charge in writing prior to the BCC Panel commencing deliberations, but any settlement offer must be supported by the Market Regulation Committee in order to be submitted to the panel.[448]

A majority vote of the BCC Panel is required to a find a member guilty of the offence that is the subject of the hearing. A "not guilty" finding precludes any further charge against the same respondent for the same underlying conduct.[449] If the BCC Panel renders a guilty verdict, the panel can prescribe a wide range of sanctions. These sanctions include, but are not limited to: (1) issuing cease and desist orders, (2) liquidating open contracts in the respondent's account, (3) imposing

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[443] *See Id.* at ch. 4, r. 407.B. Notice of Charges; Opportunity for Hearing.
[444] *Id.* at ch. 4, r.402.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[445] *Id*. at ch. 4, r. 408.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[446] *Id.* at ch. 4, r. 408.D, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[447] *Id.*
[448] *Id.* at ch. 4, r. 408.C, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[449] *Id.* at ch. 4, r. 416.A, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.

additional financial requirements, (4) requiring the deposit of additional performance bonds, (5) prescribing more restrictive position limits, (6) restricting business affiliations with – or financial interest in – a member or brokerage firm, (7) prohibiting the respondent from soliciting or accepting orders in any or all products of the exchange, (8) restricting, suspending, or terminating access to the exchange's facilities or privileges of exchange membership; (9) imposing a fine of $5,000,000 or less per violation, (10) ordering a disgorgement of any monetary benefit (including but not limited to unrealized gains and avoided losses) resulting from a violation of rules; (11) a restitution to anyone damaged by the respondent's wrongful conduct, and (12) imposing advertising restrictions upon the respondent. [450] The BCC Panel may also order the reimbursement of attorney fees and administrative costs incurred in connection with the disciplinary action against a party if the party engaged in vexatious, frivolous, or bad faith conduct during the course of an investigation or enforcement proceeding.[451]

A member found guilty by a final decision of the BCC Panel may appeal to an appellate panel. However, the member may only appeal if the decision imposes a monetary penalty greater than $25,000, a denial of access to exchange's facilities, or a suspension of any membership privileges for greater than ten business days against the member. The types of monetary penalties that satisfy the appeal requirement include: fines, disgorgements, or restitution. [452] The member appealing a penalty must file the appeal notice in writing with the exchange within ten business days after the notice of BCC's decision. The implementation of the penalty is suspended during the course of the appeal unless the Market Regulation Committee, the CME's Chairman of the Board or the BCC Panel chair objects to the stay.[453] The appellate panel does not review any new

[450] *Id.* at ch. 4, r. 402.B, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[451] *Id.*
[452] *Id.* at ch. 4, r. 411, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/4/4.pdf.
[453] *Id.*

evidence or new legal theory not raised in the prior proceeding. The only exception to this rule is a clear showing by the appellant that such new evidence or new legal theory did not exist or was not ascertainable by due diligence at the time of the prior proceeding, and that the appellant was not given sufficient time to bring such new evidence or legal theory to the attention of the presiding disciplinary panels prior to the appellate hearing.[454]

The appellate panel consists of three directors of the exchange, one of whom must be a non-member director. Any party to the appeal may request the exchange's Chairman of the Board to strike any director for good cause shown and select an alternative.[455] Any person who was a member of the BCC or PCC on this disciplinary action; any person who has a personal, financial, or other direct interest in the matter; or any person who is a member of the same broker association as the respondent or potential respondent cannot serve on the appellate panel. By majority vote, the appellate panel may only reverse or modify the decision that is: arbitrary, capricious, abusive of the adjudicating committee's discretion, in excess of its authority or jurisdiction, or based on mistaken application or interpretation of the exchange's rules.[456]

Disciplinary Action Statistics: The enforcement databases of the CFTC, the NFA, and the CME show that during the period of 2008 – 17, these regulatory authorities brought about sixty enforcement actions that involve equity index futures. The number of disciplinary actions does not necessarily reflect the number of disputes that occurred during this period of time. This is because the vast majority of the disputes are resolved through arbitrations, and the information on arbitration proceedings is either unavailable to the public (e.g., CME) or the database is unconducive to searching based on financial products or causes of actions (e.g., NFA).

[454] *Id.*
[455] *Id.*
[456] *Id.*

Table 3 breaks down the disciplinary actions by causes of action and the regulatory authority that instigated the action. If a single case involved multiple offenses, each cause is recorded separately in the table, so a single case may be recorded multiple times depending upon how many different offenses were involved. For example, if a broker made misrepresentations to customers in soliciting investments and also failed to make the required report to the CME, an entry is made twice in the table to account for both "Misrepresentation to Customer" and "Failure to Maintain Records or Submit Reports."

