

Cboe Global Markets Reports Results for Third Quarter 2019

Third Quarter 2019 Highlights*

- **Diluted EPS of \$0.94, Up 24 Percent; Adjusted Diluted EPS¹ of \$1.29, Up 22 Percent**
- **Net Revenue of \$294.0 Million, Up 9 Percent**
- **Operating Expenses of \$146.6 Million, Up 2 Percent; Adjusted Operating Expenses¹ of \$96.5 Million, Down 3 Percent**
- **EBITDA Margin¹ of 65.2 Percent, Up 30 bps; Adjusted EBITDA Margin¹ of 70.9 Percent, Up 380 bps**
- **Returned \$93 Million to Shareholders Through Dividends and Share Repurchases; Reduced Debt by \$50 Million**
- **Board Increased Share Repurchase Authorization by \$250 Million**
- **Successfully Completed Final Technology Migration**

CHICAGO, IL – November 1, 2019 - Cboe Global Markets, Inc. (Cboe: CBOE) today reported financial results for the third quarter of 2019.

“I am pleased to report strong third-quarter results, primarily driven by higher trading volume in our suite of proprietary products compared to the third quarter of 2018,” said Edward T. Tilly, Cboe Global Markets Chairman, President and Chief Executive Officer. “We remained focused on growing our proprietary products, while also completing our final technology migration to our proprietary technology, marking a major step forward for our company and positioning us for exciting future growth. The integration not only provides our customers with a single, world-class trading experience across all Cboe equities, options, and futures markets, but also lays the foundation for new innovations. We look forward to building upon the solid foundation in place and delivering increased value to our customers and our shareholders,” Mr. Tilly added.

“We delivered solid earnings growth and generated strong cash flow this quarter, with an adjusted EBITDA margin of 70.9 percent, up 380 basis points compared with 2018’s third quarter,” said Brian N. Schell, Cboe Global Markets Executive Vice President, Chief Financial Officer and Treasurer. “During the quarter, we also maintained our ongoing commitment to returning capital to shareholders in a disciplined and consistent manner with \$52.4 million of share repurchases and \$40.4 million of dividends. In addition, we used \$50 million to pay down our term loan, reducing our leverage ratio to 1.1x at September 30 from 1.2x at June 30, 2019,” Mr. Schell added.

**All comparisons are third quarter 2019 compared to the same period in 2018.*

⁽¹⁾A full reconciliation of our non-GAAP results to our GAAP results is included in the attached tables. See "Non-GAAP Information" in the accompanying financial tables.

- More -

Consolidated Third Quarter Results -Table 1

Table 1 below presents summary selected unaudited condensed consolidated financial information for the company as reported and on an adjusted basis for the three months ended September 30, 2019 and 2018.

Table 1						
Consolidated Third Quarter Results (\$ in millions except per share)	3Q19	3Q18	Change	3Q19 Adjusted¹	3Q18 Adjusted¹	Change
Total Revenues Less Cost of Revenues	\$ 294.0	\$ 270.5	9 %	\$ 294.0	\$ 270.5	9 %
Total Operating Expenses	\$ 146.6	\$ 144.4	2 %	\$ 96.5	\$ 99.1	(3)%
Operating Income	\$ 147.4	\$ 126.1	17 %	\$ 197.5	\$ 171.4	15 %
Operating Margin %	50.1 %	46.6 %	350 bps	67.2 %	63.4 %	380 bps
Net Income Allocated to Common Stockholders	\$ 105.5	\$ 85.0	24 %	\$ 144.6	\$ 118.3	22 %
Diluted EPS	\$ 0.94	\$ 0.76	24 %	\$ 1.29	\$ 1.06	22 %
EBITDA ¹	\$ 191.6	\$ 175.5	9 %	\$ 208.3	\$ 181.4	15 %
EBITDA Margin % ¹	65.2 %	64.9 %	30 bps	70.9 %	67.1 %	380 bps

