

# Third Quarter 2020 Earnings Presentation

October 30, 2020

### Agenda



**Strategic Review** 

**Financial Review** 

**Questions and Answers** 

**Edward Tilly** 

Chairman, President and Chief Executive Officer

#### **Brian Schell**

Executive Vice President, CFO and Treasurer

Edward Tilly Brian Schell

**Chris Isaacson** 

Executive Vice President and Chief Operating Officer

#### **John Deters**

Executive Vice President and Chief Strategy Officer

### Cautionary Statements Regarding Forward-Looking Information



This presentation 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.

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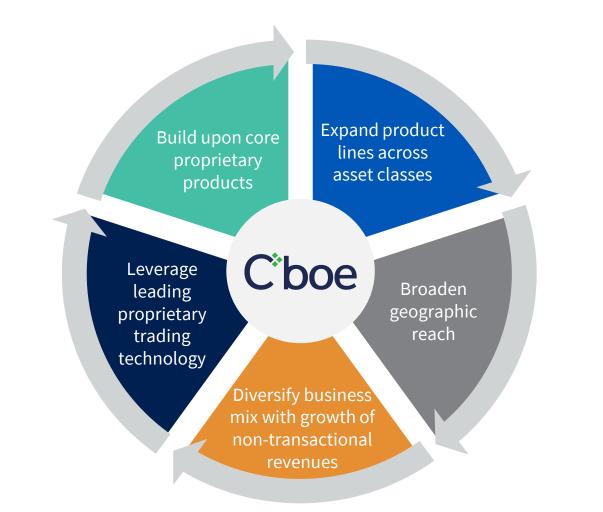




# Strategic Review Edward Tilly Chairman, President and CEO









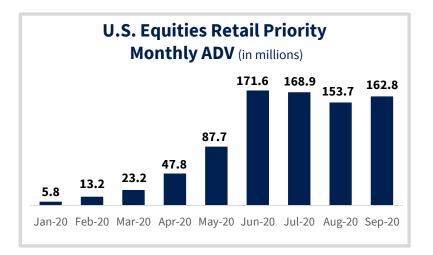
Expand product lines across asset classes / Broaden geographic reach

# N.A. Equities: Supporting Market Participants Through Innovative Offerings and Expanding Reach



#### Trading in U.S. Equities up 26% YoY in 3Q20

- Strong growth in Cboe Retail Priority on Cboe EDGX
  - Represented about 23% of Cboe EDGX trades in 3Q20
  - Record market share of 6.8% in 3Q20
- MATCHNow aligns with Cboe's global growth strategy
  - Diversifies product capabilities
  - Leverages scale of our business
  - Expands geographic presence



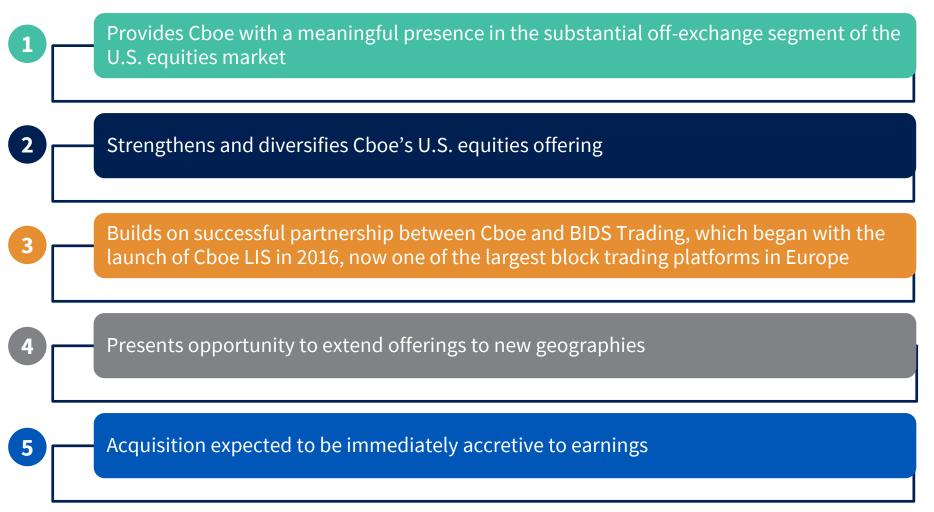
# A Cboe Global Markets Company



Expand product lines across asset classes / Extend offerings to New Geographies Cboe Global Markets Agrees to Acquire BIDS Trading<sup>1</sup>, C the Largest Independent U.S. Block Trading ATS



**Builds on Cboe's Key Strategic Growth Initiatives:** 



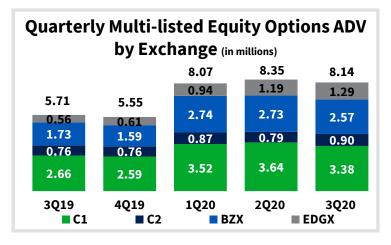
<sup>1</sup>Subject to regulatory review and other customary closing conditions

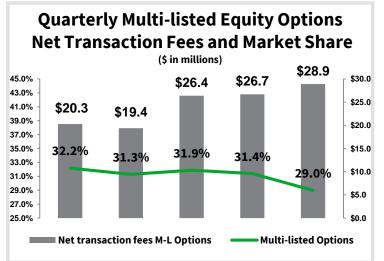


#### Leverage leading proprietary trading technology Leadership Position in Options; Leveraging Education Cooc and Innovative Product Offerings

#### ADV for multi-listed options up 42% YoY in 3Q20

- Multi-listed options up year-over-year across our four exchanges, led by retail engagement
- Committed to being a leader in the equity options space
- Focused on accessing and engaging the broad market
  - Acquisitions of Hanweck, FT Options and Trade Alert
  - Expansion of our Options Institute offering
  - Introduction of products for sophisticated retail market participants







#### The VIX® Index is used as a barometer for market uncertainty



- Average Daily closing value of **25.8** in 3Q20; **8.5** pts above average of **17.3** over last five years
- Uncertainty around election as measured by spread in volatility between September and October VIX future; 2020 spread more than double previous three election years
  - o **2020 5.35**
  - o 2016 2.15
  - o 2012 2.25
  - o 2008 1.29



