CHICAGO MERCANTILE EXCHANGE INC.
AND SUBSIDIARIES

Financial Statements

For the Years Ended December 31, 2016 and 2015

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES
FINANCIAL STATEMENTS
INDEX

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Report of Independent Auditors

The Board of Directors and Shareholders of
Chicago Mercantile Exchange Inc.

We have audited the accompanying consolidated financial statements of Chicago Mercantile Exchange Inc. and subsidiaries, which comprise the consolidated balance sheets as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income, shareholder's equity and cash flows for the years then ended, and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in conformity with U.S. generally accepted accounting principles; this includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free of material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Chicago Mercantile Exchange Inc. and subsidiaries at December 31, 2016 and 2015, and the consolidated results of their operations and their cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

Ernst & Young LLP

March 23, 2017

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS
(in millions, except share and per share data)

	December 31,	
	2016	**2015**
Assets		
Current Assets:		
Cash and cash equivalents	$ 721.6	$ 706.4
Marketable securities	56.9	49.9
Accounts receivable, net of allowance of $1.0 and $0.6	145.3	135.1
Other current assets	64.3	81.5
Due from affiliates	287.6	240.5
Performance bonds and guaranty fund contributions	37,269.9	35,390.2
Total current assets	38,545.6	36,603.6
Property, net	325.9	376.9
Intangible assets - other, net of accumulated amortization of $8.4 and $6.5	8.6	10.5
Goodwill	17.7	17.7
Other assets	94.9	72.6
Total Assets	$ 38,992.7	$ 37,081.3
Liabilities and Shareholder's Equity		
Current Liabilities:		
Accounts payable	$ 16.3	$ 17.2
Other current liabilities	159.6	148.3
Due to affiliates	102.0	116.2
Performance bonds and guaranty fund contributions	37,269.2	35,390.2
Total current liabilities	37,547.1	35,671.9
Other liabilities	224.7	102.8
Total Liabilities	37,771.8	35,774.7
Shareholder's Equity:		
Common stock, $0.01 par value, 1,000 shares authorized, 100 shares issued and outstanding	—	—
Additional paid-in capital	739.5	675.7
Retained earnings	519.3	667.7
Accumulated other comprehensive income (loss)	(37.9)	(36.8)
Total Shareholder's Equity	1,220.9	1,306.6
Total Liabilities and Shareholder's Equity	$ 38,992.7	$ 37,081.3

See accompanying notes to consolidated financial statements.

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF INCOME
(in millions)

	Year Ended December 31, 2016	Year Ended December 31, 2015
Revenues		
Clearing and transaction fees	$ 1,215.0	$ 1,144.8
Fees from affiliates	527.5	499.5
Market data and information services	133.3	78.7
Access and communication fees	89.1	82.7
Other	39.3	41.1
Total Revenues	2,004.2	1,846.8
Expenses		
Compensation and benefits	413.4	416.4
Communications	15.8	17.9
Technology support services	65.8	58.5
Professional fees and outside services	105.9	91.9
Amortization of purchased intangibles	1.9	1.9
Depreciation and amortization	97.0	100.1
Occupancy and building operations	50.8	45.7
Licensing and other fee agreements	97.2	82.7
Other	341.4	205.9
Total Expenses	1,189.2	1,021.0
Operating Income	815.0	825.8
Non-Operating Income (Expense)		
Investment income	79.5	17.5
Interest and other borrowing costs	(34.4)	(24.2)
Other	(43.5)	(3.3)
Total Non-Operating	1.6	(10.0)
Income before Income Taxes	816.6	815.8
Income tax provision	307.0	300.9
Net Income	$ 509.6	$ 514.9

See accompanying notes to consolidated financial statements.

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in millions)

	Year Ended December 31,	
	2016	2015
Net income	$ 509.6	$ 514.9
Other comprehensive income, net of tax:		
Investment securities:		
Net unrealized holding gains (losses) arising during the period	0.1	(0.1)
Income tax benefit (expense)	—	—
Investment securities, net	0.1	(0.1)
Defined benefit plan:		
Net change in defined benefit plan arising during the period	(5.1)	(11.2)
Amortization of net actuarial losses and prior service costs included in pension expense	3.2	2.7
Income tax benefit (expense)	0.7	3.2
Defined benefit plan, net	(1.2)	(5.3)
Other comprehensive loss, net of tax	(1.1)	(5.4)
Comprehensive income	$ 508.5	$ 509.5

See accompanying notes to consolidated financial statements.

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDER'S EQUITY
(in millions, except shares)

	Common Stock (shares)	Common Stock and Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholder's Equity
Balance at December 31, 2014	100	$ 624.5	$ 649.8	$ (31.4)	$ 1,242.9
Net income			514.9		514.9
Other comprehensive income (loss)				(5.4)	(5.4)
Cash dividends to CME Group Inc.			(497.0)		(497.0)
Excess tax benefits from option exercises and restricted stock vesting		2.6			2.6
Stock-based compensation		48.6			48.6
Balance at December 31, 2015	100	675.7	667.7	(36.8)	1,306.6
Net income			509.6		509.6
Other comprehensive income (loss)				(1.1)	(1.1)
Cash dividends to CME Group Inc.			(658.0)		(658.0)
Excess tax benefits from option exercises and restricted stock vesting		6.0			6.0
Stock-based compensation		57.8			57.8
Balance at December 31, 2016	100	$ 739.5	$ 519.3	$ (37.9)	$ 1,220.9

See accompanying notes to consolidated financial statements.

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

	Year Ended December 31, 2016	Year Ended December 31, 2015
Cash Flows from Operating Activities		
Net income	$ 509.6	$ 514.9
Adjustments to reconcile net income to net cash provided by operating activities:		
Stock-based compensation	57.8	48.6
Depreciation and amortization	97.0	100.1
Loss on datacenter	27.1	—
Deferred income taxes	(0.5)	17.9
Change in assets and liabilities:		
Net due to or from affiliates	(61.3)	(230.0)
Accounts receivable	(10.6)	(2.5)
Other current assets	(2.2)	(2.3)
Other assets	(0.5)	(14.2)
Accounts payable	(1.1)	1.0
Other current liabilities	(4.2)	(2.1)
Other liabilities	(7.5)	(3.4)
Other	1.8	2.1
Net Cash Provided by Operating Activities	605.4	430.1
Cash Flows from Investing Activities		
Purchases of property, net	(68.2)	(61.0)
Repayments of loans issued to CME Group Inc.	280.0	475.0
Issuance of loans to CME Group Inc.	(280.0)	(400.0)
Net Cash Provided by (Used in) Investing Activities	(68.2)	14.0
Cash Flows from Financing Activities		
Cash dividends to CME Group Inc.	(658.0)	(497.0)
Excess tax benefits from option exercises and restricted stock vesting	6.0	2.6
Proceeds from finance lease obligation	130.0	—
Issuance of loans from CME Group Inc.	200.0	—
Repayments of loans from CME Group Inc.	(200.0)	—
Net Cash Used in Financing Activities	(522.0)	(494.4)
Net change in cash and cash equivalents	15.2	(50.3)
Cash and cash equivalents, beginning of period	706.4	756.7
Cash and Cash Equivalents, End of Period	$ 721.6	$ 706.4
Supplemental Disclosure of Cash Flow Information		
Income taxes paid	$ 73.8	$ 66.0
Interest paid	0.5	—

See accompanying notes to consolidated financial statements.

