UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2021
- OR -

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to
Commission file number 001-31553

CME GROUP INC.

(Exact name of registrant as specified in its charter)

Delaware	**36-4459170**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
20 South Wacker Drive Chicago Illinois	**60606**
(Address of principal executive offices)	**(Zip Code)**

(312) 930-1000
(Registrant’s telephone number, including area code)
Not Applicable
(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol	Name of each exchange on which registered
Class A Common Stock	CME	The Nasdaq Stock Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes ☐ No ☒

The number of shares outstanding of each of the registrant’s classes of common stock as of October 13, 2021 was as follows: 359,396,169 shares of Class A common stock, $0.01 par value; 625 shares of Class B-1 common stock, $0.01 par value; 813 shares of Class B-2 common stock, $0.01 par value; 1,287 shares of Class B-3 common stock, $0.01 par value; and 413 shares of Class B-4 common stock, $0.01 par value.

CME GROUP INC.

FORM 10-Q

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PART I. FINANCIAL INFORMATION

Certain Terms

All references to “options” or “options contracts” in the text of this document refer to options on futures contracts.

Further information about CME Group and its products can be found at http://www.cmegroup.com. Information made available on our website does not constitute a part of this Quarterly Report on Form 10-Q.

Information about Contract Volume and Average Rate per Contract

All amounts regarding contract volume and average rate per contract are for CME Group's listed futures and options on futures contracts unless otherwise noted.

Trademark Information

CME Group, the Globe logo, CME, Chicago Mercantile Exchange, Globex, and E-mini are trademarks of Chicago Mercantile Exchange Inc. CBOT and Chicago Board of Trade are trademarks of Board of Trade of the City of Chicago, Inc. NYMEX, New York Mercantile Exchange and ClearPort are trademarks of New York Mercantile Exchange, Inc. COMEX is a trademark of Commodity Exchange, Inc. NEX, BrokerTec, and EBS are trademarks of various entities of NEX Group Limited (NEX). Dow Jones, Dow Jones Industrial Average, S&P 500 and S&P are service and/or trademarks of Dow Jones Trademark Holdings LLC, Standard & Poor's Financial Services LLC and S&P/Dow Jones Indices LLC, as the case may be, and have been licensed for use by Chicago Mercantile Exchange Inc. All other trademarks are the property of their respective owners.

Forward-Looking Statements

From time to time, in this Quarterly Report on Form 10-Q as well as in other written reports and verbal statements, we discuss our expectations regarding future performance. These forward-looking statements are identified by their use of terms and phrases such as "believe," "anticipate," "could," "estimate," "intend," "may," "plan," "expect" and similar expressions, including references to assumptions. These forward-looking statements are based on currently available competitive, financial and economic data, current expectations, estimates, forecasts and projections about the industries in which we operate and management's beliefs and assumptions. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or implied in any forward-looking statements. We want to caution you not to place undue reliance on any forward-looking statements. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. Among the factors that might affect our performance are:

- increasing competition by foreign and domestic entities, including increased competition from new entrants into our markets and consolidation of existing entities;
- our ability to keep pace with rapid technological developments, including our ability to complete the development, implementation and maintenance of the enhanced functionality required by our customers while maintaining reliability and ensuring that such technology is not vulnerable to security risks;
- our ability to continue introducing competitive new products and services on a timely, cost-effective basis, including through our electronic trading capabilities, and our ability to maintain the competitiveness of our existing products and services, including our ability to provide effective services to the swaps market;
- our ability to adjust our fixed costs and expenses if our revenues decline;
- our ability to maintain existing customers at substantially similar trading levels, develop strategic relationships and attract new customers;
- our ability to expand and globally offer our products and services;
- changes in regulations, including the impact of any changes in laws or government policies with respect to our products or services or our industry, such as any changes to regulations and policies that require increased financial and operational resources from us or our customers;
- the costs associated with protecting our intellectual property rights and our ability to operate our business without violating the intellectual property rights of others;
- decreases in revenue from our market data as a result of decreased demand or changes to regulations in various jurisdictions;
- changes in our rate per contract due to shifts in the mix of the products traded, the trading venue and the mix of customers (whether the customer receives member or non-member fees or participates in one of our various incentive programs) and the impact of our tiered pricing structure;

- the ability of our credit and liquidity risk management practices to adequately protect us from the credit risks of clearing members and other counterparties, and to satisfy the margin and liquidity requirements associated with the BrokerTec matched principal business;
- the ability of our compliance and risk management methods to effectively monitor and manage our risks, including our ability to prevent errors and misconduct and protect our infrastructure against security breaches and misappropriation of our intellectual property assets;
- our dependence on third-party providers and exposure to risk through third parties, including risks related to the performance, reliability and security of technology used by our third-party providers;
- volatility in commodity, equity and fixed income prices, and price volatility of financial benchmarks and instruments such as interest rates, credit spreads, equity indices, fixed income instruments and foreign exchange rates;
- economic, social, political and market conditions, including the volatility of the capital and credit markets and the impact of economic conditions on the trading activity of our current and potential customers;
- the impact of the COVID-19 pandemic and response by governments and other third parties;
- our ability to accommodate increases in contract volume and order transaction traffic and to implement enhancements without failure or degradation of the performance of our trading and clearing systems;
- our ability to execute our growth strategy and maintain our growth effectively;
- our ability to manage the risks, control the costs and achieve the synergies associated with our strategy for acquisitions, investments and alliances, including those associated with NEX;
- our ability to continue to generate funds and/or manage our indebtedness to allow us to continue to invest in our business;
- industry and customer consolidation;
- decreases in trading and clearing activity;
- the imposition of a transaction tax or user fee on futures and options transactions and/or repeal of the 60/40 tax treatment of such transactions;
- our ability to maintain our brand and reputation; and
- the unfavorable resolution of material legal proceedings.

For a detailed discussion of these and other factors that might affect our performance, see Item 1A. of our Annual Report on Form 10-K for the year ended December 31, 2020, filed with the Securities and Exchange Commission on February 26, 2021 and Item 1A. in Part II of this Quarterly Report on Form 10-Q.

ITEM 1. FINANCIAL STATEMENTS

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(dollars in millions, except par value data; shares in thousands)

	September 30, 2021 (unaudited)	December 31, 2020
Assets		
Current Assets:		
Cash and cash equivalents	$ 1,459.4	$ 1,633.2
Marketable securities	110.3	100.9
Accounts receivable, net of allowance of $5.3 and $5.4	470.4	461.3
Other current assets (includes $4.8 and $4.7 in restricted cash)	362.7	306.7
Performance bonds and guaranty fund contributions	149,191.6	86,781.8
Total current assets	151,594.4	89,283.9
Property, net of accumulated depreciation and amortization of $1,046.0 and $961.2	521.3	579.2
Intangible assets—trading products	17,175.3	17,175.3
Intangible assets—other, net	3,592.6	4,865.3
Goodwill	10,529.0	10,798.8
Other assets (includes $2.8 and $0.6 in restricted cash)	3,361.7	1,957.1
Total Assets	$ 186,774.3	$ 124,659.6
Liabilities and Equity		
Current Liabilities:		
Accounts payable	$ 71.0	$ 69.3
Short-term debt	749.2	—
Other current liabilities	405.3	1,346.8
Performance bonds and guaranty fund contributions	149,191.6	86,781.8
Total current liabilities	150,417.1	88,197.9
Long-term debt	2,695.7	3,443.8
Deferred income tax liabilities, net	5,392.4	5,607.0
Other liabilities	987.0	1,059.4
Total Liabilities	159,492.2	98,308.1
Shareholders' Equity:		
Preferred stock, $0.01 par value, 10,000 shares authorized at September 30, 2021 and December 31, 2020; none issued	—	—
Class A common stock, $0.01 par value, 1,000,000 shares authorized at September 30, 2021 and December 31, 2020; 358,574 and 358,110 shares issued and outstanding as of September 30, 2021 and December 31, 2020, respectively	3.6	3.6
Class B common stock, $0.01 par value, 3 shares authorized, issued and outstanding as of September 30, 2021 and December 31, 2020	—	—
Additional paid-in capital	21,203.8	21,185.5
Retained earnings	6,037.4	4,995.9
Accumulated other comprehensive income (loss)	37.3	134.9
Total CME Group Shareholders' Equity	27,282.1	26,319.9
Non-controlling interests	—	31.6
Total Equity	27,282.1	26,351.5
Total Liabilities and Equity	$ 186,774.3	$ 124,659.6

See accompanying notes to unaudited consolidated financial statements.

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME
(dollars in millions, except per share data; shares in thousands)
(unaudited)

	Quarter Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Revenues				
Clearing and transaction fees	$ 878.9	$ 835.4	$ 2,815.8	$ 3,054.4
Market data and information services	145.4	139.4	434.8	405.6
Other	85.6	105.9	291.8	325.1
Total Revenues	1,109.9	1,080.7	3,542.4	3,785.1
Expenses				
Compensation and benefits	198.6	216.4	635.3	640.9
Technology	49.3	48.1	146.8	144.9
Professional fees and outside services	45.2	48.4	119.4	141.3
Amortization of purchased intangibles	59.0	78.3	179.0	232.2
Depreciation and amortization	37.2	39.7	111.9	111.7
Licensing and other fee agreements	57.6	57.7	176.5	187.0
Other	49.3	67.1	160.0	204.7
Total Expenses	496.2	555.7	1,528.9	1,662.7
Operating Income	613.7	525.0	2,013.5	2,122.4
Non-Operating Income (Expense)				
Investment income	145.8	23.6	239.1	151.6
Interest and other borrowing costs	(41.8)	(41.7)	(125.0)	(124.5)
Equity in net earnings of unconsolidated subsidiaries	66.4	44.0	178.3	144.0
Other non-operating income (expense)	311.8	(14.4)	268.4	(106.4)
Total Non-Operating Income (Expense)	482.2	11.5	560.8	64.7
Income before Income Taxes	1,095.9	536.5	2,574.3	2,187.1
Income tax provision	169.6	125.0	562.6	505.5
Net Income	926.3	411.5	2,011.7	1,681.6
Less: net (income) loss attributable to non-controlling interests	0.2	0.2	(0.5)	(0.4)
Net Income Attributable to CME Group	$ 926.5	$ 411.7	$ 2,011.2	$ 1,681.2
Earnings per Common Share Attributable to CME Group:				
Basic	$ 2.59	$ 1.15	$ 5.61	$ 4.70
Diluted	2.58	1.15	5.60	4.69
Weighted Average Number of Common Shares:				
Basic	358,363	357,791	358,258	357,669
Diluted	358,988	358,590	358,894	358,492

See accompanying notes to unaudited consolidated financial statements.

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in millions)
(unaudited)

	Quarter Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net income	$ 926.3	$ 411.5	$ 2,011.7	$ 1,681.6
Other comprehensive income (loss), net of tax:				
Investment securities:				
Net unrealized holding gains (losses) arising during the period	(0.2)	—	(0.9)	0.8
Reclassification of net (gains) losses on sales included in investment income	0.2	—	0.2	—
Income tax benefit (expense)	—	—	0.2	(0.2)
Investment securities, net	—	—	(0.5)	0.6
Defined benefit plans:				
Net change in defined benefit plans arising during the period	—	—	—	(2.0)
Amortization of net actuarial (gains) losses included in compensation and benefits expense	1.1	1.2	3.3	3.5
Income tax benefit (expense)	(0.2)	(0.3)	(0.8)	(0.4)
Defined benefit plans, net	0.9	0.9	2.5	1.1
Derivative investments:				
Reclassification of net unrealized (gains) losses to interest expense and other non-operating income (expense)	(0.3)	(0.3)	(0.9)	(2.4)
Income tax benefit (expense)	—	0.2	0.2	0.6
Derivative investments, net	(0.3)	(0.1)	(0.7)	(1.8)
Foreign currency translation:				
Foreign currency translation adjustments	(29.0)	56.0	(58.6)	39.8
Reclassification of net currency (gains) losses from foreign entities to other non-operating (income) and expense	(40.3)	—	(40.3)	0.6
Foreign currency translation, net	(69.3)	56.0	(98.9)	40.4
Other comprehensive income (loss), net of tax	(68.7)	56.8	(97.6)	40.3
Comprehensive income	857.6	468.3	1,914.1	1,721.9
Less: comprehensive (income) loss attributable to non-controlling interests	0.2	0.2	(0.5)	(0.4)
Comprehensive income attributable to CME Group	$ 857.8	$ 468.5	$ 1,913.6	$ 1,721.5

See accompanying notes to unaudited consolidated financial statements.