#### Build upon core proprietary products Focus on Growing Proprietary Products



#### Ramping up marketing and education efforts

- Third quarter initiatives included:
  - Launched product focused webinars
  - Revamping our education website
  - Developing a new core derivatives education curriculum; launch planned for 1Q21
- Enhanced proprietary index product set:
  - Launched Mini VIX futures August 9<sup>th</sup>
  - Plan to move Mini SPX Index Options (XSP) to Cboe BZX; employ maker-taker pricing model aimed at enhancing market quality
  - Launched Cboe S&P 500 ESG Index Options in September





Diversify business mix with non-transactional revenues Information Solutions Provide Incremental Recurring Revenues; Support Trading of Proprietary Products



# Expanded offering contributing to strong organic and inorganic growth of proprietary recurring non-transaction revenue in 3Q20

#### **Cboe Information Solutions**



#### **Creating Tools to Navigate the Market**

- Global & cross-asset margin analytics
- Cboe theoretical values
- Implied vol and Greeks analytics
- Sophisticated portfolio risk analytics
- Implied credit / default probability data
- Index calculations, licensing and data
- Alpha generation tools
- Cross-asset OEMS platform
- Execution quality metrics
- Real-time market color, content and alerts
- Historical data sets and subscriptions



Broaden geographic reach Build upon core proprietary products

# Efforts to Launch Pan-European Derivatives<sup>1</sup> on Track

# Plan to introduce a transparent, efficient, lit pan-European derivatives market designed to expand derivatives trading in Europe

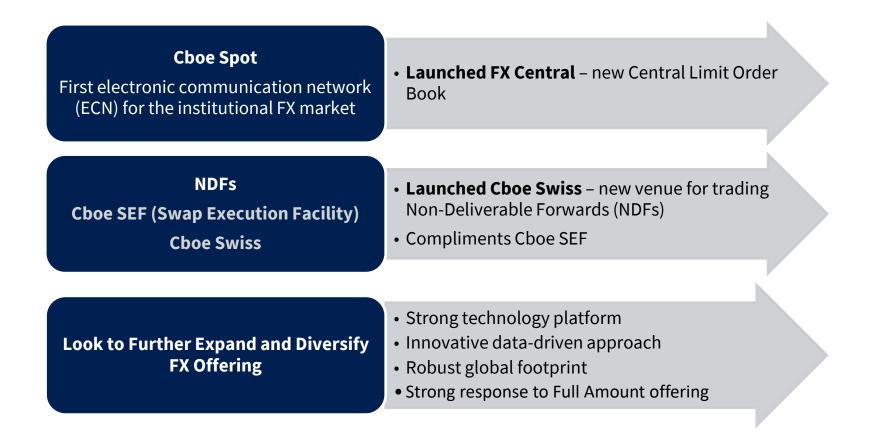


- On track to launch futures and options on six key European equity indices in first half of 2021
  - Platform available for early participant testing with customers
  - Secured commitments from major sell-side firms, market-makers and clearing firms to be participants
- Look to provide an alternative market model, enhancing the overall trading ecosystem





#### Leveraging Cboe's product innovation and technology expertise across markets



### Delivering on our Long-Term Growth Initiatives While Defining Markets Globally



Build upon Core Proprietary Products	<ul> <li>Launched Mini VIX Futures in August 2020</li> <li>Launched options on S&amp;P 500 ESG Index in September 2020</li> <li>Plan to re-launch XSP and move to BZX, maker-taker pricing</li> </ul>
Leverage Leading Proprietary Trading Technology	<ul> <li>Integration of information solutions acquisitions progressing</li> <li>Commenced integration of EuroCCP and technology build on track for launch of pan-European derivatives in 1H21</li> </ul>
Diversify Business Mix with Growth of Non-transactional Revenue	<ul> <li>Reported 14% growth in proprietary market data and access and capacity fees in 3Q20; 10% organic growth</li> <li>Acquisitions of Hanweck, FT Options and Trade Alert provide incremental recurring revenues</li> </ul>
Broaden Geographic Reach	<ul> <li>Acquisition of MATCHNow, a leading Canadian ATS, expands geographic presence and product capabilities</li> <li>Plan to launch pan-European derivatives in 1H21, subject to regulatory approval</li> </ul>
Expand Product Lines Across Asset Classes	<ul> <li>Pending acquisition of BIDS Trading will diversify equities offering<sup>1</sup></li> <li>Strong growth in Cboe Retail Priority; Plan to launch U.S. Periodic auctions order book, subject to regulatory approval</li> </ul>

<sup>1</sup>Subject to regulatory review and other customary closing conditions





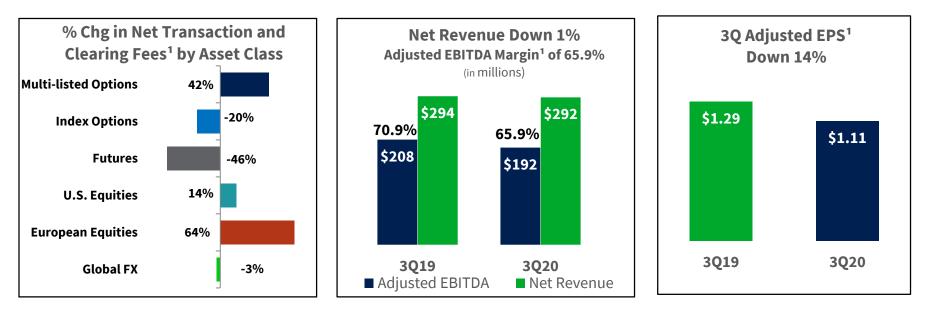
# Financial Overview and Guidance Brian Schell EVP, CFO and Treasurer



## Business Highlights – Key Performance Drivers



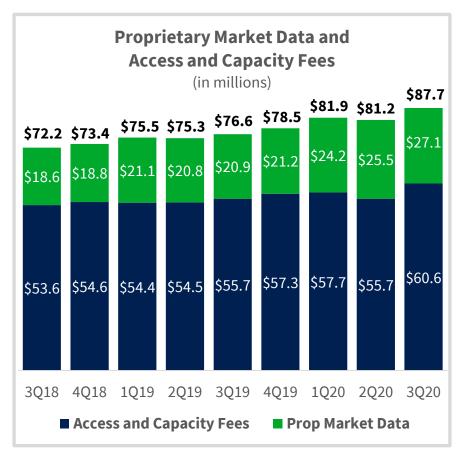
- Strong trading volumes in U.S. equities, multi-listed options and the addition of EuroCCP, offset by muted volume in index options and futures
- Net transaction and clearing fees<sup>1</sup> down 8%; non-transaction net revenue up 1%
- Adjusted operating expenses<sup>1</sup> up 13%, reflecting impact of acquisitions