CHICAGO MERCANTILE EXCHANGE INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. ORGANIZATION AND BUSINESS

Chicago Mercantile Exchange Inc. (CME, the exchange or the company), a wholly-owned subsidiary of CME Group Inc. (CME Group), is a designated contract market (DCM) for the trading of futures and options on futures contracts. CME offers a wide range of products including those based on interest rates, equities, foreign exchange and agricultural commodities. Trades are executed through electronic trading platforms, open outcry and privately negotiated transactions. CME is also a derivatives clearing organization (DCO). Through its clearing house, CME offers clearing, settlement, and guarantees for all products cleared through the company and its affiliates. CME also provides clearing and other services to non-affiliated third-parties. CME serves as a swap execution facility, which is a regulated platform for swap trading, and serves as a swap data repository, which provides public data on swap transactions and stores confidential swap data for regulatory purposes.

2. SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation. The accompanying consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States and include the accounts of the company and its majority-owned subsidiaries. All intercompany transactions and balances have been eliminated.

Use of Estimates. The preparation of consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts and the disclosure of contingent amounts in the consolidated financial statements and accompanying notes. Estimates are based on historical experience, where applicable, and assumptions management believes are reasonable under the circumstances. Due to the inherent uncertainty involved with estimates, actual results may differ.

Cash and Cash Equivalents. Cash and cash equivalents consist of cash and highly liquid investments with a maturity of three months or less at the time of purchase.

Financial Investments. The company maintains short-term marketable securities, classified as available-for-sale or trading securities. Available-for-sale investments are carried at their fair value, with unrealized gains and losses, net of deferred income taxes, reported as a component of accumulated other comprehensive income. Trading securities held in connection with non-qualified deferred compensation plans are recorded at fair value, with net realized and unrealized gains and losses and dividend income reported as investment income. Also, the company maintains long-term investments within other assets accounted for under the cost method.

The company reviews its investments to determine whether a decline in fair value below the cost basis is other-than-temporary. If events and circumstances indicate that a decline in the value of the assets has occurred and is deemed to be other-than-temporary, the carrying value of the investments is reduced to its fair value and a corresponding impairment is charged to earnings.

Fair Value of Financial Instruments. The company uses a three-level classification hierarchy of fair value measurements that establishes the quality of inputs used to measure fair value. The fair value of a financial instrument is the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value of financial instruments is determined using various techniques that involve some level of estimation and judgment, the degree of which is dependent on the price transparency and the complexity of the instruments.

The hierarchy is broken down into three levels based on the reliability of inputs as follows:

- Level 1 - Inputs consist of quoted prices (unadjusted) for identical assets or liabilities in active markets. Level 1 inputs are considered the most reliable evidence of fair value.
- Level 2 - Inputs consist of observable market data, other than level 1 inputs, 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.

Accounts Receivable. Accounts receivable are comprised of trade receivables and unbilled revenue, including clearing and transaction fees and market data and information services revenue. All accounts receivable are stated at cost. Exposure to losses on receivables for clearing and transaction fees and other amounts owed by clearing firms is dependent on each clearing firm's financial condition and the memberships that collateralize fees owed to the exchange. The exchange retains the right to liquidate exchange memberships to satisfy a clearing firm's receivable. The allowance for doubtful accounts is calculated based on historical losses and management's assessment of probable future collections.

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Performance Bonds and Guaranty Fund Contributions. Performance bonds and guaranty fund contributions held for clearing firms may be in the form of cash, securities or other non-cash deposits.

Performance bonds and guaranty fund contributions received in the form of cash held by CME may be invested in U.S. government securities, U.S. government agency securities and certain foreign government securities acquired through and held by a bank or broker-dealer subsidiary of a bank, a cash account at the Federal Reserve Bank of Chicago, reverse repurchase agreements secured with highly rated government securities, money market funds or through CME's Interest Earning Facility (IEF) program. Any interest earned on investments accrues to CME and is included in investment income in the consolidated statements of income. CME may distribute any interest earned on investments to the clearing firms at its discretion. Because CME has control of the cash collateral and the benefits and risks of ownership accrue to CME, cash performance bonds and guaranty fund contributions are reflected in the consolidated balance sheets. Performance bonds and guaranty fund contributions assets on the consolidated balance sheets also include U.S. Treasury securities with maturity dates of 90 days or less. U.S. Treasury securities are purchased by CME, at its discretion, using cash collateral.

Securities and other non-cash deposits may include U.S. Treasury securities, U.S. government agency securities, Eurobonds, corporate bonds, other foreign government securities and gold bullion. Securities and other non-cash deposits are held in safekeeping by a custodian bank. Interest and gains or losses on securities deposited to satisfy performance bond and guaranty fund requirements accrue to the clearing firm. Because the benefits and risks of ownership accrue to the clearing firm, non-cash performance bonds and guaranty fund contributions are not reflected in the consolidated balance sheets.

Property. Property, equipment and leasehold improvements are stated at cost, less accumulated depreciation and amortization. Depreciation and amortization are calculated using the straight-line method, generally over two to thirty-nine years. Property and equipment are depreciated over their estimated useful lives. Leasehold improvements are amortized over the shorter of the remaining term of the respective lease to which they relate or the remaining useful life of the leasehold improvement. Land is reported at cost. Internal and external costs incurred in developing or obtaining computer software for internal use which meet the requirements for capitalization are amortized on a straight-line basis over the estimated useful life of the software, generally two to four years.

Operating Leases. Most leases in which the company is the tenant are accounted for as operating leases. Landlord allowances are recorded as a reduction to rent expense on a straight-line basis over the term of the lease. For sale leaseback transactions, the company evaluates the sale and the lease arrangement based on the company's continuing involvement and recognizes the sale leaseback as either a sale leaseback transaction or under the financing method, which requires the asset to remain on the consolidated balance sheets throughout the term of the lease and the proceeds to be recognized as a finance lease obligation. A portion of the lease payments is recognized as a reduction of the finance lease obligation and a portion is recognized as interest expense based on an imputed interest rate.

Goodwill and Other Intangible Assets. Goodwill represents the excess of the purchase price over the fair value of the net assets acquired in a business combination. The company reviews goodwill and indefinite-lived intangible assets for impairment at least quarterly and whenever events or circumstances indicate that their carrying values may not be recoverable. The company may test goodwill quantitatively for impairment by comparing the carrying value of a reporting unit to its estimated fair value. Estimating the fair value of a reporting unit involves significant judgments inherent in the analysis including estimating the amount and timing of future cash flows and the selection of appropriate discount rates and long-term growth rate assumptions. Changes in these estimates and assumptions could materially affect the determination of fair value for the reporting unit. If the carrying amount exceeds fair value, an impairment loss is recorded. In certain circumstances, goodwill may be reviewed qualitatively for indications of impairment without utilizing valuation techniques to estimate fair value.

The company evaluates the recoverability of indefinite-lived intangible assets by comparing the estimated fair value of the intangible asset to its carrying value. If the indefinite-lived intangible asset carrying value exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. Estimating the fair value of indefinite-lived intangible assets involves the use of valuation techniques that rely on significant estimates and assumptions including forecasted revenue growth rates, forecasted allocations of expense and risk-adjusted discount rates. Changes in these estimates and assumptions could materially affect the determination of fair value for indefinite-lived intangible assets. In certain circumstances, indefinite-lived intangible assets may be reviewed qualitatively for indications of impairment without utilizing valuation techniques to estimate fair value.