- Total revenues less cost of revenues (referred to as "net revenue") were \$294.0 million, compared to \$270.5 million in the prior-year period, primarily reflecting higher trading volume in our proprietary products, including SPX options and VIX options and futures, as well as growth in market data revenue.
- Total operating expenses were \$146.6 million versus \$144.4 million in the third quarter of 2018. Adjusted operating expenses¹ of \$96.5 million declined 3 percent compared with \$99.1 million in the third quarter of 2018, primarily reflecting a decrease in compensation and benefits as a result of lower incentive-based compensation.
- Operating income increased by 17 percent to \$147.4 million and adjusted operating income¹ increased by 15 percent to \$197.5 million.
- The operating margin for the third quarter was 50.1 percent. The adjusted operating margin¹ for the quarter was 67.2 percent, up 380 basis points from 2018's third quarter, reflecting higher net revenue and lower expenses.
- The effective tax rate for the third quarter of 2019 was 24.8 percent compared with 26.3 percent in the third quarter of 2018. The effective tax rate on adjusted earnings¹ in the third quarter of 2019 was 24.1 percent compared with 26.4 percent in last year's third quarter. The lower effective tax rate for the third quarter of 2019, was primarily due to benefits related to the Tax Cuts and Jobs Act recognized upon the completion of the company's 2018 U.S. federal income tax return.
- Diluted EPS for the third quarter of 2019 was \$0.94. Adjusted diluted EPS¹ was \$1.29, up 22 percent compared to 2018's third-quarter results.

Business Segment Information:

Table 2			
Total Revenues Less Cost of Revenues by Business Segment (in millions)	3Q19	3Q18	Change
Options	\$ 146.5	\$ 133.2	10 %
U.S. Equities	75.4	71.4	6 %
Futures	38.3	30.0	28 %
European Equities	20.7	22.3	(7)%
Global FX	13.1	13.6	(4)%
Corporate	-	-	- %
Total	\$ 294.0	\$ 270.5	9 %

⁽¹⁾A full reconciliation of our non-GAAP results to our GAAP results is included in the attached tables. See "Non-GAAP Information" in the accompanying financial tables.

- More -

Discussion of Results by Business Segment:

Options:

- Options net revenue of \$146.5 million was up \$13.3 million or 10 percent from the third quarter of 2018, primarily due to higher revenue from net transaction fees¹.
- Net transaction fees¹ increased \$13.2 million, as total options average daily volume (ADV) increased 15 percent offset by revenue per contract (RPC) that declined 3 percent compared to the third quarter 2018. The RPC for multiply-listed options decreased 18 percent, primarily due to higher volume-based rebates versus the third quarter of 2018 and the RPC for index options increased 2 percent.
- Cboe's Options business had market share of 39.0 percent for the third quarter of 2019 compared to 36.8 percent in the third quarter of 2018, reflecting increased member order flow.

U.S. Equities:

- U.S. Equities net revenue of \$75.4 million was up \$4.0 million or 6 percent, primarily due to higher market data revenue from the industry tape plan, which included audit recoveries of \$4.3 million.
- Cboe U.S. Equities had market share of 17.2 percent for the third quarter of 2019 compared to 17.5 percent in the third quarter of 2018 and 15.7 percent for the second quarter of 2019.

Futures:

- Futures net revenue of \$38.3 million increased \$8.3 million or 28 percent, primarily due to higher net transaction fees.
- Net transaction fees¹ increased \$5.5 million or 21 percent, reflecting a 17 percent increase in ADV and a 2 percent increase in RPC.

European Equities:

- European Equities net revenue of \$20.7 million decreased by 7 percent, reflecting a decline in net transaction fees, offset by a slight increase in non-transaction revenue. In local currency, net revenue was down 2 percent. Average daily notional value (ADNV) for the overall market was down 17 percent during the quarter and ADNV traded for Cboe Europe was €6.8 billion, down 29 percent from last year's third quarter, with net capture up 20 percent.
- For the third quarter of 2019, Cboe European Equities had 19.8 percent market share, down from 23.1 percent in the third quarter of 2018.

Global FX:

- Global FX net revenue of \$13.1 million decreased \$0.5 million or 4 percent, primarily due to lower net transaction fees compared with the third quarter of 2018. ADNV traded on the Cboe FX platform was \$30.3 billion for the quarter, down 12 percent from last year's third quarter, offset somewhat by a 7 percent increase in net capture per one million dollars traded of \$2.80 for third quarter 2019 compared to third quarter 2018.
- Cboe FX had market share of 14.1 percent for the third quarter of 2019 compared to 14.8 percent in last year's third quarter.

