ANNUAL REPORT 2021

INNOVATE • INTEGRATE • GROW

Cboe®

OUR PURPOSE

To operate a trusted, inclusive, global marketplace, providing leading products, technology and data solutions that help all types of market participants define a sustainable financial future.

March 31, 2022

To our Cboe community,

As I write this letter, we are witnessing a global crisis in Ukraine, where citizens are fighting to defend their freedom and protect their sovereignty amid an unprovoked invasion from Russia. We continue to think of our colleagues, friends and family in Ukraine, as well as all those affected by this crisis, and hope that they find safety and peace prevails quickly.

Beyond the tragic humanitarian impact of this war, the Ukraine-Russia conflict introduces new risks with the potential to destabilize a world economy still recovering from the effects of the COVID-19 pandemic. Cboe Global Markets is deeply committed to doing our part as a global market infrastructure provider to help ensure the continued orderly operation and security of our markets. Our exchanges and platforms across 23 markets in North America, Europe and Asia Pacific continue to demonstrate remarkable resiliency amidst market turbulence, providing a forum for investors to express their views and manage their risk.

Though we are faced with a challenging macro environment ahead, I am encouraged by the significant progress made in 2021—another unusual year that was at times difficult, but also filled with hope, ingenuity and growth. At Cboe, we expanded our business, entered new geographies and launched innovative new products and services to fuel greater participation in our markets. And, as society collectively reimagines the future of the workplace, we see immense value in this moment—embracing what connects us in the work-from-home economy and doing our part to help maintain the global financial infrastructure that powers it.

We are living through the largest wealth transfer in modern history with older generations projected to pass down approximately $70 trillion in assets by 2042(1). But the next-gen investor is different from their elders. They want to be the engine for their own wealth generation, actively managing their investments and tailoring their financial decisions to their values(2). As leaders in risk management, Cboe is equipping these market participants with the information, data and tools they need to navigate today's markets, including Environmental, Social and Governance risks and opportunities. We're also welcoming new participants to our markets through product innovation and best-in-class educational programs.

The influx of retail trading has opened markets, transforming our industry for the better. Retail investors today can take ownership of their financial futures like never before and generate potential returns that were once realized by a smaller segment of market participants. In turn, our trading network grows and becomes stronger when we welcome more participants with new perspectives and a greater variety of experiences and points of view. Global investors trading across asset classes and geographies rely on the efficiencies and consistent experience afforded by our trusted, transparent and regulated marketplaces.

Purpose Driven

Now more than ever, we are guided by our purpose—to operate a trusted, inclusive global marketplace, providing leading products, technology and data solutions that help all types of market participants define a sustainable future. Maintaining the trust and integrity of our markets is paramount to growing the number and diversity of participants in the global economy. We're working to create connections and reduce barriers to entry, providing products, technology and data solutions that allow customers to better protect capital, transfer risk and generate wealth to pursue long-term financial security.

We've evolved to address changing market dynamics by broadening our geographic reach and extending access to our unique set of products and solutions around the globe—all while remaining a leader in capital markets innovation. Our journey has been powered by robust and innovative organic growth and strategic M&A, broadening our addressable market across geographies and asset classes and diversifying our revenue streams across transaction and non-transaction sources.

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(1) "Older Americans Stockpiled a Record $35 Trillion. The Time Has Come to Give It Away." *Wall Street Journal,* July 2, 2021.

(2) "Swipe to invest: the story behind millennials and ESG investing." MSCI ESG Research LLC, March 2020.

In 2021, Cboe posted a record-breaking year, increasing net revenue by 18 percent and adjusted earnings per share by 15 percent[3], and laying the groundwork for continued long-term growth. Our results were driven by higher trading volumes across our businesses, coupled with increased demand for our suite of data and access solutions.

We remain as optimistic as ever about the opportunity to extend access to global markets, grow our geographic footprint and breadth of asset classes and diversify our revenue base. At the heart of this immense progress and growth is our people. We have an incredible, diverse team of associates around the world delivering on our vision, supporting our clients and reinforcing Cboe's place as a leader in the global financial marketplace.

Diversity Fuels Innovation

Diversity is a key growth driver and permeates all aspects of our strategy—from associate engagement to product development. We believe in a culture of diversity and inclusion that promotes creativity, collaboration and innovation, which is critical to the success of our business, our markets and our communities. Our commitment and responsibility start at the top and require everyone's dedication and participation—from our board of directors to our summer interns.

As a shareholder, you're well aware of the benefits of a diverse portfolio—from offsetting exposure to minimizing risk. And, as a shareholder in our company, you're aware of the great strides we've made to diversify our business over the past few years—acquiring or announcing plans to acquire nine companies since 2020. But you cannot successfully diversify without inclusion.

Inclusive Integration Planning Starts with People

We acquire businesses because we believe in the people who run them and their ability to bring new ideas to Cboe. We also believe in those companies, their track record of success and the promise of an integrated future. We pursue acquisitions that expand our reach and scale—whether that's new geographies that allow us to disrupt incumbent markets through innovation, clearing that enables the launch of derivatives or a new approach to entering the digital asset marketplace.

It is our integration work that brings us together and our long-term strategic vision that unites us as one company.

Cboe first acquired LiveVol in 2015, setting a path for a reimagined market data business. Since then, we have made four additional strategic acquisitions designed to round out our portfolio of products and services to help our customers through every step of the trading life cycle. Data is the fuel that drives trading in our markets and products. From the retail customer to institutions executing sophisticated trading strategies, high-quality data is paramount. As the trading environment becomes increasingly globalized, customers are seeking more efficiency with fewer touchpoints in the market infrastructure services they require, from accessing multiple asset classes across numerous geographies, to market data and analytics and execution services.

Through both acquisitions and organic growth, we have expanded our Data and Access Solutions business to better serve our global customer base. This team is delivering comprehensive data and market intelligence solutions worldwide and seeking new ways to reach our global audience with tools that enhance their trading experience. The launch of Cboe Global Cloud in November was testament to the innovation made possible by customer-first collaboration. We believe our Data and Access Solutions group has the ability to further grow our base of recurring non-transaction revenue and we are excited about the continued evolution of this business.

Since Cboe acquired MATCHNow in August 2020, we have been laser focused on the full integration of our companies and defining how we can further serve the Canadian market as one team. In February of this year, we completed the seamless migration of MATCHNow's platform to Cboe technology so our

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(3) A reconciliation of adjusted earnings to a GAAP measure is provided on page 67 of the Form 10-K and adjusted diluted earnings per share is defined on page 65.

Canadian customers can benefit from our world-class technology and access Cboe's diverse markets, asset classes, data and product suite with greater ease and efficiency.

At the end of 2020, we added BIDS Trading to our roster, which operates one of the largest Alternative Trading Systems (ATS) by volume in the U.S., facilitating interaction between the buy-side and sell-side for block trades. Since then, we've been able to enhance our existing block trading capabilities and find ways to expand the BIDS offering globally. In February 2022 as part of the MATCHNow technology migration, we also launched Cboe BIDS Canada, bringing a new and enhanced block trading offering to the Canadian equities market. And, in the five years since launch, Cboe BIDS Europe has grown to become one of the largest block trading platforms in Europe.

We also plan to bring BIDS' industry-leading block trading capabilities to the Asia Pacific region through our ownership of Chi-X Asia Pacific, which Cboe acquired in July 2021. Since completing the acquisition of Chi-X, we've been thoughtfully integrating the team and its offerings into Cboe, rebranding to Cboe Australia and Cboe Japan in February 2022, as well. We see so much potential to expand our global equities and market data businesses, broaden distribution of our proprietary products and bring other new trading solutions and services to the Asia Pacific region.

On the European front, our ownership and integration of EuroCCP, the largest pan-European clearing house, into the Cboe network has been essential to bringing a new derivatives exchange to Europe. The Cboe Europe and EuroCCP teams worked hand-in-hand on the launch of Cboe Europe Derivatives in the fall.We built this new exchange motivated by the belief—and driven by many of our customers—that Europe's equity derivatives market could be significantly enhanced through the creation of a modern, vibrant, pan-European trading and clearing offering, which incorporates elements of the U.S. on-screen-based options market structure. Early participation in the market has supported this belief.

We also believe there is a significant opportunity to enhance the digital asset market through a trusted, regulated market, which was the motivation behind our pending acquisition of ErisX. With ownership of ErisX, an operator of a U.S. based digital asset spot market, a regulated futures exchange and a regulated clearing house, Cboe is entering the digital asset spot and derivatives marketplaces through a digital-first platform developed with industry partners to focus on robust regulatory compliance, data and transparency for the benefit of digital asset investors. Together, with the ErisX team and our industry partners serving as advisors, we plan to leverage the regulatory framework, transparency, valued intermediaries, infrastructure and data solutions of our trusted markets to further mature and expand digital asset trading to a global scale.

Finally, our planned acquisition of NEO will help allow Cboe to provide a more fulsome Canadian equities offering, operating the NEO Exchange, the second largest stock exchange in Canada with trading, listings and other services, in addition to MATCHNow. This strengthened offering is expected to drive more trading activity on Cboe markets and improve efficiencies and opportunities for investors and capital-raisers in both Canada and the U.S. With MATCHNow and NEO, Cboe can achieve scale in Canada, creating efficiencies for our combined customers with familiar technology and consistent market models.

All of these integrations sit atop the foundation of our best-in-class technology, which powers our global markets, data platforms and investment solutions. Our technology, and the team that builds and continuously improves it, allows us to operate at an unrivaled efficiency, effectiveness and global scale. Further, the scalability of our platform enables us to seamlessly integrate acquired companies into Cboe and fully maximize synergies we are realizing as a result of these acquisitions.

Together We Grow

Our M&A strategy has driven organic growth, truly making the sum of our parts greater than the whole. As our business scales, we're also working diligently to expand access to our markets.

Throughout the year, we continued our legacy of innovation, striving to deliver an enhanced trading experience to all market participants. The launch of Mini-Russell 2000 Index options provided greater accessibility to the booming small-cap market and our Nanos options product is expected to bring options trading to a whole new set of investors. Early trading hours on Cboe EDGX Equities made it possible for more participants to trade on their time, while the launch of extended Global Trading Hours (GTH) made S&P 500 Index (SPX) and Cboe Volatility Index (VIX) options accessible around the clock.

Additionally, we continued to lead the industry as the fastest growing global ETP exchange, reaching 500 U.S.-listed ETPs in the summer. Finally, we look forward to ushering in a new era of open outcry with the expected mid-2022 opening of our new trading floor in Chicago. Our customer-first approach drives us to make markets better—from our Chicago trading pits to an FX trader in Japan.

As we broaden our global footprint, we have an unmatched opportunity to evolve the Cboe network. And our recipe for success is simple: Innovate, Integrate and Grow. Cboe's innovative spirit has led to the creation of multiple new products and services throughout our history. That drive continues today, as evidenced by our plans for Nanos options trading, our entrance into the digital asset market, and continued expansion of our Data and Access Solutions business.

We have a proven track record of seamlessly integrating across our ecosystem for both organic and inorganic initiatives. We are intentional, folding each of our acquisitions or new products and services into the Cboe global network. Our inclusive approach creates workflow efficiencies for customers, harmonizing technology and access points, creating a better experience for them. This strategy also produces operating efficiencies alongside strong cash flow generation, a hallmark of the exchange business model.