Intangible assets subject to amortization are also assessed for impairment at least annually or when indicated by a change in economic or operational circumstances. The impairment assessment of these assets requires management to first compare the book value of the amortizing asset to undiscounted cash flows only if there are indicators of a change in circumstances. If the book value exceeds the undiscounted cash flows, management is then required to estimate the fair value of the assets and record an impairment loss for the excess of the carrying value over the fair value and annually challenge the useful lives.

Business Combinations. The company accounts for business combinations using the acquisition method. The method requires the acquirer to recognize the assets acquired, liabilities assumed, and any non-controlling interest in the acquiree at the acquisition date, measured at their fair values as of that date. The company may use independent valuation services to assist in determining the estimated fair values.

Employee Benefit Plans. The company recognizes the funded status of defined benefit postretirement plans in its consolidated balance sheets. Changes in that funded status are recognized in the year of change in other comprehensive income (loss). Plan assets and obligations are measured at year end. The company recognizes future changes in actuarial gains and losses and prior service costs in the year in which the changes occur through other comprehensive income (loss).

Foreign Currency Accounting. Foreign denominated assets and liabilities are re-measured into the functional currency using period-end exchange rates. Gains and losses from foreign currency transactions are included in other expense in the accompanying consolidated statements of income.

Revenue Recognition. Revenue recognition policies for specific sources of revenue are discussed below.

Clearing and Transaction Fees. Clearing and transaction fees include per-contract charges for trade execution, clearing, trading on the company's electronic trading platform and other fees. Fees are charged at various rates based on the product traded, the method of trade, the exchange trading privileges of the customer making the trade and the type of contract. Clearing and transaction fees are recognized as revenue when a buy and sell order are matched and the trade is cleared. Therefore, unfilled or canceled buy and sell orders have no impact on revenue. On occasion, the customer's exchange trading privileges may not be properly entered by the clearing firm and incorrect fees are charged for the transactions. When this information is corrected within the time period allowed by the exchange, a fee adjustment is provided to the clearing firm. A reserve is established for estimated fee adjustments to reflect corrections to customer exchange trading privileges. The reserve is based on the historical pattern of adjustments processed as well as specific adjustment requests. The company believes the allowances are adequate to cover estimated adjustments.

Market Data and Information Services. Market data and information services represent revenue earned for the dissemination of market information. Revenues are accrued each month based on the number of devices reported by vendors. The exchange conducts periodic examinations of the number of devices reported and assesses additional fees as necessary. On occasion, customers will pay for services in a lump sum payment; however, revenue is recognized as services are provided.

Access and Communication Fees. Access fees are the connectivity charges to customers of the company's electronic trading platform that are also used by market data vendors and customers. The fees include co-location fees, access fees for the electronic trading platform, line charges and hardware rental charges and can vary depending on the type of connection provided. An additional installation fee may be charged depending on the type of service requested and a disconnection fee may also be charged if certain conditions are met. Revenue is generally recognized monthly as the service is provided.

Communication fees consist of equipment rental and usage charges to customers and firms that utilize various telecommunications hubs located internationally as well as networks and services in the Chicago and New York City facilities. Revenue is billed and recognized on a monthly basis.

Other Revenues. Other revenues include processing services revenue, which is revenue generated from various strategic relationships, as well as management fees earned under the IEF programs. For processing services revenue and IEF revenue, revenue is recognized as services are provided.

Marketing Costs. Marketing costs are incurred for the production and communication of advertising as well as other marketing activities. These costs are expensed when incurred, except for costs related to the production of broadcast advertising, which are expensed when the first broadcast occurs.

Income Taxes. Deferred income taxes arise from temporary differences between the tax basis and book basis of assets and liabilities. A valuation allowance is recognized if it is anticipated that some or all of a deferred tax asset may not be realized. The company accounts for uncertainty in income taxes recognized in its consolidated financial statements by using a more-likely-than-not recognition threshold based on the technical merits of the tax position taken or expected to be taken. The company classifies interest and penalties related to uncertain tax positions in income tax expense.

Newly Adopted and Recently Issued Accounting Pronouncements. In the first quarter of 2016, the company adopted the FASB's standards update that simplifies the classification of deferred tax assets and liabilities. The update eliminated the previous requirement to present deferred tax assets and liabilities as current and non-current in a classified balance sheet. Instead, all deferred tax assets, along with valuation allowances, and deferred tax liabilities are required to be classified as non-current. Companies are still required to offset deferred tax assets and liabilities for each taxpaying component within a tax jurisdiction. Beginning in the first quarter of 2016, the company adopted this standards update on a prospective basis and classified all deferred tax assets and liabilities as non-current within the tables in Note 8. Prior period deferred tax assets and liabilities were not retrospectively adjusted.

In May 2014, the FASB issued a new standard on revenue recognition that replaces numerous, industry-specific requirements and converges U.S. accounting standards with International Financial Reporting Standards. The new standard introduces a framework for recognizing revenue that focuses on the transfer of control rather than risks and rewards. The new standard also requires significant additional disclosures about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments, changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. The application of the new standard becomes effective in the first annual period beginning after December 15, 2017, with early adoption permitted. This guidance may be adopted using one of two transition methods: retrospectively to each prior reporting period presented (full retrospective method) or retrospectively with the cumulative effect of initially applying the guidance recognized at the date of initial adoption (the modified retrospective approach). Management is on course to comply with the guidance by the effective date. The project team is currently in the contract review phase, which is expected to be completed by mid-2017. Management expects to reach a conclusion on whether there will be changes in revenue recognition, which method of adoption will be used and the impact the guidance will have on policies, process and controls towards the end of 2017.

In February 2016, the FASB issued a standards update that requires lessees to recognize on the balance sheet the assets and liabilities associated with the rights and obligations created by those leases. The guidance for lessors is largely unchanged from current U.S. GAAP. Under the new guidance, a lessee will be required to recognize assets and liabilities for leases with lease terms of more than 12 months. Consistent with current U.S. GAAP, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee primarily will depend on its classification as a finance or operating lease. The update is effective for reporting periods beginning after December 15, 2018. Early adoption is permitted. The company is in the process of evaluating the impact of this update on the consolidated financial statements.

3. TRANSACTIONS WITH AFFILIATED COMPANIES

The company transacts business in the normal course of operations with affiliates including its parent and entities under common ownership control. Affiliates include, but are not limited to, CME Group, Board of Trade of the City of Chicago, Inc. (CBOT), New York Mercantile Exchange, Inc. (NYMEX) and Commodity Exchange, Inc. (COMEX).

Fees from affiliates. CME receives fees from affiliates for shared operational and administrative services including, but not limited to, clearing and transaction processing; data distribution; network and infrastructure connectivity and maintenance; marketing, and staffing resources. In 2016 and 2015, CME recognized fees from affiliates of $527.5 million and $499.5 million, respectively.

Fees to affiliates. CME pays a fee to various affiliates for marketing, software development and market data services. In 2016 and 2015, CME recognized fees to affiliates of $235.2 million and $132.1 million, respectively. These expenses were included in other expenses in the consolidated statements of income.

Allocation of stock-based compensation expense. CME employees receive stock option and restricted stock awards under CME Group's stock-based incentive plans. Stock-based compensation costs and excess tax benefits related to stock-based incentives received by CME's employees are recorded as additional paid-in capital in shareholder's equity.

Allocation of income taxes. CME is included in the consolidated federal and state income tax returns of its parent, CME Group. Income tax expense is allocated to members of the consolidated group based on a separate entity basis and presented on a separate entity basis as well.