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY
(dollars in millions, except per share data; shares in thousands)
(unaudited)

	Nine Months Ended, September 30, 2021							
	Class A Common Stock (Shares)	**Class B Common Stock (Shares)**	**Common Stock and Additional Paid-in Capital**	**Retained Earnings**	**Accumulated Other Comprehensive Income (Loss)**	**Total CME Group Shareholders' Equity**	**Non-controlling Interest**	**Total Equity**
Balance at December 31, 2020	358,110	3	$ 21,189.1	$ 4,995.9	$ 134.9	$ 26,319.9	$ 31.6	$ 26,351.5
Net income				2,011.2		2,011.2	0.5	2,011.7
Other comprehensive income (loss)					(97.6)	(97.6)		(97.6)
Dividends on common stock of $2.70 per share				(969.7)		(969.7)		(969.7)
Purchase of non-controlling interest			(19.9)			(19.9)	(32.1)	(52.0)
Exercise of stock options	102		5.5			5.5		5.5
Vesting of issued restricted Class A common stock	329		(31.2)			(31.2)		(31.2)
Shares issued to Board of Directors	13		2.9			2.9		2.9
Shares issued under Employee Stock Purchase Plan	20		4.4			4.4		4.4
Stock-based compensation			56.6			56.6		56.6
Balance at September 30, 2021	358,574	3	$ 21,207.4	$ 6,037.4	$ 37.3	$ 27,282.1	$ —	$ 27,282.1

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY (continued)
(dollars in millions, except per share data; shares in thousands)
(unaudited)

	Quarter Ended, September 30, 2021							
	Class A Common Stock (Shares)	Class B Common Stock (Shares)	Common Stock and Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total CME Group Shareholders' Equity	Non-controlling Interest	Total Equity
Balance at June 30, 2021	358,305	3	$ 21,222.7	$ 5,434.5	$ 106.0	$ 26,763.2	$ 24.2	$ 26,787.4
Net income				926.5		926.5	(0.2)	926.3
Other comprehensive income (loss)					(68.7)	(68.7)		(68.7)
Dividends on common stock of $0.90 per share				(323.6)		(323.6)		(323.6)
Purchase of non-controlling interest			(15.5)			(15.5)	(24.0)	(39.5)
Exercise of stock options	43		2.3			2.3		2.3
Vesting of issued restricted Class A common stock	226		(17.7)			(17.7)		(17.7)
Stock-based compensation			15.6			15.6		15.6
Balance at September 30, 2021	358,574	3	$ 21,207.4	$ 6,037.4	$ 37.3	$ 27,282.1	$ —	$ 27,282.1

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY (continued)
(dollars in millions, except per share data; shares in thousands)
(unaudited)

	Nine Months Ended, September 30, 2020							
	Class A Common Stock (Shares)	**Class B Common Stock (Shares)**	**Common Stock and Additional Paid-in Capital**	**Retained Earnings**	**Accumulated Other Comprehensive Income (Loss)**	**Total CME Group Shareholders' Equity**	**Non-controlling Interest**	**Total Equity**
Balance at December 31, 2019	357,469	3	$ 21,116.8	$ 5,008.7	$ 3.4	$ 26,128.9	$ 30.4	$ 26,159.3
Net income				1,681.2		1,681.2	0.4	1,681.6
Other comprehensive income (loss)					40.3	40.3		40.3
Dividends on common stock of $2.55 per share				(914.5)		(914.5)		(914.5)
Impact of adoption of accounting standards updates on credit losses				(0.3)		(0.3)		(0.3)
Exercise of stock options	108		6.0			6.0		6.0
Vesting of issued restricted Class A common stock	419		(37.1)			(37.1)		(37.1)
Shares issued to Board of Directors	17		2.9			2.9		2.9
Shares issued under Employee Stock Purchase Plan	17		2.9			2.9		2.9
Stock-based compensation			69.3			69.3		69.3
Balance at September 30, 2020	358,030	3	$ 21,160.8	$ 5,775.1	$ 43.7	$ 26,979.6	$ 30.8	$ 27,010.4

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY (continued)
(dollars in millions, except per share data; shares in thousands)
(unaudited)

	Quarter Ended, September 30, 2020							
	Class A Common Stock (Shares)	Class B Common Stock (Shares)	Common Stock and Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total CME Group Shareholders' Equity	Non-controlling Interest	Total Equity
Balance at June 30, 2020	357,727	3	$ 21,152.5	$ 5,668.5	$ (13.1)	$ 26,807.9	$ 31.0	$ 26,838.9
Net income				411.7		411.7	(0.2)	411.5
Other comprehensive income (loss)					56.8	56.8		56.8
Dividends on common stock of $0.85 per share				(305.1)		(305.1)		(305.1)
Exercise of stock options	41		2.2			2.2		2.2
Vesting of issued restricted Class A common stock	262		(17.7)			(17.7)		(17.7)
Stock-based compensation			23.8			23.8		23.8
Balance at September 30, 2020	358,030	3	$ 21,160.8	$ 5,775.1	$ 43.7	$ 26,979.6	$ 30.8	$ 27,010.4

See accompanying notes to unaudited consolidated financial statements.

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)
(unaudited)

	Nine Months Ended September 30,	
	2021	**2020**
Cash Flows from Operating Activities		
Net income	$ 2,011.7	$ 1,681.6
Adjustments to reconcile net income to net cash provided by operating activities:		
Stock-based compensation	56.6	69.3
Amortization of purchased intangibles	179.0	232.2
Depreciation and amortization	111.9	111.7
Net losses on impaired assets	—	27.4
Net (gain) on derivative contracts	—	(1.5)
Gain on deconsolidation of optimization business	(343.5)	—
Net realized and unrealized (gains) losses on investments	(112.0)	4.9
Undistributed net earnings of unconsolidated subsidiaries	(13.9)	(9.7)
Deferred income taxes	13.8	(18.6)
Change in:		
Accounts receivable	(81.8)	(0.8)
Other current assets	(41.0)	(37.7)
Other assets	41.6	45.1
Accounts payable	3.6	37.6
Income taxes payable	(88.3)	(27.0)
Other current liabilities	20.0	(39.6)
Other liabilities	(26.9)	(26.2)
Other	3.3	6.6
Net Cash Provided by Operating Activities	1,734.1	2,055.3
Cash Flows from Investing Activities		
Proceeds from maturities of available-for-sale marketable securities	7.4	9.4
Purchases of available-for-sale marketable securities	(6.2)	(8.7)
Purchases of property, net	(99.9)	(127.5)
Net cash proceeds from OSTTRA joint venture transaction	43.7	—
Investments in privately-held equity investments	(1.5)	(5.5)
Purchase of non-controlling interest	(52.0)	—
Proceeds from sales of investments	99.3	8.9
Net Cash Used in Investing Activities	(9.2)	(123.4)
Cash Flows from Financing Activities		
Repayment of commercial paper, net	—	(304.6)
Cash dividends	(1,862.5)	(1,805.7)
Employee taxes paid on restricted stock vesting	(31.2)	(37.1)
Other	(2.7)	(3.8)
Net Cash Used in Financing Activities	(1,896.4)	(2,151.2)

CME GROUP INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS (continued)
(in millions)
(unaudited)

	Nine Months Ended September 30,	
	2021	**2020**
Net change in cash, cash equivalents and restricted cash	$ (171.5)	$ (219.3)
Cash, cash equivalents and restricted cash, beginning of period	1,638.5	1,556.6
Cash, Cash Equivalents and Restricted Cash, End of Period	$ 1,467.0	$ 1,337.3
Reconciliation of cash, cash equivalents and restricted cash:		
Cash and cash equivalents	$ 1,459.4	$ 1,332.1
Short-term restricted cash	4.8	4.5
Long-term restricted cash	2.8	0.7
Total	$ 1,467.0	$ 1,337.3
Supplemental Disclosure of Cash Flow Information		
Income taxes paid	$ 612.5	$ 553.2
Interest paid	109.4	109.4

See accompanying notes to unaudited consolidated financial statements.

NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

1. Basis of Presentation

The consolidated financial statements consist of CME Group Inc. (CME Group) and its subsidiaries (collectively, the company), including Chicago Mercantile Exchange Inc. (CME), Board of Trade of the City of Chicago, Inc. (CBOT), New York Mercantile Exchange, Inc. (NYMEX), Commodity Exchange, Inc. (COMEX) and NEX Group Limited (NEX). The clearing house is operated by CME.

The accompanying interim consolidated financial statements have been prepared by CME Group without audit. Certain notes and other information normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States have been condensed or omitted. In the opinion of management, the accompanying consolidated financial statements include all adjustments (consisting only of normal recurring adjustments) considered necessary to present fairly the financial position of the company at September 30, 2021 and December 31, 2020 and the results of operations and cash flows for the periods indicated. Quarterly results are not necessarily indicative of results for any subsequent period.

The accompanying consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto in CME Group’s Annual Report on Form 10-K for the year ended December 31, 2020, filed with the Securities and Exchange Commission (SEC) on February 26, 2021.

2. Business Transactions

In January 2021, the company announced that it agreed with IHS Markit to combine their post-trade services into a new joint venture, OSTTRA. The joint venture was launched in September 2021. OSTTRA will perform trade processing and risk mitigation services. The company contributed the net assets of its optimization business, which includes Traiana, TriOptima and Reset, to the new joint venture in exchange for $112.5 million in cash and a 50% equity interest in OSTTRA.

In September 2021, the company deconsolidated its optimization business and recognized a net gain on the transaction of $343.5 million in other non-operating income on the consolidated statements of net income. The deconsolidation primarily included $1.1 billion of intangible assets, $0.2 billion of goodwill and $0.2 billion of deferred tax liabilities. The company's investment in OSTTRA was $1.4 billion at September 30, 2021. The company accounts for its investment using the equity method of accounting.

3. Revenue Recognition

The company generates revenue from customers from the following sources:

Clearing and transaction fees. Clearing and transaction fees include electronic trading fees and brokerage commissions, surcharges for privately-negotiated transactions, portfolio reconciliation and compression services, risk mitigation and other volume-related charges for trade contracts. Clearing and transaction fees are assessed upfront at the time of trade execution. As such, the company recognizes the majority of the fee revenue upon successful execution of the trade. The minimal remaining portion of the fee revenue related to settlement activities performed after trade execution is recognized over the short-term period that the contract is outstanding, based on management’s estimates of the average contract lifecycle. These estimates are based on various assumptions to approximate the amount of fee revenue to be attributed to services performed through contract settlement, expiration, or termination. For cleared trades, these assumptions include the average number of days that a contract remains in open interest, contract turnover, average revenue per day, and revenue remaining in open interest at the end of each period.

The nature of contracts gives rise to several types of variable consideration, including volume-based pricing tiers, customer incentives associated with market maker programs and other fee discounts. The company includes fee discounts and incentives in the estimated transaction price when there is a basis to reasonably estimate the amount of the fee reduction. These estimates are based on historical experience, anticipated performance, and best judgment at the time. Because of the company's certainty in estimating these amounts, they are included in the transaction price of contracts.