We plan to continue to invest in organic growth initiatives this year, which we expect to contribute to our organic net revenue growth over the mid-term. Since our IPO, we have also allocated capital inorganically to help accelerate our strategy while returning capital to shareholders with a singular goal of creating long-term shareholder value. Cboe shareholders have received a total shareholder return of 502 percent over the last 10 years, exceeding the S&P 500 return of 363 percent.

We are building on our momentum in 2022, creating connections across borders, through our markets and within our communities. I thank you for trusting Cboe to deliver on our mission to build one of the world's largest global securities and derivatives networks. This work is only possible through the unwavering commitment of our Board and global associate base—who are all inspired and driven by our purpose.

We are inviting all types of investors to learn about and participate in our markets because we believe that when we make these connections, the results are exponential. Diversifying our product set and asset class operations bolsters our business and fosters innovation. Operating our trusted markets in more areas expands our reach and enables our clients to pursue global growth opportunities. Being inclusive helps us learn and improve, empowering all of us to contribute to a collective future. I am confident in our ability to provide the products, technology and data solutions necessary to help all types of market participants define a sustainable financial future. Together, we go far.

Edward T. Tilly
Chairman, President and Chief Executive Officer

Cautionary Statements Regarding Forward-Looking Information

Certain information contained in this letter may constitute forward-looking statements. We caution readers not to place undue reliance on any forward-looking statements, which speak only as of the date made and are subject to a number of risks and uncertainties. More detailed information about risks and uncertainties may be found on page 30 of the Cboe Global Markets, Inc. Annual Report on Form 10-K for the year ended December 31, 2021.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

Form 10-K

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

For the fiscal year ended December 31, 2021

or

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

For the transition period from ____________ to ____________
Commission file number: 001-34774

Cboe Global Markets, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	**20-5446972** (I.R.S. Employer Identification Number)
433 West Van Buren Street **Chicago, Illinois** (Address of principal executive offices)	**60607** (Zip Code)

Registrant's telephone number, including area code
(312) 786-5600

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

Title of Each Class	Trading Symbol (s)	Name of Exchange on Which Registered
Common Stock, par value $0.01 per share	CBOE	CboeBZX

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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

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

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of June 30, 2021, the aggregate market value of the Registrant's outstanding voting common equity held by non-affiliates was approximately $10.4 billion based on the closing price of $119.05 per share of common stock.

The number of outstanding shares of the registrant's common stock as of February 11, 2022 was 106,602,177 shares of common stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of Cboe Global Market's Definitive Proxy Statement for the 2022 Annual Meeting of Stockholders, which will be filed no later than 120 days after December 31, 2021, are incorporated by reference in Part III.

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CBOE GLOBAL MARKETS, INC.
2021 FORM 10-K

CERTAIN DEFINED TERMS

Throughout this document, unless otherwise specified or the context so requires:

- "Cboe," "we," "us," "our" or "the Company" refers to Cboe Global Markets, Inc. and its subsidiaries.
- "ADV" means average daily volume.
- "ADNV" means average daily notional value.
- "AFM" refers to the Netherlands Authority for the Financial Markets.
- "ATS" refers to an alternative trading system.
- "Bats Global Markets" and "Bats" refer to our wholly-owned subsidiary Bats Global Markets, Inc., now known as Cboe Bats, LLC, and its subsidiaries.
- "BIDS Trading" refers to BIDS Trading, L.P., a wholly-owned subsidiary of Cboe Global Markets, Inc. The ATS operated by BIDS Trading is not a registered national securities exchange or a facility thereof.
- "BYX" refers to Cboe BYX Exchange, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "BZX" refers to Cboe BZX Exchange, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "C2" refers to Cboe C2 Exchange, Inc. a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Australia" refers to Cboe Australia Pty Ltd. (formerly known as Chi-X Australia Pty. Ltd.), a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Chi-X Europe" refers to Cboe Chi-X Europe Limited, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Europe Equities and Derivatives" refers to the combined businesses of Cboe Europe and Cboe NL.
- "Cboe Europe" refers to Cboe Europe Limited, a wholly-owned subsidiary of Cboe Global Markets, Inc., the UK operator of our Multilateral Trading Facility ("MTF"), our Regulated Market ("RM"), and our Approved Publication Arrangement ("APA") under its Recognized Investment Exchange ("RIE") status.
- "Cboe FX" refers to Cboe FX Markets, LLC, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Japan" refers to Cboe Japan Ltd. (formerly known as Chi-X Japan Ltd.), a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe NL" refers to Cboe Europe BV, a wholly-owned subsidiary of Cboe Global Markets, Inc., the Netherlands operator of our MTF, RM, and APA.
- "Cboe Options" refers to Cboe Exchange, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe SEF" refers to Cboe SEF, LLC, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Swiss" refers to Cboe Switzerland GmbH, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Cboe Trading" refers to Cboe Trading, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc., operated in the United States.
- "Chi-X Asia Pacific" refers to Chi-X Asia Pacific Holdings, Limited, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "CFE" refers to Cboe Futures Exchange, LLC, a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "CFTC" refers to the U.S. Commodity Futures Trading Commission.
- "EDGA" refers to Cboe EDGA Exchange, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "EDGX" refers to Cboe EDGX Exchange, Inc., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "ErisX" refers to Eris Digital Holdings, LLC.
- "ESMA" refers to the European Securities and Markets Authority.
- "EuroCCP" refers to European Central Counterparty N.V., a wholly-owned subsidiary of Cboe Global Markets, Inc.
- "Exchanges" refers to Cboe Options, C2, BZX, BYX, EDGX, and EDGA.
- "FASB" refers to the Financial Accounting Standards Board.
- "FCA" refers to the UK Financial Conduct Authority.
- "FINRA" refers to the Financial Industry Regulatory Authority.
- "GAAP" refers to Generally Accepted Accounting Principles in the United States.
- "IIROC" refers to the Investment Industry Regulatory Organization of Canada.
- "MATCHNow" refers to TriAct Canada Marketplace LP, a wholly-owned subsidiary of Cboe Global Markets, Inc., the operator of our Canadian ATS called MATCHNow.
- "Merger" refers to our acquisition of Bats Global Markets, completed on February 28, 2017.
- "NEO" refers to Aequitas Innovations, Inc.
- "OCC" refers to The Options Clearing Corporation.
- "OPRA" refers to Options Price Reporting Authority, LLC.

- “SEC” refers to the U.S. Securities and Exchange Commission.
- “SPX” refers to our S&P 500 Index exchange-traded options products.
- “TPH” refers to either a Trading Permit Holder or a Trading Privilege Holder.
- “VIX” refers to our Cboe Volatility Index exchange traded options and futures products.

TRADEMARK AND OTHER INFORMATION

Cboe®, Cboe Global Markets®, Bats®, BIDS Trading®, BYX®, BZX®, Cboe Volatility Index®, CFE®, EDGA®, EDGX®, EuroCCP®, Hybrid®, LiveVol®, MATCHNow®, Options Institute®, Silexx®, VIX®, and XSP® are registered trademarks, and Cboe Futures Exchange℠, C2℠, f(t)options℠, Hanweck℠, NANO℠, and Trade Alert℠ are service marks of Cboe Global Markets, Inc. and its subsidiaries. Standard & Poor's®, S&P®, S&P 100®, S&P 500® and SPX® are registered trademarks of Standard & Poor's Financial Services LLC and have been licensed for use by Cboe Exchange, Inc. Dow Jones®, Dow Jones Industrial Average®, DJIA® and Dow Jones Indices are registered trademarks or service marks of Dow Jones Trademark Holdings, LLC, used under license. Russell® and the Russell index names are registered trademarks of Frank Russell Company, used under license. FTSE® and the FTSE indices are trademarks and service marks of FTSE International Limited, used under license. All other trademarks and service marks are the property of their respective owners.

MSCI and the MSCI index names are service marks of MSCI Inc. (“MSCI”) or its affiliates and have been licensed for use by us. Any derivative indices and any financial products based on the derivative indices (“MCSI-Based Products”) are not sponsored, guaranteed or endorsed by MSCI, its affiliates or any other party involved in, or related to, making or compiling such MSCI index. Neither MSCI, its affiliates nor any other party involved in, or related to, making or compiling any MSCI index makes any representations regarding the advisability of investing in such MSCI-Based Products; makes any warranty, express or implied; or bears any liability as to the results to be obtained by any person or any entity from the use of any such MSCI index or any data included therein. No purchaser, seller or holder of any MSCI-Based Product, or any other person or entity, should use or refer to any MSCI trade name, trademark or service mark to sponsor, endorse, market or promote any security without first contacting MSCI to determine whether MSCI’s permission is required.

This Annual Report on Form 10-K includes market share and industry data that we obtained from industry publications and surveys, reports of governmental agencies and internal company surveys. Industry publications and surveys generally state that the information they contain has been obtained from sources believed to be reliable, but we cannot assure you that this information is accurate or complete. We have not independently verified any of the data from third-party sources nor have we ascertained the underlying economic assumptions relied upon therein. Statements as to our market position are based on the most currently available market data. While we are not aware of any misstatements regarding industry data presented herein, our estimates involve risks and uncertainties and are subject to change based on various factors. We refer you to the “Risk Factors” in Part I, Item 1A of this Annual Report on Form 10-K and our other filings with the SEC.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K 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, including statements in "Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." 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. In particular, you should consider the risks and uncertainties described under "Risk Factors" in this Annual Report.

While we believe we have identified material risks, these risks and uncertainties are not exhaustive. Moreover, 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 or clearing volumes, market data fees or a shift in the mix of products traded on our exchanges;
- legislative or regulatory changes or changes in tax regimes;
- our ability to protect our systems and communication networks from security risks, cybersecurity risks, insider threats and unauthorized disclosure of confidential information;
- our ability to attract and retain skilled management and other personnel;
- increasing competition by foreign and domestic entities;
- our dependence on and exposure to risk from third parties;
- fluctuations to currency exchange rates;
- factors that impact the quality and integrity of our indices;
- the impact of the novel coronavirus (“COVID-19”) pandemic, including changes to trading behavior broadly in the market;
- 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 minimize the risks, including our credit and default risks, associated with operating a European clearinghouse;
- our ability to accommodate trading and clearing 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 or for whom we clear transactions;
- 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;
- our ability to maintain BIDS Trading as an independently managed and operated trading venue, separate from and not integrated with our registered national securities exchanges;
- 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 and our ability to make payments on or refinance our debt obligations;
- our ability to maintain an investment grade credit rating;

- impairment of our goodwill, long-lived assets, investments or intangible assets;
- the accuracy of our estimates and expectations;
- litigation risks and other liabilities; and
- if the acquisition of ErisX is consummated, operating a digital asset business.

For a detailed discussion of these and other factors that might affect our performance, see Part I, Item 1A of this Report. We do not undertake, and 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. We caution you not to place undue reliance on the forward-looking statements, which speak only as of the date of this filing.