Table 3 Disciplinary Actions by Cause

Cause of Action	CFTC	NFA	Exchange	# of Actions
Wrongful Conducts toward Customers/Investors				
- Misrepresentation to Customer	23	2		25
- Embezzlement of Customer Fund	13			13
- Ponzi Scheme	5			5
- Failure to Segregate Customer Fund	3			3
- Unauthorized Trading for Customer	2	2		4
- Indequate Risk Disclosure	1			1
- Trading against Customer	1		2	3
- Trading ahead of Customer Order			2	2
- Suitability Violation		1		1
- Churnig or Excessive Commission		1		1
Subtotal				58
Disruptive Trading				
- Fictitious Trade	6		8	14
- Pre-arranged Trade			14	14
- Unauthorized Access to Trading Facility			2	2
- Unauthorized Trades for Principal	1			1
Subtotal				31
Compliance Failure				
- Failure to Register	7			7
- Misrepresentation to Authority	4	1	1	6
- Failure to Maintain Records or Submit Reports	1	2	2	5
- Failure to Adopt Policies and Procedures	1			1
- Failure to Maintain Internal Control	1		3	4
Subtotal				23
Other				
- Misbehavior during Disciplinary Action or Arbitration		1		1
Subtotal				1

As the table shows, the disciplinary actions involved fifty-eight counts of "Wrongful Conducts toward Customers/Investors," the highest in frequency among all categories. The vast majority of disciplinary actions in this category were brought by the CFTC. Within this broad category, two types of offenses occurred more often than others: "Misrepresentation to Customer" (twenty-five counts) and "Embezzlement of Customer Funds" (thirteen counts). Misrepresentations most often occurred in the solicitation of investor funds and reports on investment gains or losses. As discussed earlier in this paper, the current regulation clearly prohibits misrepresentation in the course of dealing with customers, and mandates the segregation of customer funds from those of the investment intermediaries.[457] There are also rigorous record-keeping and reporting requirements to facilitate the discovery of violations.[458] The penalties for violations can be as serious as termination of membership at the NFA and the exchange. Nonetheless, misrepresentations and embezzlements still occur at a higher frequency than other types of violations. How regulation should be strengthened in this regard remains an open question.

"Disruptive Trading" occurred in thirty-one disciplinary actions, the second highest in terms of frequency after "Wrongful Conducts toward Customers/Investors". Two types of wrongdoing accounted for the vast majority of the offenses in this category: "Fictitious Trades" (fourteen counts) and "Pre-arranged Trades" (fourteen counts). Fictitious trades were perpetrated primarily through collaboration among affiliated persons (e.g., traders employed by the same firm or sibling firms) who took the opposite sides of the trades,[459] or through placing large orders on

[457] *See* NFA Rulebook supra note 64 at r. 2-2. Fraud and Related Matters; CME Rulebook *supra* note 35 at ch. 9, r. 952, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf, *and* 17 C.F.R. § 1.20(a) (2019).
[458] *See* Markham *supra* Notes 117, and 17 C.F.R. § 1.35 (2019); 17 C.F.R. § 1.20(a) (2019), *and* 17 C.F.R. §1.20(d) (2019); CME Rulebook *supra* note 35 at ch. 9, r. 973, https://www.cmegroup.com/content/dam/cmegroup/rulebook/CME/I/9/9.pdf.
[459] For example, two traders of the same firm were instructed by their boss to engage in wash trades to "churn up the volume" in an inactive market because the firm wanted to benefit from a lower transaction fee charged by the exchange if their trading volume reached a pre-determined level. *See* U.S. COMMODITY FUTURES TRADING COMMISSION, *CFTC Sanctions Gelber Group, LLC $750,000 for Trading Abuses on Two Exchanges*, CFTC Release No. 6512-13 (Feb. 8,

the open order book visible to the other traders only to cancel them before they were executed.[460] The latter type of fictitious trading is called "spoofing". The most notorious spoofing in recent years involving index futures was effectuated by a British trader during the May 2010 "flash crash". The illicit trade generated $12.8 million in profits for the trader.[461]

For "Pre-arranged Trades", the records of some disciplinary actions provide no details on the specific wrongful conducts that gave rise to the actions.[462] The cases that do provide such

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2013) [hereinafter Gelber], https://www.cftc.gov/PressRoom/PressReleases/pr6512-13. *See also* U.S. COMMODITY FUTURES TRADING COMMISSION, *CFTC Charges Royal Bank of Canada with Multi-Hundred Million Dollar Wash Sale Scheme*, CFTC Release No. 6223-12 (Apr. 2, 2012), https://www.cftc.gov/PressRoom/PressReleases/pr6223-12, (RBC Bank of Canada used two subsidiaries to engage in wash trades of some stocks and index futures products in order to realize certain Canadian tax benefits), *and* CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action*, CME 09-05684-BC, (Apr. 11, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-09-05684-BC-JACK-DICAPO.html#pageNumber=1, (Between May 2008 and April 2009, DiCapo executed numerous round-turn transaction sets on the CME GLOBEX electronic platform in the E-Mini Standard & Poor's Midcap 400 Stock Price Index futures contracts between accounts beneficially owned by DiCapo at different firms in order to avoid monthly fees imposed by one of the firms for account inactivity.).