Market data and information services. Market data and information services represent revenue from the dissemination of market data to subscribers, distributors, and other third-party licensees of market data. Pricing for market data is primarily based on the number of reportable devices used as well as the number of subscribers enrolled under the arrangement. Fees for these services are generally billed monthly. Market data services are satisfied over time and revenue is recognized on a monthly basis as the customers receive and consume the benefit of the market data services. However, the company also maintains certain annual license arrangements with one-time upfront fees. The fees for annual licenses are initially recorded as a contract liability and recognized as revenue monthly over the term of the annual period.

Other. Other revenues include certain access and communication fees, fees for collateral management, equity membership subscription fees, and fees for trade order routing through agreements from various strategic relationships. Access and communication fees are charges to customers that utilize various telecommunications networks and communications services.

Fees for these services are generally billed monthly and the associated fee revenue is recognized as billed. Collateral management fees are charged to clearing firms that have collateral on deposit with the clearing house to meet their minimum performance bond and guaranty fund obligations on the exchange. These fees are calculated based on daily collateral balances and are billed monthly. This fee revenue is recognized monthly as billed as the customers receive and consume the benefits of the services. The company also has an equity membership program which provides equity members the option to substitute a monthly subscription fee for their existing requirement to hold CME Group Class A common stock. Choosing to pay this fee in lieu of holding Class A shares is entirely voluntary and the client's choice. Fee revenue under this program is earned monthly as billed over the contractual term. Pricing for strategic relationships may be driven by customer levels and activity. There are fee arrangements which provide for monthly as well as quarterly payments in arrears. Revenue is recognized monthly for strategic relationship arrangements as the customers receive and consume the benefits of the services.

The following table represents a disaggregation of revenue from contracts with customers by product line for the quarters and nine months ended September 30, 2021 and 2020:

	Quarter Ended September 30,		Nine Months Ended September 30,	
(in millions)	**2021**	**2020**	**2021**	**2020**
Interest rates	$ 251.0	$ 172.0	$ 816.2	$ 811.5
Equity indexes	181.1	181.8	551.9	631.4
Foreign exchange	39.8	40.5	119.3	124.6
Agricultural commodities	96.3	112.8	354.8	339.2
Energy	157.1	138.8	456.2	554.6
Metals	45.0	69.1	154.8	197.5
Cash markets business	93.5	105.6	314.4	342.4
Interest rate swap	15.1	14.8	48.2	53.2
Total clearing and transaction fees	878.9	835.4	2,815.8	3,054.4
Market data and information services	145.4	139.4	434.8	405.6
Other	85.6	105.9	291.8	325.1
Total revenues	$ 1,109.9	$ 1,080.7	$ 3,542.4	$ 3,785.1
Timing of Revenue Recognition				
Services transferred at a point in time	$ 821.5	$ 827.3	$ 2,636.9	$ 2,919.8
Services transferred over time	286.2	250.3	896.0	856.6
One-time charges and miscellaneous revenues	2.2	3.1	9.5	8.7
Total revenues	$ 1,109.9	$ 1,080.7	$ 3,542.4	$ 3,785.1

The timing of revenue recognition, billings and cash collections results in billed accounts receivable, and customer advances and deposits (contract liabilities) on the consolidated balance sheets. Certain fees for transactions, annual licenses, and other revenue arrangements are billed upfront before revenue is recognized, which results in the recognition of contract liabilities. These liabilities are recognized on the consolidated balance sheets on a contract-by-contract basis upon commencement of services under the customer contract. These upfront customer payments are recognized as revenue over time as the obligations under the contracts are satisfied. Changes in the contract liability balances during the nine months ended September 30, 2021 were not materially impacted by any other factors. The balance of contract liabilities was $25.7 million and $37.3 million as of September 30, 2021 and December 31, 2020, respectively.

4. Performance Bonds and Guaranty Fund Contributions

Performance Bonds and Guaranty Fund Contributions. CME has been designated as a systemically important financial market utility by the Financial Stability Oversight Council and is authorized to maintain cash accounts at the Federal Reserve Bank of Chicago. At September 30, 2021, CME maintained $139.3 billion within the cash account at the Federal Reserve Bank of Chicago. The cash deposit at the Federal Reserve Bank of Chicago is included within performance bonds and guaranty fund contributions on the consolidated balance sheets.

Clearing House Contract Settlement. The clearing house marks-to-market open positions for all futures and options contracts twice a day (once a day for CME's cleared-only interest rate swap contracts). Based on values derived from the mark-to-market process, the clearing house requires payments from clearing firms whose positions have lost value and makes payments to clearing firms whose positions have gained value. Under the extremely unlikely scenario of simultaneous default by every clearing firm who has open positions with unrealized losses, the maximum exposure related to positions other than cleared-only interest rate swap contracts would be one half day of changes in fair value of all open positions, before considering the clearing house's ability to access defaulting clearing firms' collateral deposits.

For CME's cleared-only interest rate swap contracts, the maximum exposure related to CME's guarantee would be one full day of changes in fair value of all open positions, before considering CME's ability to access defaulting clearing firms' collateral.

During the first nine months of 2021, the clearing house transferred an average of approximately $3.9 billion a day through its clearing systems for settlement from clearing firms whose positions had lost value to clearing firms whose positions had gained value. The clearing house reduces its guarantee exposure through initial and maintenance performance bond requirements and mandatory guaranty fund contributions. Management has assessed the fair value of the company's settlement guarantee liability by taking the following factors into consideration: the design and operations of the clearing risk management process, the financial safeguard packages in place, historical evidence of default by a clearing member and the estimated probability of potential payouts by the clearing house. Based on the assessment performed, management estimates the guarantee liability to be nominal and therefore has not recorded any liability at September 30, 2021 and December 31, 2020. The company does not have a history of significant losses recognized on performance bond collateral as posted by our clearing members, and management currently does not anticipate any future credit losses on its performance bond assets. Accordingly, the company has not provided an allowance for credit losses on these performance bond deposits, nor has it recorded any liabilities to reflect an allowance for credit losses related to our off-balance sheet credit exposures and guarantees.

5. Intangible Assets and Goodwill

In September 2021, the net assets for CME Group's optimization businesses were contributed to OSTTRA, a joint venture with IHS Markit. As a result, $1.1 billion of amortizable intangible assets and $0.2 billion of goodwill were deconsolidated as part of the contribution of the optimization businesses to OSTTRA. In January 2021, the net assets that would be contributed to the joint venture were classified as held for sale following approval of the transaction by the company's Board of Directors. Amortization expense is no longer taken on intangible assets once reclassified to assets held for sale.

Intangible assets consisted of the following at September 30, 2021 and December 31, 2020:

	September 30, 2021				December 31, 2020		
(in millions)	Assigned Value	Accumulated Amortization	Deconsolidation[2]	Net Book Value	Assigned Value	Accumulated Amortization	Net Book Value
Amortizable Intangible Assets:							
Clearing firm, market data and other customer relationships	$ 5,820.8	$ (1,793.8)	$ (950.0)	$ 3,077.0	$ 5,858.0	$ (1,632.5)	$ 4,225.5
Technology-related intellectual property	175.3	(74.2)	(84.6)	$ 16.5	178.4	(68.2)	$ 110.2
Other	105.6	(33.4)	(23.1)	$ 49.1	106.9	(27.3)	$ 79.6
Total amortizable intangible assets	$ 6,101.7	$ (1,901.4)	$ (1,057.7)	3,142.6	$ 6,143.3	$ (1,728.0)	4,415.3
Indefinite-Lived Intangible Assets:							
Trade names				450.0			450.0
Total intangible assets – other, net				$ 3,592.6			$ 4,865.3
Trading products [1]				$ 17,175.3			$ 17,175.3

(1) Trading products represent futures and options products acquired in our business combinations with CBOT Holdings, Inc., NYMEX Holdings, Inc. and The Board of Trade of Kansas City, Missouri, Inc. Clearing and transaction fees are generated through the trading of these products. These trading products, most of which have traded for decades, require authorization from the Commodity Futures Trading Commission (CFTC). Product authorizations from the CFTC have no term limits.

(2) The activity from deconsolidation includes intangible assets as part of the contribution of the net assets of the optimization business to OSTTRA.

Total amortization expense for intangible assets was $59.0 million and $78.3 million for the quarters ended September 30, 2021 and 2020, respectively. Total amortization expense for intangible assets was $179.0 million and $232.2 million for the nine months ended September 30, 2021 and 2020, respectively.

As of September 30, 2021, the future estimated amortization expense related to amortizable intangible assets is expected to be as follows:

(in millions)	Amortization Expense
Remainder of 2021	$ 58.1
2022	232.2
2023	231.0
2024	224.4
2025	224.4
2026	224.4
Thereafter	1,948.1

Goodwill activity consisted of the following for the periods ended September 30, 2021 and December 31, 2020:

(in millions)	Balance at December 31, 2020	Deconsolidation [1]	Other Activity [2]	Balance at September 30, 2021
CBOT Holdings	$ 5,066.4	$ —	$ —	$ 5,066.4
NYMEX Holdings	2,462.2	—	—	2,462.2
NEX	3,229.8	(246.2)	(23.6)	2,960.0
Other	40.4	—	—	40.4
Total Goodwill	$ 10,798.8	$ (246.2)	$ (23.6)	$ 10,529.0

(in millions)	Balance at December 31, 2019	Deconsolidation [1]	Other Activity [2]	Balance at December 31, 2020
CBOT Holdings	$ 5,066.4	$ —	$ —	$ 5,066.4
NYMEX Holdings	2,462.2	—	—	2,462.2
NEX	3,173.5	—	56.3	3,229.8
Other	40.4	—	—	40.4
Total Goodwill	$ 10,742.5	$ —	$ 56.3	$ 10,798.8

———————

1) The activity from deconsolidation includes goodwill as part of the contribution of the net assets of the optimization business to OSTTRA.

2) Other activity includes currency translation adjustments.

6. Debt

Short-term debt consisted of the following at September 30, 2021 and December 31, 2020:

(in millions)	September 30, 2021	December 31, 2020
$750.0 million fixed rate notes due September 2022, stated rate of 3.00% [1]	749.2	—
Total short-term debt	$ 749.2	$ —

(1) The company maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 3.32%.

Long-term debt consisted of the following at September 30, 2021 and December 31, 2020:

(in millions)	September 30, 2021	December 31, 2020
$750.0 million fixed rate notes due September 2022, stated rate of 3.00% [1]	—	748.6
€15.0 million fixed rate notes due May 2023, stated rate of 4.30%	17.3	18.1
$750.0 million fixed rate notes due March 2025, stated rate of 3.00% [2]	747.5	747.0
$500.0 million fixed rate notes due June 2028, stated rate of 3.75%	497.1	496.8
$750.0 million fixed rate notes due September 2043, stated rate of 5.30% [3]	743.3	743.1
$700.0 million fixed rate notes due June 2048, stated rate of 4.15%	690.5	690.2
Total long-term debt	$ 2,695.7	$ 3,443.8

(1) The company maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 3.32%.

(2) The company maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 3.11%.

(3) The company maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 4.73%.

Long-term debt maturities, at par value (in U.S. dollar equivalent), were as follows at September 30, 2021:

(in millions)	Par Value
2022	$ 750.0
2023	17.5
2024	—
2025	750.0
2026	—
Thereafter	1,950.0

7. Contingencies

Legal and Regulatory Matters. In the normal course of business, the company discusses matters with its regulators raised during regulatory examinations or otherwise subject to their inquiry and oversight. These matters could result in censures, fines, penalties or other sanctions. Management believes the outcome of any resulting actions will not have a material impact on its consolidated financial position or results of operations. However, the company is unable to predict the outcome or the timing of the ultimate resolution of these matters, or the potential fines, penalties or injunctive or other equitable relief, if any, that may result from these matters.

In addition, the company is a defendant in, and has potential for, various other legal proceedings arising from its regular business activities. While the ultimate results of such proceedings against the company cannot be predicted with certainty, the company believes that the resolution of any of these matters on an individual or aggregate basis will not have a material impact on its consolidated financial position or results of operations.