#### Recurring proprietary non-transaction net revenue up 14%; organic growth of 10% YoY

- 3Q20 organic growth excludes \$5.0MM of revenue contributed from acquisitions and other items<sup>1</sup>
  - 11% organic growth in access and capacity fees
  - 8% organic growth in proprietary market data fees
- About 87% of organic proprietary market data revenue growth in 3Q20 driven by additional subscriptions
- About 86% of access and capacity fees in 3Q20 were attributable to incremental units





- Revenue increase primarily driven by:
  - Higher transaction fees from multi-listed options of \$8.6 million
  - Growth in proprietary market data revenue, with \$4.5 million from acquisitions
  - Increase in access and capacity fees of \$1.5 million
- RPC increase in index options primarily reflects shift in volume mix and impact of fee changes implemented in 1Q20
- Net transaction revenue down 9%; non-transaction revenue up 15%

<b>Options Selected</b> <b>Revenue Data</b> (\$ in millions)	3Q20	3Q19	Chg
Net Revenue	\$148.1	\$146.5	1%
Net transaction fees <sup>1</sup>	\$106.1	\$116.7	-9%
Index options	77.2	96.4	-20%
Multi-listed options	28.9	20.3	42%
Access and capacity	\$27.5	\$26.0	6%
Market data	\$19.8	\$13.8	43%
Market data – proprietary	12.1	7.0	73%
Market data – industry	7.7	6.8	13%

Options Key Operating Stats (in thousands, except RPC)	3Q20	3Q19	Chg
Total market share	32.4%	39.0%	-6.6%
Index options	98.9%	99.1%	-0.2 pts
Multi-listed options	29.0%	32.2%	-3.2 pts
Total ADV	9,569	7,720	24%
Index options	1,433	2,005	-29%
Multi-listed options	8,136	5,715	42%
Total RPC	\$0.173	\$0.236	-27%
Index options	\$0.842	\$0.751	12%
Multi-listed options	\$0.056	\$0.056	

<sup>1</sup>See appendix for "Non-GAAP Information."



- Revenue decrease driven by net transaction fees resulting from lower trading volume and RPC
- RPC decrease primarily reflects the introduction of mini VIX futures (one-tenth the size of standard VIX contract) and growth of iBoxx futures
  - RPC also reflects market maker incentives for mini VIX and iBoxx futures
  - Mini VIX futures ADV in 3Q20 of nearly 33,000 contracts, based on days traded

Futures Selected Revenue Data (\$ in millions)	3Q20	3Q19	Chg
Net Revenue	\$23.3	\$38.3	-39%
Net transaction fees <sup>1</sup>	\$16.8	\$31.2	-46%
Access and capacity	\$4.4	\$4.0	10%
Market data - proprietary	\$1.7	\$1.6	6%

Futures Key Operating Stats (in thousands, except RPC)	3Q20	3Q19	Chg
Total ADV	172	279	-38%
Total RPC	\$1.527	\$1.746	-13%



- Increase in net transaction fees offset somewhat by lower SIP market data revenue, reflecting lower market share and decrease in SIP audit recoveries
- Net transaction fees reflect higher U.S. equities trading volume offset somewhat by lower net capture, reflecting fee changes implemented to capture market share

N.A. Equities Selected Revenue Data (\$ in millions)	3Q20	3Q19	Chg
Net Revenue	\$75.8	\$75.4	1%
Net transaction fees <sup>1</sup>	\$18.2	\$16.0	14%
Market data	\$34.3	\$37.7	-9%
Market data - SIP <sup>2</sup>	24.7	28.6	-14%
Market data – proprietary	9.6	9.1	5%
Access and capacity fees	\$21.2	\$20.1	5%

N.A. Equities Key Operating Stats	3Q20	3Q19	Chg
<b>U.S. Equities</b> (shares in billions)			
Total market share	15.1%	17.2%	-2.1 pts
Market ADV	9.9	6.9	43%
ADV (matched shares)	1.5	1.2	25%
Net capture (per 100 touched shares)	\$0.017	\$0.020	-15%
<b>Canadian Equities</b> (shares in millions; Canadian Dollars)			
Touched market share – TSX listed	4.7%		
ADV (matched shares)	40.0		
Net capture (per 10,000 touched shares)	\$8.200		

<sup>1</sup>See appendix for "Non-GAAP Information."

<sup>2</sup>Includes \$0.9 million in 3Q20 and \$4.3 million in 3Q19 for SIP audit recoveries.

European Equities 3Q20 Net Revenue Up 47% on Local Currency Basis, Reflecting Addition of EuroCCP



- Net revenue increase includes \$10.3 million contribution from EuroCCP
- On local currency basis, net transaction and clearing fees increased 59% and nontransaction revenue increased 30%
- Decline in net transaction fees driven by lower overall industry volume and lower market share, offset somewhat by higher net capture

European Equities Selected Revenue Data (in millions)	3Q20	3Q19	Chg (\$)	Chg (£)	European Equities Key Operating Stats	3Q20	3Q19	Chg
Net Revenue (\$)	\$31.6	\$20.7	53%	47%	Total market share	17.7%	19.8%	-2.1 pts
Net transaction and	440.0		<b>6 4</b> 0/	500/	Market ADNV ( in billions)	€31.5	€34.2	-8%
clearing fees <sup>1</sup>	\$19.2	\$11.7	64%	<b>59%</b>	Net capture (per matched			
Net transaction fees	10.5	11.7	-10%	-14%	notional value, in bps)	0.245	0.233	5%
Net clearing fees	8.7		NM	NM				
Access and capacity fees	\$5.4	\$3.9	38%	28%				
Market data	\$3.5	\$3.0	17%	8%				
Other	\$3.5	\$2.1	67%	65%				

<sup>1</sup>See appendix for "Non-GAAP Information."

