

# Cboe Global Markets, Inc.

**Recommendation** BUY ★ ★ ★ ★ ★

**Price** USD 113.83 (as of market close May 14, 2021) **12-Mo. Target Price** USD 118.00 **Report Currency** USD **Investment Style** Mid-Cap Blend

**Equity Analyst** Chris Kuiper, CFA

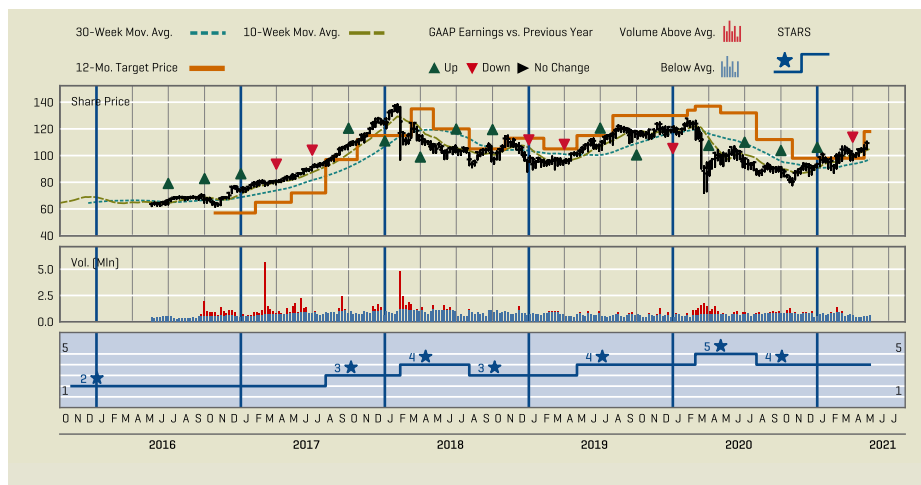
**GICS Sector** Financials  
**Sub-Industry** Financial Exchanges and Data

**Summary** CBOE Global Markets, Inc. offers trading in options and futures on equities, indexes, and exchange-traded funds.

**Key Stock Statistics** (Source: CFRA, S&P Global Market Intelligence (SPGMI), Company Reports)

52-Wk Range	<b>USD 113.83 - 78.47</b>	Oper.EPS2021E	<b>USD 5.30</b>	Market Capitalization[B]	<b>USD 12.14</b>	Beta	<b>0.65</b>
Trailing 12-Month EPS	<b>USD 4.11</b>	Oper.EPS2022E	<b>USD 5.46</b>	Yield [%]	<b>1.48</b>	3-yr Proj. EPS CAGR[%]	<b>5</b>
Trailing 12-Month P/E	<b>27.69</b>	P/E on Oper.EPS2021E	<b>21.48</b>	Dividend Rate/Share	<b>USD 1.68</b>	SPGMI's Quality Ranking	<b>A-</b>
USD 10K Invested 5 Yrs Ago	<b>18,142.0</b>	Common Shares Outstg.[M]	<b>107.00</b>	Institutional Ownership [%]	<b>82.0</b>		

**Price Performance**



Source: CFRA, S&P Global Market Intelligence

Past performance is not an indication of future performance and should not be relied upon as such.

Analysis prepared by Chris Kuiper, CFA on Apr 30, 2021 04:05 PM ET, when the stock traded at USD 104.99.

**Highlights**

- ▶ We see revenue (less costs) increasing 8%-10% in 2021 given a rise in trading and recurring revenues, as well as acquisitions, moderating to 2%-4% organic growth in 2022 and beyond. Option revenue declined 4% Y/Y in Q1 as average daily volume (ADV) increased 18%, offset by a 24% decline in rate per contract (RPC). Futures revenue was down 24% on lower volume [-23%] and RPC [-6%], due to mini-VIX futures added in 2020, while U.S. equity revenue rose 11%.
- ▶ CBOE's proprietary index and VIX futures products are down on a Y/Y as Q1 2020 was exceptionally strong but are showing Q/Q growth [VIX futures up 63% and VIX options up 29%]. We continue to believe VIX and SPX options remain important hedging vehicles and will continue to be a strong source of growth when volatility returns.
- ▶ CBOE had realized the majority of the synergies with the BATS acquisition, but operating expenses ramped back up with the BIDS and EuroCCP acquisition (adjusted operating margins down 6.6 percentage points Y/Y to 65.9% in Q1 2021). However, we see margins expanding again as the acquisitions are digested.

**Investment Rationale/Risk**

- ▶ Our Buy recommendation is based on our view that expectations for CBOE are relatively low with current share prices only embedding mid-single digit top-line growth and stable margins, both of which we think could be exceeded. We think investors are underestimating the potential for volatility to return in 2021 given what we see as frothy markets that are becoming increasingly fragile amid a still unfolding recession. Additionally, we are seeing institutional investors starting to reengage with CBOE's products after a year of refraining. We like CBOE's dominant position in the options market and see traders and investors continuing to go to CBOE's proprietary products for risk management and speculation.
- ▶ Risks to our opinion and target price include increased competition, increasing regulation, lower-than-anticipated volume in options and/or investigations regarding CBOE's products.
- ▶ Our 12-month target of \$118 is equal to a forward P/E of 22.3x our 2021 EPS estimate, still below the market exchange peer average of 26.1x. Our target price is based on a discounted cash flow model assuming mid-single-digit top-line growth and modestly expanding operating margins given CBOE's economies of scale.