460 *E.g.*, U.S. COMMODITY FUTURES TRADING COMMISSION,*CFTC Charges Chicago Trader Igor B. Oystacher and His Proprietary Trading Company, 3 Red Trading LLC, with Spoofing and Employment of a Manipulative and Deceptive Device while Trading E-Mini S&P 500, Copper, Crude Oil, Natural Gas, and VIX Futures Contracts*, CFTC Release No. 7264-15 (Oct. 19, 2015), https://www.cftc.gov/PressRoom/PressReleases/pr7264-15, (Oystacher and 3 Red "manually placing large passive orders on one side of the market at or near the best bid or offer price … to create the false impression of growing market interest to trade in a certain direction (to either buy or sell) and to induce other market participants into placing orders on the same side of the market and at similar price levels. Oystacher and 3 Red would then cancel or attempt to cancel all of the spoof orders before they were executed and virtually simultaneously "flip" their position from buy to sell (or vice versa) by placing at least one aggressive order on the other side of the market at the same or better price to trade with market participants that had been induced to enter the market by the spoof orders that were just canceled. This strategy allowed Oystacher and 3 Red to buy or sell futures contracts in quantities and at price levels that would not have otherwise been available to them in the market, absent the spoofing conduct…"). *See also*, Gelber *supra* note 478, (Traders repeatedly entered false orders in the pre-opening session of the NASDAQ E-mini 100 futures contract on the CME GLOBEX electronic trading platform only to cancel them before the market opened, causing non-bona fide prices in the indicative opening price (IOP) for the NASDAQ E-mini 100 futures contract).

461 *See* U.S. COMMODITY FUTURES TRADING COMMISSION, *CFTC Charges U.K. Resident Navinder Singh Sarao and His Company Nav Sarao Futures Limited PLC with Price Manipulation and Spoofing*, CFTC Release No. 7156-15 (Apr. 21, 2015), https://www.cftc.gov/PressRoom/PressReleases/pr7156-15. (From 2010 to 2015, Defendants have manipulated the price of the E-mini S&P by using large, aggressive, and persistent spoofing tactics. They simultaneously "layer" four to six exceptionally large sell orders into the visible E-mini S&P 500 futures central limit order book (the Layering Algorithm), with each sell order one price level from the other. As the E-mini S&P futures price moved, the Layering Algorithm continued modifying the price of the sell orders to ensure that they remained at least three or four price levels from the best asking price; thus, remaining visible to other traders, but staying safely away from the best asking price to avoid execution. Eventually, the vast majority of the Layering Algorithm orders were canceled without resulting in any transactions.)

462 For example, in a few cases, the disciplinary notices stated merely that the Business Conduct Committee of CME found that the disciplined trader executed trades "in a manner that was not open and competitive." *See* CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: Scott Wallach*, CME 11-8304-BC (Feb. 23, 2012),

details involve either intentional violations of the open competitiveness requirement in trade submission,[463] or accidental breaches of procedural rules such as the wait period and post-execution reporting.[464] It is unclear how the CME monitors trade submissions to prevent noncompetitive trades from entering the exchange's system ex-ante. All cases in this group involve trades having been executed before violations were discovered. In some cases, disciplinary actions lagged the offense by a few years.[465] In absence of effective screening to prevent illicit trades from entering the exchange's system, regulatory authorities must rely on the deterrent power of penalties to incentivize compliance. The fines imposed for violations ranged from $2,500 to $50,000, accompanied by a suspension period ranging from ten to fifty business days. Whether this level of penalty is sufficient deterrence warrants careful examination.

https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-11-8304-BC-SCOTT-WALLACH.html#pageNumber=1.

[463] *See*, *e.g.*, CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: Walter B. Posner*, CME 08-05039-BC & CME 08-03909-BC, (Sept. 23, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-08-05039-BC-CME-08-03909-BC-WALTER-POSNER.html#pageNumber=1 (Trader knowingly put trades into three other members that had not been competitively executed); and CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: Thomas Stack*, CBOT 08-00014-BC (Aug. 29, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CBOT-08-00014-BC-THOMAS-STACK.html#pageNumber=1 (Execution of trades with other members in the Dow Jones Industrial Average Index futures pit, in a manner that was not open and competitive).

[464] *See*, *e.g.*, CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: David Springer*, CME 07-02425-BC, (Oct. 14, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-07-02425-BC-DAVID-SPRINGER.html#pageNumber=1 (execution of customer orders without bidding or offering both sides of orders openly and competitively in the pit); CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: Mark Hinken*, CME 09-05559-BC (July 1, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-09-05559-BC-MARK-HINKEN.html#pageNumber=1 (Trader indirectly crossed buy orders opposite sell orders without bidding or offering those contracts openly and competitively in the trading pit); *and* CHICAGO MERCANTILE EXCHANGE, Notice of Disciplinary Action: John Melone, CME 08-04882-BC (June 2, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-08-04882-BC-JOHN-MELONE.html#pageNumber=1 (Trader crossed two buy orders totaling eight contracts opposite a portion of a sell order without bidding or offering those eight contracts openly and competitively in the pit).

[465] *See*, *e.g.*, CHICAGO MERCANTILE EXCHANGE, *Notice of Disciplinary Action: William T. Schultz*, CME 08-05039-BC, (Oct. 14, 2011), https://www.cmegroup.com/tools-information/lookups/advisories/disciplinary/CME-08-05039-BC-WILLIAM-SCHULTZ.html#pageNumber=1 (Offense occurred in 2008, and disciplinary action took place in 2011).