Amounts due from and to affiliates. Amounts due from and to affiliates represent unsecured receivables and payables for shared services and income taxes. At December 31, 2016, amounts due from (to) affiliates consisted of the following:

(in millions)	Shared Services	Income Taxes	Total	Due from Affiliates	Due to Affiliates	Total
CME Group	$ 16.0	$ 14.0	$ 30.0	$ 30.0	$ —	$ 30.0
CBOT	51.7	—	51.7	51.7	—	51.7
NYMEX	195.7	—	195.7	195.7	—	195.7
COMEX	(65.9)		(65.9)	—	(65.9)	(65.9)
CME Marketing Europe Limited	(14.4)	—	(14.4)	—	(14.4)	(14.4)
CME Group International Market Data Limited	(14.5)	—	(14.5)	—	(14.5)	(14.5)
Other affiliates	3.0	—	3.0	10.2	(7.2)	3.0
Total	$ 171.6	$ 14.0	$ 185.6	$ 287.6	$ (102.0)	$ 185.6

At December 31, 2015, amounts due from (to) affiliates consisted of the following:

(in millions)	Shared Services	Income Taxes	Total	Due from Affiliates	Due to Affiliates	Total
CME Group	$ 19.2	$ (71.4)	$ (52.2)	$ —	$ (52.2)	$ (52.2)
CBOT	52.5	—	52.5	52.5	—	52.5
NYMEX	150.8	—	150.8	150.8	—	150.8
COMEX	(48.5)		(48.5)	—	(48.5)	(48.5)
CME Marketing Europe Limited	(5.1)	—	(5.1)	—	(5.1)	(5.1)
CME Group International Market Data Limited	25.1	—	25.1	25.1	—	25.1
Other affiliates	1.7	—	1.7	12.1	(10.4)	1.7
Total	$ 195.7	$ (71.4)	$ 124.3	$ 240.5	$ (116.2)	$ 124.3

Intercompany debt. CME and CME Group have entered into an intercompany loan agreement in which each entity may make loans to the other entity. The agreement will expire in March 2020. The outstanding loan amount cannot exceed $750.0 million and can be voluntarily prepaid. Interest accrued based on the prime rate of 3.50% during 2016 and is payable quarterly or in connection with a voluntary prepayment. The prime rate was raised to 3.75% as of December 2016.

During 2016 and 2015, the average balance of the outstanding loans receivable from CME Group to CME was $15.5 million and $46.8 million, respectively. There were no outstanding loans receivable from CME Group at December 31, 2016 and December 31, 2015. Total intercompany interest revenue for 2016 and 2015 was $0.6 million and $1.6 million, respectively.

During 2016, the average balance of the outstanding loans payable by CME to CME Group was $15.6 million. There were no outstanding loans payable to CME Group during 2015. Total intercompany interest expense for 2016 was $0.5 million.

CME also maintains an intercompany committed line of credit agreement with CME Group. CME may use the proceeds for its general operating expenses and those of its subsidiaries. The line of credit provides for borrowings of up to $400.0 million. The agreement will expire in March 2020. The company has the option to request an increase in the line of credit from $400.0 million up to $500.0 million. During 2016 and 2015, the company did not borrow against this facility.

4. MARKETABLE SECURITIES

Available-for-Sale Securities. An asset-backed security has been classified as available for sale. The amortized cost and fair value of the asset-backed security at December 31, 2016 were $0.6 million and $0.3 million, respectively. The amortized cost and fair value of the asset-backed security at December 31, 2015 were $0.7 million and $0.3 million, respectively.

Net unrealized gains (losses) on marketable securities classified as available for sale are reported as a component of other comprehensive income (loss) and included in the accompanying consolidated statements of comprehensive income and shareholder's equity.

The gross unrealized loss totaled $0.3 million and $0.4 million at December 31, 2016 and 2015, respectively. The asset-backed security was in an unrealized loss position for more than 12 months at December 31, 2015. The company has the ability and intent to hold the asset-backed security until a recovery of fair value, which may be at maturity, and does not consider the asset-backed security to be other-than-temporarily impaired at December 31, 2016. Based on its contractual terms, the asset-backed security is scheduled to mature in 2037.

Trading Securities. The company maintains additional investments in a diverse portfolio of mutual funds related to its non-qualified deferred compensation plan (note 9). The fair value of these securities was $56.6 million and $49.6 million at December 31, 2016 and 2015, respectively.

5. PERFORMANCE BONDS AND GUARANTY FUND CONTRIBUTIONS

The clearing house clears and guarantees the settlement of contracts traded in the market. In its guarantor role, the clearing houses has precisely equal and offsetting claims to and from clearing firms on opposite sides of each contract, standing as an intermediary on every contract cleared. Clearing firm positions in the United States are held according to Commodity and Futures Trading Commission (CFTC) regulatory account segregation standards. To the extent that funds are not otherwise available to satisfy an obligation under the applicable contract, the clearing house bears counterparty credit risk in the event that future market movements create conditions that could lead to clearing firms failing to meet their obligations to the clearing house. The clearing house reduces the exposure through risk management programs that include initial and ongoing financial standards for designation as a clearing firm, performance bond requirements, daily mark-to-market, mandatory guaranty fund contributions and intra-day monitoring.

Each CME clearing firm is required to deposit and maintain balances in the form of cash, U.S. government securities, certain foreign government securities, bank letters of credit or other approved investments to satisfy performance bond and guaranty fund requirements. All non-cash deposits are marked-to-market and haircut on a daily basis. Securities deposited by the clearing firms are not reflected in the consolidated financial statements and the clearing house does not earn any interest on these deposits. These balances may fluctuate significantly over time due to investment choices available to clearing firms and changes in the amount of contributions required.

The clearing house marks-to-market open positions at least once a day (twice a day for futures and options contracts), and requires payment from clearing firms whose positions have lost value and makes payments to clearing firms whose positions have gained value. The clearing house has the capability to mark-to-market more frequently as market conditions warrant.

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 credit default and 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 credit default swap and 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 2016, the clearing house transferred an average of approximately $3.2 billion a day through the clearing system for settlement from clearing firms whose positions had lost value to clearing firms whose positions had gained value. The clearing house reduces the guarantee exposure through initial and maintenance performance bond requirements and mandatory guaranty fund contributions. The company believes that the guarantee liability is immaterial and therefore has not recorded any liability at December 31, 2016.

At December 31, 2016, performance bond and guaranty fund contribution assets on the consolidated balance sheets include cash as well as U.S. Treasury and U.S. government agency securities with maturity dates of 90 days or less. U.S. Treasury and U.S. government agency securities are purchased by CME, at its discretion, using cash collateral. The benefits, including interest earned, and risks of ownership accrue to CME. Interest earned is included in investment income on the consolidated statements of income. The U.S. Treasury and U.S. government agency securities held at December 31, 2016 will mature during the first quarter of 2017.

The amortized cost and fair value of these securities at December 31 were as follows:

	2016		2015	
(in millions)	**Amortized Cost**	**Fair Value**	**Amortized Cost**	**Fair Value**
U.S. Treasury securities	$ 5,548.9	$ 5,549.0	$ 10,973.9	$ 10,973.9
U.S. government agency securities	1,228.3	1,228.3	—	—

CME has been designated as a systemically important financial market utility by the Financial Stability Oversight Council and is authorized to establish and maintain a cash account at the Federal Reserve Bank of Chicago. CME has received approval to establish this account at the Federal Reserve Bank of Chicago for clearing members' proprietary cash balances and the account is now operational. At December 31, 2016, CME maintained $6.2 billion within the cash account at the Federal Reserve Bank of Chicago.