**Analyst's Risk Assessment**

LOW	MEDIUM	HIGH
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Our risk assessment reflects potential volatility in results due to changes in options pricing or trading volumes. Other fundamental risks are tied to proposed changes that may jeopardize derivative products. This is offset by CBOE's dominant market share of approximately 40% for the options market and nearly 20% market share of U.S. equities trading with the BATS acquisition.

**Revenue/Earnings Data**

Revenue (Million USD)	1Q	2Q	3Q	4Q	Year
2022	E 346	E 344	E 347	E 349	E 1,385
2021	1,011	E 332	E 328	E 331	E 1,344
2020	922	869	793	844	3,427
2019	602	621	675	599	2,496
2018	778	668	576	748	2,769
2017	356	641	611	621	2,229

**Earnings Per Share (USD)**

	1Q	2Q	3Q	4Q	Year
2022	E 1.38	E 1.34	E 1.34	E 1.40	E 5.46
2021	1.27	E 1.27	E 1.24	E 1.26	E 5.30
2020	1.42	1.31	1.01	0.80	4.27
2019	0.84	0.78	0.94	0.78	3.34
2018	1.04	0.73	0.76	1.23	3.76
2017	0.16	0.60	0.53	2.26	3.69

Fiscal Year ended Dec 31. EPS Estimates based on CFRA's Operating Earnings; historical GAAP earnings are as reported in Company reports.

**Dividend Data**

Amount (USD)	Date Decl.	Ex-Div. Date	Stk. of Record	Payment Date
0.4200	--	Feb 25	Feb 26	Mar 15 '21
0.4200	Oct 28	Nov 27	Nov 30	Dec 15 '20
0.4200	Aug 14	Aug 27	Aug 28	Sep 15 '20
0.3600	--	May 28	May 29	Jun 15 '20

Dividends have been paid since 2010. Source: Company reports

**Past performance is not an indication of future performance and should not be relied upon as such.**

Forecasts are not reliable indicator of future performance.

## Cboe Global Markets, Inc.

## Business Summary Apr 30, 2021

**CORPORATE OVERVIEW.** Cboe Global Markets or "Cboe" is one of the world's largest exchange holding companies and is the largest options exchange in the U.S. with nearly 40% market share and the third largest stock exchange operator by volume. Cboe offers trading in options, futures, U.S. and European equities, exchange-traded products (ETPs), global foreign exchange (FX) and multi-asset volatility products based on the Cboe Volatility Index (VIX Index).

Cboe [formerly the Chicago Board of Options Exchange] was founded in 1973 and became the first marketplace for trading listed options. On June 18, 2010, the Chicago Board Options Exchange converted from a non-stock corporation owned by its members into a stock corporation that is a wholly owned subsidiary of CBOE Holdings.

**BUSINESS SEGMENTS.** Cboe's business is organized into five segments. 1) Options includes the options exchange business, which includes trading of options on market indexes (including the VIX Index), options on non-exclusive options such as stocks, and options on ETPs; 2) U.S. Equities includes listed cash equities and ETP transaction services; 3) Futures includes trading of futures on the VIX Index, Bitcoin and other futures; 4) European Equities; and 5) Global FX.

Cboe's revenue is primarily derived from transaction fees on the contracts or shares traded on its various exchanges. Approximately 70% of operating revenues were generated by transaction fees. These fees are a product of both the volume traded as well as the rate per contract.

**COMPETITIVE LANDSCAPE.** CBOE is the largest options exchange in the U.S. based on both total contract volume and notional value of contracts traded. Its market share for all options traded on U.S. exchanges is nearly 40%. It competes with options exchanges operated by Nasdaq (approximately 36% market share) as well as the NYSE (owned by ICE), which has approximately 17% market share, as well as smaller players such as the Miami Exchange (8% market share) and BOX Options (3%). Cboe is number three in U.S. equities market share (with 16% following NYSE and NASDAQ at 21% and 19%, respectively) and number one in the Pan-European equities market, with approximately 16% market share.

Cboe's competitive advantage lies in its proprietary products. Its most popular proprietary products are the SPX options (options on the S&P 500 Index) and VIX options and futures. The VIX was created in 1993 and has become one of the most watched barometers of market volatility, often known as the "fear index." VIX futures began trading in 2004 and VIX options were launched in 2006. Cboe has exclusive right to offer options contracts on the S&P 500 index, the S&P 100 Index and the S&P Select Sector Indexes as a result of its licensing arrangement with S&P Dow Jones Indices. This exclusive license with S&P is through the end of 2032. Cboe also has exclusive licenses with various FTSE Russell Indexes, MSCI Indexes and the Dow Jones Industrial Average Index.