IV. Challenging Issues Facing the Regulation of Equity Index Futures

A. The Risk of Market Manipulation

Collusive Fictitious (Wash) Trades: As shown in Table 3, fictitious trades are one of the two main forms of disruptive trading practices. While the CME's Self-Match Prevention functionality[466] helps prevent traders from accidentally taking both sides of a transaction, it is unable to detect carefully crafted collusive schemes designed to evade the law. Table 4 illustrates this point with a series of hypothetical trades in the E-mini S&P 500 futures.

Table 4 Collusive Wash Trades Illustration

Order Number	Trader	Buy/Sell	Price	Volume (# Contracts)
1	A	Buy	2,700.00	4
2	B	Sell	2,699.75	3
3	B	Sell	2,699.50	1

Traders A and B collaborate in this wash trade. Trader A first places a buy order of four contracts at the limit price of 2,700. Trader B immediately follows with a sequence of two sell orders that are lower than 2,700. If Trader B's orders are placed sufficiently fast so there is no time for independent orders interjecting in between, Trader A's buy order will be matched with B's orders under the exchange's matching algorithm. Thus, a volume of 4 contracts is created without a change in beneficial ownership. The CME's system only monitors the same-priced buy/sell orders from trading accounts with the same beneficial ownership. There are no effective surveillance mechanisms for wash trades involving multiple traders.[467]

[466] For discussions on CME's Self-Match Prevention functionality, s*ee supra* p.44.
[467] Cao et al., *supra* note 196 at 2351.

Spoofing: The law has yet to find an effective mechanism to prevent the order-and-cancel (spoofing) manipulative scheme ex-ante. Spoofing involves submitting large quantity of orders to the exchange without an intention to execute them, but with the intention to mislead the market by distorting the supply/demand balance. After the market is moved by spoofing trades in the direction desired by the spoofer, he submits a market order for the same security for expedient execution at the preferable price and cancels the original spoofing order. Although there is a position limit on the total number of unsettled contracts a person can hold in a particular financial instrument, the limit does not apply at the order entry stage because some orders may end up not being executed or the orders may be part of a legitimate hedging strategy that is subject to valid exemptions.[468]

There is both theoretical basis and empirical evidence suggesting that spoofing can trigger market movement in the direction desired by the trader. These large fictitious orders cause an imbalance in the order book. In "Market Liquidity, asset prices, and welfare", the authors present an equilibrium model of liquidity and its impact on asset prices.[469] They show that when market presence is costly, and thus not all traders could afford to constantly participate in trading, information shocks lead to order imbalances and large price deviations from the economic fundamentals. These information shocks include communications both passively. received and actively instigated, as in the case of manipulations [470] In "Microstructure-based manipulation: Strategic behavior and performance of spoofing traders", the authors examined the intraday data of the Korea Exchange and found that spoofing trades that were placed away from the best bid and

[468] For discussions on position limits, *see supra* p. 55.
[469] *See* Jennifer Huang & Jiang Wang, *Market Liquidity, Asset Prices, and Welfare*, 95 J. OF FIN. ECON. 107, 107-127 (Jan. 2010).
[470] *Id.* at 108.

ask prices were nonetheless able to create an impression of a substantial order book imbalance and move prices to the spoofers' advantage. Spoofing traders achieved substantial extra profits.[471]

Spoofing played a substantial role in the Flash Crash on May 6, 2010. The day started off with a broadly negative market sentiment due to unsettling political and economic news concerning the Greek debt crisis. By 2:30 PM the S&P 500 volatility index was up 22.5% from the opening level and buy-side liquidity had fallen about 55% from the opening level.[472] Against this backdrop of unusually high level of anxiety, market volatility, and thinning liquidity, some spoofers – notoriously a British futures trader named Sarao – entered large spoof orders that, at various times throughout the day, accounted for over 20% of all E-mini S&P 500 index futures sell orders visible to the market.[473] The spoofing orders exacerbated a price pressure on the E-mini S&P futures. This pressure in turn triggered computer-generated automatic trading programs of large institutions to sell in the amount of billions of dollars.[474] The E-mini S&P 500 futures fell by more than 5% in four-and-one-half minutes.[475] The downward pressure spilled over to the individual stocks underlying the S&P index through index arbitrage activities.[476]

Sarao's spoofing activities lasted for five years from 2010-15 when the CFTC finally initiated disciplinary actions against him.[477] In January 2018, the CFTC announced eight other