<sup>2</sup>Includes trade reporting

NM = not meaningful



- Revenue increase driven by higher non-transaction revenue
- FX continues to made solid progress in expanding its footprint and diversifying its revenue streams, introducing new order types and products, including:
  - Launch of Cboe Swiss, a new venue
  - Addition of FX Central, a new order book launched earlier this year

	3Q20	3Q19	Change
FX Net Revenue (in millions)	\$13.2	\$13.1	1%
Net transaction fees	10.9	11.2	-3%
Non-transaction revenue	2.3	1.9	21%
Key Operating Statistics:			
Market share <sup>1</sup>	15.9%	14.1%	1.8 pts
Average Daily Notional Value (\$ in billions)	\$30.2	\$30.3	
Net capture (per one million dollars traded)	\$2.70	\$2.80	-4%

<sup>1</sup>Market share represents Cboe FX volume divided by the total volume of publicly reporting spot FX venues (Cboe FX, EBS, Refinitiv, and FastMatch).

### 3Q20 Adjusted Operating Expenses Up 13%; Primarily Reflects Acquisitions



- Expense increases primarily driven by addition of EuroCCP and other acquisitions:
  - \$10 million increase in compensation and benefits, reflecting:
    - \$4 million increase in compensation expenses related to acquisitions
    - \$2 million increase in benefits
    - \$3 million increase due to lower capitalized wages, resulting from technology migration
  - \$14 million of increase attributable to acquisitions

Adjusted Operating Expenses <sup>1</sup> (in millions)	3Q20	3Q19	% Chg
Compensation and benefits	\$59.2	\$49.7	19%
Depreciation and amortization <sup>1</sup>	8.6	9.5	-9%
Technology support services	15.1	10.6	42%
Professional fees and outside services	15.8	17.5	-10%
Travel and promotional	1.2	2.7	-56%
Facilities costs	4.5	2.7	67%
Other expenses	4.5	3.8	18%
Total <sup>1</sup>	\$108.9	\$96.5	13%

<sup>1</sup>Adjusted to reflect the impact of certain items. See Appendix for "Non-GAAP Information."

Updated Guidance: 2020 Adjusted Operating Expenses

- Decrease reflects lower expenses related to compensation costs, including incentive compensation, professional fees, technology services and travel and promotional expenses
- C1 migration in October 2019 key contributor to lower expenses in 2020
- Detailed expense bridge from 2019 to 2020 available on slide 30

<b>2020 Full-Year Adjusted Operating Expenses Guidance <sup>1</sup></b> (\$ in millions)	Guidance Range	
Guidance range at July 31, 2020	\$436	\$444
Incremental cost savings projected	(21)	(21)
Narrowed expense range		(3)
Guidance range at October 30, 2020	\$415	\$420

<sup>1</sup>Adjusted to reflect the impact of certain items. See Appendix for "Non-GAAP Information."

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<b>2020 Full-Year Guidance <sup>1, 2</sup></b> (\$ in millions)	2020 Guidance as of October 30, 2020	2020 Guidance as of July 31, 2020
Adjusted operating expenses <sup>3</sup>	\$415 to \$420	\$436 to \$444
Depreciation and amortization (excluding amortization of acquired intangible assets)	\$32 to \$36	\$34 to \$38
Effective tax rate on adjusted earnings	27.0% to 29.0%	26.5% to 28.5%
Capital expenditures	\$45 to \$50	\$65 to \$70

'See "Non-GAAP Information" in the appendix for reconciliations

<sup>2</sup>Guidance includes acquisitions completed through September 30, 2020, and investment in launching pan-European trading and clearing.

<sup>3</sup>Adjusted operating expenses exclude acquisition-related expenses and amortization of acquired intangible assets. The amortization of acquired intangible assets was \$139 million for 2019 and is now expected to be \$124 million for 2020, up from prior guidance of \$120 million . Adjustments included in the non-GAAP reconciliation.



#### Preserving balance sheet flexibility is a priority

- Invest in growth of our business
- Return capital through dividends and opportunistic share repurchases
  - Returned \$386MM in dividends and share repurchases through 3Q20; share repurchases of \$32MM in October (thru 29<sup>th</sup>) and repurchase availability of \$256MM
  - Raised third quarter dividend by 17% to \$0.42 per share

<b>Debt Outstanding</b> (\$ in millions)	Sept. 30, 2020	June 30, 2020	Mar. 31, 2020	Dec. 30, 2019	Sept. 30, 2019
3.650% Senior Notes (10Y; Due 2027)	\$650	\$650	\$650	\$650	\$650
Revolving Credit Agreement	70	-	-	-	-
Term Loan Facility	225	225	225	225	225
Total Debt (Gross)	\$ 945	\$ 875	\$ 875	\$ 875	\$ 875
Debt to EBITDA TTM <sup>1</sup>	1.1x	<b>1.0</b> x	<b>1.0</b> x	<b>1.2x</b>	1.1x
Adjusted Cash & Financial Investments <sup>1</sup>	\$213	\$176	\$137	\$208	\$151
Dividends Paid	\$45.8	\$39.5	\$40.0	\$40.1	\$40.4
Share Repurchases	\$41.8	\$99.8	\$119.5	\$69.5	\$52.4

### Leveraging Cboe's Strong Value Proposition While Defining Markets Globally



Diverse and Unique Product Set	<ul> <li>Growth in multi-listed options and cash equities drove revenue growth in 3Q20 despite muted volume in proprietary products</li> </ul>
Exposure to Large, Underpenetrated Market Segments	<ul> <li>Reported growth of 14% in non-transactional proprietary market data and access and capacity fees in 3Q20; 10% organic growth</li> <li>Focused on growing proprietary products globally</li> </ul>
Highly Scalable Business Model, Coupled with Disciplined Expense Management	<ul> <li>Disciplined expense management and efficiency of technology</li> <li>Integration progress of information solutions acquisitions</li> <li>Commenced integration of EuroCCP and plan to launch Pan-European derivatives<sup>1</sup> in 1H21</li> </ul>
Strong Track Record of Financial Results and Efficient Capital Allocation	<ul> <li>Returned capital through dividends and share repurchases</li> <li>Focused on maintaining balance sheet flexibility</li> <li>Leverage ratio at 1.1x at September 30, 2020</li> </ul>





# **Questions & Answers**





# **Appendix Materials**

### Updated Guidance for 2020 Adjusted Operating Expenses; Cboe Detailed Bridge from 2019 to 2020 as of October 30, 2020

2020 Guidance Reduced by \$21 million in 3Q20 to \$415 to \$420 million <sup>1</sup> (\$ in millions)											
2019 Adjusted Operating Expenses <sup>1</sup>	\$ 389	G	uidan	ce R	ange						
Core growth of 4-5% assumed Feb. 7, 2020		\$	16	\$	20						
Reduction in expense guidance			(44)		(44)						
Narrowed guidance range					(3)						
Core decline of about 7% assumed as of Oct. 30			(28)		(27)						
Realized synergies projected			(18)		(18)						
Growth net of synergies			(46)		(45)						
Full year of Brexit readiness costs			3		3						
2019 non-recurring items			6		6						
Software development expensed vs capitalized			7		8						
Real estate overlap			7		8						
Incentive compensation			10		11						
Acquisition of Hanweck, FT Options and Trade Alert			15		16						
Acquisition of EuroCCP/derivatives launch/MatchNow			24		24						
Total		\$	26	\$	31						
2020 Guidance as of October 30, 2020		\$	415	\$	420						

<sup>1</sup>Adjusted to reflect the impact of certain items. See Appendix for "Non-GAAP Information."