**IMPACT OF MAJOR DEVELOPMENTS.** On February 6, 2019, shares of CBOE plunged more than 10% in one day due to the implosion of various VIX-related exchange traded products. While the forced liquidation and nearly total loss of these products was due to their poor structuring and not the VIX contracts themselves, nevertheless this caused investors to re-evaluate the growth prospects for VIX contracts and related products. While Cboe does not disclose the exact amount of its revenue directly tied to its VIX products, it does note that in 2018 nearly 65% of its net transaction fees were generated by futures and index options, of which the "overwhelming majority" were generated by exclusively-licensed products and products based on the VIX methodology, such as the S&P 500 Index options and VIX Index options and futures.

On September 26, 2016, CBOE announced that an agreement to acquire Bats in a cash and stock transaction valued at approximately \$32.50 per Bats share, or a total of approximately \$3.2 billion, consisting of 31% cash and 69% CBOE Holdings stock, based on CBOE Holdings' closing stock price of \$70.30 per share on September 23, 2016. The acquisition closed on February 28, 2017. Not only has Bats given Cboe the number two position in equity trading in the U.S., but Cboe also acquired Bats' leading proprietary technology, which features very low latency, higher speed, and greater scalability. Cboe continues to integrate the technology into its options platform, eventually creating a single platform for all customers. As of Q2 2018, the C2 options platform was recently migrated to Bats technology and the entire transition is expected to be done by October 7, 2019.

**FINANCIAL TRENDS.** The transition to the Bats technology platform was completed in October 2019 with all of Cboe's options, futures, and equity exchanges now run on the same technology, giving Cboe's clients a single trading experience across all markets. Run-rate expense synergies came in ahead of schedule and targets. For example, at the time of the announcement, CBOE estimated it would realize \$50 million in annualized expense synergies, increasing to approximately \$65 million within five years following closing. As of Q1 2020, it expects \$82 million by 2020 and \$85 million in expense synergies by 2021.

CBOE has ample liquidity, in our view, to meet its product development programs. Previous to the Bats acquisition, CBOE had no debt, but then secured \$1.65 billion in debt to finance the cash portion of the acquisition. However, as of Q2 2020 debt has been decreased to approximately \$900 million. We think Cboe's balance sheet is reasonable at 31% debt-to-equity and 0.7x net debt-to-EBITDA compared to the peer average of 2.1x. We think Cboe will continue to generate ample cash flow to either continue reducing debt, return to shareholders, or both.

## Corporate information

## Investor contact

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## Office

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## Telephone

312 786 5600

## Fax

N/A

## Website

www.cboe.com

## Officers

## Executive VP, General Counsel &amp; Corporate Secretary

J. P. Sexton

## Senior VP &amp; Chief Accounting Officer

J. M. Griebenow

## Executive VP &amp; COO

C. A. Isaacson

## Chairman, President &amp; CEO

E. T. Tilly

## Executive VP &amp; Chief Technology Officer

E. S. Crampton

## Executive VP, CFO &amp; Treasurer

B. N. Schell

## Chairman, President &amp; CEO

E. T. Tilly

## Chairman, President &amp; CEO

E. T. Tilly

## Board Members

A. J. Maturri

E. J. Fitzpatrick

E. S. Sunshine

E. T. Tilly

F. J. Tomczyk

I. K. Fong

J. E. Parisi

J. E. Sommers

J. J. McPeck

J. P. Froetscher

J. P. Ratterman

J. R. Goodman

M. L. Richter

R. A. Palmore

W. M. Farrow

## Domicile

Delaware

## Founded

1973

## Employees

1,010

## Stockholders

136

## Auditor

KPMG LLP - Klynveld Peat Marwick Goerdeler



# Cboe Global Markets, Inc.

## Sub-Industry Outlook

We have a neutral fundamental outlook on the financial exchanges & data sub-industry for the next 12 months. Our outlook for the exchanges is positive, but is offset by a negative outlook for data providers, largely driven by a negative fundamental view of the credit rating agencies.

Trading activity is likely to still grow in 2021 for the big exchanges, but be moderately lower after a robust year in 2020. We previously moved our outlook to positive as we forecasted volatility would return, which it did with the outbreak of Covid-19. We maintain a positive view for 2021 as we see continued growth in trading of equities and derivatives. While markets make new highs and exchanges benefit from record IPO issuance, we also see a chance for volatility to return in 2021 as investors reassess what we see as elevated valuations against a still recovering economy.

Exchanges with more exposure to cash equity products may fare better with the rise in volatility. We note that exchanges with significant exposure to interest rate products previously benefited from the uncertainty regarding the Federal Reserve interest rate moves. But with the Fed now indicating rates will stay low for the next year or longer, there has been a severe decline in demand for these hedging products.

Another industry disrupter is dark pool providers, which are grabbing market share from the NYSE and NASDAQ. The share of trading done in dark pools, or off-exchange markets, has gone from 27% in 2008 to approximately 40% today.