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[471] *See* Eun Jung Leea et al., *Microstructure-based manipulation: Strategic behavior and performance of spoofing traders*, 16 J. FIN. MKTS. 227, *227-252* (May 2013).
[472] U.S. COMMODITY FUTURES TRADING COMMISSION & THE U.S. SECURITIES AND EXCHANGE COMMISSION, FINDINGS REGARDING THE MARKET EVENTS OF MAY 6, 2010 REPORT OF THE STAFFS OF THE CFTC AND SEC TO THE JOINT ADVISORY COMMITTEE ON EMERGING REGULATORY ISSUES 1 (Sept. 30, 2010), https://www.sec.gov/news/studies/2010/marketevents-report.pdf.
[473] *See* Department of Justice, *Futures Trader Pleads Guilty to Illegally Manipulating the Futures Market in Connection With 2010 "Flash Crash",* Press Release No. 16-1314 (Nov. 9, 2016), https://www.justice.gov/opa/pr/futures-trader-pleads-guilty-illegally-manipulating-futures-market-connection-2010-flash.
[474] *See* U.S. COMMODITY FUTURES TRADING COMMISSION & THE U.S. SECURITIES AND EXCHANGE COMMISSION *supra* note 472 at 2.
[475] *Id.* at 4.
[476] *Id*. at 3.
[477] *See* U.S. COMMODITY FUTURES TRADING COMMISSION *supra* note 480.

enforcement actions against institutions and individuals who were engaged in spoofing in multiple markets, including the E-mini S&P and E-mini Dow ($5).[478]

Spoofing is effective if the order book is transparent. In the past two decades, securities exchanges worldwide have followed suit in opening up their order books, albeit at different levels of transparency. The New York Stock Exchange (NYSE) introduced Open Book in 2002 to provide a real-time view of the exchange's limit order book for all NYSE-traded securities and enable traders to see aggregated limit-order volume at every bid and offer price.[479] NASDAQ's Totalview, also launched in 2002, provides the same real time information for every single quote and order at every price level.[480] The CME now has Market by Order (MBO) that provides the ability to view individual queue position, full depth of order book, and the size of individual orders at each price level.[481] The London Stock Exchange, Singapore Stock Exchange, and Australian Stock Exchange also disclose their entire limit order books to investors. Whereas the Tokyo Stock Exchange and Hong Kong Stock Exchange restrict disclosure to the best ten bid and ask prices.[482]

Securities exchanges take pride in their provision of real-time trade data with the lowest level of latencies.[483] However, the merit of a fully transparent order book is not without doubt.

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[478] *See* U.S. COMMODITY FUTURES TRADING COMMISSION, *CFTC Files Eight Anti-Spoofing Enforcement Actions against Three Banks (Deutsche Bank, HSBC & UBS) & Six Individuals*, CFTC Release No. 7681-18 (Jan. 29, 2018), https://www.cftc.gov/PressRoom/PressReleases/pr7681-18.
[479] Shmuel Baruch, *Who Benefits from an Open Limit-Order Book*, 78 J. BUS. 1267, 1267 (July 2005).
[480] *See* NASDAQ, *NASDAQ Totalview – The Only Complete View of The NASDAQ Stock Market* (2015), http://www.nasdaqomx.com/digitalAssets/97/97683_q15-totalview-fs.pdf.
[481] *See* CME Group, *Market by Order (MBO)*, https://www.cmegroup.com/education/market-by-order-mbo.html.
[482] *See* London Stock Exchange, *Real Time Data*, https://www.londonstockexchange.com/products-and-services/market-data/realtimedata/data/infolect.htm; Singapore Exchange, *SGX Derivatives Market Direct Feed*, available at https://www2.sgx.com/data-connectivity/real-time-price-feeds, Japan Exchange Group, *Real Time Market Data*, https://www.jpx.co.jp/english/markets/paid-info-equities/realtime/index.html, *and* HKEX, *Real-Time DataFeeds*, https://www.hkex.com.hk/Services/Market-Data-Services/Real-Time-Data-Services/Overview/Real-time-Datafeeds?sc_lang=en.
[483] *See*, *e.g.*, CME Group *supra* note 481 ("CME takes pride in its transparent trading environment given by a trader's ability to see all existing orders at every price level"), *and* Singapore Exchange *supra* note 505 ("Real-time data direct from the trading engine with the lowest latency in delivery of market data").

While some studies have shown that an open order book improves market quality,[484] others have shown deterioration, no change, or mixed results in bid-ask spreads, speed of price discovery and order book depth. In *Hidden Liquidity: Some New Light on Dark Trading*, the authors found that markets in which all orders must be displayed exhibit more efficient prices at the open, but the convergence of prices to true value does not seem to be affected if some layers of orders are hidden. That means latent liquidity in the book has no sustainable impact on the informational efficiency of prices.[485] The authors also found little evidence that changing transparency levels alters trading volume,[486] bid-ask spreads[487], or the overall depth at the best quote.[488] In *Limit order book transparency, execution risk, and market liquidity: Evidence from the Sydney Futures Exchange*, the authors examined the effect of displaying additional layers of bid and ask prices and order volumes at each layer for index futures and interest rate futures that were traded on the Sydney Futures Exchange. They also documented a decline in the depth of quotes and little change in the bid-ask spread.[489] These findings were repeated in *Market Transparency, Market Quality, and Sunshine Trading* that studied the effects of an increase in pre-trade transparency on the Tokyo Stock Exchange.[490]