No accrual was required for legal and regulatory matters as none were probable and estimable as of September 30, 2021 and December 31, 2020.

Intellectual Property Indemnifications. Certain agreements with customers and other third parties related to accessing the CME Group platforms, utilizing market data services and licensing CME SPAN software may contain indemnifications from intellectual property claims that may be made against them as a result of their use of the applicable products and/or services. The potential future claims relating to these indemnifications cannot be estimated and therefore no liability has been recorded.

8. Leases

The company has operating leases for corporate offices. The operating leases have remaining lease terms of up to 17 years, some of which include options to extend or renew the leases for up to an additional five years, and some of which include options to early terminate the leases in less than 12 months. Management evaluates whether these options are exercisable at least quarterly in order to determine whether the contract term must be reassessed. For a small number of the leases, primarily the international locations, management's approach is to enter into short-term leases for a lease term of 12 months or less in order to provide for greater flexibility in the local environment. For certain office spaces, the company has entered into arrangements to sublease excess space to third parties, while the original lease contract remains in effect with the landlord.

The company also has one finance lease, which is related to the sale of our data center in March 2016. In connection with the sale, the company leased back a portion of the property. The sale leaseback transaction was recognized under the financing method and not as a sale leaseback arrangement.

The right-of-use lease asset is recorded within other assets, and the present value of the lease liability is recorded within other liabilities (segregated between short term and long term) on the consolidated balance sheets. The discount rate applied to the lease payments represents the company's incremental borrowing rate.

The components of lease costs were as follows:

	Quarter Ended September 30,		Nine Months Ended September 30,	
(in millions)	**2021**	**2020**	**2021**	**2020**
Operating lease expense:				
Operating lease cost	$ 15.6	$ 17.7	$ 48.7	$ 49.0
Short-term lease cost	0.2	0.2	0.6	0.9
Total operating lease expense included in other expense	$ 15.8	$ 17.9	$ 49.3	$ 49.9
Finance lease expense:				
Interest expense	$ 0.7	$ 0.8	$ 2.3	$ 2.5
Depreciation expense	2.2	2.2	6.5	6.5
Total finance lease expense	$ 2.9	$ 3.0	$ 8.8	$ 9.0
Sublease revenue included in other revenue	$ 2.8	$ 3.4	$ 7.7	$ 10.1

Supplemental cash flow information related to leases was as follows:

	Quarter Ended September 30,		Nine Months Ended September 30,	
(in millions)	**2021**	**2020**	**2021**	**2020**
Cash outflows for operating leases	$ 17.2	$ 16.4	$ 47.3	$ 48.0
Cash outflows for finance leases	4.2	4.3	12.7	12.7

Supplemental balance sheet information related to leases was as follows:

Operating leases

(in millions)	September 30, 2021	December 31, 2020
Operating lease right-of-use assets	$ 356.7	$ 390.3
Operating lease liabilities:		
Other current liabilities	$ 47.9	$ 44.5
Other liabilities	462.0	492.2
Total operating lease liabilities	$ 509.9	$ 536.7
Weighted average remaining lease term (in months)	134	138
Weighted average discount rate	3.9 %	3.9 %

Finance leases

(in millions)	September 30, 2021	December 31, 2020
Finance lease right-of-use assets	$ 82.3	$ 88.8
Finance lease liabilities:		
Other current liabilities	$ 7.8	$ 7.7
Other liabilities	77.9	83.8
Total finance lease liabilities	$ 85.7	$ 91.5
Weighted average remaining lease term (in months)	114	123
Weighted average discount rate	3.5 %	3.5 %

Future minimum lease payments were as follows as of September 30, 2021 for operating and finance leases:

(in millions)	Operating Leases
Remainder of 2021	$ 16.9
2022	67.3
2023	66.8
2024	61.7
2025	58.8
2026	54.4
Thereafter	307.2
Total lease payments	633.1
Less: imputed interest	(123.2)
Present value of lease liability	$ 509.9

(in millions)		Finance Leases
Remainder of 2021	$	4.3
2022		17.1
2023		17.2
2024		17.4
2025		17.5
2026		17.6
Thereafter		76.7
Total lease payments		167.8
Less: imputed interest		(82.1)
Present value of lease liability	$	85.7

9. Guarantees

Mutual Offset Agreement. CME and Singapore Exchange Limited (SGX) maintain a mutual offset agreement with a current term through May 2023. This agreement enables market participants to open a futures position on one exchange and liquidate it on the other. The term of the agreement will automatically renew for a one-year period after May 2023 unless either party provides advance notice of their intent to terminate. CME can maintain collateral in the form of irrevocable, standby letters of credit. At September 30, 2021, CME was contingently liable to SGX on letters of credit totaling $310.0 million. CME also maintains a $350.0 million line of credit to meet its obligations under this agreement. Regardless of the collateral, CME guarantees all cleared transactions submitted through SGX and would initiate procedures designed to satisfy these financial obligations in the event of a default, such as the use of performance bonds and guaranty fund contributions of the defaulting clearing firm. Management has assessed the fair value of the company's guarantee liability under this mutual offset agreement by taking the following factors into consideration: the design and operations of the clearing risk management process, the financial safeguard packages in place, historical evidence of default by a clearing member and the estimated probability of potential payouts by the clearing house. Based on the assessment performed, management estimates the guarantee liability to be nominal and therefore has not recorded any liability at September 30, 2021 and December 31, 2020.

Family Farmer and Rancher Protection Fund. In 2012, the company established the Family Farmer and Rancher Protection Fund (the Fund). The Fund is designed to provide payments, up to certain maximum levels, to family farmers, ranchers and other agricultural industry participants who use the company's agricultural commodity products and who suffer losses to their segregated account balances due to their CME clearing member becoming insolvent. Under the terms of the Fund, farmers and ranchers are eligible for up to $25,000 per participant. Farming and ranching cooperatives are eligible for up to $100,000 per cooperative. The Fund was established with a maximum of $100.0 million available for distribution to participants. Since its establishment, the Fund has made payments of approximately $2.0 million, which leaves $98.0 million available for future claims. If, at any time, payments due to participants were to exceed the amount remaining in the fund, payments would be pro-rated. Clearing members and customers must register with the company in advance and provide certain documentation in order to substantiate their eligibility. The company believes that its guarantee liability is nominal and therefore has not recorded any liability at September 30, 2021 and December 31, 2020.

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10. Accumulated Other Comprehensive Income (Loss)

The following tables present changes in the accumulated balances for each component of other comprehensive income (loss), including current period other comprehensive income (loss) and reclassifications out of accumulated other comprehensive income (loss):

(in millions)	Investment Securities	Defined Benefit Plans	Derivative Investments	Foreign Currency Translation	Total
Balance at December 31, 2020	$ 1.6	$ (57.1)	$ 67.0	$ 123.4	$ 134.9
Other comprehensive income (loss) before reclassifications and income tax benefit (expense)	(0.9)	—	—	(58.6)	(59.5)
Amounts reclassified from accumulated other comprehensive income (loss)	0.2	3.3	(0.9)	(40.3)	(37.7)
Income tax benefit (expense)	0.2	(0.8)	0.2	—	(0.4)
Net current period other comprehensive income (loss)	(0.5)	2.5	(0.7)	(98.9)	(97.6)
Balance at September 30, 2021	$ 1.1	$ (54.6)	$ 66.3	$ 24.5	$ 37.3

(in millions)	Investment Securities	Defined Benefit Plans	Derivative Investments	Foreign Currency Translation	Total
Balance at December 31, 2019	$ 0.8	$ (55.1)	$ 69.0	$ (11.3)	$ 3.4
Other comprehensive income (loss) before reclassifications and income tax benefit (expense)	0.8	(2.0)	—	39.8	38.6
Amounts reclassified from accumulated other comprehensive income (loss)	—	3.5	(2.4)	0.6	1.7
Income tax benefit (expense)	(0.2)	(0.4)	0.6	—	—
Net current period other comprehensive income (loss)	0.6	1.1	(1.8)	40.4	40.3
Balance at September 30, 2020	$ 1.4	$ (54.0)	$ 67.2	$ 29.1	$ 43.7

11. Fair Value Measurements

The company uses a three-level classification hierarchy of fair value measurements for disclosure purposes:

- Level 1 inputs, which are considered the most reliable evidence of fair value, consist of quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 inputs consist of observable market data, such as quoted prices for similar assets and liabilities in active markets, or inputs other than quoted prices that are directly observable.
- Level 3 inputs consist of unobservable inputs which are derived and cannot be corroborated by market data or other entity-specific inputs.

The company's level 1 assets generally include investments in publicly traded mutual funds, equity securities and corporate debt securities with quoted market prices. In general, the company uses quoted prices in active markets for identical assets to determine the fair value of marketable securities.

The company's level 2 assets and liabilities generally consist of long-term debt notes. The fair values of the long-term debt notes were based on quoted market prices in an inactive market.

The company's level 3 assets and liabilities include certain fixed assets and investments that were adjusted to fair value.

Recurring Fair Value Measurements. Financial assets and liabilities recorded at fair value on the consolidated balance sheet as of September 30, 2021 were classified in their entirety based on the lowest level of input that was significant to each asset and liability's fair value measurement. The following table presents financial instruments measured at fair value on a recurring basis:

	September 30, 2021			
(in millions)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets at Fair Value:				
Marketable securities:				
Corporate debt securities	$ 17.0	$ —	$ —	$ 17.0
Mutual funds	93.1	—	—	93.1
Equity securities	0.2	—	—	0.2
Total Marketable Securities	110.3	—	—	110.3
Total Assets at Fair Value	$ 110.3	$ —	$ —	$ 110.3

Non-Recurring Fair Value Measurements. The company recognized impairment charges of $0.6 million related to certain fixed assets in the first nine months of 2021. The fair value of these fixed assets was estimated to be zero at September 30, 2021. The company also recognized net unrealized gain on investments of $9.2 million on equity investments without readily determinable fair value. The fair value of these investments was estimated to be $32.7 million at September 30, 2021. These assessments were based on quantitative and qualitative indicators of fair value. The fair value measurements of the fixed assets and investment are considered level 3 and non-recurring.

Fair Values of Long-Term Debt Notes. The following presents the estimated fair values of long-term debt notes, which are carried at amortized cost on the consolidated balance sheets. The fair values below are classified as level 2 under the fair value hierarchy and were estimated using quoted market prices in inactive markets.

At September 30, 2021, the fair values (in U.S. dollar equivalent) were as follows:

(in millions)	**Fair Value**	**Level**
$750.0 million fixed rate notes due September 2022	$ 769.8	Level 2
€15.0 million fixed rate notes due May 2023	18.7	Level 2
$750.0 million fixed rate notes due March 2025	798.5	Level 2
$500.0 million fixed rate notes due June 2028	566.3	Level 2
$750.0 million fixed rate notes due September 2043	1,055.2	Level 2
$700.0 million fixed rate notes due June 2048	890.7	Level 2

12. Earnings Per Share

Basic earnings per share is computed by dividing net income by the weighted average number of shares of all classes of CME Group common stock outstanding for each reporting period. Diluted earnings per share reflects the increase in shares using the treasury stock method to reflect the impact of an equivalent number of shares of common stock if stock options were exercised and restricted stock awards were converted into common stock. Anti-dilutive stock awards were as follows for the periods presented:

	Quarter Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2021	2020	2021	2020
Stock awards	—	44	72	44
Total	—	44	72	44

The following table presents the earnings per share calculation for the periods presented:

	Quarter Ended September 30,		Nine Months Ended September 30,	
	2021	2020	2021	2020
Net Income Attributable to CME Group (in millions)	$ 926.5	$ 411.7	$ 2,011.2	$ 1,681.2
Weighted Average Number of Common Shares (in thousands):				
Basic	358,363	357,791	358,258	357,669
Effect of stock options, restricted stock and performance shares	625	799	636	823
Diluted	358,988	358,590	358,894	358,492
Earnings per Common Share Attributable to CME Group:				
Basic	$ 2.59	$ 1.15	$ 5.61	$ 4.70
Diluted	2.58	1.15	5.60	4.69

13. Subsequent Events

The company has evaluated subsequent events through the date the financial statements were issued. The company has determined that there were no subsequent events that met the requirement for recognition or disclosure in the consolidated financial statements.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion is provided as a supplement to, and should be read in conjunction with, the accompanying unaudited consolidated financial statements and notes in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the year ended December 31, 2020, filed with the SEC on February 26, 2021.