⁽¹⁾A full reconciliation of our non-GAAP results to our GAAP results is included in the attached tables. See "Non-GAAP Information" in the accompanying financial tables.

2019 Fiscal Year Financial Guidance

The company updated or reaffirmed its financial guidance for the 2019 fiscal year as follows:

- Adjusted operating expenses are now expected to be in the range of \$390 to \$395 million, down from the previous range of \$405 to \$413 million. The guidance excludes the expected amortization of acquired intangible assets of \$138 million, which the company plans to include in its non-GAAP reconciliation.¹
- Reaffirmed that depreciation and amortization expense, which is included in adjusted operating expenses above, are expected to be in the range of \$35 to \$40 million, excluding the expected amortization of acquired intangible assets of \$138 million.
- The company now expects the effective tax rate¹ on adjusted earnings for the full year to be in the range of 25.5 to 27.5 percent, down from the previous range of 27 to 29 percent. Significant changes in trading volume, expenses, federal, state and local tax laws or rates and other items could materially impact this expectation.
- Capital expenditures are now expected to be in the range of \$35 to \$40 million, down compared to the previous range of \$50 to \$55 million, reflecting a shift in the timing of expenditures associated with the company's Chicago headquarters relocation.

⁽¹⁾Specific quantifications of the amounts that would be required to reconcile the company's adjusted operating expenses guidance and the effective tax rate on adjusted earnings guidance are not available. The company believes that there is uncertainty and unpredictability with respect to certain of its GAAP measures, primarily related to acquisition-related expenses that would be required to reconcile to GAAP operating expenses and GAAP effective tax rate, which preclude the company from providing accurate guidance on certain forward-looking GAAP to non-GAAP reconciliations. The company believes that providing estimates of the amounts that would be required to reconcile the range of the company's adjusted operating expenses and the effective tax rate on adjusted earnings would imply a degree of precision that would be confusing or misleading to investors for the reasons identified above.

Capital Management

The company paid cash dividends of \$40.4 million, or \$0.36 per share, during the third quarter of 2019 and utilized \$52.4 million to repurchase 0.5 million shares of its common stock under its share repurchase program at an average price of \$115.49 per share. The company also used \$50 million of cash on hand to reduce debt outstanding under its term loan agreement.

As announced on October 30, 2019, the company's Board of Directors increased its share repurchase authorization by \$250 million. This new authorization will be in addition to any unused amount remaining under the company's existing share repurchase authorizations. The company utilized \$55.4 million to repurchase 0.5 million shares in October, for a total of approximately \$313 million authorized and available for repurchase as of October 31, 2019.

At September 30, 2019, the company had adjusted cash and financial investments² of \$150.5 million. Total debt as of September 30, 2019 was \$867.1 million.

Earnings Conference Call

Executives of Cboe Global Markets will host a conference call to review its third-quarter financial results today, November 1, 2019, at 8:30 a.m. ET/7:30 a.m. CT. The conference call and any accompanying slides will be publicly available via live webcast from the Investor Relations section of the company's website at www.cboe.com under Events & Presentations. Participants may also listen via telephone by dialing (877) 255-4313 from the United States, (866) 450-4696 from Canada or (412) 317-5466 for international callers. Telephone participants should place calls 10 minutes prior to the start of the call. The webcast will be archived on the company's website for replay. A telephone replay of the earnings call also will be available from approximately 11:00 a.m. CT, November 1, 2019, through 11:00 p.m. CT, November 8, 2019, by calling (877) 344-7529 from the U.S., (855) 669-9658 from Canada or (412) 317-0088 for international callers, using replay code 10135123.

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- More -

About Cboe Global Markets

Cboe Global Markets (Cboe: CBOE) is one of the world's largest exchange holding companies, offering cutting-edge trading and investment solutions to investors around the world. The company is committed to defining markets to benefit its participants and drive the global marketplace forward through product innovation, leading edge technology and seamless trading solutions.

The company offers trading across a diverse range of products in multiple asset classes and geographies, including options, futures, U.S. and European equities, exchange-traded products (ETPs), global foreign exchange (FX) and volatility products based on the Cboe Volatility Index (VIX Index), recognized as the world's premier gauge of U.S. equity market volatility.