Clearing firms, at their option, may instruct CME to deposit the cash held by CME into one of the IEF programs. The total principal in the IEF programs was $6.8 billion at December 31, 2016 and $11.3 billion at December 31, 2015. The consolidated statements of income reflect management fees earned under the IEF programs of $10.1 million, $11.3 million and $14.9 million during 2016, 2015 and 2014, respectively. These fees are included in other revenues.

CME and The Options Clearing Corporation (OCC) have a perpetual cross-margin arrangement, whereby a clearing firm may maintain a cross-margin account in which a CME clearing firm's positions in certain equity index futures and options are combined with certain positions cleared by OCC for purposes of calculating performance bond requirements. The performance bond deposits are held jointly by CME and OCC. Cross-margin cash, securities and letters of credit jointly held with OCC under the cross-margin agreement are reflected at 50% of the total, or CME's proportionate share per that agreement. If a participating firm defaults, the gain or loss on the liquidation of the firm's open position and the proceeds from the liquidation of the cross-margin account would be allocated 50% each to CME and OCC. The company believes that the guarantee liability is immaterial and therefore has not recorded any liability at December 31, 2016.

In addition, CME has perpetual cross-margin agreements with Fixed Income Clearing Corporation (FICC) whereby the clearing firms' offsetting positions with CME and FICC are subject to reduced performance bond requirements. Clearing firms maintain separate performance bond deposits with each clearing house, but depending on the net offsetting positions between CME and

FICC, each clearing house may reduce that firm's performance bond requirements. In the event of a firm default, the total liquidation net gain or loss on the firm's offsetting open positions and the proceeds from the liquidation of the performance bond collateral held by each clearing house's supporting offsetting positions would be divided evenly between CME and FICC. Additionally, if, after liquidation of all the positions and collateral of the defaulting firm at each respective clearing organization, and taking into account any cross-margining loss sharing payments, any of the participating clearing organizations has a remaining liquidating surplus, and any other participating clearing organization has a remaining liquidating deficit, any additional surplus from the liquidation would be shared with the other clearing house to the extent that it has a remaining liquidating deficit. Any remaining surplus funds would be passed to the bankruptcy trustee. The company believes that the guarantee liability is immaterial and therefore has not recorded any liability at December 31, 2016.

Each CME clearing firm for futures and options is required to deposit and maintain specified guaranty fund contributions in the form of cash or approved securities. In the event that performance bonds, guaranty fund contributions and other assets required to support clearing membership of a defaulting CME clearing firm are inadequate to fulfill that clearing firm's outstanding financial obligation, the base guaranty fund for contracts other than credit default and interest rate swaps is available to cover potential losses after first utilizing $100.0 million of corporate contributions designated by CME to be used in the event of a default of a clearing firm for the base guaranty fund.

CME maintains separate guaranty funds to support the clearing firms that clear interest rate swap products and credit default swap products. The funds for interest rate and credit default swaps are independent of the base guaranty fund and are isolated to clearing firms for products in the respective asset class. Each clearing firm for cleared interest rate swaps and cleared credit default swaps is required to deposit and maintain specified guaranty fund contributions in the form of cash or approved securities. In the event that performance bonds, guaranty fund contributions and other assets required to support clearing membership of a defaulting clearing firm for cleared interest rate swap contracts are inadequate to fulfill that clearing firm's outstanding financial obligation, the interest rate swaps contracts guaranty fund is available to cover potential losses after first utilizing $150.0 million of corporate contributions designated by CME to be used in the event of a default of a cleared interest rate swap clearing firm. In the event that performance bonds, guaranty fund contributions and other assets required to support clearing membership of a defaulting clearing firm for cleared credit default swap contracts are inadequate to fulfill that clearing firm's outstanding financial obligation, the credit default swaps contracts guaranty fund is available to cover potential losses after first utilizing corporate contributions designated by CME to be used in the event of default of a cleared credit default swap clearing firm, which is equal to the greater of $50.0 million and 5% of the credit default swap guaranty fund, up to a maximum of $100.0 million.

CME maintains a 364-day multi-currency line of credit with a consortium of domestic and international banks to be used in certain situations by CME Clearing. CME may use the proceeds to provide temporary liquidity in the unlikely event of a clearing firm default, in the event of a liquidity constraint or default by a depositary (custodian of the collateral), or in the event of a temporary disruption with the domestic payments system that would delay payment of settlement variation between CME and its clearing firms. Clearing firm guaranty fund contributions received in the form of cash or U.S. Treasury securities as well as the performance bond assets of a defaulting firm can be used to collateralize the facility. The line of credit provides for borrowings of up to $7.0 billion. At December 31, 2016, guaranty fund contributions available for CME clearing firms were $6.0 billion. CME has the option to request an increase in the line from $7.0 billion to $10.0 billion, subject to the approval of participating banks. In addition to the 364-day fully secured, committed multi-currency line of credit, the company also has the option to use the $2.3 billion multi-currency revolving senior credit facility to provide liquidity for the clearing house in the unlikely event of default.

CME is required under the Commodity Exchange Act in the United States to segregate cash and securities deposited by clearing firms on behalf of its customers. In addition, CME requires segregation of all funds deposited by its clearing firms from operating funds.

Cash and non-cash deposits held as performance bonds and guaranty fund contributions at fair value at December 31 were as follows:

	2016		2015	
(in millions)	**Cash**	**Non-Cash Deposits and IEF Funds**	**Cash**	**Non-Cash Deposits and IEF Funds**
Performance bonds [1]	$ 35,570.2	$ 111,764.2	$ 33,431.5	$ 91,954.4
Guaranty fund contributions	1,585.7	5,246.3	1,919.2	5,290.0
Cross-margin arrangements	107.9	351.3	37.8	163.7
Performance collateral for delivery	6.1	—	1.7	—
Total	$ 37,269.9	$ 117,361.8	$ 35,390.2	$ 97,408.1

(1) Cash performance bonds include cash collateral reinvested in U.S. Treasury securities at December 31, 2016 and 2015 and U.S. government agency securities at December 31, 2016.

Performance bonds and guaranty fund contributions include collateral for clearing firms for futures, options, cleared over-the-counter interest rate swaps and cleared over-the-counter credit default swaps. Cross-margin arrangements include collateral for the cross-margin accounts with OCC and FICC.

Cash performance bonds may include intraday settlement, if any, that is owed to the clearing firms and paid the following business day. The balance of intraday settlements was $131.7 million at December 31, 2016 and $210.2 million at December 31, 2015. These amounts may be invested on an overnight basis and are offset by an equal liability owed to clearing firms.

In addition to cash, securities and other non-cash deposits, irrevocable letters of credit may be used as performance bond deposits. At December 31, 2016 and 2015, these letters of credit, which are not included in the accompanying consolidated balance sheets, were $2.3 billion and $2.6 billion, respectively.

All cash, securities and letters of credit posted as performance bonds are only available to meet the financial obligations of that clearing firm to the clearing house.