References in this discussion and analysis to "we" and "our" are to CME Group Inc. (CME Group) and its consolidated subsidiaries, collectively. References to "exchange" are to Chicago Mercantile Exchange Inc. (CME), the Board of Trade of the City of Chicago, Inc. (CBOT), New York Mercantile Exchange, Inc. (NYMEX), and Commodity Exchange, Inc. (COMEX), collectively, unless otherwise noted.

RESULTS OF OPERATIONS

Financial Highlights

The following summarizes significant changes in our financial performance for the periods presented.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(dollars in millions, except per share data)	2021	2020	Change	2021	2020	Change
Total revenues	$ 1,109.9	$ 1,080.7	3 %	$ 3,542.4	$ 3,785.1	(6)%
Total expenses	496.2	555.7	(11)	1,528.9	1,662.7	(8)
Operating margin	55.3 %	48.6 %		56.8 %	56.1 %	
Non-operating income (expense)	$ 482.2	$ 11.5	n.m.	$ 560.8	$ 64.7	n.m.
Effective tax rate	15.5 %	23.3 %		21.9 %	23.1 %	
Net income attributable to CME Group	$ 926.5	$ 411.7	125	$ 2,011.2	$ 1,681.2	20
Diluted earnings per common share attributable to CME Group	2.58	1.15	124	5.60	4.69	19
Cash flows from operating activities				1,734.1	2,055.3	(16)

Revenues

	Quarter Ended September 30,			Nine Months Ended September 30,		
(dollars in millions)	2021	2020	Change	2021	2020	Change
Clearing and transaction fees	$ 878.9	$ 835.4	5 %	$ 2,815.8	$ 3,054.4	(8)%
Market data and information services	145.4	139.4	4	434.8	405.6	7
Other	85.6	105.9	(19)	291.8	325.1	(10)
Total Revenues	$ 1,109.9	$ 1,080.7	3	$ 3,542.4	$ 3,785.1	(6)

Clearing and Transaction Fees

Futures and Options Contracts

The following table summarizes our total contract volume, revenue and average rate per contract for futures and options. Total contract volume includes contracts that are traded on our exchange and cleared through our clearing house and certain cleared-only contracts. Volume is measured in round turns, which is considered a completed transaction that involves a purchase and an offsetting sale of a contract. Average rate per contract is determined by dividing total clearing and transaction fees by total contract volume. Contract volume and average rate per contract disclosures exclude trading volume for the cash markets business and interest rate swaps volume.

	Quarter Ended September 30,			Nine Months Ended September 30,		
	2021	2020	Change	2021	2020	Change
Total contract volume (in millions)	1,138.3	998.6	14 %	3,631.4	3,782.2	(4)%
Clearing and transaction fees (in millions)	$ 770.3	$ 715.0	8	$ 2,453.2	$ 2,658.8	(8)
Average rate per contract	$ 0.677	$ 0.716	(5)	$ 0.676	$ 0.703	(4)

We estimate the following net changes in clearing and transaction fees based on changes in total contract volumes and changes in average rate per contract for futures and options during the third quarter and first nine months of 2021 when compared with the same periods in 2020.

(in millions)	Quarter Ended	Nine Months Ended
Increase (decrease) due to changes in total contract volumes	$ 94.5	$ (101.9)
Decreases due to changes in average rate per contract	(39.2)	(103.7)
Net increase (decrease) in clearing and transaction fees	$ 55.3	$ (205.6)

Average rate per contract is impacted by our rate structure, including volume-based incentives; product mix; trading venue, and the percentage of volume executed by customers who are members compared with non-member customers. Due to the relationship between average rate per contract and contract volume, the change in clearing and transaction fees attributable to changes in each is only an approximation.

Contract Volume

The following table summarizes average daily contract volume. Contract volume can be influenced by many factors, including political and economic conditions, the regulatory environment and market competition.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
Average Daily Volume by Product Line:						
Interest rates	8,111	5,315	53 %	8,995	8,628	4 %
Equity indexes	5,100	5,410	(6)	5,372	5,820	(8)
Foreign exchange	776	829	(6)	798	876	(9)
Agricultural commodities	1,141	1,372	(17)	1,412	1,396	1
Energy	2,178	1,852	18	2,166	2,548	(15)
Metals	480	825	(42)	573	744	(23)
Aggregate average daily volume	17,786	15,603	14	19,316	20,012	(3)
Average Daily Volume by Venue:						
CME Globex	16,652	15,054	11	18,071	18,826	(4)
Open outcry	598	108	n.m.	640	457	40
Privately negotiated	536	441	21	605	729	(17)
Aggregate average daily volume	17,786	15,603	14	19,316	20,012	(3)
Electronic Volume as a Percentage of Total Volume	94%	96 %		94%	94 %	

n.m. not meaningful

Overall market volatility increased throughout the third quarter of 2021 following periods of lower volatility in 2020, particularly in the third quarter of 2020. In mid-2021, the Federal Reserve indicated a potential increase in interest rates earlier than many market participants expected, which resulted in higher volatility within the interest rate market. In addition, energy contract volume increased in the third quarter 2021 when compared with the same period in 2020, largely due to an increase in volatility within the crude oil market. The crude oil market exhibited higher volatility as a result of supply outages from Hurricane Ida and demand uncertainties related to the market impact of COVID-19. However, volatility within the equity, agriculture and metal markets subsided in the third quarter of 2021 when compared to the same period in 2020. We believe these factors led to the changes in contract volume during the third quarter and first nine months of 2021, when compared with the same periods in 2020.

Following the Illinois stay at home orders in March 2020, we closed the trading floor in Chicago. We began a limited re-opening of the trading floor in the third quarter of 2020. Only the Eurodollar options trading pit (where options on One-Month and Three-Month Secured Overnight Financing Rate (SOFR) futures also trade) remains open.

Interest Rate Products

The following table summarizes average daily contract volume for our key interest rate products. Eurodollar Front 8 futures include contracts expiring in two years or less. Eurodollar Back 32 futures include contracts with expirations after two years through ten years.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
Eurodollar futures and options:						
Front 8 futures	1,072	741	45 %	1,165	1,479	(21)%
Back 32 futures	967	457	112	1,126	623	81
Options	890	422	111	986	1,254	(21)
U.S. Treasury futures and options:						
10-Year	2,151	1,462	47	2,409	2,093	15
5-Year	1,113	777	43	1,244	1,146	9
Treasury Bond	508	422	20	562	471	19
2-Year	390	347	12	439	583	(25)
Federal Funds futures and options	71	87	(19)	87	256	(66)

In the third quarter and first nine months of 2021, overall interest rate contract volumes increased when compared with the same period in 2020. We believe these increases resulted from higher interest rate volatility due to changes in market expectations. Interest rate volatility increased following the Federal Reserve's indication that it would maintain its zero interest rate policy in the short term and potentially raise interest rates sooner than expected. In addition, we believe the increases in U.S. Treasury contract volumes were due to a record level of U.S. Treasury issuances, which has led to an increased need for market participants to manage their risk across the treasury yield curve.

The overall increase in interest rate contract volume in the first nine months of 2021 when compared with the same period in 2020 was offset by high volume in the first quarter of 2020 due to significant volatility as a result of economic uncertainty caused by the governmental and business response to the COVID-19 pandemic in early 2020.

Equity Index Products

The following table summarizes average daily contract volume for our key equity index products.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
E-mini S&P 500 futures and options	2,940	3,311	(11)%	3,081	3,728	(17)%
E-mini Nasdaq 100 futures and options	1,391	1,397	—	1,499	1,265	18
E-mini Russell 2000 futures and options	348	285	22	358	311	15

In the third quarter and the first nine months of 2021, equity index contract volumes decreased when compared with the same periods in 2020. Volatility within the broad-based indexes, including the S&P 500, subsided in 2021 following significant equity market volatility in early 2020 resulting from uncertainty surrounding the economic impact of governmental and business actions to combat the COVID-19 pandemic. However, there was an increase in volatility within certain narrow-based small cap indexes, which resulted from a market repricing of certain stocks in early 2021. We believe this increase in volatility contributed to increases in E-mini Russell 2000 contract volumes.

Foreign Exchange Products

The following table summarizes average daily contract volume for our key foreign exchange products.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
Euro	195	249	(22)%	210	244	(14)%
Japanese Yen	113	97	17	112	128	(13)
British Pound	100	114	(12)	100	113	(12)
Australian dollar	96	99	(3)	105	109	(4)

Overall foreign exchange contract volume decreased in the third quarter and first nine months of 2021 when compared with the same periods in 2020. Market volatility subsided in 2021 following very high foreign exchange volatility in early 2020 caused by significant uncertainty surrounding the economic impacts of the governmental and business actions to combat the COVID-19 pandemic. We believe these factors led to the overall decreases in foreign exchange contract volumes. However, in the third quarter of 2021 when compared with the same period in 2020, Japanese Yen contract volume increased due to risk aversion by market participants with other currencies, as the Japanese Yen is considered a safe haven currency.

Agricultural Commodity Products

The following table summarizes average daily contract volume for our key agricultural commodity products.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
Corn	369	440	(16)%	494	438	13 %
Soybean	205	292	(30)	284	280	1
Wheat	182	219	(17)	203	227	(11)

Overall commodity contract volume decreased in the third quarter of 2021 when compared with the same period in 2020. Corn and soybean contract volumes decreased due to lower volatility as a result of stable prices and demand following the 2021 growing season.

Commodity contract volume was flat for the first nine months of 2021 when compared to the same period in 2020, as market volatility subsided in the second half of 2021 following periods of high volatility in the first half of 2021 caused by expectations of lower than expected crop yields in 2021.

Energy Products

The following table summarizes average daily contract volume for our key energy products.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
WTI crude oil	1,119	873	28 %	1,150	1,369	(16)%
Natural gas	583	582	—	540	657	(18)
Refined products	355	307	16	351	379	(7)

Overall energy contract volume increased in the third quarter of 2021 when compared with the same period in 2020, largely due to an increase in volatility within the crude oil markets. We believe the crude oil market exhibited higher volatility as a result of supply outages from Hurricane Ida and demand uncertainties related to the market impact of COVID-19. We also believe the increase in crude oil volumes was due to rising oil prices, which created a greater need for hedging.

The decrease in energy contract volume in the first nine months of 2021 when compared to the same period in 2020 can be attributed to lower overall market volatility within the energy market. We believe this was due to a continued rebalance and reduction in demand in the crude oil markets as a result of the COVID-19 pandemic. In addition, forecasts of warmer than expected weather resulted in a decrease in natural gas contract volume compared to the same period in 2020.

Metal Products

The following table summarizes average daily volume for our key metal products.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in thousands)	2021	2020	Change	2021	2020	Change
Gold	294	526	(44)%	341	490	(31)%
Copper	87	99	(12)	108	101	7
Silver	78	180	(57)	102	129	(21)

In the third quarter and first nine months of 2021, metal contract volumes decreased when compared with the same periods in 2020. We believe the decreases are attributed to lower overall market volatility within the gold and silver markets. Volatility was higher in 2020, as investors were using gold and other precious metals as safe-haven investments as a result of uncertainty within other markets caused by the governmental and business actions to combat the COVID-19 pandemic.