Cboe's subsidiaries include the largest options exchange and the third largest stock exchange operator in the U.S. In addition, the company operates the largest stock exchange by value traded in Europe and is a leading market globally for ETP listings and trading.

The company is headquartered in Chicago with a network of domestic and global offices across the Americas, Europe and Asia, including main hubs in New York, London, Kansas City and Amsterdam. For more information, visit www.cboe.com.

Cautionary Statements Regarding Forward-Looking Information

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve a number of risks and uncertainties. You can identify these statements by forward-looking words such as “may,” “might,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “potential” or “continue,” and the negative of these terms and other comparable terminology. All statements that reflect our expectations, assumptions or projections about the future other than statements of historical fact are forward-looking statements. These forward-looking statements, which are subject to known and unknown risks, uncertainties and assumptions about us, may include projections of our future financial performance based on our growth strategies and anticipated trends in our business. These statements are only predictions based on our current expectations and projections about future events. There are important factors that could cause our actual results, level of activity, performance or achievements to differ materially from those expressed or implied by the forward-looking statements.

We operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time, and it is not possible to predict all risks and uncertainties, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

Some factors that could cause actual results to differ include: the loss of our right to exclusively list and trade certain index options and futures products; economic, political and market conditions; compliance with legal and regulatory obligations; price competition and consolidation in our industry; decreases in trading volumes, market data fees or a shift in the mix of products traded on our exchanges; legislative or regulatory changes; our ability to protect our systems and communication networks from security risks, cybersecurity risks, insider threats and unauthorized disclosure of confidential information; increasing competition by foreign and domestic entities; our dependence on and exposure to risk from third parties; fluctuations to currency exchange rates; our index providers’ ability to maintain the quality and integrity of their indexes and to perform under our agreements; our ability to operate our business without violating the intellectual property rights of others and the costs associated with protecting our intellectual property rights; our ability to attract and retain skilled management and other personnel, including those experienced with post-acquisition integration; our ability to accommodate trading volume and transaction traffic, including significant increases, without failure or degradation of performance of our systems; misconduct by those who use our markets or our products; challenges to our use of open source software code; our ability to meet our compliance obligations, including managing potential conflicts between our regulatory responsibilities and our for-profit status; damage to our reputation; the ability of our compliance and risk management methods to effectively monitor and manage our risks; our ability to manage our growth and strategic acquisitions or alliances effectively; restrictions imposed by our debt obligations; our ability to maintain an investment grade credit rating; impairment of our goodwill, investments or intangible assets; and the accuracy of our estimates and expectations. More detailed information about factors that may affect our actual results to differ may be found in our filings with the SEC, including in our Annual Report on Form 10-K for the year ended December 31, 2018 and other filings made from time to time with the SEC.

We do not undertake, and we expressly disclaim, any duty to update any forward-looking statement whether as a result of new information, future events or otherwise, except as required by law. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof.

The condensed consolidated statements of income and balance sheets are unaudited and subject to reclassification.

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- More -

Cboe Global Markets, Inc.
Key Performance Statistics by Business Segment

	3Q 2019	2Q 2019	1Q 2019	4Q 2018	3Q 2018
Options (ADV in thousands)					
Total industry ADV	19,790	19,274	19,193	22,450	18,292
Total company Options ADV	7,720	7,261	7,063	8,610	6,733
Multiply-listed options	5,715	5,329	5,215	6,067	4,965
Index options	2,005	1,932	1,848	2,543	1,768
Total Options Market Share	39.0 %	37.7 %	36.8 %	38.4 %	36.8 %
Total Options RPC:	\$ 0.236	\$ 0.238	\$ 0.240	\$ 0.280	\$ 0.244
Multiply-listed options	\$ 0.056	\$ 0.058	\$ 0.067	\$ 0.083	\$ 0.068
Index options	\$ 0.751	\$ 0.736	\$ 0.730	\$ 0.750	\$ 0.737
U.S. Equities					
Total industry ADV (shares in billions)	6.9	6.9	7.5	8.5	6.3
Market share %	17.2 %	15.7 %	16.0 %	17.8 %	17.5 %
Net capture (per 100 touched shares)	\$ 0.020	\$ 0.028	\$ 0.029	\$ 0.027	\$ 0.026
Futures					
ADV (in thousands)	279	257	231	338	239
RPC	\$ 1.746	\$ 1.748	\$ 1.739	\$ 1.697	\$ 1.709
European Equities					
Total industry ADVN (Euros - in billions)	€ 34.2	€ 40.8	€ 41.7	€ 46.7	€ 41.4
Market share %	19.8 %	20.3 %	22.1 %	22.7 %	23.1 %
Net capture (bps)	0.233	0.224	0.210	0.200	0.195
Global FX					
Market share %	14.1 %	15.2 %	15.8 %	15.3 %	14.8 %
ADNV (\$ in billions)	\$ 30.3	\$ 32.5	\$ 36.5	\$ 35.1	\$ 34.6
Net capture (per one million dollars traded)	\$ 2.80	\$ 2.65	\$ 2.61	\$ 2.63	\$ 2.63