6. PROPERTY

In March 2016, the company sold its datacenter in the Chicago area for $130.0 million. At the time of 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 under generally accepted accounting principles due to the company's participation in future revenues and development work, which constitutes continuing involvement in the datacenter. Under the financing method, the assets remain on the consolidated balance sheet throughout the term of the lease and the proceeds of $130.0 million from the transaction are recognized as a finance lease obligation within other liabilities and other current liabilities in the consolidated balance sheet. A portion of the lease payments will be recognized as a reduction of the finance lease obligation and a portion will be recognized as interest expense based on an imputed interest rate.

The net cost basis of the property and equipment legally sold was $153.1 million at the date of the sale. At March 31, 2016, the company wrote down the property and equipment to a fair value of $130.0 million based on qualitative indications of impairment and a quantitative analysis based on undiscounted cash flows. The company recognized a net loss on the transaction of $27.1 million through other expenses, which includes the write down to fair value and certain other transaction-related costs. The company recognized a total net loss and expenses of $28.6 million, which also includes $1.5 million of legal and other fees incurred. The property and equipment legally sold will continue to be recognized on the consolidated balance sheets and will continue to be depreciated on the consolidated statements of income over the useful life.

A summary of the property accounts at December 31 is presented below:

(in millions)	**2016**	**2015**	**Estimated Useful Life**
Land and land improvements	$ —	$ 9.9	10 - 20 years (1)
Building and building improvements	138.5	238.9	3 - 39 years
Leasehold improvements	116.0	183.9	3 - 24 years
Furniture, fixtures and equipment	228.5	262.5	2 - 7 years
Software and software development costs	311.7	329.0	2 - 4 years
Total property	794.7	1,024.2	
Less accumulated depreciation and amortization	(468.8)	(647.3)	
Property, net	$ 325.9	$ 376.9	

(1) Estimated useful life applies only to land improvements.

7. DEBT

CME maintains a 364-day multi-currency revolving secured credit facility with a consortium of domestic and international banks to be used in certain situations by CME Clearing. The facility provides for borrowings of up to $7.0 billion. CME may use the proceeds to provide temporary liquidity in the unlikely event of a clearing firm default, in the event of a liquidity constraint or default by a depositary (custodian for our collateral), or 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. CME clearing firm guaranty fund contributions received in the form of cash or U.S. Treasury securities as well as the performance bond assets of a defaulting firm can be used to collateralize the facility. At December 31, 2016, guaranty funds available to collateralize the facility totaled $6.0 billion. We have the option to request an increase in the line from $7.0 billion to $10.0 billion. Throughout

2016 and 2015, the company did not borrow any funds against this facility. However, in order to ensure that the facility would operate as intended, CME periodically draws down nominal amounts of funds against the line of credit and immediately repays the amounts borrowed. The 364-day multi-currency line of credit 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 line of credit agreement) of not less than $800.0 million. At December 31, 2016, CME is in compliance with the covenant requirement. In addition to the 364-day multi-currency line of credit, CME also has the option to use CME Group's $2.3 billion multi-currency revolving senior credit facility to provide liquidity for clearing operations in the unlikely event of default in certain circumstances.

8. INCOME TAXES

The income tax provision consisted of the following for the years ended December 31. The company is subject to regulation under a wide variety of federal, state and foreign tax laws and regulations.

(in millions)	2016	2015
Current:		
Federal	$ 263.3	$ 247.0
State	47.8	36.0
Total	311.1	283.0
Deferred:		
Federal	(3.8)	15.1
State	(0.3)	2.8
Total	(4.1)	17.9
Total Income Tax Provision	$ 307.0	$ 300.9

Reconciliation of the statutory U.S. federal income tax rate to the effective tax rate is as follows:

	2016	2015
Statutory U.S. federal tax rate	35.0%	35.0%
State taxes, net of federal benefit	4.4	3.0
Domestic production activities deduction	(1.4)	(1.3)
Impact of revised state and local apportionment estimates	—	0.2
Other, net	(0.4)	—
Effective Tax Rate	37.6%	36.9%

In 2016 and 2015, the effective tax rates were higher than the statutory tax rate primarily due to the impact of state and local income taxes. The effective rates were primarily reduced by the Section 199 Domestic Productions Activities Deduction (Section 199 deduction). The Section 199 deduction is related to certain activities performed by the company's electronic platform.

At December 31, net deferred income tax assets (liabilities) consisted of the following:

(in millions)		2016		2015
Current Deferred Income Tax Assets:				
Stock-based compensation	$	—	$	19.1
Unrealized loss on investments		—		0.7
Other		—		1.7
Net Current Deferred Income Tax Assets	$	—	$	21.5
Non-Current Deferred Income Tax Assets:				
Stock-based compensation	$	32.2	$	17.7
Deferred compensation and other benefit plans		24.6		21.2
Property		6.3		1.4
Accrued expenses		1.3		3.3
Deferred rent		14.9		15.8
Other		4.9		3.1
Subtotal		84.2		62.5
Valuation allowance		(0.7)		(0.9)
Total non-current deferred income tax assets		83.5		61.6
Non-Current Deferred Income Tax Liabilities:				
Purchased intangible assets		(3.2)		(3.9)
Total non-current deferred income tax liabilities		(3.2)		(3.9)
Net Non-Current Deferred Income Tax Assets	$	80.3	$	57.7

At December 31, 2015, net current deferred income tax assets were included in other current assets in the consolidated balance sheets. At December 31, 2016 and 2015, net non-current deferred income tax assets were included in other assets in the consolidated balance sheets.

A valuation allowance is recorded when it is more-likely-than-not that some portion or all of the deferred income tax assets may not be realized. The ultimate realization of the deferred income tax assets depends on the ability to generate sufficient taxable income of the appropriate character in the future and in the appropriate taxing jurisdictions.

At December 31, 2016 and 2015, the company had gross domestic and foreign income tax loss carry forwards of $14.1 million and $17.6 million, respectively. These amounts primarily relate to the losses from the acquisition of Pivot, Inc. in 2012. At December 31, 2016 and 2015, the company has determined that a portion of the net operating loss deferred tax assets were not more-likely-than-not to be realized and a valuation allowance of $0.7 million and $0.9 million has been provided at December 31, 2016 and 2015, respectively. The net operating losses will expire between 2024 and 2032.

The following is a summary of the company's unrecognized tax benefits:

(in millions)		2016		2015
Gross unrecognized tax benefits	$	101.5	$	82.1
Unrecognized tax benefits, net of tax impacts in other jurisdictions		86.5		71.2
Unrecognized interest and penalties related to uncertain tax positions		13.3		7.3
Interest and penalties recognized in the consolidated statements of income		5.9		3.4

The company does not believe it is reasonably possible that within the next twelve months, unrecognized tax benefits will change by a significant amount.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

(in millions)	2016	2015
Balance at January 1	$ 82.1	$ 74.1
Additions based on tax positions related to the current year	12.1	8.9
Additions for tax positions of prior years	7.9	0.6
Reductions for tax positions of prior years	(0.6)	(1.5)
Balance at December 31	$ 101.5	$ 82.1

The company is subject to U.S. federal income tax as well as income taxes in Illinois and other state and foreign jurisdictions. As of December 31, 2016, substantially all federal and state income tax matters had been concluded through 2007 and 2006, respectively.

9. EMPLOYEE BENEFIT PLANS

Pension Plan. CME maintains a non-contributory defined benefit cash balance pension plan for eligible employees. CME's plan provides for a pay-based credit added to the cash balance account based on age and earnings and includes salary and cash bonuses in the definition of earnings. Employees who have completed a continuous 12-month period of employment and have reached the age of 21 are eligible to participate. Participant cash balance accounts receive an interest credit equal to the greater of the one-year constant maturity yield for U.S. Treasury notes or 4.0%. Participants become vested in their accounts after three years of service. The measurement date used for the plan is December 31.