PART I

Item 1. Business

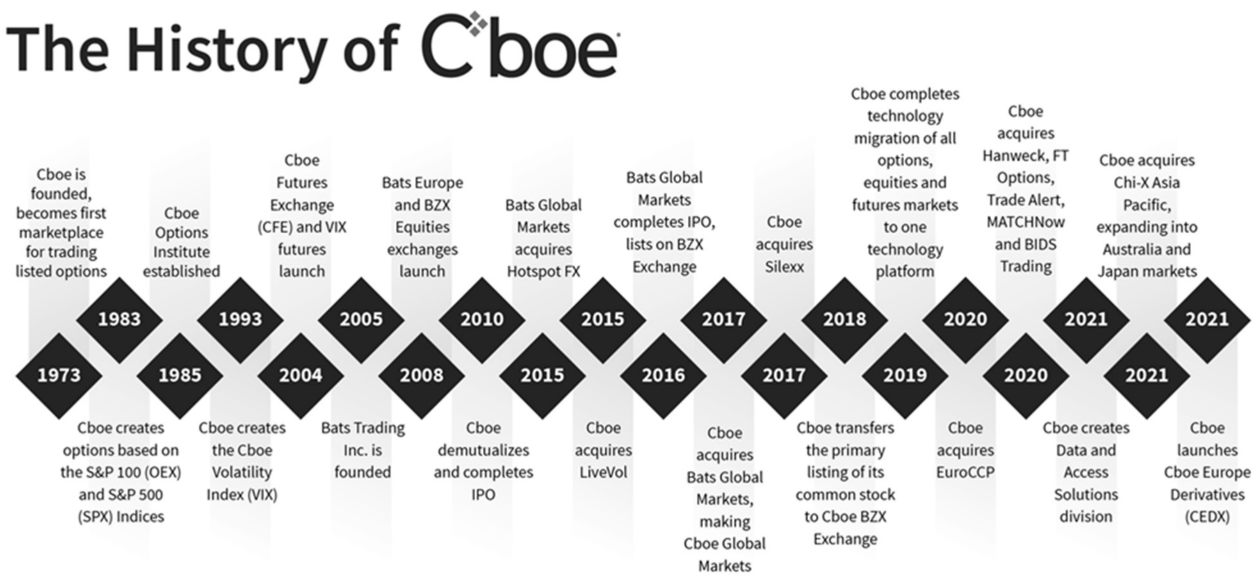
The following description of the business should be read in conjunction with the information included elsewhere in this Annual Report on Form 10-K for the year ended December 31, 2021. This description contains forward-looking statements that involve risks and uncertainties. Actual results could differ significantly from the results discussed in the forward-looking statements due to the factors set forth in "Risk Factors" and elsewhere in this Annual Report on Form 10-K.

Overview

Cboe Global Markets, Inc., a leading provider of market infrastructure and tradable products, delivers cutting-edge trading, clearing and investment solutions to market participants around the world. The Company is committed to operating a trusted, inclusive global marketplace, and to providing leading products, technology and data solutions that enable participants to define a sustainable financial future. Cboe provides trading solutions and products in multiple asset classes, including equities, derivatives and FX, across North America, Europe, and Asia Pacific.

Cboe's subsidiaries include the largest options exchange and the third largest stock exchange operator in the U.S. In addition, the Company operates one of the largest stock exchanges by value traded in Europe, and owns EuroCCP, a leading pan-European equities and derivatives clearinghouse, BIDS Trading, a leading block-trading ATS by volume in the U.S., MATCHNow, a leading equities ATS in Canada, Cboe Australia, an operator of trading venues in Australia, and Cboe Japan, an operator of trading venues in Japan. Cboe also is a leading market globally for exchange-traded products ("ETPs") listings and trading.

The graphic below provides a brief overview of Cboe's history:



Our Business

Cboe Global Markets reports on the following five business segments:

- **Options.** The Options segment includes options on market indices ("index options"), as well as on the stocks of individual corporations ("equity options"), and options on ETPs, such as exchange-traded funds ("ETFs") and exchange-traded notes ("ETNs"), which are "multi-listed" options and listed on a non-exclusive basis. These options are eligible to trade on Cboe Options, C2, BZX, EDGX, and other U.S. national security exchanges. Cboe Options is the Company's primary options market and offers trading in listed options through a single system that integrates electronic trading and traditional open outcry trading on the Cboe Options trading floor in Chicago. C2 Options, BZX Options, and EDGX Options are all-electronic options exchanges, and typically operate with different market models and fee structures than Cboe Options. The Options segment also includes applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary options market data, index licensing, and access and capacity services.

- **North American Equities.** The North American Equities segment includes listed U.S. equities and ETP transaction services that occur on fully electronic exchanges owned and operated by BZX, BYX, EDGX, and EDGA, equities transactions that occur on the BIDS Trading platform, and Canadian equities and other transaction services that occur on or through the MATCHNow ATS. The North American Equities segment also includes ETP listings on BZX, the Cboe Global Markets, Inc. common stock listing, applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary equities market data, routing services, and access and capacity services.

- **Europe and Asia Pacific.** The Europe and Asia Pacific segment includes the pan-European listed equities and derivatives transaction services, ETPs, exchange-traded commodities, and international depository receipts that are hosted on MTFs operated by Cboe Europe Equities (Cboe Europe and Cboe NL) and Cboe Europe Derivatives ("CEDX"). It also includes the ETP listings business on RMs and clearing activities of EuroCCP, as well as the equities transaction services of Cboe Australia and Cboe Japan, each operators of trading venues in Australia and Japan. This segment was previously referred to as the European Equities segment but was updated to the Europe segment in the first quarter of 2021 as a result of the launch of Cboe Europe Derivatives, a pan-European derivatives platform, in September 2021. The segment was subsequently updated to Europe and Asia Pacific to reflect the acquisition of Chi-X Asia Pacific in July 2021. Cboe Europe operates lit and dark books, a periodic auctions book, and a Large-in-Scale ("LIS") trading negotiation facility for UK symbols. Cboe NL, launched in October 2019 and based in Amsterdam, operates similar business functionality to that offered by Cboe Europe, and provides for trading only in European Economic Area ("EEA") symbols. The new Cboe Europe Derivatives venue offers futures and options based on Cboe Europe equity indices. This segment also includes Cboe Europe, Cboe NL, CEDX, Cboe Australia and Cboe Japan revenue generated from the licensing of proprietary market data and from access and capacity services.

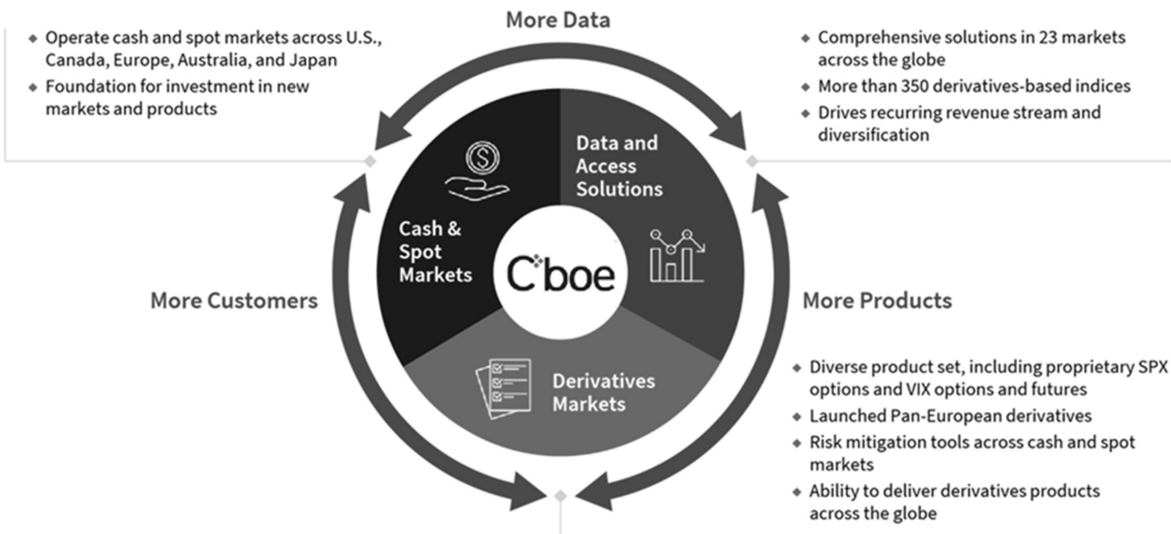
- **Futures.** The Futures segment includes transaction services provided by the Company's fully electronic futures exchange, CFE, which includes offerings for trading of VIX futures and other futures products, the licensing of proprietary market data, as well as access and capacity services.

- **Global FX.** The Global FX segment includes institutional FX trading services that occur on the Cboe FX fully electronic trading platform, non-deliverable forward FX transactions ("NDFs") offered for execution on Cboe SEF and Cboe Swiss, as well as revenue generated from the licensing of proprietary market data and from access and capacity services.

See "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Note 16 ("Segment Reporting") in the notes to our Consolidated Financial Statements for discussion of revenues and certain operational and financial metrics, and operating income (or loss) by business segment. Certain activities within our segments operate globally. For information regarding risks related to our international operations see "Risk Factors."

Competitive Strengths

Cboe is a leading provider of market infrastructure and tradable products across cash and spot markets, derivative markets and data and access solutions. Cboe delivers cutting-edge trading, clearing and investment solutions across the globe through a comprehensive ecosystem that helps drive innovation and growth.



- Information is as of December 31, 2021.

Key Growth Strategy Initiatives

Our strategy is to build one of the world's largest global derivatives and securities networks to create value and drive growth by:

- ***Innovating to capture growing demand for trading products and data services, globally.*** We plan to increase access to data products and trading solutions, provide unrivaled transaction capabilities, have a global presence in high value markets, and develop indices and products to meet growing environmental, social, and governance ("ESG") needs. In 2021, we delivered on this initiative by launching nearly 24x5 trading for VIX and SPX options, distributing real-time data via Cboe Global Cloud, launching mini-options on the Russell 2000 Index, and preparing to launch in 2022, subject to regulatory approval, Nanos by Cboe, smaller and simpler options designed for retail traders.

- ***Integrating across ecosystems to increase efficiency and better serve customers.*** We aim to seamlessly integrate across ecosystems to increase operating efficiency and better serve our customers. We leverage industry-leading technology, apply a non-siloed approach for organic and inorganic initiatives and generate strong free cash flow as we improve operating efficiency. In 2021, we delivered on this initiative by integrating EuroCCP and its technology to launch pan-European derivatives in 2021, integrating our acquisition of BIDS Trading and beginning the integration of Chi-X Asia Pacific.

- ***Growing by accessing untapped addressable markets.*** We are expanding and diversifying our revenue opportunity set through both organic investment and merger and acquisition activity. In 2021, we delivered on this initiative by launching Pan-European Derivatives and expanding into new key markets in the Asia-Pacific region. In addition, in 2022, we are planning to further expand into Canada by acquiring the NEO exchange, subject to regulatory approvals and other customary closing conditions, and into the digital asset space by acquiring ErisX, an operator of a U.S.-based digital asset spot market, subject to regulatory approvals and other customary closing conditions.

Proprietary Products

In addition to providing cash and spot markets, derivative markets, and data and access solutions, we also offer for trading proprietary products and are a leader in the volatility space with our proprietary products. These proprietary products are built both through our in-house research and development staff of the Data and Access Solutions business and our strategic relationships and license agreements with index providers, which are both described below in further detail. Our most frequently traded proprietary products include SPX options and VIX options and futures.