Adjusted Operating Expenses Bridge from 2019 to 2020



Adjusted Financial Results <sup>1</sup> (\$ in millions, except per share)	3Q20	3Q19	% Chg
Net Revenue <sup>2</sup>	\$292.0	\$294.0	-1%
Adjusted Operating Expenses <sup>1</sup>	108.9	96.5	13%
Adjusted Operating Income <sup>1</sup>	\$183.1	\$197.5	-7%
Adjusted Operating Margin <sup>1</sup>	62.7%	67.2%	-4.5 pp
Adjusted Net Income Allocated to Common Stockholders <sup>1</sup>	\$120.5	\$144.6	-17%
Adjusted Diluted EPS <sup>1</sup>	\$ 1.11	\$ 1.29	-14%
Adjusted EBITDA <sup>1</sup>	\$192.4	\$208.3	-8%
Adjusted EBITDA Margin <sup>1</sup>	65.9%	70.9%	-5.0 pp

<sup>1</sup>Adjusted to reflect the impact of certain items. See Appendix for "Non-GAAP Information."

<sup>2</sup>Net revenue referenced in this presentation represents revenue less cost of revenue.



#### 3Q20 net transaction fees down 8%; non-transaction net revenue up 1%

<b>Net Revenue</b> (in millions)	3Q20	3Q19	% Chg
Net transaction and clearing fees <sup>1</sup>	\$171.2	\$186.8	-8%
Access and capacity fees	60.6	55.7	9%
Market data fees	59.5	56.3	6%
Regulatory fees	8.4	8.7	-3%
Royalty fees	(17.6)	(22.9)	-23%
Other revenue	9.9	9.4	5%
Total	\$292.0	\$294.0	-1%

<sup>1</sup>See Appendix for "Non-GAAP Information."

# Supplemental Segment Information



<b>3Q20 Supplemental Net Revenue</b> <b>by Segment</b> (in millions)	Options	U.S. Equities	Futures	European Equities	Global FX	Total <sup>1</sup>
Net transaction and clearing fees <sup>2</sup>	\$106.1	\$18.2	\$16.8	\$19.2	\$10.9	\$171.2
Proprietary net transaction fees included above	\$77.2		\$16.8			\$94.0
Access and capacity fees	\$27.5	\$21.2	\$4.4	\$5.4	\$2.1	\$60.6
Market data fees	\$19.8	\$34.3 <sup>3</sup>	\$1.7	\$3.5	\$0.2	\$59.5
Proprietary market data fees included above	\$12.1	\$9.6	\$1.7	\$3.5	\$0.2	\$27.1

<b>3Q19 Supplemental Net Revenue</b> <b>by Segment</b> (in millions)	Options	U.S. Equities	Futures	European Equities	Global FX	Total <sup>1</sup>
Net transaction fees <sup>2</sup>	\$116.7	\$16.0	\$31.2	\$11.7	\$11.2	\$186.8
Proprietary net transaction fees included above	\$96.4		\$31.2			\$127.6
Access and capacity fees	\$26.0	\$20.1	\$4.0	\$3.9	\$1.7	\$55.7
Market data fees	\$13.8	\$37.7 <sup>3</sup>	\$1.6	\$3.0	\$0.2	\$56.3
Proprietary market data fees included above	\$7.0	\$9.1	\$1.6	\$3.0	\$0.2	\$20.9

<sup>1</sup>Totals may not foot due to rounding.

<sup>2</sup>A full reconciliation of our non-GAAP results to our GAAP results is included in the following tables. See "Non-GAAP Information" in the accompanying financial tables. <sup>3</sup>Includes \$0.9 million and \$4.3 million in SIP audit recoveries for 3Q20 and 3Q19, respectively.



# Non-GAAP Information

#### 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 presentation include net transaction and clearing fees, adjusted operating expenses, adjusted operating income, adjusted operating margin, adjusted net income allocated to common stockholders and adjusted diluted earnings per share, adjusted tax rate, 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 presentation, 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.