We see some exchanges seeking to diversify their revenue sources with non-transaction, recurring data subscriptions rather than be subject to market volume fluctuations. However, there is a growing resistance and even lawsuits against exchanges pertaining to data sold to high-frequency traders and their seemingly excessive high cost.

We continue to monitor the rise of cryptocurrency futures and whether they will bring a new source of trading revenue for exchanges. While CBOE abandoned Bitcoin futures, ICE has now

successfully launched new futures and is the first to offer custody and physical settlement in Bitcoin. CME has added Bitcoin options on its existing futures and is set to introduce mini-bitcoin futures contracts starting May 3, 2021.

Data providers, largely the rating agencies, have fared well given the record amount of debt issuance as corporations and governments took advantage of record low interest rates. Debt issuance surged in the wake of Covid-19 as companies scrambled to raise cash and build up as much liquidity as possible to combat the economic downturn. However, we think debt issuance will start to slow as many companies likely pulled forward their debt issuance. We note corporate debt-to-GDP is off its high of 57% in Q2 2020, but still elevated at 52% as of Q4 2020, which is much higher than the past two credit cycle peaks of 45%. Therefore, we think debt issuance levels will slow even further, which is the largest driver of revenue for credit rating agencies.

The Financial Exchanges & Data sub-industry was up 2.8% year-to-date as of March 31, 2021, compared to the Financials sector up 15.7% and the S&P 1500 up 6.5%. For the full-year 2020, the sub-industry rose 17.9%, compared to the Financials sector down 4.4% and the S&P 1500 up 15.8%.

**/ Chris Kuiper, CFA**

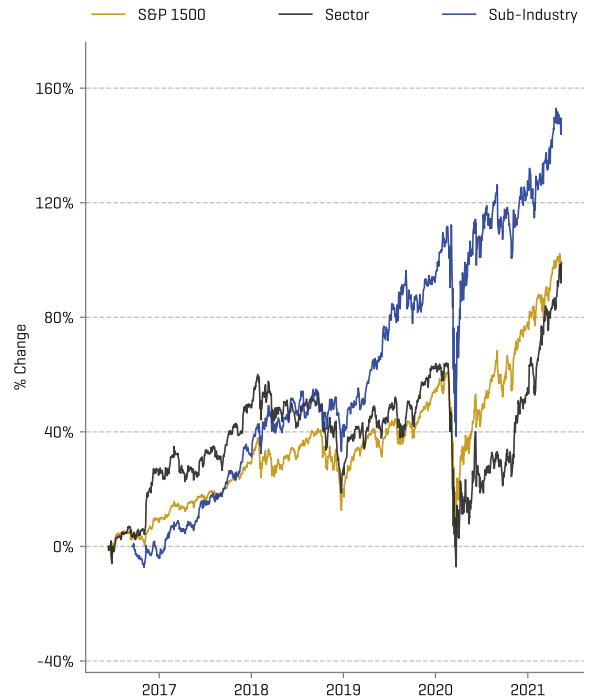
## Industry Performance

### GICS Sector: Financials

### Sub-Industry: Financial Exchanges and Data

Based on S&P 1500 Indexes

Five-Year market price performance through May 15, 2021



NOTE: A sector chart appears when the sub-industry does not have sufficient historical index data.

All Sector & Sub-Industry information is based on the Global Industry Classification Standard (GICS).

Past performance is not an indication of future performance and should not be relied upon as such.

**Source: CFRA, S&P Global Market Intelligence**

## Sub-Industry: Financial Exchanges and Data Peer Group\*: Financial Exchanges and Data

Peer Group	Stock Symbol	Exchange	Currency	Recent Stock Price	Stk. Mkt. Cap. [M]	30-Day Price Chg. [%]	1-Year Price Chg. [%]	P/E Ratio	Fair Value Calc.	Yield [%]	Return on Equity [%]	LTD to Cap [%]
<b>Cboe Global Markets, Inc.</b>	<b>CBOE</b>	<b>BATS</b>	<b>USD</b>	<b>113.66</b>	<b>12,126.0</b>	<b>12.6</b>	<b>15.9</b>	<b>27.0</b>	<b>N/A</b>	<b>1.5</b>	<b>14.0</b>	<b>27.0</b>
ASX Limited	ASXFY	OTCPK	USD	56.48	10,657.0	2.4	6.7	28.0	N/A	N/A	13.1	1.9
Euronext N.V.	EUXT.F	OTCPK	USD	100.10	7,591.0	-2.8	10.8	18.0	N/A	N/A	31.7	54.0
FactSet Research Systems Inc.	FDS	NYSE	USD	328.53	12,436.0	5.5	17.7	34.0	248.98	1.0	47.5	47.8
Japan Exchange Group, Inc.	JPXGY	OTCPK	USD	11.12	11,879.0	-13.6	14.5	13.0	N/A	N/A	16.4	5.2
MarketAxess Holdings Inc.	MKTX	NasdaqGS	USD	452.22	17,177.0	-16.2	-10.4	58.0	N/A	0.6	34.7	7.8
Morningstar, Inc.	MORN	NasdaqGS	USD	246.58	10,590.0	6.1	70.2	48.0	N/A	0.5	19.0	30.9
Open Lending Corporation	LPRO	NasdaqGM	USD	33.87	4,274.0	-11.1	N/A	NM	N/A	N/A	-201.6	83.2
Singapore Exchange Limited	SPXC.Y	OTCPK	USD	115.75	8,070.0	4.2	12.2	351.0	N/A	N/A	40.3	4.2
TMX Group Limited	TMXX.F	OTCPK	USD	110.07	6,109.0	1.7	21.8	27.0	N/A	2.3	7.9	18.1
Tradeweb Markets Inc.	TW	NasdaqGS	USD	82.44	16,628.0	4.8	37.5	94.0	N/A	0.4	4.5	0.5