Average Rate per Contract

The average rate per contract decreased in the third quarter and first nine months of 2021 when compared with the same periods in 2020. The decreases were largely due to a shift in product mix. In the third quarter of 2021, interest contract volume increased by 12 percentage points as a percentage of total volume, while all other product lines collectively decreased by 12 percentage points as a percentage of total volume. In the first nine months of 2021, interest contract volume increased by 3 percentage points as a percentage of total volume, while all other product lines collectively decreased by 3 percentage points as a percentage of total volume. Interest rate contracts have a lower average rate per contract compared with other product lines.

Cash Markets Business

Total clearing and transaction fees revenues in the third quarter and the first nine months of 2021 include $93.5 million and $314.4 million of transaction fees attributable to the cash markets business compared with $105.6 million and $342.4 million in the third quarter and first nine months of 2020, respectively. This revenue primarily includes BrokerTec Americas LLC's fixed income volume and EBS's foreign exchange volume.

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in millions)	2021	2020	Change	2021	2020	Change
BrokerTec U.S.'s fixed income transaction fees	$ 38.8	$ 39.8	(3)%	$ 125.5	$ 133.3	(6)%
EBS's foreign exchange transaction fees	40.7	42.3	(4)%	129.0	136.9	(6)

The related average daily notional value for the third quarter and first nine months of 2021 were as follows:

	Quarter Ended September 30,			Nine Months Ended September 30,		
(amounts in billions)	2021	2020	Change	2021	2020	Change
U.S. Treasury	$ 98.0	$ 93.2	5 %	$ 113.0	$ 135.3	(16)%
European Repo (in euros)	293.4	261.6	12	293.8	265.9	10
Spot FX	54.4	63.3	(14)	62.8	74.3	(15)

Overall average daily notional value for the cash markets business increased in the third quarter of 2021 compared with the same period in 2020. The increase in European Repo transactions was largely due to increased volatility as a result of the European Union unexpectedly leaving interest rates unchanged. Despite the increase in average daily notional value, transaction revenue decreased due to the tiered pricing structure and a rate reduction for certain customer groups.

Overall average daily notional value for the cash markets business decreased in the first nine months of 2021 compared with the same period in 2020. The decrease in trading was largely due to lower volatility as the first quarter of 2020 saw high volatility as a result of the uncertainty surrounding the COVID-19 pandemic.

Concentration of Revenue

We bill a substantial portion of our clearing and transaction fees directly to our clearing firms. The majority of clearing and transaction fees received from clearing firms represent charges for trades executed and cleared on behalf of their customers. One individual firm represented approximately 10% of our clearing and transaction fees in the first nine months of 2021. Should a clearing firm withdraw, we believe that the customer portion of the firm’s trading activity would likely transfer to another clearing firm of the exchange. Therefore, we do not believe we are exposed to significant risk from the ongoing loss of revenue received from or through a particular clearing firm.

Other Sources of Revenue

During the third quarter and first nine months of 2021, overall market data and information services revenues increased when compared with the same periods in 2020 largely due to price increases for certain products.

The two largest resellers of our market data represented approximately 33% of our market data and information services revenue in the first nine months of 2021. Despite this concentration, we consider exposure to significant risk of revenue loss to be minimal. In the event that one of these vendors no longer subscribes to our market data, we believe the majority of that vendor’s customers would likely subscribe to our market data through another reseller. Additionally, several of our largest institutional customers that utilize services from our two largest resellers report usage and remit payment of their fees directly to us.

In the third quarter and first nine months of 2021, the decreases in other revenues when compared with the same periods in 2020 were largely due to decreases in custody fees resulting from declines in the overall level of non-cash performance bonds and guaranty fund collateral. The decreases were also due to a reduction in reported revenue related to the deconsolidation of the net assets of our optimization business, which was contributed to OSTTRA, our new joint venture with IHS Markit. The joint venture was launched in September 2021.

Expenses

	Quarter Ended September 30,			Nine Months Ended September 30,		
(dollars in millions)	2021	2020	Change	2021	2020	Change
Compensation and benefits	$ 198.6	$ 216.4	(8)%	$ 635.3	$ 640.9	(1)%
Technology	49.3	48.1	3	146.8	144.9	1
Professional fees and outside services	45.2	48.4	(6)	119.4	141.3	(15)
Amortization of purchased intangibles	59.0	78.3	(25)	179.0	232.2	(23)
Depreciation and amortization	37.2	39.7	(6)	111.9	111.7	—
Licensing and other fee agreements	57.6	57.7	—	176.5	187.0	(6)
Other	49.3	67.1	(26)	160.0	204.7	(22)
Total Expenses	$ 496.2	$ 555.7	(11)	$ 1,528.9	$ 1,662.7	(8)

Operating expenses decreased by $59.5 million and $133.8 million in the third quarter and first nine months of 2021 when compared with the same periods in 2020. The following table shows the estimated impacts of key factors resulting in the change in operating expenses:

	Quarter Ended, September 30, 2021		Nine Months Ended, September 30, 2021	
(dollars in millions)	Amount of Change	Change as a Percentage of Total Expenses	Amount of Change	Change as a Percentage of Total Expenses
Amortization of purchased intangibles	$ (19.3)	(3)%	$ (53.2)	(3)%
Intangible and fixed asset impairments	(1.8)	—	(26.8)	(2)
Professional fees and outside services	(3.2)	(1)	(21.9)	(1)
Salaries, benefits and employer taxes	(14.8)	(3)	(16.7)	(1)
Stock-based compensation	(7.7)	(2)	(12.5)	(1)
Licensing and other fee agreements	(0.1)	—	(10.5)	(1)
Foreign currency exchange rate fluctuation	(9.3)	(1)	(2.2)	—
Employee separation and retention costs	0.9	—	10.2	1
Other expenses, net	(4.2)	(1)	(0.2)	—
Total decrease	$ (59.5)	(11)%	$ (133.8)	(8)%

Decreases in operating expenses in the third quarter and first nine months of 2021 when compared with the same periods in 2020 were as follows:

- Amortization of purchased intangibles was lower during the third quarter and first nine months of 2021, as intangible assets related to CME Group's optimization business were contributed to a joint venture with IHS Markit in September 2021. Prior to the completion of the joint venture, amortization was no longer taken on these intangible assets once they were classified as held for sale in January 2021 following approval by the company's Board of Directors.
- In the third quarter and first nine months of 2020, we recognized higher impairment charges on certain intangible assets and fixed assets related to a subsidiary.
- Professional fees and outside services expenses decreased due to a greater reliance on consultants for platform integrations, information security and systems enhancements in 2020 as well as a reduction in legal fees related to our business activities and product offerings. The decrease in consulting and legal fees was partially offset by one-time deal costs incurred in the third quarter of 2021 related to our joint venture with IHS Markit.

- Salaries, benefits and employer taxes were lower during the third quarter and first nine months of 2021 when compared to the same periods in 2020 due to higher reductions in workforce and the contribution of employees from CME Group's optimization businesses to the new joint venture with IHS Markit in September 2021.
- Decreases in stock-based compensation expense were primarily due to higher forfeitures resulting from reductions in headcount compared to the same periods in 2020.
- A decrease in licensing and other fee agreements expense was due to lower volumes for certain equity products during the first nine months of 2021 when compared to the same period in 2020.
- In the third quarter of 2021, we recognized a net gain of $3.2 million due to favorable changes in exchange rates on foreign liability balances, compared with a net loss of $6.1 million in the third quarter of 2020. In the first nine months of 2021, we recognized a net loss of $0.2 million, compared with a net loss of $2.4 million in the first nine months of 2020. Gains and losses from exchange rate fluctuations are recognized in the consolidated statements of net income when subsidiaries with a U.S. dollar functional currency hold certain monetary assets and liabilities denominated in foreign currencies.

Increases in operating expenses in the third quarter and first nine months of 2021 when compared with the same periods in 2020 were as follows:

- Employee separation and retention costs were higher during the third quarter and first nine months of 2021 due to a higher reduction in workforce compared to the same periods in 2020.

Non-Operating Income (Expense)

	Quarter Ended September 30,			Nine Months Ended September 30,		
(dollars in millions)	2021	2020	Change	2021	2020	Change
Investment income	$ 145.8	$ 23.6	n.m.	$ 239.1	$ 151.6	58 %
Interest and other borrowing costs	(41.8)	(41.7)	—	(125.0)	(124.5)	—
Equity in net earnings of unconsolidated subsidiaries	66.4	44.0	51	178.3	144.0	24
Other non-operating income (expense)	311.8	(14.4)	n.m.	268.4	(106.4)	n.m.
Total Non-Operating	$ 482.2	$ 11.5	n.m.	$ 560.8	$ 64.7	n.m.

n.m. not meaningful

Investment income. Investment income increased in the third quarter and first nine months of 2021 when compared with the same periods in 2020, largely due to increases in net realized and unrealized gains on investments. In the third quarter of 2021 when compared with the same period in 2020 there was an increase in earnings from cash performance bond and guaranty fund contributions that are reinvested due to higher reinvestment balances. In the first nine months of 2021, there was a decrease in earnings from cash performance bond and guaranty fund contributions that are reinvested. The decrease in earnings resulted largely from lower rates of interest earned in the cash account at the Federal Reserve Bank of Chicago following significant interest rate cuts in early 2020 by the Federal Reserve, despite an increase in reinvestment balances.

Equity in net earnings (losses) of unconsolidated subsidiaries. In September 2021, we began recognizing our share of net earnings in our investment in OSTTRA, our new joint venture with IHS Markit. Higher income generated from our S&P/Dow Jones Indices LLC (S&P/DJI) business venture also contributed to increases in equity in net earnings of unconsolidated subsidiaries in the third quarter and first nine months of 2021, when compared with the same periods in 2020.

Other income (expense). In the third quarter of 2021, we recognized a net gain of $343.5 million on the deconsolidation and contribution of our optimization business to OSTTRA, which contributed to an increase in other income in the third quarter and first nine months of 2021. In the third quarter of 2021 when compared with the same period in 2020, we recognized higher expense related to the distribution of interest earned on performance bond collateral reinvestments to the clearing firms due to higher interest income earned on our reinvestment. In the first nine months of 2021 when compared with the same period of 2020, we recognized lower expense related to the distribution of interest earned on performance bond collateral reinvestments to the clearing firms caused by lower interest income earned on our reinvestment during the nine-month period due to a higher Federal Funds rate in early 2020.

Income Tax Provision

The following table summarizes the effective tax rates for the periods presented:

	2021	2020
Quarter ended September 30	15.5 %	23.3 %
Nine months ended September 30	21.9 %	23.1 %

The overall effective tax rate decreased in the third quarter of 2021 and first nine months of 2021 when compared with the same periods in 2020. In the third quarter of 2021, we recognized the gain on the deconsolidation and contribution of our optimization business to OSTTRA, which was not taxable.

Liquidity and Capital Resources

Sources and Uses of Cash. Net cash provided by operating activities decreased in the first nine months of 2021 when compared with the same period in 2020 largely due to a decrease in trading volume. Net cash used in investing activities was lower during the first nine months of 2021 when compared with the same period in 2020 largely due to an increase in proceeds from sales of investments. Cash used in financing activities was lower during the first nine months of 2021 when compared with the same period in 2020 due to net repayments of commercial paper made during the first nine months of 2020.

Debt Instruments. The following table summarizes our debt outstanding at September 30, 2021:

(in millions)		Par Value
Fixed rate notes due September 2022, stated rate of 3.00% (1)	$	750.0
Fixed rate notes due May 2023, stated rate of 4.30%	€	15.0
Fixed rate notes due March 2025, stated rate of 3.00% (2)	$	750.0
Fixed rate notes due June 2028, stated rate of 3.75%	$	500.0
Fixed rate notes due September 2043, stated rate of 5.30% (3)	$	750.0
Fixed rate notes due June 2048, stated rate of 4.15%	$	700.0

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(1) We maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 3.32%.

(2) We maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable on the notes effectively became fixed at a rate of 3.11%.