#### Non-GAAP Information

For the Three Months Ended	Op	tions	U.S. E	quities	Fut	ures	European	Equities	Glob	al FX	Total			
March 31 (in millions)	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019		
Transaction fees	\$ 284.2	\$ 173.8	\$ 304.0	\$ 198.9	\$ 35.9	\$ 24.6	\$ 22.3	\$ 21.1	\$ 15.1	\$ 12.0	\$ 661.5	\$ 430.4		
Liquidity payments	(124.3)	(65.5)	(261.4)	(170.7)	-	-	(6.7)	(7.5)	-	-	(392.4)	(243.7)		
Routing and clearing	(4.5)	(3.5)	(11.5)	(5.7)	-	-	-	-	-	-	(16.0)	(9.2)		
Net transaction fees	\$ 155.4	\$ 104.8	\$ 31.1	\$ 22.5	\$ 35.9	\$ 24.6	\$ 15.6	\$ 13.6	\$ 15.1	\$ 12.0	\$ 253.1	\$ 177.5		
For the Three Months Ended	Op	tions	U.S. E	quities	Fut	ures	European	Equities	Glob	al FX	Tot	al		
June 30 (in millions)	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019		
Transaction fees	\$ 250.8	\$ 185.9	\$ 325.1	\$ 182.0	\$ 15.8	\$ 28.3	\$ 15.2	\$ 19.5	\$ 11.4	\$ 11.2	\$ 618.3	\$ 426.9		
Liquidity payments	(132.0)	(73.3)	(279.4)	(156.2)	-	-	(4.2)	(6.3)	-	-	(415.6)	(235.8)		
Routing and clearing	(5.0)	(3.5)	(12.7)	(5.7)	-	-	-	-	-	-	(17.7)	(9.2)		
Net transaction fees	\$ 113.8	\$ 109.1	\$ 33.0	\$ 20.1	\$ 15.8	\$ 28.3	\$ 11.0	\$ 13.2	\$ 11.4	\$ 11.2	\$ 185.0	\$ 181.9		
			N.A. Equities		Futures		<b>European Equities</b>				Total			
For the Three Months Ended	Ор	tions	N.A. E	quities	Fut	ures	European	Equities	Glob	al FX	Tot	al		
For the Three Months Ended September 30 (in millions)	Op 2020	tions 2019	N.A. E 2020	quities 2019	Fut 2020	ures 2019	European 2020	Equities 2019	Glob 2020	al FX 2019	Tot 2020	al 2019		
	· ·						•	•		0				
September 30 (in millions)	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019		
September 30 (in millions) Transaction and clearing fees	<b>2020</b> \$ 241.4	<b>2019</b> \$ 207.1	<b>2020</b> \$ 253.0	<b>2019</b> \$ 199.4	2020	<b>2019</b> \$ 31.2	<b>2020</b> \$ 23.4	<b>2019</b> \$ 16.9	2020	2019	<b>2020</b> \$ 545.5	<b>2019</b> \$ 465.8		
September 30 (in millions) Transaction and clearing fees Liquidity payments	<b>2020</b> \$ 241.4 (130.1)	<b>2019</b> \$ 207.1 (86.9)	<b>2020</b> \$ 253.0 (225.1)	<b>2019</b> \$ 199.4 (177.6)	2020	<b>2019</b> \$ 31.2 -	<b>2020</b> \$ 23.4	<b>2019</b> \$ 16.9 (5.2)	2020	2019	<b>2020</b> \$ 545.5 (359.4)	<b>2019</b> \$ 465.8 (269.7)		
September 30 (in millions) Transaction and clearing fees Liquidity payments Routing and clearing	<b>2020</b> \$ 241.4 (130.1) (5.2) <b>\$ 106.1</b>	<b>2019</b> \$ 207.1 (86.9) (3.5)	<b>2020</b> \$ 253.0 (225.1) (9.7) <b>\$ 18.2</b>	<b>2019</b> \$ 199.4 (177.6) (5.8)	<pre>2020 \$ 16.8 \$ 16.8</pre>	2019 \$ 31.2 - -	<b>2020</b> \$ 23.4 (4.2)	2019 \$ 16.9 (5.2) - \$ 11.7	2020 \$ 10.9 - \$ - \$ 10.9	<b>2019</b> \$ 11.2 - -	<b>2020</b> \$ 545.5 (359.4) (14.9)	<ul> <li>&gt; 2019</li> <li>\$ 465.8</li> <li>(269.7)</li> <li>(9.3)</li> <li>\$ 186.8</li> </ul>		
September 30 (in millions) Transaction and clearing fees Liquidity payments Routing and clearing Net transaction and clearing fees	<b>2020</b> \$ 241.4 (130.1) (5.2) <b>\$ 106.1</b>	2019           \$ 207.1           (86.9)           (3.5)           \$ 116.7	<b>2020</b> \$ 253.0 (225.1) (9.7) <b>\$ 18.2</b>	<pre>2019 \$ 199.4 (177.6) (5.8) \$ 16.0</pre>	<pre>2020 \$ 16.8 \$ 16.8</pre>	≥019       \$     31.2       -     -       \$     31.2	<b>2020</b> \$ 23.4 (4.2) - <b>\$ 19.2</b>	2019 \$ 16.9 (5.2) - \$ 11.7	2020 \$ 10.9 - \$ - \$ 10.9	<pre>2019 \$ 11.2</pre>	2020           \$ 545.5           (359.4)           (14.9)           \$ 171.2	<ul> <li>&gt; 2019</li> <li>\$ 465.8</li> <li>(269.7)</li> <li>(9.3)</li> <li>\$ 186.8</li> </ul>		
September 30 (in millions) Transaction and clearing fees Liquidity payments Routing and clearing Net transaction and clearing fees For the Three Months Ended	2020 \$ 241.4 (130.1) (5.2) \$ 106.1 Op	2019 \$ 207.1 (86.9) (3.5) \$ 116.7 tions	2020 \$ 253.0 (225.1) (9.7) \$ 18.2 U.S. E	2019 \$ 199.4 (177.6) (5.8) \$ 16.0 quities	2020 \$ 16.8 - \$ 16.8 Fut	2019 \$ 31.2 - \$ 31.2 ures	2020 \$ 23.4 (4.2) - \$ 19.2 European	2019 \$ 16.9 (5.2) \$ 11.7 Equities	2020 \$ 10.9 - - \$ 10.9	2019 \$ 11.2 - \$ 11.2 val FX	2020 \$ 545.5 (359.4) (14.9) \$ 171.2 Tot	2019 \$ 465.8 (269.7) (9.3) \$ 186.8 :al		
September 30 (in millions) Transaction and clearing fees Liquidity payments Routing and clearing Net transaction and clearing fees For the Three Months Ended December 31 (in millions)	2020 \$ 241.4 (130.1) (5.2) \$ 106.1 Op	2019 \$ 207.1 (86.9) (3.5) \$ 116.7 tions 2019	2020 \$ 253.0 (225.1) (9.7) \$ 18.2 U.S. E	2019 \$ 199.4 (177.6) (5.8) \$ 16.0 quities 2019	2020 \$ 16.8 - \$ 16.8 Fut	2019 \$ 31.2 - \$ 31.2 ures 2019	2020 \$ 23.4 (4.2) - \$ 19.2 European	2019 \$ 16.9 (5.2) 	2020 \$ 10.9 - - \$ 10.9	2019 \$ 11.2 - \$ 11.2 val FX 2019	2020 \$ 545.5 (359.4) (14.9) \$ 171.2 Tot	2019 \$ 465.8 (269.7) (9.3) \$ 186.8 cal 2019		
September 30 (in millions) Transaction and clearing fees Liquidity payments Routing and clearing Net transaction and clearing fees For the Three Months Ended December 31 (in millions) Transaction and clearing fees	2020 \$ 241.4 (130.1) (5.2) \$ 106.1 Op	2019 \$ 207.1 (86.9) (3.5) \$ 116.7 tions 2019 \$ 177.2	2020 \$ 253.0 (225.1) (9.7) \$ 18.2 U.S. E	2019 \$ 199.4 (177.6) (5.8) \$ 16.0 quities 2019 \$ 164.3	2020 \$ 16.8 - \$ 16.8 Fut	2019 \$ 31.2 - \$ 31.2 ures 2019	2020 \$ 23.4 (4.2) - \$ 19.2 European	2019 \$ 16.9 (5.2) <b>\$ 11.7</b> <b>\$ 11.7</b> <b>Equities</b> <b>2019</b> \$ 15.6	2020 \$ 10.9 - - \$ 10.9	2019 \$ 11.2 - \$ 11.2 val FX 2019	2020 \$ 545.5 (359.4) (14.9) \$ 171.2 Tot	2019 \$ 465.8 (269.7) (9.3) \$ 186.8 cal 2019 \$ 394.2		