ADV = average daily volume; ADNV = average daily notional value.

RPC, average revenue per contract, for options and futures represents total net transaction fees recognized for the period divided by total contracts traded during the period.

U.S. Equities, "net capture per 100 touched shares" refers to transaction fees less liquidity payments and routing and clearing costs divided by the product of one-hundredth ADV of touched shares on BZX, BYX, EDGX and EDGA and the number of trading days.

European Equities, "net capture per matched notional value" refers to transaction fees less liquidity payments in British pounds divided by the product of matched ADNV in British pounds and the number of trading days.

Global FX, "net capture per one million dollars traded" refers to net transaction fees divided by the product of one-millionth of ADNV traded on the Cboe FX market, the number of trading days, and two, which represents the buyer and seller that are both charged on the transaction. Market Share represents Cboe FX volume divided by the total volume of publicly reporting spot FX venues (Cboe FX, EBS, Refinitiv, and FastMatch).

Average transaction fees per contract can be affected by various factors, including exchange fee rates, volume-based discounts and transaction mix by contract type and product type.

- More -

Cboe Global Markets, Inc. and Subsidiaries
Condensed Consolidated Statements of Income (Unaudited)
Three Months and Nine Months Ended September 30, 2019 and 2018

(in millions, except per share amounts)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenue:				
Transaction fees	\$ 465.8	\$ 411.8	\$ 1,322.0	\$ 1,423.7
Access and capacity fees	55.7	53.6	164.6	156.4
Market data fees	56.3	47.6	159.7	154.3
Regulatory fees	88.1	55.2	226.5	260.8
Other revenue	9.5	7.7	24.7	25.9
Total Revenues	675.4	575.9	1,897.5	2,021.1
Cost of Revenues				
Liquidity payments	269.7	229.2	749.2	803.2
Routing and clearing	9.3	8.7	27.7	28.8
Section 31 fees	79.4	46.8	197.9	236.7
Royalty fees	22.9	20.7	65.8	69.9
Other	0.1	-	0.3	-
Total Cost of Revenues	381.4	305.4	1,040.9	1,138.6
Revenues Less Cost of Revenues	294.0	270.5	856.6	882.5
Operating Expenses:				
Compensation and benefits	49.7	51.8	150.0	168.1
Depreciation and amortization	42.9	50.3	133.8	154.9
Technology support services	10.6	10.6	34.3	34.5
Professional fees and outside services	17.5	16.6	52.9	51.9
Travel and promotional expenses	2.7	2.6	8.3	9.8
Facilities costs	2.7	3.3	7.8	8.6
Acquisition-related costs	16.7	5.9	39.8	23.3
Other expenses	3.8	3.3	11.7	8.5
Total Operating Expenses	146.6	144.4	438.6	459.6
Operating Income	147.4	126.1	418.0	422.9
Non-operating (Expense)/Income:				
Interest expense, net	(8.2)	(9.6)	(28.1)	(28.5)
Other (expense) income	1.7	(0.2)	(2.7)	1.1
Total Non-operating (Expense)/Income	(6.5)	(9.8)	(30.8)	(27.4)
Income Before Income Tax Provision	140.9	116.3	387.2	395.5
Income tax provision	35.0	30.6	102.7	108.7
Net Income	105.9	85.7	284.5	286.8
Net loss attributable to redeemable noncontrolling interest	0.1	0.3	4.1	0.9
Net Income Excluding Redeemable Noncontrolling Interest	106.0	86.0	288.6	287.7
Change in redemption value of redeemable noncontrolling interest	(0.1)	(0.3)	(0.5)	(0.9)
Net income allocated to participating securities	(0.4)	(0.7)	(1.5)	(2.1)
Net Income Allocated to Common Stockholders	\$ 105.5	\$ 85.0	\$ 286.6	\$ 284.7
Net Income Per Share Allocated to Common Stockholders:				
Basic earnings per share	\$ 0.95	\$ 0.76	\$ 2.57	\$ 2.54
Diluted earnings per share	0.94	0.76	2.56	2.53
Weighted average shares used in computing income per share:				
Basic	111.6	111.4	111.6	112.0
Diluted	111.9	111.8	112.0	112.4