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[484] *See, e.g.*, Kyong Shik Eom, Jinho Ok & Jong-Ho Park, *Pre-trade transparency and market quality*, 10 J. FIN. MKTS. 319, (2007), (pre-trade transparency on the Korean Exchange lead to improved market quality and information efficiency). *See also*, Ekkehart Boehmer, Gideon Saar , Lei Yu, *Lifting the Veil: An Analysis of Pre-trade Transparency at the NYSE*, 60 J. FIN. 783, (2005), (The introduction of OpenBook by the NYSE leads to a more active management of trading strategies and improvements in terms of liquidity and informational efficiency).
[485] Robert Bloomfield, Maureen O'Hara & Gideon Saar, *Hidden Liquidity: Some New Light on Dark Trading*, 70 J. FIN. 2227, 2252 (2015).
[486] *Id.*
[487] *Id.* at 2259.
[488] *Id*. at 2250.
[489] Luke Bortoli, Alex Frino, Elvis Jarnecic & David Johnsto, *Limit order book transparency, execution risk, and market liquidity: Evidence from the Sydney Futures Exchange*, 26 J. Futures Mkts. 1147, 1150, 1160 (2006).
[490] M. Ángeles de Frutos & Carolina Manzano, *Market transparency, market quality, and sunshine trad*ing, 17 J. Fin. Mkts. 174 (2014), (An increase in pre-trade transparency in the Toronto Stock Exchange leads to wider spreads, lower depth, and higher volatility).

Given the mixed results of studies on the effect of order book transparency and the connection between a totally transparent order book and spoofing, regulators should re-evaluate the virtue of complete transparency that reveals orders at even remote price levels. A partial transparent book, similar to that implemented by the Tokyo Stock Exchange and HongKong Exchange,[491] could indeed represent a better balance of promoting transparency and deterring spoofing.

B. Automated Trading and the Flash Crash

According to the Joint Report by the CFTC and the SEC, [492] the Flash Crash that took place on May 6, 2010 was fermented by a nervous market sentiment and opportunistic spoof trading, but was directly triggered by an automated trading program of a large mutual fund complex. The program had an algorithm that targeted a pre-determined execution rate in markets of thinning liquidity without regard to the execution prices.[493] The program continuously fed sell orders in the June E-mini S&P 500 futures contracts and executed 75,000 contracts (valued at approximately $4.1 billion) in twenty minutes. The sell orders depleted buy-side interests at every executable price level and sent the E-mini to a 3% freefall in a just four minutes.[494] The mutual fund had options of using block trades to execute this unusually large order or manually feeding orders into the trading platform, but both options would entail substantially more execution time and likely

[491] In "Eun Jung Leea et al., *supra* note 493 at 227-252, the authors found that spoofing orders were more likely to be placed 10 ticks away from the best quotes, lending support to the 10-layer disclosure level implemented by the Tokyo Stock Exchange and HongKong Exchange.
[492] U.S. COMMODITY FUTURES TRADING COMMISSION & THE U.S. SECURITIES AND EXCHANGE COMMISSION *supra* note 494.
[493] *Id*. at 14.
[494] *Id.* at 14.

derail the hedging strategy in a rapidly moving market.[495] Buy-side market depth, contributed to by index arbitrage, opportunistic, and fundamental trading, was not in sufficient quantity nor at a fast enough pace to keep up with the selling pressure.[496]

Many cross-market arbitrage firms reported that they had ceased operating their cross-market strategies because of the highly abnormal price changes in the market.[497] A number of firms used internal risk limits based on a variety of metrics, including intraday profit or loss, executions volumes, price volatility, risk exposures due to unhedged long or short positions, or the overall market sentiment. Triggers in one or more of these risk limits during the Flash Crash caused some firms to reduce, pause, or completely halt their trading activities; thereby depriving the markets of liquidity they otherwise would have been providing.[498] In addition, most market makers rely on data integrity in making decisions as to whether to provide liquidity at all; and if so, in what size and at what price. During the Flash Crash, rapid price moves in the futures and the underlying stocks prompted the systems of some market makers to automatically pause pending human verification of the accuracy of price data.[499] The sheer volume of orders also triggered the processing systems of some market makers to pause. In order to manually override the systems and continue providing liquidity, market makers needed more time to analyze the market condition and data integrity. Some took as long as several hours to re-enter the market.[500] Eventually the CME's circuit breaker (i.e., Stop Logic Functionality) was triggered to pause trading on the E-Mini for five seconds in order to halt further price declines from irrational trading. In that short

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[495] *Id.* at 14 (In the previous 12 months, the same mutual fund had executed an even larger order through a combination of manual trading entered over a course of a day and several automated execution algorithms which took into account price, time, and volume. On that occasion it took more than 5 hours for this large trader to execute the first 75,000 contracts of a large sell program.).
[496] *Id.* at 15.
[497] *Id*. at 17.
[498] *Id*. at 36.
[499] *Id*. at 38.
[500] *Id*. at 38.

period of inactivity, imbalance in the buy and sell interests was partially alleviated with the arrival of significant amount of opportunistic and fundamental buyer orders. When trading resumed five seconds later prices stabilized and started to recover shortly thereafter.[501]