The following is a summary of the change in projected benefit obligation:

(in millions)	2016	2015
Balance at January 1	$ 217.3	$ 223.7
Service cost	16.7	18.4
Interest cost	10.3	9.8
Actuarial (gain) loss	5.3	(11.6)
Benefits paid	(9.7)	(23.0)
Balance at December 31	$ 239.9	$ 217.3

The accumulated benefit obligation at December 31, 2016 and 2015 was $211.4 million and $190.8 million, respectively.

The following is a summary of the change in the fair value of plan assets:

(in millions)	2016	2015
Balance at January 1	$ 217.5	$ 225.1
Actual return on plan assets	16.0	(7.2)
Employer contributions	15.0	22.6
Benefits paid	(9.7)	(23.0)
Balance at December 31	$ 238.8	$ 217.5

The plan assets are classified into a fair value hierarchy in their entirety based on the lowest level of input that is significant to each asset or liability's fair value measurement. Valuation techniques for level 2 assets use significant observable inputs such as quoted prices for similar assets, quoted market prices in inactive markets and other inputs that are observable or can be supported by observable market data. The fair value of each major category of plan assets as of December 31 is indicated below.

(in millions)	2016	2015
Level 2:		
Money market funds	$ 31.5	$ 26.5
Mutual funds:		
Fixed income	68.6	61.6
Foreign equity	64.5	60.0
U.S. equity	63.9	59.9
Commodity	10.3	9.5
Total	$ 238.8	$ 217.5

At December 31, 2016, the projected benefit obligation exceeded the fair value of pension plan assets by $1.1 million and the excess was recorded as a non-current pension liability in other liabilities. At December 31, 2015, the fair value of pension plan assets exceeded the projected benefit obligation by $0.2 million and the excess was recorded as a non-current pension asset in other assets.

CME's funding goal is to have its pension plan 100% funded at each year-end on a projected benefit obligation basis, while also satisfying any minimum required contribution and obtaining the maximum tax deduction. Year-end 2016 assumptions have been used to project the assets and liabilities from December 31, 2016 to December 31, 2017. The result of this projection is that estimated liabilities would exceed the fair value of the plan assets at December 31, 2017 by approximately $13.9 million. Accordingly, it is estimated that a $13.9 million contribution in 2017 will allow the company to meet its funding goal.

The components of net pension expense and the assumptions used to determine the end-of-year projected benefit obligation and net pension expense in aggregate are indicated below:

(in millions)	2016	2015
Components of Net Pension Expense:		
Service cost	$ 16.7	$ 18.4
Interest cost	10.3	9.8
Expected return on plan assets	(15.7)	(16.3)
Recognized net actuarial loss	3.2	2.7
Net Pension Expense	$ 14.5	$ 14.6
Assumptions Used to Determine End-of-Year Benefit Obligation:		
Discount rate	4.30%	4.60%
Rate of compensation increase	5.00	5.00
Cash balance interest crediting rate	4.00	4.00
Assumptions Used to Determine Net Pension Expense:		
Discount rate	4.60%	4.20%
Rate of compensation increase	5.00	5.00
Expected return on plan assets	7.50	7.50
Interest crediting rate	4.00	4.00

The discount rate for the plan was determined based on the market value of a theoretical settlement bond portfolio. This portfolio consisted of U.S. dollar denominated Aa-rated corporate bonds across the full maturity spectrum. A single equivalent discount rate was determined to align the present value of the required cash flow with that settlement value. The resulting discount rate was reflective of both the current interest rate environment and the plan's distinct liability characteristics.

The basis for determining the expected rate of return on plan assets for the plan is comprised of three components: historical returns, industry peers and forecasted return. The plan's total return is expected to equal the composite performance of the security markets over the long term. The security markets are represented by the returns on various domestic and international stock, bond and commodity indexes. These returns are weighted according to the allocation of plan assets to each market and measured individually.

The overall objective of the plan is to achieve required long-term rates of return in order to meet future benefit payments. The component of the investment policy for the plan that has the most significant impact on returns is the asset mix. The asset mix has a minimum and maximum range depending on asset class. The plan assets are diversified to minimize the risk of large losses by any one or more individual assets. Such diversification is accomplished, in part, through the selection of asset mix and investment management. The asset allocation for the plan, by asset category, at December 31 was as follows:

	2016	2015
Fixed income	28.8%	28.3%
Foreign equity	27.0	27.6
U.S. equity	26.7	27.5
Money market funds	13.2	12.2
Commodity	4.3	4.4

The range of target allocation percentages for 2017 is as follows:

	Minimum	Maximum
Fixed income	33.0%	45.0%
U.S. equity	23.5	35.0
Foreign equity	23.5	35.0
Commodity	2.0	8.0

At times, the company may determine that it is necessary to place some assets in cash equivalent investments in order to pay expected plan liabilities. Given this, the actual asset allocation for the plan may not fall within the target allocation ranges from time to time.

According to the plan's investment policy, the plan is not allowed to invest in securities that compromise independence, short sales of securities directly owned by the plan, securities purchased on margin or other uses of borrowed funds, derivatives not used for hedging purposes, restricted stock or illiquid securities or any other transaction prohibited by employment laws. If the plan directly invests in short-term and long-term debt obligations, the investments are limited to obligations rated at the highest rating category by Standard & Poor's (S&P) or Moody's.

The pre-tax balance and activity of the prior service costs and actuarial losses for the pension plan, which are included in other comprehensive income (loss), for 2016 are as follows:

(in millions)	Prior Service Costs	Actuarial Loss
Balance at January 1	$ 0.1	$ 60.8
Unrecognized net loss	—	5.1
Recognized as a component of net pension expense	(0.1)	(3.1)
Balance at December 31	$ —	$ 62.8

The company expects to amortize $3.5 million of actuarial loss and prior service costs from accumulated other comprehensive income (loss) into net periodic benefit costs in 2017.

At December 31, 2016, anticipated benefit payments from the plan in future years are as follows:

(in millions)		
2017	$	12.5
2018		14.0
2019		15.1
2020		16.0
2021		17.6
2022-6		109.0

Savings Plan. CME maintains a defined contribution savings plan pursuant to Section 401(k) of the Internal Revenue Code, whereby all U.S. employees are participants and have the option to contribute to this plan. CME matches employee contributions up to 3% of the employee's base salary and may make additional discretionary contributions. Total expense for the savings plan was $6.0 million and $5.6 million in 2016 and 2015, respectively.

Non-Qualified Plans. CME maintains non-qualified plans, under which participants may make assumed investment choices with respect to amounts contributed on their behalf. Although not required to do so, CME invests such contributions in assets that mirror the assumed investment choices. The balances in these plans are subject to the claims of general creditors of the company and totaled $56.6 million and $49.6 million at December 31, 2016 and 2015, respectively. Although the value of the plans is recorded as an asset in marketable securities in the consolidated balance sheets, there is an equal and offsetting liability. The investment results of these plans have no impact on net income as the investment results are recorded in equal amounts to both investment income and compensation and benefits expense.

Supplemental Savings Plan. CME maintains a supplemental plan to provide benefits for employees who have been impacted by statutory limits under the provisions of the qualified pension and savings plan. Employees in this plan are subject to the vesting requirements of the underlying qualified plans.