- More -

Cboe Global Markets, Inc. and Subsidiaries
Condensed Consolidated Balance Sheets (Unaudited)
September 30, 2019 and December 31, 2018

(in millions)	September 30, 2019	December 31, 2018
Assets		
Current Assets:		
Cash and cash equivalents	\$ 150.0	\$ 275.1
Financial investments	21.4	35.7
Accounts receivable, net	235.5	287.3
Income taxes receivable	65.0	70.4
Other current assets	17.6	15.2
Total Current Assets	489.5	683.7
Investments	69.7	86.2
Land	—	4.9
Property and equipment, net	49.0	71.7
Property held for sale	21.0	—
Operating lease right of use assets	53.4	—
Goodwill	2,663.4	2,691.4
Intangible assets, net	1,598.6	1,720.2
Other assets, net	74.7	62.9
Total Assets	\$ 5,019.3	\$ 5,321.0
Liabilities, Redeemable Noncontrolling Interest and Stockholders' Equity		
Current Liabilities:		
Accounts payable and accrued liabilities	\$ 159.2	\$ 198.5
Section 31 fees payable	25.4	81.1
Deferred revenue	8.1	8.5
Income taxes payable	—	4.1
Current portion of long-term debt	—	299.8
Contingent consideration liability	6.3	3.9
Total Current Liabilities	199.0	595.9
Long-term debt	867.1	915.6
Income tax liability	134.8	114.9
Deferred income taxes	418.2	436.8
Non-current operating lease liabilities	47.4	—
Other non-current liabilities	24.1	7.4
Total Liabilities	1,690.6	2,070.6
Redeemable Noncontrolling Interest	—	9.4
Stockholders' Equity:		
Preferred stock	—	—
Common stock	1.2	1.2
Common stock in treasury, at cost	(817.3)	(720.1)
Additional paid-in capital	2,686.5	2,660.2
Retained earnings	1,467.4	1,288.2
Accumulated other comprehensive income (loss), net	(9.1)	11.5
Total Stockholders' Equity	3,328.7	3,241.0
Total Liabilities, Redeemable Noncontrolling Interest and Stockholders' Equity	\$ 5,019.3	\$ 5,321.0

- More -

Non-GAAP Information

In addition to disclosing results determined in accordance with GAAP, Cboe Global Markets has disclosed certain non-GAAP measures of operating performance. These measures are not in accordance with, or a substitute for, GAAP, and may be different from or inconsistent with non-GAAP financial measures used by other companies. The non-GAAP measures provided in this press release include net transaction fees, adjusted operating expenses, adjusted operating income, adjusted operating margin, adjusted net income allocated to common stockholders and adjusted diluted earnings per share, effective tax rate on adjusted earnings, adjusted cash and financial investments, EBITDA, EBITDA margin, adjusted EBITDA and adjusted EBITDA margin.

Management believes that the non-GAAP financial measures presented in this press release, including adjusted operating income and adjusted operating expenses, provide additional and comparative information to assess trends in our core operations and a means to evaluate period-to-period comparisons. Non-GAAP financial measures disclosed by management are provided as additional information to investors in order to provide them with an alternative method for assessing our financial condition and operating results.

Amortization expense of acquired intangible assets: We amortize intangible assets acquired in connection with various acquisitions. Amortization of intangible assets is inconsistent in amount and frequency and is significantly affected by the timing and size of our acquisitions. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the businesses, the relative operating performance of the businesses between periods and the earnings power of the company. Therefore, we believe performance measures excluding intangible asset amortization expense provide investors with an additional basis for comparison across accounting periods.