\*For Peer Groups with more than 10 companies or stocks, selection of issues is based on market capitalization.

NA-Not Available; NM-Not Meaningful.

Note: Peers are selected based on Global Industry Classification Standards and market capitalization. The peer group list includes companies with similar characteristics, but may not include all the companies within the same industry and/or that engage in the same line of business.

**Cboe Global Markets, Inc.****Analyst Research Notes and other Company News****April 30, 2021**

03:37 PM ET... CFRA Reiterates Buy Opinion on Shares of Cboe Global Markets, Inc. [CBOE 106.02\*\*\*\*]:

We raise our target price by \$20 to \$118 per share based on our DCF analysis assuming mid-single-digit top-line growth and moderately expanding margins. We raise our 2021 EPS estimate by \$0.17 to \$5.30 and by \$0.10 to \$5.46 for 2022. CBOE reported Q1 adjusted EPS of \$1.53 vs. \$1.65, \$0.13 above consensus on revenue that was up 2% Y/Y and 4% above expectations. Option revenue was down 4% as average daily trading volume was up 18%, offset by rates per contract down 24%. Futures revenue was down 24% as volume and rates were lower while American Equities revenue was the bright spot, up 11%, while Europe contributed 61% growth due to the EuroCCP acquisition. While volumes looked lackluster on a Y/Y basis, we note this was against strong Q1 2020 volumes; Q/Q volumes were much higher and more indicative of future growth ahead in our opinion. We think expectations for shares are low and see CBOE exceeding them with higher top line growth given expansion and higher trading as well as expanding margins. / Chris Kuiper, CFA

**February 05, 2021**

02:13 PM ET... CFRA Reiterates Buy Opinion on Shares of Cboe Global Markets, Inc. [CBOE 89.99\*\*\*\*]:

We maintain our target price of \$98 per share based on our DCF analysis assuming mid-single-digit top-line growth and stable margins. We raise our 2021 EPS estimate by \$0.15 to \$5.13 and by \$0.30 to \$5.36 for 2022. CBOE reported Q4 adjusted EPS of \$1.21 vs. \$1.21, \$0.02 below consensus on revenue that was up 10% Y/Y and in-line with consensus. Option revenue was up 17% as average daily trading volume was up 41% but offset by rates per contract down 19%. Futures revenue was down 30% as volume and rates were lower while American Equities revenue shrank 2%. We were disappointed with the continued market share decline in both options and equities, but think shares have now declined to the point where expectations are low and think CBOE could surpass them, especially if volatility rises in 2021 or institutional buying comes back in. We note in January volume has already increased markedly in VIX futures and options. / Chris Kuiper, CFA

**October 30, 2020**

02:08 PM ET... CFRA Reiterates Buy Opinion on Shares of Cboe Global Markets, Inc. [CBOE 79.22\*\*\*\*]:

We trim our target price by \$14 to \$98, equal to 19.7x our 2021 EPS estimate. We maintain our 2020 EPS estimate of \$5.22, trim our 2021 estimate by \$0.02 to \$4.98, and start 2022 at \$5.06. CBOE reported Q3 adjusted EPS of \$1.11 vs. \$1.29, \$0.04 above consensus. Option revenue was up 1% as average daily volume [ADV] increases of 24% were offset by a 27% decline in rate per contract [RPC]; market share was 32% vs. 39% a year ago. Futures revenue declined 39% as ADV tumbled 38% and was compounded by a 13% drop in RPC due to the launch of mini VIX futures. Equity revenue grew 1% but market share is now at 15% vs. 17% a year ago. CBOE has adjusted prices to try to maintain market share but faces competition from three exchanges that launched in September. CBOE has benefitted from the influx in retail trading, but this has been offset by a decline in institutional trading. However, we find shares attractive as expectations appear to be low with the potential for institutional volume to return along with volatility. / Chris Kuiper, CFA

**October 16, 2020**

03:59 PM ET... CFRA Reiterates Buy Opinion on Shares of Cboe Global Markets, Inc. [CBOE 83.75\*\*\*\*]:

Today CBOE announced it has agreed to acquire BIDS Trading, an alternative trading system [ATS] or "dark-pool" operator. BIDS is the 9th largest ATS by total number of shares traded but is number one in large block trading. With CBOE's market share in U.S. equities trading slowing being eroded, we are not surprised to see it make the acquisition [over 40% of all equity trading volume is now done off-exchange]. We therefore view the move as more defensive, but given CBOE's previous partnership with BIDS [they launched a large block trading platform in Europe in 2016], it could also spur more international growth. CBOE may also be feeling the pressure of three new competing equity exchanges going live last month. Terms were not disclosed, except that the deal is expected to be immediately accretive to earnings [contributing \$0.05 to \$0.06 in adj. EPS in 2021], and will be funded with debt. BIDS will operate as an independently managed venue, and is expected to close early 2021, subject to regulatory review. / Chris Kuiper, CFA

**July 31, 2020**

11:51 AM ET... CFRA Lowers Opinion on Shares of Cboe Global Markets to Buy from Strong Buy [CBOE 86.89\*\*\*\*]:

We lower our target price by \$20 to \$112, equal to 22.4x our 2021 EPS estimate, near the peer average and CBOE's 10-year historical forward PE average. We trim our 2020 EPS estimate by \$0.04 to \$5.22 and by \$0.33 to \$5.00 for 2021. CBOE reported Q2 adjusted EPS of \$1.31 vs. \$1.13, \$0.07 above consensus on revenue that met expectations. Total revenue was up 4.8% YoY, driven by strong 22% growth in U.S. Equities and 7% growth in Options, but partially offset by a 36% decline in futures revenue. Somewhat paradoxically, average daily volume [ADV] in CBOE's proprietary products [VIX futures, options, and index options] were down 21% YoY for Q2 and down 42% from the previous quarter as the Covid-19 uncertainty has resulted in institutional investors staying on the sidelines and raising cash, rather than increasing usage of CBOE's products to manage risk as we previously predicted. For this reason, and the fact that we see equity trading competition increasing, we are tempering our outlook and reducing our opinion. / Chris Kuiper, CFA

**May 01, 2020**

12:42 PM ET... CFRA Reiterates Strong Buy Opinion on Shares of Cboe Global Markets, Inc. [CBOE 99.38\*\*\*\*]:

We trim our target price by \$5 to \$132, equal to 24.8x our 2021 EPS estimate. We raise our 2020 EPS estimate by \$0.32 to \$5.26 and keep 2021 at \$5.33. CBOE reported Q1 adjusted EPS of \$1.65 vs. \$1.11, \$0.11 above consensus. As expected, CBOE has been a beneficiary of the Covid-19 volatility with average daily volume [ADV] up 51%, setting a new quarterly record and only partially offset by a 3% decline in revenue per contract. Total revenue climbed 28% while expenses were up only 5%, resulting in an impressive adjusted operating margin of 72.5%, up 770bps from Q1 2019. We remain positive on CBOE's positioning with its proprietary VIX and SPY derivatives, which remain one of the foremost products for hedging and speculating in times of stress. Index options and VIX futures were up 44% for Q1, but we think investors still underappreciate the shift in volatility that we think will last through the end of the year as the Covid-19 situation remains in flux. / Chris Kuiper, CFA

**February 27, 2020**

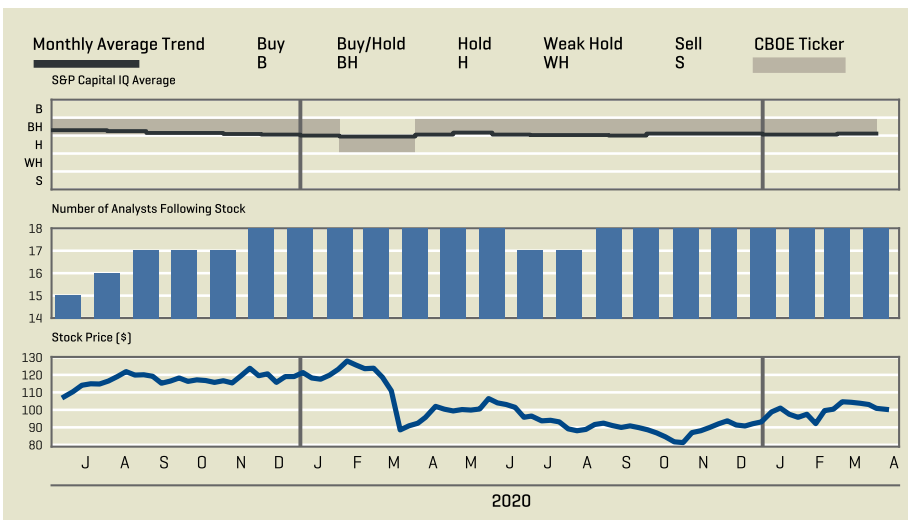
09:42 AM ET... CFRA Raises Opinion on Shares of Cboe Global Markets to Strong Buy from Buy [CBOE 123.81\*\*\*\*]:

We raise our target price by \$3 to \$137, equal to 27.7x our 2020 EPS estimate and still below the peer average of 32.4x. Our target price is based on a discounted cash flow model assuming 7% revenue growth in 2020, slowing to 5% growth with moderately expanding margins given CBOE's continued cost cutting and scale. We think the recent surge in market volatility, kicked off by the coronavirus, confirms our thesis that we may be experiencing a regime shift in volatility after years of investor complacency, helped by geopolitical tensions and an election year. We think investors will flock to Cboe's proprietary VIX and other risk management products, with volumes likely to exceed expectations. We also see Cboe recapturing market share in equity trading as it launches its closing exchange on March 6. / Chris Kuiper, CFA

Note: Research notes reflect CFRA's published opinions and analysis on the stock at the time the note was published. The note reflects the views of the equity analyst as of the date and time indicated in the note, and may not reflect CFRA's current view on the company.