SPX Options

The S&P 500 Index is an index comprised of 500 large-cap U.S. listed companies. It is one of the most commonly followed indices and is considered a bellwether for the U.S. economy. The SPX options we offer on the S&P 500 Index are exclusive to Cboe and contribute substantially to our volumes and transaction fees. Because of the S&P 500 Index's status as a bellwether, SPX options are used in many different trading strategies by customers with different goals, including pension funds hedging their equity exposure by buying put options, asset managers seeking enhanced returns by selling covered call options and hedge funds using risk-managed strategies to capture so-called "risk premia" embedded in option prices. We also offer SPX Weeklys options, which have settlements on Mondays, Wednesdays, Fridays and on the last trading day of each month and nearly 24x5 trading in SPX options. We believe these additional expirations provide customers with more precision when hedging overall portfolio risk.

Volatility Trading

Cboe pioneered the trading of exchange-traded volatility products with its introduction of VIX futures in 2004 and VIX options in 2006. The VIX Index (as defined below), although not directly tradable, is based on the mid-point of real-time quotes of SPX options and is designed to reflect investors' consensus view of future 30-day expected stock market volatility. The VIX methodology provides the basis for the creation of VIX options and futures. The final settlement value of VIX derivatives is determined on their expiration date through a Special Opening Quotation ("SOQ") of the VIX Index. The SOQ calculation uses opening trade prices of selected options; unless there is no opening price, in which case the opening price used in the SOQ calculation is the midpoint of the highest bid and lowest offer at the time of the opening. Since we started offering these products, we have seen trading from a number of different customer segments utilizing a number of different trading strategies, including hedging extreme stock market declines, also known as "tail risk" hedging, and risk-managed strategies that seek to capture the relative price changes of expected volatility at different times in the future. We also offer VIX Weeklys options and futures, mini VIX futures, and nearly 24x5 trading in VIX options and futures to provide investors with additional tools to trade volatility.

Proprietary Indices

We also calculate and disseminate proprietary indices that are licensed for use by third parties or are used as the basis for other proprietary products. These proprietary indices are built both through our in-house research and development staff of the Data and Access Solutions business and our strategic relationships and license agreements with index providers, which are both described below in further detail. Our proprietary indices include:

- volatility indices based on broad-based market indices, such as the S&P 500 and the Russell 2000,
- volatility indices based on ETFs, and
- options strategy benchmark indices, such as the Cboe BuyWrite, PutWrite and Collar indices based on the S&P 500 and Russell 2000, BuyWrite and PutWrite indices based on MSCI EAFE and MSCI Emerging Markets, and BuyWrite indices based on other broad-based market indices.

In addition to any transaction fee revenue generated on products created based on these indices, we have granted licenses for third parties to use and sublicense some of these proprietary indices to create third-party indices and products. Accordingly, we generate revenue from proprietary indices by distributing them for reference purposes, using them as the basis for proprietary products and licensing them for use for third-party indices and products.

Strategic Relationships

The Company has long-term business relationships with several providers of market indices. We license their indices, including on an exclusive basis, as the foundation for indices, index options and other products. The Company also acquires interests in and agrees to work jointly with key providers to develop new products and services that are expected to capitalize on our core competencies and diversify our sources of revenue. Of particular note are the following:

- ***S&P.*** We have the exclusive right to offer exchange-listed options contracts in the United States on the S&P 500 Index, the S&P 100 Index, the S&P 500 ESG Index, and the S&P Select Sector Indices as a result of a licensing arrangement with S&P Dow Jones Indices, LLC ("S&P"). Our license from S&P is through December 31, 2033, with an exclusive license to trade options on the S&P 500 Index through December 31, 2032. We use the market data from the trading of options on the S&P 500 Index and S&P 100 Index for the creation of Cboe volatility indices, such as the Cboe Volatility Index ("VIX Index"), and for the creation of tradable products on those volatility indices.

- ***FTSE Russell.*** Under our license agreement with the London Stock Exchange Group's ("LSEG") leading global index franchises, Frank Russell Company and FTSE International Limited (together "FTSE Russell"), we have the exclusive right in the United States to offer listed options on more than two dozen FTSE Russell indices, which represent a diverse group of domestic and global equities with international appeal. Our exclusive license from FTSE Russell is through 2030. We offer options on the Russell 2000, Russell 1000, Russell 1000 Value and Russell 1000 Growth Indices and mini-options on the Russell 2000 Index.

- ***MSCI.*** We have an exclusive license from MSCI Inc. ("MSCI") until April 1, 2031 to offer U.S.-listed options on ten of MSCI's indices including the MSCI EAFA and MSCI Emerging Markets indices. We use market data from the trading of these options to calculate several versions of BuyWrite and PutWrite strategy indices.

- ***IHS Markit***. Under our licensing agreement with IHS Markit Ltd., we have the worldwide exclusive license through August 2023 to offer options and futures on indices benchmarked to a diverse array of U.S. corporate bonds. We currently offer futures on high yield and investment grade corporate bond indices.

- ***Dow Jones.*** We have the exclusive right during standard U.S. trading hours to offer listed options contracts on the Dow Jones Industrial Average ("DJIA") and Dow 10 Index, and non-exclusive rights to offer listed options on several other Dow Jones indices including the Dow Jones Utilities Average and Dow Jones Transportation Average. This licensing arrangement with DJI Opco, LLC extends through December 31, 2033. We use market data from the trading of options on these indices to create Cboe volatility indices, variance indicators and BuyWrite indices, and to trade options and other products on these indices.

Data and Access Solutions

The Data and Access Solutions business provides an offering of market data and information solutions products across multiple asset classes and geographic regions that are designed to suit our customers' diverse needs. The Data and Access Solutions business consists of five product groups:

- **Market Data and Access Services.** Data products include real-time depth of book quotation information, auction and complex option information, top of book quotes and trades, last sale information, and consolidated equity feeds. In addition to market data, Access Services include all Access and Capacity products including connectivity, terminal and other equipment rights, maintenance services, trading floor space and permits for the opportunity to trade.

- **Cboe Global Indices.** Services include index creation, calculation, licensing, and data dissemination. In addition to index data dissemination, through Cboe's Streaming Market Indices platform, we distribute real-time cryptocurrency prices and indicative net asset values. See above for additional information regarding our proprietary indices.

- **Financial Risk Analytics.** Services include portfolio, margin risk and scenario analytics.

- **Data and Market Analytics.** Services include aggregated equity and derivative market statistics, theoretical values, trading indicators, and historical data from Cboe's markets as well third-party consolidated data.

- **Front-End Platforms.** Cboe provides multiple trading solutions and services including Cboe Silexx, LiveVol Pro, FT Options and Trade Alert.

In 2021, we started to provide data services to market participants globally through Cboe Global Cloud with a plan to disseminate most of Cboe's real-time market data and analytics products via the cloud as an additional distribution channel.

U.S. Tape Plans

We also derive a portion of our revenue from market data fees from U.S. tape plans, including Unlisted Trading Privileges ("UTPs"), the Consolidated Tape Association ("CTA") and OPRA. Fees, net of plan costs, from UTP, CTA, and OPRA are allocated and distributed to plan participants like us according to their share of tape fees based on a formula, required by Regulation NMS, which may take into account both trading and quoting activity.

Our Market Models

We operate a variety of derivatives and cash and spot markets. Our markets use a combination of pricing and market models to differentiate them from each other and from our competitors.

For our U.S. derivatives options markets, Cboe Options is a hybrid market combining open outcry floor trading with electronic trading. For multi-listed products, we utilize public customer priority, market turner in certain products, participation rights and pro-rata allocation market models, combined with the "classic" pricing model. Under the classic pricing model, professional participants pay transaction fees, public customers generally do not pay transaction fees and market makers compensate brokers for sending order flow to the exchange (known as payment for order flow). For proprietary products, we use price-time or pro-rata allocation, sometimes with public customer priority, and market turner market models, combined with a pricing model where all market participants generally pay fees. Our other three options markets are fully electronic. BZX options utilizes a price-time market model, combined with a "maker-taker" pricing model. Under the maker-taker pricing model, market participants who make the market (a "maker") generally receive a rebate, while market participants who trade against those markets (a "taker") pay a transaction fee. EDGX options utilizes customer priority, participation rights and pro-rata allocation market models, combined with the classic pricing model. C2 options utilizes a pro-rata allocation market model, combined with the maker-taker pricing model.

For our U.S. derivatives futures market, which is fully electronic, CFE utilizes a price-time market model, combined with a pricing model where all market participants generally pay fees, subject to specified exceptions.

For our cash and spot markets, the U.S. equities exchanges, which are fully electronic, offer various market models. BZX equities utilizes a price-time market model, combined with the maker-taker pricing model. EDGX equities utilizes a price-time with retail priority market model, combined with the maker-taker pricing model. BYX equities utilizes a price-time with price improvement for retail customers market model, combined with the "taker-maker" pricing model. Under the taker-maker pricing model, market participants who make the market pay a transaction fee, while market participants who trade against those markets receive a rebate. EDGA equities utilizes a price-time market model, combined with a taker-maker pricing model. In addition to these market models, each of the U.S. equity exchanges provides numerous specific order types that are designed to enhance their respective market models.

For our cash and spot markets, MATCHNow, the Canadian equities ATS, which is fully electronic, utilizes a model that combines frequent call matches and continuous execution opportunities in a confidential trading book. The system uses real-time quotes for protected transparent Canadian markets, and orders may be firm or conditional. Firm orders matched within MATCHNow are executed at three levels of price improvement: (1) the mid-point between the Canadian best bid and offer (the "CBBO"); (2) one price increment better than the CBBO or; (3) at the bid or offer for orders that meet a specified large threshold. Trading fees are typically calculated as a function of trade volume and share price.

In Europe, following the implementation of the Directive on Markets in Financial Instruments (Directive 2014/65/EU) ("MiFID II"), for the derivatives and cash and spot markets, rebates are generally available if they are tied to a market making scheme or specific service.

For our cash and spot markets, BIDS Trading, the U.S. equities ATS market, which is fully electronic, utilizes a sponsored access model to provide anonymous executions in NMS stocks. BIDS Trading provides numerous order types, including both firm and conditional orders. All orders matched within BIDS Trading are executed at or better than the

NBBO. BIDS Trading charges fees based on disclosed, objective criteria: (i) means of access; (ii) the type of order; and (iii) the total volume of executions during the calendar month.

In Australia, for our derivatives and cash and spot markets, Cboe Australia, a regulated stock exchange, which is fully electronic, utilizes a model that charges a different ad valorem fee rate depending on whether a participant is making or taking liquidity. Fee waivers are also provided to participants registered as market makers, but payments for order flow are prohibited.

In Japan, for our cash and spot markets, Cboe Japan, offers two fully electronic displayed markets, Chi-Alpha, which utilizes a price-time market model, combined with the “maker-taker” pricing model and Chi-Select, which utilizes a price-time retail customers focused market model, combined with the “taker-maker” pricing model. Cboe Japan also offers two fully electronic non-displayed markets, Chi-Match, which matches VWAP orders during pre-market hours and Kai-X, which utilizes a price-time market model aiming for primary market mid-point trades.

For our FX spot markets, the Cboe FX platform utilizes a price-firmness-time priority market model, combined with a pricing model where users are charged either a flat or tiered commission rate based upon the notional amount traded on the platform. For our FX NDF markets, Cboe SEF and Cboe Swiss platforms utilize a price-firmness-time priority market model and charge a flat commission based upon the notional amount traded on the platform and the capacity in which a participant is trading.

Our markets also charge fees for the opportunity to trade or access our markets, including fees for trading-related functionality. To facilitate trading, we also charge fees for certain technology services, terminal and other equipment rights, maintenance services, trading floor space and telecommunications services.