Acquisition-related expenses: From time to time, we have pursued small bolt-on acquisitions and in 2017 completed a larger transformative acquisition, which have resulted in expenses which would not otherwise have been incurred in the normal course of the company's business operations. These expenses include integration costs, as well as legal, due diligence and other third party transaction costs. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction. Accordingly, we exclude these costs for purposes of calculating non-GAAP measures which provide an additional analysis of Cboe's ongoing operating performance or comparisons in Cboe's performance between periods.

The tables below show the reconciliation of each financial measure from GAAP to non-GAAP. The non-GAAP financial measures exclude the impact of those items detailed below and are referred to as adjusted financial measures.

Reconciliation of GAAP and non-GAAP Information

Table 4 (in millions, except per share amounts)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Reconciliation of Net Income Allocated to Common Stockholders to Non-GAAP (As shown on Table 1)				
Net income allocated to common stockholders	\$ 105.5	\$ 85.0	\$ 286.6	\$ 284.7
Non-GAAP adjustments				
Acquisition-related expenses (1)	16.7	5.9	39.8	23.3
Amortization of acquired intangible assets (2)	33.4	39.4	105.1	121.2
Change in redemption value of noncontrolling interest	0.1	0.3	0.5	0.9
Total Non-GAAP adjustments	50.2	45.6	145.4	145.4
Income tax expense related to the items above	(11.0)	(12.1)	(34.2)	(37.7)
Impairment charges attributed to noncontrolling interest	—	—	(3.6)	—
Net income allocated to participating securities - effect on reconciling items	(0.1)	(0.2)	(0.5)	(0.7)
Adjusted net income allocated to common stockholders	\$ 144.6	\$ 118.3	\$ 393.7	\$ 391.7
Reconciliation of Diluted EPS to Non-GAAP				
Diluted earnings per common share	\$ 0.94	\$ 0.76	\$ 2.56	\$ 2.53
Per share impact of non-GAAP adjustments noted above	0.35	0.30	0.96	0.96
Adjusted diluted earnings per common share	\$ 1.29	\$ 1.06	\$ 3.52	\$ 3.49
Reconciliation of Operating Margin to Non-GAAP				
Revenue less cost of revenue	\$ 294.0	\$ 270.5	\$ 856.6	\$ 882.5
Non-GAAP adjustments noted above	—	—	—	—
Adjusted revenue less cost of revenue	\$ 294.0	\$ 270.5	\$ 856.6	\$ 882.5
Operating expenses (3)	\$ 146.6	\$ 144.4	\$ 438.6	\$ 459.6
Non-GAAP adjustments noted above	50.1	45.3	144.9	144.5
Adjusted operating expenses	\$ 96.5	\$ 99.1	\$ 293.7	\$ 315.1
Operating income	\$ 147.4	\$ 126.1	\$ 418.0	\$ 422.9
Non-GAAP adjustments noted above	50.1	45.3	144.9	144.5
Adjusted operating income	\$ 197.5	\$ 171.4	\$ 562.9	\$ 567.4
Adjusted operating margin (4)	67.2 %	63.4 %	65.7 %	64.3 %
Reconciliation of Income Tax Rate to Non-GAAP				
Income before income taxes	140.9	116.3	387.2	395.5
Non-GAAP adjustments noted above	50.2	45.6	145.4	145.4
Adjusted income before income taxes	\$ 191.1	\$ 161.9	\$ 532.6	\$ 540.9
Income tax expense	35.0	30.6	102.7	108.7
Non-GAAP adjustments noted above	11.0	12.1	34.2	37.7
Adjusted income tax expense	\$ 46.0	\$ 42.7	\$ 136.9	\$ 146.4
Adjusted income tax rate	24.1 %	26.4 %	25.7 %	27.3 %

(1) This amount includes professional fees and outside services, severance, facilities expenses, impairment charges and other costs related to the company's acquisitions.

(2) This amount represents the amortization of acquired intangible assets related to the company's acquisitions.