# Cboe Global Markets, Inc.

## Analysts Recommendations



## Wall Street Consensus Opinion

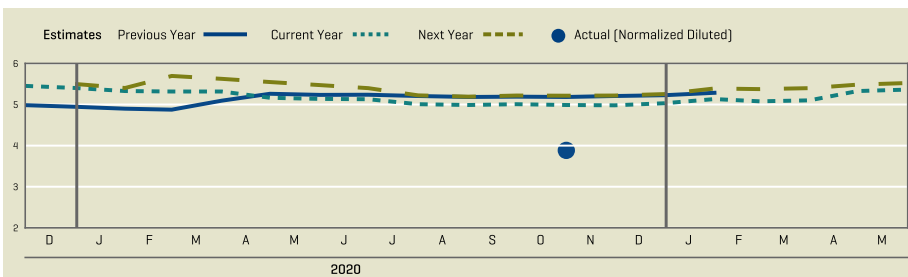
Buy/Hold

### Wall Street Consensus vs. Performance

For fiscal year 2021, analysts estimate that CBOE will earn USD 5.36. For fiscal year 2022, analysts estimate that CBOE's earnings per share will grow by 2.95% to USD 5.52.

	No. of Recommendations	% of Total	1 Mo.Prior	3 Mos.Prior
Buy	6	32	6	6
Buy/Hold	1	5	1	0
Hold	9	47	9	10
Weak hold	2	11	2	2
Sell	0	0	0	0
No Opinion	1	5	0	0
Total	19	100	18	18

## Wall Street Consensus Estimates



Fiscal Year	Avg Est.	High Est.	Low Est.	# of Est.	Est. P/E
2022	5.52	5.94	5.16	18	20.59
2021	5.36	5.57	5.10	17	21.20
<b>2022 vs. 2021</b>	<b>▲ 3%</b>	<b>▲ 7%</b>	<b>▲ 1%</b>	<b>▲ 6%</b>	<b>▼ -3%</b>
Q2'22	1.35	1.44	1.29	8	84.11
Q2'21	1.30	1.39	1.25	15	87.12
<b>Q2'22 vs. Q2'21</b>	<b>▲ 4%</b>	<b>▲ 3%</b>	<b>▲ 3%</b>	<b>▼ -47%</b>	<b>▼ -3%</b>

Forecasts are not reliable indicator of future performance.

Note: A company's earnings outlook plays a major part in any investment decision. S&P Global Market Intelligence organizes the earnings estimates of over 2,300 Wall Street analysts, and provides their consensus of earnings over the next two years, as well as how those earnings estimates have changed over time. Note that the information provided in relation to consensus estimates is not intended to predict actual results and should not be taken as a reliable indicator of future performance.

**Note: For all tables, graphs and charts in this report that do not cite any reference or source, the source is S&P Global Market Intelligence.**

# Choe Global Markets, Inc.

## Glossary

### STARS

Since January 1, 1987, CFRA Equity and Fund Research Services, and its predecessor S&P Capital IQ Equity Research has ranked a universe of U.S. common stocks, ADRs [American Depositary Receipts], and ADSs [American Depositary Shares] based on a given equity's potential for future performance. Similarly, we have ranked Asian and European equities since June 30, 2002. Under proprietary STARS (Stock Appreciation Ranking System), equity analysts rank equities according to their individual forecast of an equity's future total return potential versus the expected total return of a relevant benchmark [e.g., a regional index [MSCI AC Asia Pacific Index, MSCI AC Europe Index or S&P 500® Index]], based on a 12-month time horizon. STARS was designed to meet the needs of investors looking to put their investment decisions in perspective. Data used to assist in determining the STARS ranking may be the result of the analyst's own models as well as internal proprietary models resulting from dynamic data inputs.