Listing

Cboe serves as a listing destination for ETPs in the U.S., the UK, Europe and Australia, and its markets are structured and designed for ETP issuers and their investors. In 2021, Cboe added 121 ETP listings in the U.S. and won 25% of all new U.S. ETP listings. There are now 643 ETPs globally listed on Cboe from 84 different issuers. We offer fully-automated opening, closing and halt reopening auctions for our listed securities, which are designed to maximize the efficiency of the price discovery process.

Clearing

Our subsidiary EuroCCP, a European central counterparty (“CCP”), provides post-trade services, including clearing, to stock exchanges, multilateral trading facilities and for over-the-counter equities trades and derivatives trades. EuroCCP acts as a central counterparty that, for its clearing participants, becomes the buyer to every seller and the seller to every buyer. As a result, it guarantees the timely performance of the obligations of buyers and sellers and takes on the risk of the performance of the transactions that it clears. Additionally, as a critical Financial Market Infrastructure, EuroCCP is subject to strict business continuity requirements and regulatory oversight. In 2021, EuroCCP provided CCP protection for an average of €43 billion of cleared value on a daily basis. Through the process of netting, in 2021, EuroCCP eliminated 72%, or €31 billion of the average daily cleared value, leaving an average daily settlement value of €12 billion. In 2020, EuroCCP provided CCP protection for an average of €41 billion of cleared value on a daily basis. Through the process of netting, in 2020, EuroCCP eliminated 80%, or €30 billion of the average daily cleared value, leaving an average daily settlement value of €11 billion.

Customers

Our customers generally include financial institutions, trading platforms, institutional and individual investors, and professional traders. Our equities and options customers in the United States include trading permit holders and members of Cboe Options, C2, BZX, BYX, EDGX, and EDGA, which are SEC-registered broker-dealers, and the customers of those broker-dealers. Our Canadian equities customers include subscribers of MATCHNow, which are Canadian registered investment dealers, and certain clients of those dealers. Our Australian customers include trading participants of Cboe Australia, which are Australian registered investment dealers, and certain clients of those dealers. Our Japanese customers include participants of Chi-Alpha, Chi-Select, Chi-Match and Kai-X, which are Japanese registered broker-dealers, and certain clients of those dealers. Our ATS equities participants in the United States include subscribers of BIDS Trading, which are SEC-registered broker-dealers, and certain customers of those broker-dealers. Our futures customers include banks, futures commission merchants and their customers, hedge funds, asset managers, proprietary trading firms, and Commodity Trading Advisors. Similarly, our equities’ customers in Europe are European Union (“EU”) regulated brokerage and proprietary trading firms, as well as sponsored access clients of these brokerage firms and certain non-EU regulated and unregulated direct access participants. EuroCCP clears equities, equity like instruments from 18 European markets and from the United States. EuroCCP also clears equity derivative instruments as traded on Cboe NL. EuroCCP clearing participants include EEA regulated banks and brokerage trading firms. Our institutional global FX customers include banks, broker-dealers, hedge funds, asset managers, proprietary trading firms, Commodity Trading Advisors, and corporates. Access to our markets and trading rights and privileges depend upon the nature of the customer, such as whether the individual or firm is (or is eligible to become) a trading permit holder, trading privilege holder, member, participant, or subscriber of one of our markets.

Competition

The industry in which we operate is intensely competitive. We believe we face competition on a number of factors, including:

- price, quality and speed of our trade and clearing execution;
- functionality and ease of use of our trading and clearing platforms;
- reliability, integrity, range and functionality of our products and services;
- integrity of our marketplaces;
- technological innovation and adaption;
- our brand awareness; and
- our reputation.

We believe that we compete favorably with respect to these factors through a variety of methods, including:

- offering access to a broad array of products and services, including proprietary products and market data;
- offering fee schedules and pricing models that both attract order flow and provide incentives to liquidity providers;
- providing advanced technology that offers broad functionality, low latency, fast execution, ease of use, scalability, reliability and security;
- offering efficient, transparent and liquid marketplaces;
- offering deep and liquid markets with opportunities for price improvement;
- offering broad trading platform access in the EU;
- maintaining close relationships with customers; and
- providing customers with a comprehensive source of information on options and ETPs as well as extensive options education.

In our proprietary products, we compete against other futures exchanges and swap execution facilities that offer similar products, as well as against financial market participants that offer similar over-the-counter derivatives. We also compete against certain multi-listed options products, such as options on SPY, which may offer similar market exposure of our proprietary products, such as SPX options.

The multi-listed options industry is extremely competitive. We expect this trend to continue. As of December 31, 2021, we compete with 12 U.S. options exchanges, in large part due to existing exchange holding companies opening new exchanges that offer different markets and pricing models on existing technology. Most of the equity and ETP options listed and traded on our exchanges are also listed and traded on the other exchanges. In addition, the options exchanges that we compete with set fees and rebates to attract multi-listed options business to their exchanges, which has historically reduced the net revenue per contract that we generate from multi-listed options, and the options exchanges that we compete with structure their options businesses in partnership with established market participants, such as consolidators, and other order flow providers, to increase their volume traded.

Our U.S. listed equity securities and listing services and the BIDS Trading ATS compete against 12 other exchanges as of December 31, 2021, and several other ATSs and single dealer platforms. Market participants have multiple venues for the execution of orders, including national securities exchanges and numerous off-exchange venues, including other ATSs and broker-dealers who internalize orders off-exchange. Additionally, issuers have multiple venues for the listing of their products. In Canada, our equities ATS, MATCHNow, competes with several Canadian exchanges and other ATSs. In Australia, our exchange, Cboe Australia, competes with other Australian exchanges and ATSs. In Japan, our equities exchanges and ATSs, compete with several Japanese exchanges and other ATSs.

The market for execution and clearing services in Europe became more competitive following the introduction of MiFID II and the Regulation on Markets in Financial Instruments (Regulation (EU) No 600/2014) (“MiFIR”). Furthermore, MiFID II and MiFIR placed more onerous conditions on trading venues and investment firms and restricted certain types of trading activity. Our major competitors in Europe include national stock exchanges, other pan-European MTFs, European clearinghouses, dark pools, and systematic internalizers.

The global FX market remains severely fragmented, with transparent automated marketplaces such as Cboe FX challenging a small number of similarly situated competitors. While the global FX market has experienced a shift from competing interbank platforms to ECNs, the electronification of the spot and NDF FX market may encounter resistance from customers that still prefer to utilize the phone, instant chats, terminals and key banking relationships for price discovery and trading. Furthermore, electronification of the FX market appears to be experiencing more resistance outside the United States. The electronic spot FX market is also intensely competitive, with over 10 other venues competing for market share as of December 31, 2021. Cboe measures and reports on market share against a narrower set of competitors, included in those venues.

In addition, our data and access solutions face competition from other securities exchanges, technology companies, third-party market data providers, and information and software vendors, which have their own substantial market data distribution capabilities that serve as alternative means for receiving open market data feeds instead of connecting directly to our exchanges or trading venues. The sale of our proprietary data products is also under competitive threat from ATSs and trading venues that offer similar products. Distributors and consumers of our market data may also use our market data as an input into a product that competes against one of our traded or cleared products.

Technology

Cboe Trading Technology

The trading platform for our equities, options, and futures markets is developed, owned, and operated in-house and is designed to optimize reliability, speed, scalability, and versatility. Each of our exchanges provide different market models, appealing to different user bases, and the trading technologies support all of them. Further, the technologies are designed to support many specialized features for each of the markets, such as: dark pools, trade reporting facility, systematic internalizer, Large-in-Scale, smart order routing, FLEX options, 24x5 trading, and hybrid trading (combining electronic and open outcry). In addition, Cboe and its applicable subsidiaries operate separate trading and/or clearing platforms, as applicable, for BIDS Trading, MATCHNow, EuroCCP, Global FX, Cboe Australia, and Cboe Japan.

Our trading platforms have experienced very low operational downtime and low latency. The trading platforms use readily available hardware, thereby minimizing capital outlays required for each new market entry. Also, in order to continue to implement new enhancements to our trading platforms, new releases of software are generally deployed routinely in all of the applicable markets.

Disaster Recovery

We operate and maintain geographically diverse disaster recovery facilities for all of our markets. We expect that the disaster recovery facilities can be up and running in a short period of time and in certain instances we work with our market participants to try to quickly reopen marketplaces. We regularly test our data center recovery plans and periodically carry out weekend tests using our back-up data centers, as well as an annual test with our U.S. trading participants. In Canada, as required by local regulations, MATCHNow conducts internal testing of its disaster recovery data processing capabilities at least annually, and it participates in the bi-annual testing coordinated by IIROC. In Australia and Japan, Chi-X Asia Pacific conducts internal testing of its disaster recovery data processing capabilities at least annually. In Europe, we also regularly test our data center recovery plans and periodically carry out weekend tests which use our back-up data center, as well as an annual test with our European trading participants. We continue to work to improve both the availability of our technology and our disaster recovery facilities.

Routing and Clearing

OCC is the sole provider of clearing on all of our U.S. options and futures exchanges. National Securities Clearing Corporation (“NSCC”), a subsidiary of the Depository Trust and Clearing Corporation (“DTC”), is the sole provider of clearing on our U.S. listed equity exchanges. The Canadian Depository for Securities (“CDS”) is the sole provider of clearing on all equities transactions occurring on MATCHNow. With respect to Australian equities and derivatives, Cboe Australia delivers matched trades of its customers to ASX Clear Pty Ltd and ASX Settlement Pty Ltd. ASX Clear Pty Ltd acts as a central counterparty on all transactions occurring on Cboe Australia. The Japan Securities Clearing Corporation

(“JSCC”) is the sole provider of clearing on all equities transactions occurring on Cboe Japan’s Chi-Alpha, Chi-Select, Chi-Match and Kai-X. BofA Securities, Inc. (“BOA”) is the sole provider of clearing on all equities transactions occurring on BIDS Trading. Cboe Europe Equities and Derivatives relies on LCH Limited and LCH SA (“LCH”), EuroCCP, which is described above, and SIX x-clear Ltd (“SIX x-clear”) to clear trades in European listed equity securities and derivatives as part of an interoperable clearing model.

Cboe Trading is a routing broker-dealer used by our four U.S. equities exchanges and our four U.S. options exchanges, including the electronic platform portion of Cboe Options. Cboe Trading’s clearings firms are Wedbush Securities, Inc. (“Wedbush”) and Morgan Stanley & Co. LLC (“Morgan Stanley”).

Regulatory Environment and Compliance

Various aspects of our business are subject to regulation by the SEC, CFTC, FINRA, IIROC, the Ontario Securities Commission (the “OSC”), the Australian Securities & Investments Commission (“ASIC”), JFSA, JSDA, ESMA, FCA, the Central Bank of the Netherlands (“DNB”), AFM, and other international regulatory authorities where our exchanges or EuroCCP may be authorized to act as foreign exchanges or provide clearing services, and market participants may be subject to regulation by the SEC, CFTC, FINRA, National Futures Association (“NFA”), FCA, Board of Governors of the Federal Reserve, U.S. Department of the Treasury and/or foreign regulators. The following is a discussion of the more significant areas of regulation of us by the SEC, the CFTC, and certain European regulators.