(3) We maintained a forward-starting interest rate swap agreement that modified the interest obligation associated with these notes so that the interest payable effectively became fixed at a rate of 4.73%.

We maintain a $2.4 billion multi-currency revolving senior credit facility with various financial institutions, which matures in November 2022. The proceeds from this facility can be used for general corporate purposes, which includes providing liquidity for our clearing house in certain circumstances at CME Group's discretion and, if necessary, for maturities of commercial paper. As long as we are not in default under this facility, we have the option to increase it up to $3.0 billion with the consent of the agent and lenders providing the additional funds. This facility is voluntarily pre-payable from time to time without premium or penalty. Under this facility, we are required to remain in compliance with a consolidated net worth test, which is defined as our consolidated shareholders' equity at September 30, 2017, giving effect to share repurchases made and special dividends paid during the term of the agreements (and in no event greater than $2.0 billion in aggregate), multiplied by 0.65. We currently do not have any borrowings outstanding under this facility, but any commercial paper balance if or when outstanding can be backstopped against this facility.

We maintain a 364-day multi-currency revolving secured credit facility with a consortium of domestic and international banks to be used in certain situations by the clearing house. The facility provides for borrowings of up to $7.0 billion. We may use the proceeds to provide temporary liquidity in the unlikely event a clearing firm fails to promptly discharge an obligation to CME Clearing, in the event of a liquidity constraint or default by a depositary (custodian for our collateral), in the event of a temporary disruption with the domestic payments system that would delay payment of settlement variation between us and our clearing firms, or in other cases as provided by the CME rulebook. Clearing firm guaranty fund contributions received in the form of cash or U.S. Treasury securities as well as the performance bond assets (pursuant to the CME rulebook) can be used to collateralize the facility. At September 30, 2021, guaranty fund contributions available to collateralize the facility totaled $8.6 billion. We have the option to request an increase in the line from $7.0 billion to $10.0 billion. Our 364-day facility contains a requirement that CME remain in compliance with a consolidated tangible net worth test, defined as CME consolidated shareholder's equity less intangible assets (as defined in the agreement), of not less than $800.0 million. We currently do not have any borrowings outstanding under this facility.

The indentures governing our fixed rate notes, our $2.4 billion multi-currency revolving senior credit facility and our 364-day multi-currency revolving secured credit facility for $7.0 billion do not contain specific covenants that restrict the ability to pay dividends. These documents, however, do contain other customary financial and operating covenants that place restrictions on the operations of the company that could indirectly affect the ability to pay dividends.

At September 30, 2021, we have excess borrowing capacity for general corporate purposes of approximately $2.4 billion under our multi-currency revolving senior credit facility.

At September 30, 2021, we were in compliance with the various financial covenant requirements of all our debt facilities.

CME Group, as a holding company, has no operations of its own. Instead, it relies on dividends declared and paid to it by its subsidiaries in order to provide the funds which it uses to pay dividends to its shareholders.

To satisfy our performance bond obligation with Singapore Exchange Limited, we may pledge irrevocable standby letters of credit. At September 30, 2021, the letters of credit totaled $310.0 million. We also maintain a $350.0 million line of credit to meet our obligations under this agreement.

The following table summarizes our credit ratings at September 30, 2021:

Rating Agency	**Short-Term Debt Rating**	**Long-Term Debt Rating**	**Outlook**
Standard & Poor’s Global Ratings	A1+	AA-	Stable
Moody’s Investors Service, Inc.	P1	Aa3	Stable

Given our cash flow generation, our ability to pay down debt levels and our ability to refinance existing debt facilities if necessary, we expect to maintain an investment grade rating. If our ratings are downgraded below investment grade due to a change of control, we are required to make an offer to repurchase our fixed rate notes at a price equal to 101% of the principal amount, plus accrued and unpaid interest.

Liquidity and Cash Management. Cash and cash equivalents totaled $1.5 billion and $1.6 billion at September 30, 2021 and December 31, 2020, respectively. The balance retained in cash and cash equivalents is a function of anticipated or possible short-term cash needs, prevailing interest rates, our corporate investment policy and alternative investment choices. A majority of our cash and cash equivalents balance is invested in money market mutual funds that invest only in U.S. Treasury securities, U.S. government agency securities and U.S. Treasury security reverse repurchase agreements and short-term bank deposits. Our exposure to credit and liquidity risk is minimal given the nature of the investments. Cash that is not available for general corporate purposes because of regulatory requirements or other restrictions is classified as restricted cash and is included in other current assets or other assets in the consolidated balance sheets.

Regulatory Requirements. CME is regulated by the CFTC as a U.S. Derivatives Clearing Organization (DCO). DCOs are required to maintain capital, as defined by the CFTC, in an amount at least equal to one year of projected operating expenses as well as cash, liquid securities, or a line of credit at least equal to six months of projected operating expenses. CME was designated by the Financial Stability Oversight Council as a systemically important financial market utility under Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act. As a result, CME must comply with CFTC regulations applicable to a systemically important DCO for financial resources and liquidity resources. CME is in compliance with all DCO financial requirements.

CME, CBOT, NYMEX and COMEX are regulated by the CFTC as Designated Contract Markets (DCM). DCMs are required to maintain capital, as defined by the CFTC, in an amount at least equal to one year of projected operating expenses as well as cash, liquid securities or a line of credit at least equal to six months of projected operating expenses. Our DCMs are in compliance with all DCM financial requirements.

BrokerTec Americas LLC is required to maintain sufficient net capital under Securities Exchange Act of 1934, as amended (Exchange Act), Rule 15c3-1 (the Net Capital Rule). The Net Capital Rule focuses on liquidity and is designed to protect securities customers, counterparties, and creditors by requiring that broker-dealers have sufficient liquid resources on hand at all times to satisfy claims promptly. Rule 15c3-3, or the customer protection rule, which complements rule 15c3-1, is designed to ensure that customer property (securities and funds) in the custody of broker-dealers is adequately safeguarded. By law, both of these rules apply to the activities of registered broker-dealers, but not to unregistered affiliates. The firm began operating as a (k)(2)(i) broker dealer in November 2017 following notification to the Financial Industry Regulatory Authority and the SEC. A company operating under the (k)(2)(i) exemption is not required to lock up customer funds as would otherwise be required under Exchange Act Rule 15c3-3.

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ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are subject to various market risks, including those caused by changes in interest rates, credit, foreign currency exchange rates and equity prices. There have not been material changes in our exposure to market risk since December 31, 2020. Refer to Item 7A. of CME Group's Annual Report on Form 10-K for the year ended December 31, 2020, filed with the SEC on February 26, 2021, for additional information.

ITEM 4. CONTROLS AND PROCEDURES

(a) Disclosure Controls and Procedures. Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of the end of such period, our disclosure controls and procedures are effective.

(b) Changes in Internal Control Over Financial Reporting. As required by Rule 13a-15(d) under the Exchange Act, the company's management, including the company's Chief Executive Officer and Chief Financial Officer, have evaluated the company's internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) to determine whether any changes occurred during the quarter covered by this quarterly report that have materially affected, or are reasonably likely to materially affect, the company's internal control over financial reporting. There were no changes in the company's internal control over financial reporting which occurred during the fiscal quarter ended September 30, 2021, that have materially affected, or are reasonably likely to materially affect, the company's internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

The disclosure under "Legal and Regulatory Matters" in Note 7. Contingencies in the Notes to Unaudited Consolidated Financial Statements in Item 1 of Part I of this report is incorporated herein by reference. Such disclosure includes updates to the legal proceedings disclosed in the company's Annual Report on Form 10-K, for the year ended December 31, 2020, filed with the SEC on February 26, 2021.

ITEM 1A. RISK FACTORS

There have been no material changes in the company's risk factors from those disclosed in the company's Annual Report on Form 10-K for the year ended December 31, 2020, filed with the SEC on February 26, 2021.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Issuer Purchases of Equity Securities

Period	(a) Total Number of Class A Shares Purchased (1)	(b) Average Price Paid Per Share	(c) Total Number of Class A Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Value) that May Yet Be Purchased Under the Plans or Programs (in millions)
July 1 to July 31	557	$ 210.16	—	$ —
August 1 to August 31	34	208.38	—	—
September 1 to September 30	95,514	188.80	—	—
Total	96,105	$ 189.01	—	

(1) Shares purchased consist of an aggregate of 96,105 shares of Class A common stock surrendered in the third quarter of 2021 to satisfy employees' tax obligations upon the vesting of restricted stock.

ITEM 6. EXHIBITS

10.1(1)*	Form of Equity Grant Letter for Restricted Shares.
10.2(1)*	Form of Equity Grant Letter for Annual Grant of Performance Shares.
31.1	Section 302 Certification—Terrence A. Duffy
31.2	Section 302 Certification—John W. Pietrowicz
32.1	Section 906 Certification
101	The following materials from CME Group Inc.'s Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2021, formatted in Inline XBRL (Xtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Income, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statements of Equity, (v) Consolidated Statements of Cash Flows and (vi) Notes to Unaudited Consolidated Financial Statements, tagged as blocks of text.
104	Cover Page Interactive Data File included in the Inline XBRL Document Set for Exhibit 101.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

CME Group Inc.
(Registrant)

Dated: November 3, 2021	By:	/s/ John W. Pietrowicz
		John W. Pietrowicz
		Chief Financial Officer & Senior Managing Director Finance
		Principal Financial Offer and Duly Authorized Officer

WHERE FUTURES ARE MADE.

CME Group

Name:

Department:

Division:

Congratulations! We are pleased to provide you with an equity grant under the CME Group Inc. Second Amended and Restated Omnibus Stock Plan (the "Plan"). This equity grant is in recognition of the anticipated positive impact you will make toward the future success of CME Group. Your equity grant may enable you to acquire ownership in CME Group Inc., which is a means for you to share in the success of the company while creating shareholder value. Certain terms of your equity grant follow:

Restricted Stock Terms

Restricted Stock: You have been granted [ ] restricted shares of Class A common stock, $.01 par value, of CME Group Inc.

Grant Date: [ ]

Vesting Schedule: Except as otherwise provided in the Plan, 25 percent of the restricted stock grant shall become vested on each anniversary of the grant date, with 100 percent of the restricted stock grant becoming vested on the fourth anniversary of the grant date.

Accelerated Vesting: In the event of your Retirement, as defined and subject to the conditions below, 75% of any unvested portion of the restricted stock grant shall become vested upon the date of your Retirement. You will be eligible for this accelerated vesting for Retirement only if each the following conditions are met:

- You are at least 55 years old with 10 years of service[1] at a CME Group company on your Retirement date;
- You provide at least 6 months' advanced written notice of your Retirement date to the Chairman and Chief Executive Officer;
- Your Retirement date and transition plan must be approved by the Chairman and Chief Executive Officer; and
- You remained employed through your approved Retirement date and successfully transition responsibilities, as determined by the Chairman and Chief Executive Officer upon your Retirement date.

Dividends: Dividends accrued on unvested restricted shares will either be credited toward your tax liability upon vest or paid via local payroll depending on the country in which you are a tax resident.

Your equity grant has a total planned economic value of $[ ] which is [ ]% of your current base salary. The planned value was used to calculate the number of shares granted, using the closing stock price on the grant date.

*For employees at the Director level and above: To be eligible to receive this grant, you must have signed a Confidentiality, Non-Competition and Non-Solicitation Agreement. In addition to the terms stated in this grant letter, your equity grant shall be subject to the terms and conditions of the Plan. All documents relating to the Plan, including the cover letter, grant letter, Plan Document, Prospectus, Frequently Asked Questions, and any other supplemental documents are available online by logging on to your E*TRADE account at www.etrade.com/stockplans or by calling E*TRADE at 1-800-838-0908 (+1-650-599-0125 outside the U.S.). A copy of the current CME Group Form 10-K can be found at: http://investor.cmegroup.com/investor-relations/financials.cfm. Please complete your W-9 Form (or W-8BEN Form if outside the U.S.) during activation of your E*TRADE account.*

By accepting this equity grant, you hereby agree to the terms and conditions of the Plan (which are subject to change at any time pursuant to the terms of the Plan) and of the Confidentiality, Non-Competition and Non-Solicitation Agreement previously signed by you. In addition, you acknowledge and agree that you are receiving this grant pursuant to CME Group's Equity Program, which is in place at the discretion of CME Group. Accordingly, your receipt of this grant and your eligibility for any future grants are subject to the continued existence of the Equity Program.