### S&P Global Market Intelligence's Quality Ranking

[also known as **S&P Capital IQ Earnings & Dividend Rankings**] - Growth and S&P Capital IQ Earnings & Dividend Rankings stability of earnings and dividends are deemed key elements in establishing S&P Global Market Intelligence's earnings and dividend rankings for common stocks, which are designed to capsize the nature of this record in a single symbol. It should be noted, however, that the process also takes into consideration certain adjustments and modifications deemed desirable in establishing such rankings. The final score for each stock is measured against a scoring matrix determined by analysis of the scores of a large and representative sample of stocks. The range of scores in the array of this sample has been aligned with the following ladder of rankings:

A+	Highest	B	Below Average
A	High	B-	Lower
A	Above	C	Lowest
B+	Average	D	In Reorganization
NC	Not Ranked		

### EPS Estimates

CFRA's earnings per share (EPS) estimates reflect analyst projections of future EPS from continuing operations, and generally exclude various items that are viewed as special, non-recurring, or extraordinary. Also, EPS estimates reflect either forecasts of equity analysts; or, the consensus [average] EPS estimate, which are independently compiled by S&P Global Market Intelligence, a data provider to CFRA. Among the items typically excluded from EPS estimates are asset sale gains; impairment, restructuring or merger-related charges; legal and insurance settlements; in process research and development expenses; gains or losses on the extinguishment of debt; the cumulative effect of accounting changes; and earnings related to operations that have been classified by the company as discontinued. The inclusion of some items, such as stock option expense and recurring types of other charges, may vary, and depend on such factors as industry practice, analyst judgment, and the extent to which some types of data is disclosed by companies.

### 12-Month Target Price

The equity analyst's projection of the market price a given security will command 12 months hence, based on a combination of intrinsic, relative, and private market valuation metrics, including Fair Value.

### CFRA Equity Research

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### Abbreviations Used in Equity Research Reports

CAGR	- Compound Annual Growth Rate
CAPEX	- Capital Expenditures
CY	- Calendar Year
DCF	- Discounted Cash Flow
DDM	- Dividend Discount Model
EBIT	- Earnings Before Interest and Taxes
EBITDA	- Earnings Before Interest, Taxes, Depreciation & Amortization
EPS	- Earnings Per Share
EV	- Enterprise Value
FCF	- Free Cash Flow
FFO	- Funds From Operations
FY	- Fiscal Year
P/E	- Price/Earnings
P/NAV	- Price to Net Asset Value
PEG Ratio	- P/E-to-Growth Ratio
PV	- Present Value
R&D	- Research & Development
ROCE	- Return on Capital Employed
ROE	- Return on Equity
ROI	- Return on Investment
ROIC	- Return on Invested Capital
ROA	- Return on Assets
SG&A	- Selling, General & Administrative Expenses
SOTP	- Sum-of-The-Parts
WACC	- Weighted Average Cost of Capital

**Dividends on American Depositary Receipts (ADRs) and American Depositary Shares (ADSs) are net of taxes (paid in the country of origin).**

### Qualitative Risk Assessment

Reflects an equity analyst's view of a given company's operational risk, or the risk of a firm's ability to continue as an ongoing concern. The Qualitative Risk Assessment is a relative ranking to the U.S. STARS universe, and should be reflective of risk factors related to a company's operations, as opposed to risk and volatility measures associated with share prices. For an ETF this reflects on a capitalization-weighted basis, the average qualitative risk assessment assigned to holdings of the fund.

### STARS Ranking system and definition:

#### ★★★★★ 5-STARS (Strong Buy):

Total return is expected to outperform the total return of a relevant benchmark, by a notable margin over the coming 12 months, with shares rising in price on an absolute basis.

#### ★★★★ 4-STARS (Buy):

Total return is expected to outperform the total return of a relevant benchmark over the coming 12 months.

#### ★★★ 3-STARS (Hold):

Total return is expected to closely approximate the total return of a relevant benchmark over the coming 12 months.

#### ★★★ 2-STARS (Sell):

Total return is expected to underperform the total return of a relevant benchmark over the coming 12 months.

#### ★★★ 1-STAR (Strong Sell):

Total return is expected to underperform the total return of a relevant benchmark by a notable margin over the coming 12 months, with shares falling in price on an absolute basis.

### Relevant benchmarks:

In North America, the relevant benchmark is the S&P 500 Index, in Europe and in Asia, the relevant benchmarks are the MSCI AC Europe Index and the MSCI AC Asia Pacific Index, respectively.

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### STARS Stock Reports:

Qualitative STARS recommendations are determined and assigned by equity analysts. For reports containing STARS recommendations refer to the Glossary section of the report for detailed methodology and the definition of STARS rankings.

### Quantitative Stock Reports:

Quantitative recommendations are determined by ranking a universe of common stocks based on 5 measures or model categories: Valuation, Quality, Growth, Street Sentiment, and Price Momentum. In the U.S., a sixth sub-category for Financial Health will also be displayed. Percentile scores are used to compare each company to all other companies in the same universe for each model category. The five (six) model category scores are then weighted and rolled up into a single percentile ranking for that company. For reports containing quantitative recommendations refer to the Glossary section of the report for detailed methodology and the definition of Quantitative rankings.

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### STARS Stock Reports:

Global STARS Distribution as of June 28, 2019

Ranking	North America	Europe	Asia	Global
Buy	34.4%	29.0%	41.1%	33.5%
Hold	56.1%	54.8%	46.4%	54.6%
Sell	10.5%	16.2%	12.5%	11.9%
Total	100.0%	100.0%	100.0%	100.0%

### Analyst Certification:

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