Recent Developments

Laws and regulations regarding our business are frequently modified or changed to address perceived problems, new products, or competition or at the request of market participants. The following is a brief discussion of recent regulatory developments that may significantly impact our business.

United States

Consolidated Data Plan Order

On May 6, 2020, the SEC issued an order (the “Consolidated Data Plan Order”) that would require U.S. equities exchanges and FINRA to develop and file a new consolidated data plan (the “Plan”) that would replace the three current U.S. equities tape data plans and require certain governance provisions, such as changes to the voting structure. Pursuant to the Consolidated Data Plan Order, we and the other U.S. equities exchanges and FINRA were required to file the proposed Plan for public comment before the SEC takes any definitive action on such new plan. The proposed Plan was filed on August 11, 2020 and on August 6, 2021 the SEC approved such Plan. The Plan was subsequently challenged by exchanges and the courts granted a stay of the Plan. Until a decision is made by the courts, the current data plans will continue to govern. Our equities exchanges, BZX, BYX, EDGX, and EDGA, may require additional resources to comply with or challenge the Consolidated Data Plan Order and the Plan may have a material impact on our business, financial condition and operating results if, for example, there is a negative impact on the applicable market data revenues that we receive that are generated from such new plan. See “Risk Factors” and “Legal Proceedings” for more information.

Financial Transaction Taxes

A number of federal, state and local jurisdictions in the U.S. and EU Member States have considered a financial transaction tax, but many details remain to be discussed and agreed, including how to assess the tax. Additionally, legislation has been proposed from time to time on a federal level that would introduce in the U.S. mark-to-market tax treatment for all derivatives contracts and require gains and losses be taxed at ordinary income tax rates. Implementation of such taxes could result in a reduction in volumes and liquidity, which would have a negative impact on our operations. See “Risk Factors” for more information.

Market Data Infrastructure Rule

On December 9, 2020, the SEC issued a Market Data Infrastructure Final Rule, which makes significant additions to the content available on the Securities Information Processors (“SIPs”) and replaces the exclusive processors with a competing consolidator model. The implementation of the new rules could cause Cboe’s equities exchanges, BZX, BYX, EDGX, and EDGA, to require additional resources to comply with or to challenge the new rules and they may have a material impact on our business, financial condition and operating results if, for example, there are lower SIP plan revenues or we must reduce the fees we charge for market data. See “Risk Factors” and “Legal Proceedings” for more information.

Europe

Capital Markets Union

The European Council (“E.C.”) has highlighted one of its top priorities as being the establishment of a fully functioning, well-regulated Capital Markets Union (“CMU”). An Action Plan of concrete steps was set out in September 2015, and an update of the list of initiatives was published in September 2016. In November 2019, the E.C. set up a High Level Forum on CMU, resulting in a final report published in June 2020. On September 24, 2020, the E.C. published a new CMU Action Plan, and on November 25, 2021, published a set of legislative proposals in furtherance of the CMU, including proposals to amend the Markets in Financial Instruments Regulation (“MiFIR”) described in the EU Transparency Rules section below. This therefore remains an ongoing project for the E.C., which may result in additional regulation or legislation. In November 2021 the EU Commission published an update regarding progress against the CMU Action Plan alongside a number of new legislative proposals designed to contribute to the objectives of CMU. These included proposals to:

- Create a European Single Access Point (“ESAP”) which will be a common source of public, free information about EU companies and investment products, regardless of where in the EU they are located or originated.

- Amendments to the ELTIF framework to promote long-term investments through European Long-Term Investment Funds (“ELTIFs”).

- Making funding more diversified for companies by reviewing the Alternative Investment Fund Managers Directive (“AIFMD”).

- Enhancing market transparency by reviewing the Markets in Financial Instruments Regulation (“MiFIR”).

OTC Derivatives, Central Counterparties and Trade Repositories

Regulation (EU) No 648/2012 of the European Parliament and of the Council of July 4, 2012 on OTC derivatives, central counterparties and trade repositories (the “European Market Infrastructure Regulation” or “EMIR”) sets out rules relating to over-the-counter (“OTC”) derivatives markets, central counterparties and trade repositories. The rules introduce a reporting obligation for OTC derivatives markets, a clearing obligation for eligible OTC derivatives markets, measures to reduce counterparty credit and operational risk for bilateral OTC derivatives markets, CCPs, and trade repositories, and rules on the establishment of interoperability between CCPs. EMIR was enhanced and amended in June 2019. In addition, regulation governing the authorization and supervision of Central Securities Depositories (“CSDR”) was approved in September 2014, with the publication of most “Level 2” Regulatory Technical Standards in March 2017, with implementation in March 2019. CSDR may result in the introduction of mandatory buy-ins for OTC business in 2022 although recent communications from ESMA and the EU Commission have indicated that the intended implementation date of February 1, 2022 will be postponed pending a further review of those proposals by the EU Commission during 2022. Rules in relation to the calculation and collection of cash penalties are expected to come in to force in February 2022. The Central Counterparty Recovery and Resolution Regulation (“R&R Regulation”) was published in the Official Journal of the EU on January 22, 2021, which may, among other things, increase the amount of prefunded capital EuroCCP is required to maintain. This additional prefunded capital may be required to be drawn before any recovery measures can be taken by the CCP. On July 12, 2021, and November 18, 2021, ESMA proposed a set of level 2 and level 3 guidance pursuant to the R&R Regulation. As European authorities finalize and potentially adopt level 2 and 3 guidance, the final R&R Regulation may have a material adverse effect on our clearing business, financial condition and operating results.

EU Transparency Rules

On November 11, 2021, the European Council (“E.C.”) published its proposal for a review of EU market structure legislation, including proposed amendments to Markets in Financial Instruments Regulation (“MiFiR”) and Directive 2014/65/EU on markets in financial instruments (“MiFID II”). The proposal includes, among other provisions, provision for a consolidated tape for the EU and changes to the transparency regime for equities. These proposals are expected to be implemented in late 2023 or early 2024.

In addition, the European Securities and Markets Authority (“ESMA”) also published its proposal for a review of EU transparency rules. The proposal includes, among other provisions, provision for increased pre-trade transparency for periodic auctions and post-trade flagging. These proposals may be implemented in the second half of 2022 although they may also be incorporated into the wider MiFiR review.

As proposed, these proposals may have a material adverse effect on our business, financial condition and operating results. See “Risk Factors” for more information.

Compliance

U.S. Securities Industry

Federal securities laws have established a two-tiered system for the regulation of securities exchanges and market participants. The first tier consists of the SEC, which has primary responsibility for enforcing federal securities laws. The second tier consists of self-regulatory organizations (“SROs”), which are non-governmental entities that must register with and are regulated by the SEC. The Exchanges are SROs, each registered under Section 6 of the Exchange Act of 1934, as amended (“Exchange Act”) as a “national securities exchange,” and are subject to oversight by the SEC.

SROs are an essential component of the regulatory scheme of the Exchange Act for providing fair and orderly markets and protecting investors. To be registered as a national securities exchange, an exchange must successfully undergo an application and review process with the SEC prior to beginning operations. Among other things, the SEC must determine that the SRO has the ability to comply with the Exchange Act and to enforce compliance by its members and persons associated with its members with the provisions of the Exchange Act, the rules and regulations thereunder and the rules of the exchange.

In general, an exchange SRO is responsible for operating its trading platforms consistent with its rules, and regulating its members through the adoption and enforcement of rules governing the business conduct of its members. The rules of the exchange must also assure fair representation of its members in the selection of its directors and administration of its affairs and, among other things, provide that one or more directors be representative of issuers or investors and not be associated with a member of the exchange or with a broker or dealer. Additionally, the rules of the exchange must be adequate to ensure fair dealing and to protect investors and may not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act.

As registered national securities exchanges, virtually all facets of our Exchange operations are subject to the SEC’s oversight, as prescribed by the Exchange Act. The Exchange Act and the rules thereunder impose on us many regulatory and operational responsibilities, including record keeping and the day-to-day responsibilities for market operations and broker-dealer oversight. Furthermore, as SROs, the Exchanges are potentially subject to regulatory or legal action by the SEC or other interested parties. The SEC also has broad enforcement powers to censure, fine, issue cease-and-desist orders, prohibit us from engaging in some of our businesses, suspend or revoke our designation as a registered securities exchange or remove or censure any of our officers or directors who violate applicable laws or regulations. For example, in 2013, Cboe Options and C2 and, in 2015, EDGX and EDGA, entered into consent orders with the SEC, under which they were censured, ordered to cease and desist from violating certain sections of the Exchange Act, paid fines and agreed to complete certain undertakings. We have certified to the completion of these undertakings and are no longer required to certify.

As part of its regulatory oversight, the SEC conducts periodic reviews and inspections of exchanges, and the Exchanges have been subject to such routine reviews and inspections. To the extent such reviews and inspections result in regulatory or other changes, we may be required to modify the manner in which we conduct our business, which may adversely affect our business. We collect certain fees to cover Section 31 fees charged to the Exchanges by the SEC and certain fees derived from our regulatory function and fines in connection with our disciplinary proceedings. The Exchanges are responsible for the ultimate payment of Section 31 fess to the SEC. Additionally, under the rules of each of our exchanges, as required by the SEC, any revenue derived from the regulatory fees and fines cannot be used for non-regulatory purposes.

Section 19 of the Exchange Act also provides that we must submit to the SEC proposed changes to any of the Exchanges’ rules, including revisions of their certificates of incorporation, bylaws, or other governing documents of the

SROs or their parent companies. The SEC will typically publish the proposal for public comment, following which the SEC may approve or disapprove the proposal, as it deems appropriate. Certain categories of rule changes, like fee changes, can be effective on filing, but the SEC retains the ability to suspend or reject such filings within a prescribed period of time.

Canadian Securities Industry

MATCHNow is subject to comprehensive regulation and oversight by its primary provincial securities regulatory authority, the OSC, and by IIROC. The regulations applicable to MATCHNow cover a wide array of areas, including, but not limited to, marketplace operations (which include corporate governance, fair access, systems compliance and integrity, and conflict management requirements), trading rules, electronic trading risk management, and financial viability.

Australian Securities Industry

Cboe Australia is subject to comprehensive regulation and oversight by the ASIC. The regulations applicable to Cboe Australia cover a wide array of areas, including, but not limited to, marketplace operations (which include corporate governance, fair access, systems compliance and integrity, and conflict management requirements), trading rules, electronic trading risk management, and financial viability.

Japanese Securities Industry

Cboe Japan is subject to comprehensive regulation and oversight by the JFSA and the JSDA. The regulations applicable to Cboe Japan cover a wide array of areas, including, but not limited to, marketplace operations (which include corporate governance, fair access, systems compliance and integrity, and conflict management requirements), trading rules, electronic trading risk management, and financial viability.

Futures and Swaps Industry-CFE and Cboe SEF

The operations of each of CFE and Cboe SEF are subject to regulation by the CFTC under the Commodity Exchange Act. The Commodity Exchange Act generally requires that futures trading in the United States be conducted on a designated contract market and, in some cases, requires swaps trading to be conducted on swap execution facility (“SEF”) or designated contract market (“DCM”). The Commodity Exchange Act and CFTC regulations establish criteria for an exchange to be designated as a contract market on which futures and futures options contracts may be traded, and for a trading platform to be designated as a swap execution facility on which certain swaps may be traded. Designation as a contract market or swap execution facility for the trading of specified futures or swaps contracts is non-exclusive. This means that the CFTC may permit additional exchanges or trading platforms to be contract markets or swap execution facilities for trading the same or similar contracts.