The Flash Crash highlighted the importance and urgency of regulating automated trading. On May 31, 2012, the SEC approved a price limit plan (Limit UP and Limit Down, (LULD)) submitted by national exchanges and the FINRA to address extraordinary volatilities in U.S. equity markets. LULD is designed to prevent trades in securities (including exchange-traded funds (ETFs) of major indices such as the S&P 500 and Russell 2000) listed on a national stock exchange (e.g., NYSE and NASDAQ) from occurring outside of specified price bands. The bands are set at a percentage level above and below the moving average price of the security over the immediately preceding five-minute period. Trading would pause for fifteen seconds if the best quotes are outside the band. If quotes do not revert back to within the band range after fifteen seconds, trading in the stock will pause for five minutes. LULD was implemented in two phases. By May 12, 2014, all stocks traded on a national exchange were subject to LULD. [502] In September 2011, the NYSE applied for the SEC's approval for a change in its circuit breaker rules to replace the Dow Jones Industrial Average with the S&P 500 as the reference benchmark for purposes of implementing a market-wide circuit breaker. The NYSE also sought to narrow the levels of price triggers from 10%, 20%, and 30% to 7%, 13%, and 20%.[503] The change was approved on a pilot basis. On Apr. 9, 2019; the NYSE petitioned the SEC for an extension of the pilot period to Oct. 18, 2019, while

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[501] *Id.* at 16.
[502] *See* Claudia E. Moise & Paca Flaherty, *"Limit Up–Limit Down" Pilot Plan and Associated Events*, DIVISION OF ECONOMIC AND RISK ANALYSIS 50-51 app. A (Mar. 2017), https://www.sec.gov/files/dera-luld-white-paper.pdf.
[503] *See* Self-Regulatory Orgs.; Int'l Sec. Exch., LLC; Notice of Proposed r. Change Related to Trading Halts Due to Extraordinary Mkt. Volatility, Securities Exchange Act of 1934 Release No. 34-65425, 2011 SEC LEXIS 3378 * (Sept. 28,2011), https://www.sec.gov/rules/sro/ise/2011/34-65425.pdf.

the exchange prepares for a separate filing to make the changes permanent.[504] As discussed earlier in this paper, the CME pegs its circuit breaker for the S&P 500 futures products to the NYSE market-wide trading halts, so trading on the futures side also pauses in tandem with the implementation of a circuit break on the underlying stocks.[505]

In addition to limiting the speed of market movements through circuit breakers, regulators also sought to prevent future flash crashes from occurring by imposing controls on order entries. In August 2010, the International Organization of Securities Commissions (IOSCO) issued a report entitled *Principles for Direct Electronic Access to Markets*,[506] in which the organization set out a number of principles to guide markets, regulators, and intermediaries. Principle Six states that a market should not permit direct electronic access "unless there are in place effective systems and controls reasonably designed to enable the management of risk with regard to fair and orderly trading including, in particular, automated pre-trade controls that enable intermediaries to implement appropriate trading limits." Principle Seven states that: Intermediaries (including clearing firms) should "use controls, including automated pre-trade controls, which can limit or prevent a DEA [direct electronic access] Customer from placing an order that exceeds a relevant intermediary's existing position or credit limits." On Apr. 9, 2012, the CFTC adopted new rules to require clearing members – among others – to establish limits based on position size, order size, and margin requirements for their customers who clear trades through them. In addition, the rules require clearing members to use automated means to screen orders for compliance with the size-

[504] *See* Self-Regulatory Organizations; New York Stock Exchange LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Extend the Pilot Related to Rule 80B, Trading Halts Due to Extraordinary Market Volatility, Securities Exchange Act of 1934 Release No. 34-85560, 2019 SEC LEXIS 831 * (Apr. 9, 2019), https://www.sec.gov/rules/sro/nyse/2019/34-85560.pdf.
[505] *See supra* p. 62.
[506] *See* Press Release, International Organization of Securities Commissions, Principles for Direct Electronic Access to Markets (Aug. 1, 2010), https://www.iosco.org/news/pdf/IOSCONEWS190.pdf.

based limits.[507] The CFTC emphasized that the rules do not proscribe the particular means of fulfilling these obligations and that clearing members have flexibility in developing procedures that meet their needs. Some examples of ways to comply include setting simple numerical limits on order size or the number of orders that can be placed in any time span or more complex margin-based limits.[508] In September 2013, the CFTC issued *Concept Release on Risk Controls and System Safeguards for Automated Trading Environments*, soliciting public comments on sweeping new regulations governing automated trading.[509] In December 2015, the CFTC proposed rules based on public comments on the concept release,[510] which proposal was supplemented by additional provisions proposed in November 2016.[511] The proposed rules would impose pre-screening obligations to all financial intermediaries as opposed to just clearing members.[512] Market participants voiced concerns over certain key aspects of the proposed rules such as the registration of automated traders, a volume-based definition of automated trading, and regulatory access to proprietary source codes of risk management software used by market participants. Despite these concerns, they generally supported a principle-based pre-screening obligations that extend to all financial intermediaries.[513] The proposed rules have not been adopted as of this date.