#### Reconciliation of Net Transaction and Clearing Fees by Segment

Non-GAAP Information								
(in millions, except per share amounts)	1Q19	2Q19	3Q19	4Q19	2019	1Q20	2Q20	3Q20
Reconciliation of Net Income Allocated to Common Stockholders to Non-GAAP								
Net income allocated to common stockholders	\$ 94.6	\$ 87.6	\$ 105.5	\$ 86.1	\$ 372.7	\$ 157.0	\$ 113.3	\$ 109.6
Acquisition-related expenses (1)	2.3	20.8	16.7	8.7	48.5	0.8	9.4	6.2
Amortization of acquired intangible assets (2)	37.6	34.1	33.4	33.4	138.5	32.5	30.0	30.9
Provision for notes receivable (3)	-	-	-	23.4	23.4	-	-	6.7
Total Non-GAAP operating expense adjustments	39.9	54.9	50.1	65.5	210.4	33.3	39.4	43.8
Bargain purchase gain (4)								(32.6
Change in redemption value of noncontrolling interest	0.2	0.2	0.1	-	0.5	-	-	-
Total Non-GAAP adjustments - pretax	40.1	55.1	50.2	65.5	210.9	33.3	39.4	11.2
Income tax expense related to the items above	(10.0)	(13.2)	(11.0)	(16.5)	(50.7)	(7.6)	(9.3)	(8.0
Deferred tax remeasurements	-	-	-	-	-	-	-	7.7
Impairment charges attributed to noncontrolling interest	-	(3.6)	-	-	(3.6)	-	-	-
Net income allocated to participating securities - effect on reconciling items	(0.2)	(0.2)	(0.1)	(0.2)	(0.7)	(0.4)	(0.1)	-
Adjusted net income allocated to common stockholders	\$ 124.5	\$ 125.7	\$ 144.6	\$ 134.9	\$ 528.6	\$ 182.3	\$ 143.3	\$ 120.5
Reconciliation of Diluted EPS to Non-GAAP								
Diluted earnings per common share	\$ 0.85	\$ 0.78	\$ 0.94	\$ 0.77	\$ 3.34	\$ 1.42	\$ 1.03	\$ 1.01
Per share impact of non-GAAP adjustments noted above	0.26	0.35	0.35	0.44	1.39	0.23	0.28	0.10
Adjusted diluted earnings per common share	\$ 1.11	\$ 1.13	\$ 1.29	\$ 1.21	\$ 4.73	\$ 1.65	\$ 1.31	\$ 1.11
Reconciliation of Operating Margin to Non-GAAP								
Revenue less cost of revenue	\$ 280.5	\$ 283.2	\$ 294.0	\$ 280.3	\$ 1,136.9	\$ 358.3	\$ 296.9	\$ 292.0
Non-GAAP adjustments noted above	-	-	-	-	-	-	-	-
Adjusted revenue less cost of revenue	\$ 280.5	\$ 283.2	\$ 294.0	\$ 280.3	\$ 1,136.9	\$ 358.3	\$ 296.9	\$ 292.0
Operating expenses (5)	\$ 134.0	\$ 158.0	\$ 146.6	\$ 161.1	\$ 599.7	\$ 131.9	\$ 135.2	\$ 152.7
Non-GAAP expense adjustments noted above	(39.9)	(54.9)	(50.1)	(65.5)	(210.4)	(33.3)	(39.4)	(43.8
Adjusted operating expenses	\$ 94.1	\$ 103.1	\$ 96.5	\$ 95.6		\$ 98.6	\$ 95.8	\$ 108.9
Operating income	\$ 146.5	\$ 125.2	\$ 147.4	\$ 119.2	\$ 537.2	\$ 226.4	\$ 161.7	\$ 139.3
Non-GAAP expense adjustments noted above	39.9	54.9	50.1	65.5	210.4	33.3	39.4	43.8
Adjusted operating income	\$ 186.4	\$ 180.1	\$ 197.5	\$ 184.7	\$ 747.6	\$ 259.7	\$ 201.1	\$ 183.1
Adjusted operating margin (6)	66.5%	63.6%	67.2%	65.9%	65.8%	72.5%	67.7%	62.7%
Reconciliation of Income Tax Rate to Non-GAAP								
Income before income taxes	\$ 127.8	\$ 119.6	\$ 140.9	\$ 114.2	\$ 501.4	\$ 217.5	\$ 156.6	\$ 163.4
Non-GAAP adjustments noted above	40.1	55.1	50.2	65.5	210.9	33.3	39.4	11.2
Adjusted income before income taxes	\$ 167.9	\$ 174.7	\$ 191.1	\$ 179.7	\$ 712.3	\$ 250.8	\$ 196.0	\$ 174.6
Income tax (benefit) expense	\$ 32.6	\$ 35.1	\$ 35.0	\$ 27.9	\$ 130.6	\$ 60.1	\$ 43.0	\$ 53.5
Non-GAAP adjustments noted above	10.0	13.2	11.0	16.5	50.7	7.6	9.3	0.3
Adjusted income tax (benefit) expense	\$ 42.6	\$ 48.3	\$ 46.0	\$ 44.4		\$ 67.7	\$ 52.3	\$ 53.8
Adjusted income tax rate	25.4%	27.7%	24.1%	24.7%		•		30.8%

(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) This amount represents the provision for notes receivable, recorded in other expenses on the consolidated statements of income, associated with the funding for the development of the consolidated audit trail ("CAT").