CFE is a designated contract market, and Cboe SEF is a swap execution facility, each of which is subject to the oversight of the CFTC and to a variety of ongoing regulatory and reporting responsibilities under the Commodity Exchange Act. As a designated contract market, CFE is required to comply with the applicable core principles and regulations under the Commodity Exchange Act, as is Cboe SEF as a swap execution facility. Each of CFE and Cboe SEF has surveillance and regulatory operations and procedures to monitor and enforce compliance by trading privilege holders with CFE rules, and by participants with Cboe SEF rules, as applicable. If CFE or Cboe SEF fails to comply with applicable laws, rules or regulations, it may be subject to censure, fines, cease-and-desist orders, suspension of its business, removal of personnel or other sanctions, including revocation of CFE’s designation as a contract market or Cboe SEF’s designation as a swap execution facility.

Europe

Cboe Europe is located in London and is subject to regulation in the UK and to certain European regulations. The current UK regulatory system was established by the Financial Services Act 2012 (“FSA12”), which amended the Financial Services and Markets Act 2000. The legislation replaced the previous financial services regulator, the Financial Services Authority, with three new bodies: The Financial Policy Committee (“FPC”), The Prudential Regulation Authority, and the FCA. Financial conduct of markets, including activity on, and the operation of, markets is regulated by the FCA, which is an independent non-governmental body, given statutory powers by the FSA12. The FCA has three statutory objectives: to secure an appropriate degree of protection for consumers; to protect and enhance the integrity of the UK financial system; and to promote effective competition in the interests of consumers in the markets for financial services. The FCA is accountable to Her Majesty’s Treasury Ministers and, through them, to Parliament.

EuroCCP and Cboe NL are located in Amsterdam and subject to Dutch law and regulation. The current Dutch regulatory system was established by the Act on Financial Supervision. Financial conduct of markets, including activity on, and the operation of, markets is regulated by the AFM. Financial conduct of CCPs, including clearing activity is regulated by the AFM and DNB. The AFM is an independent non-governmental body, given statutory powers by the Act on Financial Supervision. The AFM has three strategic objectives: to promote the fair and conscientious provision of financial services, to promote the fair and efficient operation of the capital markets and to contribute to the stability of the financial system. The AFM is accountable to the Minister of Finance. The DNB is the Dutch central bank, financial sector supervisor and resolution authority. The DNB is committed to a stable financial system: stable prices, solid financial institutions and properly functioning payment transfers.

Much of the UK and Dutch financial services regulation originates from the EU. Such regulation includes organizational requirements, capital resources requirements and the specific requirements for RMs and MTFs and are applicable to both Cboe Europe and Cboe NL. MiFID II and MiFIR set out requirements for RMs and MTFs with respect to the establishment of transparent and non-discretionary rules and procedures governing access and for fair and orderly trading and the efficient execution of orders, as well as to facilitate the efficient settlement of transactions conducted on RMs and MTFs and monitoring compliance with the rules. EMIR governs the CCPs operating in the EU and requires them to meet common risk management, governance and capital adequacy standards. The regulatory functions required of Cboe Europe Equities and Derivatives, including EuroCCP, by MiFID II, MiFIR, EMIR and other relevant legislation and regulations are performed by in-house staff. Cboe Europe Equities and Derivatives utilizes the same state-of-the-art, real-time surveillance system is used on the U.S. to monitor trading and market activities on BZX, BYX, EDGA, and EDGX. EuroCCP utilizes proprietary risk management software to monitor settlement and funding flows.

Global FX

While the global institutional spot FX market remains largely unregulated, the enactment of the Dodd Frank Act and its related regulations in the United States and the ongoing implementation of MiFID II and MiFIR in Europe have impacted the regulatory landscape for currency derivative products. For example, certain standardized currency derivative products are required to trade on an organized trading venue such as a SEF or DCM in the United States or on an MTF or organized trading facility in Europe. Moreover, even in the largely unregulated spot FX market, this movement towards additional trading standards and norms is highlighted by the publication of the FX Global Code in 2017 by the Global Foreign Exchange Committee, reflecting principles of good conduct for the wholesale FX market, and whose publication may lead to additional oversight in the global FX market. Cboe FX issued a Statement of Commitment declaring its commitment to conduct its FX market activities in a manner consistent with the principles of the FX Global Code. Following the publication of the FX Global Code regulators are taking a new look at the spot FX market, and any decision to impose new regulations may affect our spot FX business line.

Broker-Dealer

Cboe Trading and BIDS Trading are registered broker-dealers regulated by the SEC, FINRA, other SROs of which they are members and various state securities regulators. Cboe Trading currently operates as a routing broker-dealer for sending orders from the Exchanges to other venues for execution, including routing orders among the Exchanges. Cboe Trading is considered a facility of each of the Exchanges and is subject to the rules of the Exchanges. The Exchanges are responsible for enforcing Cboe Trading's compliance with their rules, including to ensure Cboe Trading is not given preferential treatment. BIDS Trading currently operates an ATS, which is designed to bring counterparties together to anonymously trade large blocks of U.S. equities. BIDS Trading is not a member of any of the U.S. national securities exchanges and is not subject to exchange rules.

Cboe Trading and BIDS Trading are subject to SEC and SRO rules, as applicable, and, as registered broker-dealers, regulations concerning all aspects of their businesses, including trading practices, order handling, best execution, anti-money laundering, handling of material non-public information, safeguarding data, reporting, capital adequacy, record retention, market access and the conduct of their officers, employees and other associated persons. The SEC, SROs and state securities commissions may conduct proceedings which can result in injunctions or other sanctions, censures, fines, the issuance of cease and desist orders or the suspension or expulsion of a broker-dealer, its officers or employees. The SEC and FINRA impose certain minimum capital requirement rules that require notification when a broker-dealer's net capital falls below certain predefined criteria, dictate the ratio of debt to equity in the regulatory capital composition of a broker-dealer, constrain the ability of a broker-dealer to expand its business under certain circumstances and impose certain requirements that may have the effect of prohibiting a broker-dealer from distributing or withdrawing capital.

In addition, the ATS operated by BIDS Trading is not a registered national securities exchange or a facility thereof, as such, Cboe intends to maintain the BIDS ATS as an independently managed and operated trading venue, separate from and not integrated with the Exchanges. The Chief Executive Officer of BIDS Trading is expected to lead BIDS Trading as an independent business within Cboe, reporting into an independent committee of the board of Cboe Global Markets. Further, Cboe Trading will not route orders to BIDS Trading on behalf of the Exchanges.

Cboe Global Markets

Certain aspects of Cboe Global Markets are also subject to SEC, FCA and AFM oversight, including certain ownership and voting restrictions on its stockholders. The focus of the SEC's regulation of Cboe Global Markets is to assure fair representation of members in the selection of the directors of the Exchanges, public participation in the governance of the Exchanges and that the Exchanges can satisfy their regulatory responsibilities under the Exchange Act. Furthermore, the SEC requires that Cboe Global Markets give due regard to the preservation of the independence of the self-regulatory function of the Exchanges and to Cboe Global Markets' obligations to investors and the general public. The SEC also requires that Cboe Global Markets not take any actions that would interfere with the effectuation of any decisions by the Board of Directors of any of the Exchanges relating to its regulatory functions or the structure of the market that it regulates or that would interfere with the ability of such Exchange to carry out its responsibilities under the Exchange Act. To the extent that Cboe Global Markets' business activities involve or relate to the Exchanges, the officers and directors of Cboe Global Markets may be deemed to be officers and directors of the exchanges for purposes of and subject to oversight under the federal securities laws. Accordingly, the SEC may exercise direct supervision and disciplinary authority over certain Cboe Global Markets' activities and those activities may be subject to SEC approval and, in some cases, public notice and comment.

In addition, Cboe Global Markets indirectly holds all of the issued share capital and voting rights in Cboe Europe and its wholly owned subsidiaries, Cboe Chi-X Europe and Cboe NL. As a result, we and any person who holds, or has voting power with respect to, 10% or more of the outstanding shares of Cboe Global Markets common stock may be subject to certain regulatory requirements under UK and Dutch law.

U.S. Regulatory Responsibilities

Our U.S.-based exchanges are responsible for assessing the compliance of their TPHs or members, including Cboe Trading, with the respective exchange's rules and the applicable rules of the SEC and/or CFTC. The main activities that the exchanges, as applicable, are required to monitor for the purpose of compliance with these rules include:

- surveillance designed to detect violations of exchange trading rules;
- surveillance designed to detect violations of SEC and/or CFTC rules;
- investigation of matters involving potential rule violations;
- the investigation of complaints about possible rule violations brought by customers, TPHs, members or other SROs; and
- the examination of TPHs or members for compliance with rules such as those related to net capital, books and records, market access and other matters related to the TPHs' or members' exchange business functions.

In order to ensure market integrity, we regulate and monitor our TPHs' and members' trading activities by using both our employees and third parties under regulatory services agreements ("RSAs"). See "Regulatory Agreements" below. Providing effective regulation is important for attracting and retaining the confidence and participation of market-makers, broker-dealers and institutional and retail investors.

We expend considerable time, financial resources and effort to ensure that the exchanges' rules and regulations conform to regulatory best practices within the securities and futures exchange industries and within the regulatory regime overseen by the SEC and CFTC, our primary regulators. In order to support our efforts and those of our market participants to comply with applicable law and our exchange rules, we developed a regulatory program to monitor market activity on our exchanges.

All of our Exchanges and CFE are participants in the Intermarket Surveillance Group ("ISG"). ISG is an international information-sharing cooperative governed by a written agreement that provides for a comprehensive surveillance sharing arrangement. In addition to the agreement for confidential information sharing, the ISG provides a framework for the coordination of regulatory efforts among exchanges trading securities, commodity futures and related products to address potential intermarket manipulations and trading abuses.

As part of the regulatory program, each of our Exchanges and CFE have rules pertaining to their respective disciplinary processes.

U.S. Regulatory Agreements

The Exchanges and CFE have entered into agreements under which third parties have agreed to perform regulatory functions on behalf of our markets (e.g., RSAs). As discussed below, in addition, in certain other instances for our Exchanges, a third party has been allocated the regulatory responsibility under Rule 17d-1 or Rule 17d-2 under the Exchange Act, while in others, we retain the regulatory responsibility for the activities.

Regulatory Services Agreement with FINRA

The Exchanges have entered into agreements with FINRA under which FINRA has agreed to provide regulatory services to the Exchanges. Under these agreements, FINRA performs certain regulatory functions on behalf of the Exchanges and, to avoid any potential conflicts of interest concerning the regulation and oversight of Cboe Trading, certain regulatory services specific to Cboe Trading. The Exchanges remain responsible for the regulation of their TPHs, members and marketplaces, and retain the authority for bringing disciplinary actions against their TPHs and members, although FINRA performs certain disciplinary-related functions on behalf of the Exchanges. Over the course of 2019 through 2021, certain regulatory and disciplinary-related functions that FINRA had performed on behalf of the Exchanges have been moved back in-house from FINRA.