The efficacy of existing pre-screening rules in preventing automated trading from triggering another flash crash is questionable. First of all, a principle-based order screening was

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[507] *See* 17 C.F.R. pts. 1, 23, 37, 38 & 39 (2019).
[508] *Id.*
[509] *See* Concept Release on Risk Controls and System Safeguards for Automated Trading Environments, 78 Fed. Reg. 56,542 (Sept. 12, 2013).
[510] Regulation Automated Trading, 80 Fed. Reg. 78824 (Dec. 17, 2015) (to be codified at 17 C.F.R. pts. 1, 38, 40 & 170).
[511] Regulation Automated Trading; Proposed Rule, 81 Fed. Reg. 85,334 (Nov.25, 2016).
[512] *See* Regulation Automated Trading, 80 Fed. Reg. 78,824, 78,828, https://www.cftc.gov/sites/default/files/idc/groups/public/@lrfederalregister/documents/file/2015-30533a.pdf.
[513] *See, e.g.*, Letter from the Futures Industry Association, FIA Principal Traders Group, Managed Funds Association, International Swaps and Derivatives Association, and SIFMA Asset Management Group, to Mr. Christopher Kirkpatrick, Secretary of the Commission, Commodity Futures Trading Commission (June 24, 2016), at p. 3, https://comments.cftc.gov/PublicComments/ViewComment.aspx?id=60899&SearchText=.

already in place when the Flash Crash happened on May 6, 2010. The NFA has provided guidance regarding automated trading to industry participants since 2002. NFA Compliance Rule 2–9 requires each NFA member to ‘‘diligently supervise its employees and agents in the conduct of their commodity futures activities for or on behalf of the Member.’’[514] The NFA issued Interpretive Notice 9046 in 2002 (and a revised version in 2006) under this rule to provide that NFA members ‘‘must adopt and enforce written procedures to examine the security, capacity, and credit and risk management controls provided by the firm's automated order-routing systems (AORSs).’’[515] Among other requirements, the interpretive notice states that ‘‘An AORS should allow the member to set limits for each customer based on commodity, quantity, and type of order or based on margin requirements. It should allow the Member to impose limits pre-execution and to automatically block any orders that exceed those limits.’’[516]

CME Rule 982 also has provisions on pre-screening which were effective on the day of the Flash Crash.[517] These provisions require all clearing members to "have procedures in place to demonstrate compliance in the following areas for trades executed through both electronic platforms and open outcry: 1. Monitoring the credit risks of accepting trades, including give-up trades, of specific customers. 2. Monitoring the risks associated with proprietary trading. 3. Limiting the impact of significant market moves through the use of tools such as stress testing or position limits. 4. Maintaining the ability to monitor account activity on an intraday basis, including overnight. 5. Ensuring order entry systems include the ability to set automated credit

[514] NFA Rulebook *supra* note 64 at pt. Compliance Rules, r. 2-9, https://www.nfa.futures.org/rulebook/rules.aspx?Section=4&RuleID=RULE%202-9.
[515] *Id*. at pt. Interpretive Notice, § 9046 Supervision of the Use of Automated Order-Routing Systems, https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=9046&Section=9.
[516] *Id.*
[517] *See* letter from CME Group Market Regulation Department, to Members, Member Firms and Market Users, CME and CBOT Rule Changes in Connection With NYMEX Rulebook Harmonization, (Nov. 28, 2008), https://www.cmegroup.com/tools-information/lookups/advisories/market-regulation/SER-4789.html.

controls or position limits or requiring a firm employee to enter orders." The CFTC's principle-based order pre-screening rules that were adopted in April 2012 have added nothing beyond what the NFA and CME already had in place when the Flash Crash occurred. It is not difficult to predict the impotence of the "new" rules in protecting the market from anomalous orders entered by algorithmic trading in the future.

Practically speaking, it is difficult for clearing members to screen trades for compliance with the member's risk-based controls before trades are executed. First, the clearing member may not know the identity of the person who placed the trades because trades may be bunched by investment advisors managing multiple accounts. Investment advisors generally execute bunched orders for all of their clients and then allocate the filled trades to their clients by the end of the trading day. Even if the clearing member is the executing broker, the member will not know the identity of all of the customers within the bunched order and the number of contracts allocated to each such client, in order to screen such trades for compliance with the clearing member's risk-based limits before the trades are executed. Secondly, an institutional customer may enter trades through multiple trading platforms. These systems may have limited risk control abilities and are not linked in any way. Consequently, although it may be possible to impose controls based on order size or limit size, it is not possible to impose or enforce aggregate controls. Thirdly, clearing members may not have the information on the tactics behind a large algorithm order. To the extent that the order is entered to hedge other positions of the trader, preclusion of the order from execution will result in large unhedged positions of the trader and hence create greater risk on the trader as well as the clearing member.

V. Conclusion

Equity index futures are among the most actively traded financial products in the U.S. The instrument is widely used in hedging, arbitrage, and directional trading. Comprehensive rules are in place to ensure that participants in this market have sound financial health, adequate technical capability, and robust internal control systems. The rules seek to provide a transparent, efficient, and orderly trading environment with competitive bidding, streamline trade execution, and sophisticated risk management systems. Regulations protect the investing public with a stringent code of conducts that must be followed by financial intermediaries in their interactions with clients. However, challenges remain in detecting coordinated manipulations, preventing spoofing trades that utilize order book transparency, and identifying mechanisms to prevent disruptive algorithm orders from entering the marketplace.