(4) This amount represents the bargain purchase gain related to the acquisition of EuroCCP on July 1, 2020.

(5) The company sponsors deferred compensation plans held in a rabbi trust. The expenses or income related to the deferred compensation plans are included in "Compensation and benefits" (\$1.0 million and \$30 thousand in expense for the three months ended September 30, 2020 and 2019, respectively, and \$1.1 million and 3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$30 thousand in income, expenses and dividends in the three months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 30, 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 2020 and 2019, respectively, and \$1.1 million and \$3.7 million in the nine months ended September 2020 and 2019, respectively), on the condensed 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."

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

#### **Non-GAAP Information**

#### **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 net income interest expense, provision for notes receivable, bargain purchase gain 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 margin represents Adjusted EBITDA and Adjusted EBITDA margin represents Adjusted EBITDA and Adjusted EBITDA margin represents Adjusted EBITDA divided by net revenue.

Reconciliation of Net Income Allocated to Common Stockholders to EBITDA and Ajdusted EBITDA
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(in millions, except per share amounts)	10	219	2Q19	3Q19	4Q19	2019	1Q20	2Q20	3Q20
Net income allocated to common stockholders	\$ 9	4.6	\$ 87.6	\$ 105.5	\$ 86.1	\$ 372.7	\$ 157.0	\$ 113.3	\$ 109.6
Interest expense	1	9.9	10.0	8.2	7.8	35.9	7.3	7.3	9.5
Income tax provision	3	2.6	35.1	35.0	27.9	130.6	60.1	43.0	53.5
Depreciation and amortization	4	7.2	43.7	42.9	42.8	176.6	 40.5	38.0	39.5
EBITDA	\$ 18	4.3	\$ 176.4	\$ 191.6	\$ 164.6	\$ 715.8	\$ 264.9	\$ 201.6	\$ 212.1
EBITDA Margin	65	7%	62.3%	65.2%	58.7%	63.0%	73.9%	67.9%	72.6%
Non-GAAP adjustments not included in above line items									
Acquisition-related expenses		2.3	20.8	16.7	8.7	\$ 48.5	0.8	9.4	6.2
Impairment charges attributed to noncontrolling interest		-	(3.6)	-	-	(3.6)	-	-	-
Provision for notes receivable		-	-	-	23.4	23.4	-	-	6.7
Bargain purchase gain		-	-	-	-	-	-	-	(32.6)
Adjusted EBITDA	\$ 18	5.6	\$ 193.6	\$ 208.3	\$ 196.7	\$ 784.1	\$ 265.7	\$ 211.0	\$ 192.4
Adjusted EBITDA Margin	66	5%	68.4%	70.9%	70.2%	69.0%	 74.2%	71.1%	65.9%

#### Non-GAAP Information

(in millions)	4	4Q19		1Q20	2 <b>Q</b> 20		3 <b>Q</b> 20	LTM
Net income allocated to common stockholders	\$	86.1	\$	157.0	\$ 113.3	\$	109.6	\$ 466.0
Interest expense, net		7.8		7.3	7.3		9.5	31.9
Income tax provision		27.9		60.1	43.0		53.5	184.5
Depreciation and amortization		42.8		40.5	38.0		39.5	160.8
EBITDA	\$	164.6	\$	264.9	\$ 201.6	\$	212.1	\$843.2
Non-GAAP adjustments not included in above line items:								
Acquisition-related expenses		8.7		0.8	9.4		6.2	25.1
Provision for notes receivable		23.4		-	-		6.7	30.1
Bargain purchase gain		-		-	-		(32.6)	(32.6)
Adjusted EBITDA	\$	196.7	\$	265.7	\$ 211.0	\$	192.4	\$ 865.8
Debt at end of period								\$ 945.0
Debt to EBITDA								1.1x

<sup>1</sup>A full reconciliation of our non-GAAP to our GAAP results are available in this section.

#### **Adjusted Cash**

Adjusted cash is a non-GAAP measure and represents cash and cash equivalents plus financial investments minus deferred compensation plan assets and cash collected for Section 31 fees, which will need to be remitted in the near term. We have presented adjusted cash because we consider it an important supplemental measure of our liquidity and believe that it is frequently used by analysts, investors and other interested parties in the evaluation of companies.

Adjusted Cash (in millions)	-	As of /31/19	As of 30/19	As of 30/19	As of 2/31/19	_	As of 31/20	 As of /30/20	As of 30/20
Cash and cash equivalents	\$	346.2	\$ 161.3	\$ 150.0	\$ 229.3	\$	165.2	\$ 210.1	\$ 212.7
Financial investments		30.2	82.9	21.4	71.0		43.6	176.5	22.8
Less deferred compensation plan assets		-	(20.3)	(20.9)	(23.4)		(18.4)	(20.9)	(22.3)
Less cash collected for Section 31 fees		(28.6)	(88.0)	-	(69.0)		(53.1)	(189.4)	-
Adjusted Cash	\$	347.8	\$ 135.9	\$ 150.5	\$ 207.9	\$	137.3	\$ 176.3	\$ 213.2

Reconciliation of Organic Growth for Recurring Proprietary Non-transaction Net Revenue								
(in millions)	2Q20	2Q19	% Chg	3Q20	3Q19	% Chg		
Access and capacity fees	\$55.7	\$54.5		\$60.6	\$55.7			
Proprietary market data	25.5	20.8		27.1	20.9			
Total reported	\$81.2	\$75.3	8%	\$87.7	\$76.6	14%		
Less: acquisitions - access and capacity fees				(0.4)				
Less: acquisitions - market data	(3.5)			(4.6)				
Less: impact of reporting changes		(1.4)		-	(1.5)			
Less: fee realignments due to floor closing		(3.5)			-			
Organic growth	\$77.7	\$70.4	10%	\$82.7	\$75.1	10%		

Reconciliation of Revenue Less Cost of Revenue to Organic Revenue Less Cost of Revenue									
Net Revenue (in millions)	3Q20	3Q19	YTD	YTD					
Revenue less cost of revenue (net revenue)	\$292.0	\$294.0	\$947.2	\$856.6					
Acquisition revenue less cost of revenue	(16.6)	-	(23.3)	-					
Organic net revenue	\$275.4	\$294.0	\$923.9	\$856.6					

#### Trademarks

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