[1] ***"Year of Service" means each twelve (12) consecutive-month period, which is measured from an employee's most recent date of hire***

No Right to Future Grants; No Right of Employment; Extraordinary Item: In accepting the grant, you acknowledge that: (a) the Plan is established voluntarily by the Company, it is discretionary in nature and it may be modified, suspended or terminated by the Company at any time, as provided in the Plan and this Award Agreement; (b) the grant of the Award is voluntary and occasional and does not create any contractual or other right to receive future grants of Awards, or benefits in lieu of Awards, even if Awards have been granted repeatedly in the past; (c) all decisions with respect to future grants, if any, will be at the sole discretion of the Company; (d) your participation in the Plan is voluntary; (e) the Awards are an extraordinary item that do not constitute compensation of any kind for services of any kind rendered to the Company and which is outside the scope of your employment or employment contract, if any; (f) the Awards are not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculating any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement benefits or similar payments; (g) in the event that you are an employee of an affiliate or subsidiary of the Company, the grant will not be interpreted to form an employment contract or relationship with the Company; and furthermore, the grant will not be interpreted to form an employment contract with the affiliate or subsidiary that is your employer; (h) the future value of the underlying shares is unknown and cannot be predicted with certainty; (i) no claim or entitlement to compensation or damages arises from forfeiture or termination of the Awards or diminution in value of the Awards or the shares and you irrevocably release the Company, its affiliates and/or its subsidiaries from any such claim that may arise; (j) to the extent the Award shall be included in the calculation of vacation pay under applicable law, the final amount received from the vested shares, if any, includes such vacation pay (i.e. vacation pay is not payable on top of the amount received from the vested shares); (k) at the time of vesting the Company will either withhold vesting shares to meet any tax withholding obligations, or determine another appropriate method (determined by the Company in its sole discretion) to meet such obligations; (l) the Company may share personal information with E*Trade and any of its other third party providers who assist with the administration of the Equity Program as necessary to effect the issuance and vesting of the Awards; and (m) notwithstanding any terms or conditions of the Plan to the contrary, once notice of termination of employment has been given by either party you are no longer eligible to receive Awards. Further, in the event of termination of your employment for any reason other than death or disability (as defined in the Plan), your right to vest in the Awards under the Plan, if any, will terminate effective as of the date that you are no longer employed.

WHERE FUTURES ARE MADE.

CME Group

Name:

Department:

Division:

Congratulations! We are pleased to provide you with a long-term incentive opportunity under the CME Group Inc. Second Amended and Restated Omnibus Stock Plan (the “Plan”). This long-term incentive opportunity is in recognition of the anticipated positive impact you will make toward the future success of the company. Your grant provides you with the opportunity to earn a range of performance shares based on the achievement of the performance goal set forth below. If earned, the ultimate payout for achieving the performance goal will be in the form of CME Group Inc. stock, which is a means for you to share in the success of the overall company. Certain terms of your long-term incentive opportunity follow:

Performance Share Terms

Performance Shares: Your grant has a target of [ ] Performance Shares for the achievement of the Performance Goal at the target level. Payout will be settled after the end of the Performance Period by the issuance of Class A common stock, $.01 par value, of CME Group Inc. if the specified Performance Goal is achieved for the Performance Period as set forth below.

Grant Date: [ ]

Performance Period: [ ]

Performance Goal: [ ]

Payment and Vesting Schedule: Performance Shares that are earned, if any, shall be settled in Class A common stock, $0.01 par value of CME Group Inc., which shall be issued as soon as administratively practicable after the Performance Period has ended and after the Compensation Committee and/or its delegate confirms that the Goal has been attained. The Goal shall not be deemed to be attained until the Compensation Committee and/or its delegate confirms that it has been attained. The Performance Shares earned shall be based on the actual performance achieved under the Performance Goal during the Performance Period and issued in accordance with the Terms and Conditions attached hereto. Such shares based on [ ] performance shall become vested on the payout date in March [ ], except as otherwise provided by the terms and conditions in the Plan.

Additional Terms and Conditions: The Performance Shares granted are subject to the Terms and Conditions attached hereto, as well as the terms and conditions set forth in the Plan.

Your equity grant has a total planned economic value of $[ ] which is [ ]% of your current base salary. The planned value was used to calculate the number of shares granted, using the closing stock price on the grant date.

*To be eligible to receive this grant, you must have signed a Confidentiality, Non-Competition and Non-Solicitation Agreement. In addition to the terms stated in this grant letter, your equity grant shall be subject to the terms and conditions of the Plan. All documents relating to the Plan, including the Plan Document, Prospectus and any other supplemental documents can be accessed online by logging on to your E*TRADE account at www.etrade.com/stockplans or by calling E*TRADE at 1-800-838-0908 or +1-650-599-0125 if outside the U.S. A copy of the current CME Group Form 10-K can be found at: http:// investor.cmegroup.com/investor-relations/financials.cfm. Please certify your W-9 (or W-8BEN if outside the U.S.) upon activation of your E*TRADE account.*

By accepting this equity grant, you hereby agree to the terms and conditions of the Plan (which are subject to change at any time pursuant to the terms of the Plan) and of the Confidentiality, Non-Competition and Non-Solicitation Agreement previously signed by you. In addition, you acknowledge and agree that you are receiving this grant pursuant to CME Group's Equity Program, which is in place at the discretion of CME Group. Accordingly, your receipt of this grant and your eligibility for any future grants are subject to the continued existence of the Equity Program.

No Right to Future Grants; No Right of Employment; Extraordinary Item: In accepting the grant, you acknowledge that: (a) the Plan is established voluntarily by the Company, it is discretionary in nature and it may be modified, suspended or terminated by the Company at any time, as provided in the Plan and this Award Agreement; (b) the grant of the Award is voluntary and occasional and does not create any contractual or other right to receive future grants of Awards, or benefits in lieu of Awards, even if Awards have been granted repeatedly in the past; (c) all decisions with respect to future grants, if any, will be at the sole discretion of the Company; (d) your participation in the Plan is voluntary; (e) the Award is an extraordinary item that does not constitute compensation of any kind for services of any kind rendered to the Company and which is outside the scope of your employment or employment contract, if any; (f) the Award is not part of normal or expected compensation or salary for any purposes, including, but not limited to, calculating any severance, resignation, termination, redundancy, end of service payments, bonuses, long-service awards, pension or retirement benefits or similar payments; (g) in the event that you are an employee of an affiliate or subsidiary of the Company, the grant will not be interpreted to form an employment contract or relationship with the Company; and furthermore, the grant will not be interpreted to form an employment contract with the affiliate or subsidiary that is your employer; (h) the future value of the underlying Shares is unknown and cannot be predicted with certainty; (i) no claim or entitlement to compensation or damages arises from forfeiture or termination of the Award or diminution in value of the Award or the Shares and you irrevocably release the Company, its affiliates and/or its subsidiaries from any such claim that may arise; (j) to the extent the Award shall be included in the calculation of vacation pay under applicable law, the final amount received from the vested shares, if any, includes such vacation pay (i.e. vacation pay is not payable on top of the amount received from the vested shares); (k) at the time of vesting the Company will either withhold and sell shares to meet any tax withholding obligations, or determine another appropriate method (determined by the Company in its sole discretion) to meet such obligations; (l) the Company may share personal information with E*Trade and any of its other third party providers who assist with the administration of the Equity Program as necessary to effect the issuance and vesting of the Awards; and
(m) notwithstanding any terms or conditions of the Plan to the contrary, once notice of termination of employment has been given by either party you are no longer eligible to receive Awards. Further, in the event of termination of your employment for any reason other than death or Disability (as defined in the Plan), your right to vest in the Awards under the Plan, if any, will terminate effective as of the date that you are no longer employed.

TERMS AND CONDITIONS

1. **Performance Shares Earned.** The number of Performance Shares earned, if any, will be based on the actual performance achieved during the Performance Period relative to the Performance Goal. This determination shall be made in accordance with the following schedule:

[ ] Performance	Performance Shares Earned
75th percentile or above	200% of Target Performance Shares
50th percentile	100% of Target Performance Shares
25th percentile	50% of Target Performance Shares
Below 25th percentile	0% of Target Performance Shares

Note: If actual performance falls between any of the levels above, then straight-line interpolation will be applied to determine the number of shares earned.

2. **Eligibility to Receive Grant and Condition of Receipt of Performance Shares.** Notwithstanding any other eligibility requirements specified in this grant or in the Plan, in order to be eligible to receive this award and as a condition of receipt of payment of any earned Performance Shares under this award, you must have entered into an agreement with the Company containing certain post- termination of employment restrictions. The post-termination employment restrictions applicable to you are set forth in the Confidentiality, Non-Competition and Non-Solicitation Agreement previously signed by you, which is incorporated herein by reference.

3. **Eligibility to Receive Performance Shares.** Notwithstanding any other eligibility requirements specified in this grant or in the Plan, in order for you to be eligible to receive payment of any earned Performance Shares after the end of the Performance Period, you must remain employed through the payout date

4. **Termination of Service.** If your employment is terminated by reason of Death or Disability (as defined in the Plan), your eligibility for payment of the Performance Shares is governed by the terms of the Plan. If your employment is terminated by reason of your Retirement (as defined below), 25% of your unvested Performance Shares will continue vesting and you will be eligible for payment based on actual performance against the Performance Goal after the Performance Period has ended. To be eligible for this continued vesting upon Retirement, each of the following conditions must be met:

   - You are at least 55 years old with 10 years of service[1] at a CME Group company on your Retirement date;
   - You provide at least 6 months' advanced written notice of your desire to retire to the Chairman and Chief Executive Officer;
   - Your Retirement date and transition plan must be approved by the Chairman and Chief Executive Officer; and
   - You remain employed through your approved Retirement date and successfully transition responsibilities, as determined by the Chairman and Chief Executive Officer upon your Retirement date.

   If your employment is terminated for any other reason, any Performance Shares that are not vested and paid out will be forfeited.

5. **IRS Code Section 409A**. This grant is intended to be exempt from or to comply with IRS Code Section 409A and will be interpreted consistent with such intention.

[1] ***"Year of Service" means each twelve (12) consecutive-month period, which is measured from an employee's most recent date of hire***

Exhibit 31.1

CERTIFICATION

I, Terrence A. Duffy, certify that:

1. I have reviewed this report on Form 10-Q of CME Group Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: November 3, 2021	/s/ Terrence A. Duffy
	Name: Terrence A. Duffy
	Title: Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, John W. Pietrowicz, certify that:

1. I have reviewed this report on Form 10-Q of CME Group Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: November 3, 2021	/s/ John W. Pietrowicz
	Name: John W. Pietrowicz
	Title: Chief Financial Officer

Exhibit 32.1

Certification of CEO and CFO Pursuant to
18 U.S.C. Section 1350,
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Quarterly Report on Form 10-Q of CME Group Inc. (the “Company”) for the quarter ended September 30, 2021 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), Terrence A. Duffy, as Chief Executive Officer of the Company, and John W. Pietrowicz, as Chief Financial Officer of the Company, each hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of his knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Terrence A. Duffy
Name: Terrence A. Duffy
Title: Chief Executive Officer

Dated: November 3, 2021

/s/ John W. Pietrowicz
Name: John W. Pietrowicz
Title: Chief Financial Officer

Dated: November 3, 2021

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by the Company for purposes of §18 of the Securities Exchange Act of 1934, as amended.

A signed original of this written statement required by § 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.