Deferred Compensation Plan. A deferred compensation plan is maintained by CME, under which eligible officers and members of the board of directors may contribute a percentage of their compensation and defer income taxes thereon until the time of distribution.

10. COMMITMENTS

Operating Leases. CME has entered into various non-cancellable operating lease agreements, with the most significant being as follows:

- In March 2016, the company sold its datacenter and 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 operating lease, which has an initial lease term ending in March 2031, contains two consecutive renewal options for five years.
- In April 2012, CBOT sold two buildings in Chicago at 141 W. Jackson. CME leased back a portion of the property. The operating lease, which has an initial lease term ending on April 30, 2027, contains four consecutive renewal options for five years.
- In July 2008, the company renegotiated the operating lease for its headquarters at 20 South Wacker Drive in Chicago. The lease, which has an initial term ending on November 30, 2022, contains two consecutive renewal options for seven and ten years and a contraction option which allows the company to reduce its occupied space after November 30, 2018. In addition, the company may exercise a lease expansion option in December 2017.
- In August 2006, the company entered into an operating lease for additional office space in Chicago. The initial lease term, which became effective on August 10, 2006, terminates on November 30, 2023. The lease contains two 5-year renewal options beginning in 2023.

At December 31, 2016, future minimum payments under non-cancellable operating leases were payable as follows (in millions):

Year		
2017	$	39.5
2018		39.2
2019		39.7
2020		40.1
2021		40.4
Thereafter		210.2
Total	$	409.1

Total rental expense, including equipment rental, was $28.7 million and $24.9 million in 2016 and 2015, respectively.

Other Commitments. Commitments include material contractual purchase obligations that are non-cancellable. Purchase obligations relate to licensing, hardware, software and maintenance as well as telecommunication services. At December 31, 2016, future minimum payments due under purchase obligations were payable as follows (in millions):

Year		
2017	$	12.8
2018		13.3
2019		9.9
2020		9.0
2021		3.5
Thereafter		1.1
Total	$	49.6

11. 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.

At December 31, 2015, the company had accrued $3.5 million for legal and regulatory matters that were probable and estimable. No accrual was required for legal and regulatory matters that were probable and estimable as of December 31, 2016.

Intellectual Property Indemnifications. Certain agreements with customers and other third parties related to accessing the CME 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.

12. GUARANTEES

Mutual Offset Agreement. CME and Singapore Exchange Limited (SGX) have a mutual offset agreement with a current term through October 2016. 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 unless either party provides advance notice of its intent to terminate. CME can maintain collateral in the form of U.S. Treasury securities or irrevocable, standby letters of credit. At December 31, 2016, CME was contingently liable to SGX on irrevocable letters of credit totaling $435.0 million. 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. The company believes that its guarantee liability is immaterial and therefore has not recorded any liability at December 31, 2016.

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 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 has an aggregate maximum payment amount of $100.0 million. Since its establishment, the Fund has made payments of approximately $2.0 million, which leaves $98.0 million available for future claims. If payments to participants were to exceed this amount, payments would be pro-rated. Clearing members and customers must register in advance with the company and provide certain documentation in order to substantiate their eligibility. The company believes that its guarantee liability is immaterial and therefore has not recorded any liability at December 31, 2016.

13. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

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

(in millions)	Investment Securities	Defined Benefit Plan	Total
Balance at December 31, 2015	$ (0.2)	$ (36.6)	$ (36.8)
Other comprehensive income (loss) before reclassifications and income tax benefit (expense)	0.1	(5.1)	(5.0)
Amounts reclassified from accumulated other comprehensive income (loss)	—	3.2	3.2
Income tax benefit (expense)	—	0.7	0.7
Net current period other comprehensive income (loss) attributable to CME	0.1	(1.2)	(1.1)
Balance at December 31, 2016	$ (0.1)	$ (37.8)	$ (37.9)

(in millions)	Investment Securities	Defined Benefit Plan	Total
Balance at December 31, 2014	$ (0.1)	$ (31.3)	$ (31.4)
Other comprehensive income (loss) before reclassifications and income tax benefit (expense)	(0.1)	(11.2)	(11.3)
Amounts reclassified from accumulated other comprehensive income (loss)	—	2.7	2.7
Income tax benefit (expense)	—	3.2	3.2
Net current period other comprehensive income (loss) attributable to CME	(0.1)	(5.3)	(5.4)
Balance at December 31, 2015	$ (0.2)	$ (36.6)	$ (36.8)

14. FAIR VALUE MEASUREMENTS

Level 1 assets generally include U.S. Treasury securities and investments in publicly traded mutual funds 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 and equity investments. If quoted prices are not available to determine fair value, the company uses other inputs that are directly observable. Assets included in level 2 generally consist of asset-backed securities. Asset-backed securities are measured at fair value based on matrix pricing using prices of similar securities with similar inputs such as maturity dates, interest rates and credit ratings.

Financial assets and liabilities recorded in the consolidated balance sheet as of December 31, 2016 and 2015 were classified in their entirety based on the lowest level of input that was significant to each asset or liability's fair value measurement.

(in millions)	At December 31, 2016 Level 1	Level 2	Level 3	Total
Assets at Fair Value:				
Marketable Securities:				
Mutual funds	$ 56.6	$ —	$ —	$ 56.6
Asset-backed securities	—	0.3	—	0.3
Total	56.6	0.3	—	56.9
Performance bonds and guaranty fund contributions[1]:				
U.S. Treasury securities	5,549.0	—	—	5,549.0
U.S. Government agency securities	1,228.3	—	—	1,228.3
Total Assets at Fair Value	$ 6,833.9	$ 0.3	$ —	$ 6,834.2

(in millions)	At December 31, 2015 Level 1	Level 2	Level 3	Total
Assets at Fair Value:				
Marketable Securities:				
Mutual funds	$ 49.6	$ —	$ —	$ 49.6
Asset-backed securities	—	0.3	—	0.3
Total	49.6	0.3	—	49.9
Performance bonds and guaranty fund contributions:				
U.S. Treasury securities [1]	10,973.9	—	—	10,973.9
Total Assets at Fair Value	$ 11,023.5	$ 0.3	$ —	$ 11,023.8

(1) Performance bonds and guaranty fund contributions on the consolidated balance sheet at December 31, 2016 and 2015 include cash collateral that has been invested in U.S. Treasury securities. Performance bonds and guaranty fund contributions on the consolidated balance sheet at December 31, 2016 also include cash collateral that has been invested in U.S. government agency securities.

There were no transfers of assets between level 1, level 2 and level 3 during 2016 and 2015. There were no level 3 assets or liabilities valued at fair value on a recurring basis during 2016 and 2015.

In the first quarter of 2016, the company sold a datacenter and leased back a portion of the property. Under generally accepted accounting principles, the transaction has been recognized under the financing method instead of recognized as a sale leaseback arrangement. As a result, the property and equipment legally sold will continue to be recognized on the consolidated balance sheets and was written down to a fair value of $130.0 million at March 31, 2016. There were no other level 3 assets or liabilities valued at fair value on a nonrecurring basis during 2016 and 2015.

15. REGULATORY REQUIREMENTS

CME is regulated by the CFTC as a DCO and a DCM. DCOs and 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. CME is in compliance with the DCO and DCM financial requirements.

16. SUBSEQUENT EVENTS

The company has evaluated subsequent events through March 23, 2017, the date the financial statements were available to be issued, and has determined that there were no subsequent events that required disclosure.