(3) The company sponsors deferred compensation plans held in a rabbi trust. The expenses related to the deferred compensation plans are included in "Compensation and benefits" (\$30 thousand and \$3.7 million in expense in the three and nine months ended September 30, 2019, respectively), and are directly offset by deferred compensation income, expenses and dividends included within "Other income (expense)" (\$30 thousand and \$3.7 million in income, expense and dividends in the three and nine months ended September 30, 2019, respectively), on the consolidated statements of income. The deferred compensation plans' expenses are not adjusted out of "adjusted operating expenses" and do not have an impact on "Income before income taxes."

(4) Adjusted operating margin represents adjusted operating income divided by adjusted revenue less cost of revenue.

EBITDA Reconciliations

EBITDA (earnings before interest, income taxes, depreciation and amortization) and Adjusted EBITDA are widely used non-GAAP financial measures of operating performance. EBITDA margin represents EBITDA divided by revenues less cost of revenues (net revenue). It is presented as supplemental information that the company believes is useful to investors to evaluate its results because it excludes certain items that are not directly related to the company's core operating performance. EBITDA is calculated by adding back to net income interest expense, income tax expense, depreciation and amortization. Adjusted EBITDA is calculated by adding back to EBITDA acquisition-related expenses and impairment charges attributed to noncontrolling interest. EBITDA and Adjusted EBITDA should not be considered as substitutes either for net income, as an indicator of the company's operating performance, or for cash flow, as a measure of the company's liquidity. In addition, because EBITDA and Adjusted EBITDA may not be calculated identically by all companies, the presentation here may not be comparable to other similarly titled measures of other companies. Adjusted EBITDA margin represents Adjusted EBITDA divided by net revenue.

Table 5

(in millions)

Reconciliation of Net Income Allocated to Common Stockholders to EBITDA and Adjusted EBITDA
(Per Table 1)

Net income allocated to common stockholders

Interest expense, net

Income tax provision

Depreciation and amortization

EBITDA

EBITDA Margin

Non-GAAP adjustments not included in above line items

Acquisition-related expenses

Impairment charges attributed to noncontrolling interest

Adjusted EBITDA

Adjusted EBITDA Margin

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
\$	105.5	\$ 85.0	\$ 286.6	\$ 284.7
	8.2	9.6	28.1	28.5
	35.0	30.6	102.7	108.7
	42.9	50.3	133.8	154.9
\$	191.6	\$ 175.5	\$ 551.2	\$ 576.8
	65.2 %	64.9 %	64.3 %	65.4 %
	16.7	5.9	39.8	23.3
	—	—	(3.6)	—
\$	208.3	\$ 181.4	\$ 587.4	\$ 600.1
	70.9 %	67.1 %	68.6 %	68.0 %

Table 6

(in millions)

Reconciliation of Cash and cash equivalents to Adjusted Cash

Cash and cash equivalents

Financial investments

Less deferred compensation plan assets

Less cash collected for Section 31 Fees

Adjusted Cash

	September 30, 2019	December 31, 2018
\$	150.0	\$ 275.1
	21.4	35.7
	(20.9)	—
	—	(53.1)
\$	150.5	\$ 257.7

Table 7

(in millions)

Reconciliation of Net Transaction Fees – Three Months Ended September 30, 2019 and 2018

	Consolidated		Options Segment		U.S. Equities Segment		Futures Segment		European Equities Segment		Global FX Segment	
	Three Months Ended		Three Months Ended		Three Months Ended		Three Months Ended		Three Months Ended		Three Months Ended	
	September 30,		September 30,		September 30,		September 30,		September 30,		September 30,	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
Transaction fees	\$ 465.8	\$ 411.8	\$ 207.1	\$ 175.2	\$ 199.4	\$ 176.7	\$ 31.2	\$ 25.7	\$ 16.9	\$ 22.4	\$ 11.2	\$ 11.8
Liquidity payments	(269.7)	(229.2)	(86.9)	(68.2)	(177.6)	(152.7)	—	—	(5.2)	(8.3)	—	—
Routing and clearing	(9.3)	(8.7)	(3.5)	(3.5)	(5.8)	(5.2)	—	—	—	—	—	—
Net transaction fees	\$ 186.8	\$ 173.9	\$ 116.7	\$ 103.5	\$ 16.0	\$ 18.8	\$ 31.2	\$ 25.7	\$ 11.7	\$ 14.1	\$ 11.2	\$ 11.8

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