Regulatory Services Agreements with NFA and OCC

Through December 31, 2020, the NFA performed regulatory functions on behalf of CFE pursuant to an RSA with CFE. The RSA has been terminated and, starting January 1, 2021, these regulatory functions were moved in-house from the NFA. In addition, OCC has also performed and continues to perform certain regulatory functions on behalf of CFE pursuant to an RSA with CFE. CFE also performs other regulatory and disciplinary-related functions in-house. Whether performed under an RSA or in-house, CFE retains overall responsibility for the regulation of its marketplace and for bringing disciplinary actions. CFE is also a party to cooperative and regulatory information sharing agreements with other SROs and is a member of the ISG, described above.

Rule 17d-1 Designations and Rule 17d-2 Agreements

Section 17(d) of the Exchange Act and the related Exchange Act rules permit SROs to allocate certain regulatory responsibilities to avoid duplicative oversight and regulation. Under Exchange Act Rule 17d-1, the SEC designates one SRO to be the designated examining authority ("DEA") for each broker-dealer that is a member of more than one SRO. The DEA is responsible for the regulatory oversight of applicable financial responsibility rules pertaining to that broker-dealer. Cboe Options is the DEA for several of its TPHs. Cboe Trading's assigned DEA is FINRA.

Exchange Act Rule 17d-2 permits SROs to enter into agreements, commonly called Rule 17d-2 agreements, which are approved by the SEC and concern the allocation of regulatory responsibility for rules applicable to TPHs and members that those SROs have in common. The Exchanges have entered into certain bi-lateral Rule 17d-2 agreements under which FINRA is allocated responsibility for enforcing certain federal securities laws and certain exchange rules that are common with FINRA rules. The Exchanges have entered into certain other multi-party Rule 17d-2 agreements that allocate responsibility among the participating SROs, which may include the Exchanges, for oversight of their allocated common members compliance with certain rules governing, among other items, options related sales practices, options related market surveillance, insider trading, NMS and consolidated audit trail NMS plan ("CAT") compliance.

National Market System Plans

We are member participants of several NMS plans including, but not limited to, the following: Cboe Options, C2, BZX, and EDGX are member exchanges in OPRA, which is the designated securities information processor for market information that is generated through the trading of exchange-listed securities options in the United States, and it disseminates certain core trading information, such as last sale reports and quotations. Cboe Options, BZX, BYX, EDGA, and EDGX also participate in the CTA/CQ and the UTP Plans, which perform analogous services for the U.S. equities market. Securities Information Automation Corporation ("SIAC") acts as the "processor" for OPRA and the CTA/QC Plans. Nasdaq Stock Market, LLC acts as the processor for the Nasdaq Unlisted Trading Privileges Plan. Also, see "Regulatory Environment and Compliance - Recent Developments - United States - Consolidated Data Plan Order", "Risk Factors" and "Legal Proceedings" for more information regarding the Consolidated Data Plan Order and the Plan.

Cboe Options, C2, BZX, and EDGX are also parties to the Options Order Protection and Locked/Crossed Market Plan, which is designed to prohibit trade-throughs and avoid locked/crossed markets. Cboe Options, C2, BZX, and EDGX are also parties to the Options Listing Procedures Plan, which sets forth the procedures that the options exchanges must follow to list new options. Cboe Options, BZX, BYX, EDGA, and EDGX are also parties to the NMS plan for the selection and reservation of securities symbols.

Under the Options Regulatory Surveillance Authority Plan ("ORSA Plan"), U.S. securities options exchanges are permitted to act jointly in the administration, operation and maintenance of a regulatory system for the surveillance, investigation and detection of the unlawful use of undisclosed, material information in trading in one or more of their markets. The ORSA Plan is intended to enhance the effectiveness and efficiency with which the exchanges regulate their respective markets and to avoid duplication of certain regulatory efforts. FINRA operates the ORSA Plan facility for options insider trading.

The CAT involves the creation of a comprehensive audit trail that strives to enhance regulators' ability to monitor trading activity in the U.S. securities markets through a phased implementation. Upon final implementation of the provisions of the CAT, data will be required to be reported to a central repository the following day by each SRO (a "Plan Participant") and broker-dealer (an "Industry Member"). On November 15, 2016, the SEC approved the CAT. The first of various phases of CAT were originally required to begin in November 2017; however, there have been some delays. In 2017, Thesys CAT LLC ("Thesys"), a subsidiary of Thesys Technologies, LLC, was selected as the plan processor with the responsibility to build and operate the CAT. The first phase of CAT ultimately went live in November 2018, at which time we and other SROs/Plan Participants began initial reporting to the CAT. In 2019, Thesys was replaced by a new plan processor, FINRA CAT, LLC, a subsidiary of FINRA. The second phase for Industry Member order and trade file submissions is now live and began in June 2020 (for equities), June/July 2020 (for options), and additional sub-phases related to order and trade file submissions were implemented through December 2021. The final implementation sub-phase, related to broker-dealer customer and account information submissions by Industry Members, is now scheduled to go live in July 2022 (or by a subsequent date in the event the current deadline is extended). While the funding of the CAT is ultimately expected to be provided by both the SROs/Plan Participants (which includes our U.S.-based securities exchanges) and Industry Members, until fee filings associated with the funding model are effective with or approved by the SEC, the funding to date has solely been provided by the SROs/Plan Participants. The funding by the SROs/Plan Participants has been done in exchange for promissory notes expected to be repaid once such Industry Member fees are collected. Until those fees are collected, the SROs/Plan Participants may continue to incur additional significant costs, including as a result of replacing the plan processor, or result in the uncollectibility of promissory notes related to the funding of the implementation and operation of the CAT. See Note 8 ("Credit Losses") and Note 9 ("Other Assets, Net") for further information. In addition, on February 14, 2021, Consolidated Audit Trail, LLC, formed by SRO Plan Participants to implement the CAT requirements, filed motions to stay all or portions of two exemptive orders the SEC issued on December 16, 2020 related to the implementation of the CAT. On February 16, 2021, Consolidated Audit Trail, LLC also petitioned the U.S. Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") for judicial review of the two exemptive orders, asserting that the orders are unlawful. On April 7, 2021, the D.C. Circuit ordered the case to remain in abeyance, directed the filing of status reports every 60 days and ordered the parties "to file motions to govern future proceedings within 30 days after the discussions between the parties and the agency proceedings are completed."

Intellectual Property

We own or have rights to a number of intellectual property assets, including trademarks, service marks, domain names, trade names, copyrights, trade secrets and patents. While the majority of our intellectual property is protected under U.S. law, we have many intellectual property assets protected by laws in Europe, Asia and other parts of the world. We license some intellectual property assets to other entities. We attempt to protect our intellectual property rights, while respecting the legitimate intellectual property rights of others.

Human Capital Management

Cboe has a robust human capital management program in place focused on equal opportunities including diversity, equity and inclusion ("DEI"), performance and career development, health and well-being, comprehensive benefits, training, talent acquisition, and succession planning. Additional information on our approach to human capital and ESG issues can be found in the Cboe Global Markets, Inc. Environmental, Social and Governance Report located in the Corporate Social Responsibility section of our website at https://markets.cboe.com/about/corporate-social-responsibility, which does not form a part of this Form 10-K.

Equal Opportunity, Diversity, and Pay Equity

Cboe believes in a culture of diversity and inclusion that promotes creativity, collaboration and innovation, which is critical to the success of our business and defining the markets of tomorrow. Cboe is an equal opportunity employer and provides equal employment opportunities to all qualified persons without regard to sex, race, color, ethnicity, creed, religion, national origin, ancestry, citizenship status, age, veteran or military status, disability, marital status, domestic partnership or civil union status, pregnancy, sexual orientation, genetic status, gender identity or expression, and any other characteristic protected by law (a “Protected Characteristic”). Cboe is committed to applying our Equal Employment Opportunity Policy to all employment practices that impact the terms and conditions of employment including, but not limited to, hiring, evaluation, discipline, promotion, training, compensation, transfer, and termination. Actively nurturing and maintaining a diverse and inclusive culture at Cboe is a core imperative. We believe that our collective and unique perspectives fuel our capabilities, enhance our team spirit and enable us to attract and retain top talent as we define the markets of the future. Our commitment and responsibility in this regard starts at the top, with leadership and support from the full Cboe Board of Directors and executive team.

One of the most compelling examples of our pledge to equality, diversity and inclusion throughout our Company is the completion of our first pay equity study in 2019. In 2020, we finalized the implementation of the findings of our inaugural study. To maintain and strengthen our efforts in this area, we also review the critical touchpoints across the employee journey with Cboe to keep a level playing field, from the talent selection, promotion, leadership development and succession planning processes and make adjustments, as necessary, to ensure opportunity parity across the Company. Our goal is to ensure that equal pay and equal opportunity for all that results in a collaborative, high performing organization bringing new innovations to market and providing superior service to our customers.

The Cboe Women’s Initiative works toward its mission: *to increase representation, strengthen voices, and build a culture of opportunity and advancement for the women of Cboe*. The Women’s Initiative is led by an associate board and engages women throughout the Company on a variety of programs. More specifically, the Women’s Initiative is comprised of three committees that target areas where its membership strives to promote change, such as networking events, building a formal mentorship program and an advocacy group aimed at gathering input on topics of importance for its membership. This outreach helps shape the planning and focus for the Initiative. Networking events include the “Trailblazers” events where senior women share their success stories through personal accounts of career growth and impact and speakers on Male Allyship in the workplace. In its first year, the mentorship program paired over 45 mentors with mentees across the Company.

We are also proud to share that Cboe recently formed an employee Diversity Leadership Council in 2020 focused on unlocking the potential of a variety of perspectives, capabilities and cultural experiences. We believe in a culture of diversity and inclusion that promotes creativity, collaboration and innovation, which is critical to the success of our business and defining the markets of tomorrow. To reinforce this belief, this council is a collective voice on how Cboe strives to create a diverse workforce that reflects the world in which we operate. Further, they are charged with oversight on how we build an inclusive culture where every employee feels welcome, safe and empowered. In 2021, we also created a new DEI leadership position within our human resources organization to be accountable for helping to establish the strategy and execution of our DEI approach to attract develop and retain top diverse talent while fostering a community of belonging and inclusion.

To reinforce our commitment to organizational wide education and commitment to diversity and inclusion we provided a full-day Unconscious Bias training through third-party experts for all managers around the globe in 2020 with the commitment to continue the rollout of this program for all employees.

In addition, in 2021, we launched Cboe Empowers and Cboe’s Veterans Initiative. Cboe Empowers is a community engagement program that provides mentorship, scholarship and guidance to under-resourced students throughout their educational journey through access to Cboe's associates, resources, work environment and other learning and experience opportunities. Initially launched in Chicago, the vision for Cboe Empowers is to support students through all stages of education from elementary or primary school to career by providing mentorship, learning and experience opportunities, professional development and scholarships to students within the Chicago Public School system and graduates pursuing higher education. Cboe Empowers expects to supplement its own programs by collaborating with local partners, including the Greenwood Project and Working in the Schools, to help create maximum impact for its participants. The Cboe Veterans Initiative is an Associate Resource Group that operates based on four main pillars: recruiting, mentorship, service, and networking. The vision for the Cboe Veterans Initiative is to actively seek Veteran talent, provide mentorship to veterans within and outside of the Company, commit to giving back to the Veteran community through financial and non-monetary support, and encourage outreach to Cboe Veterans.

Performance and Career Development

Cboe expects employees to perform their duties to the best of their ability and to develop their competencies for career growth. We recognize the need to provide ongoing, timely, and constructive performance feedback. Cboe has designed a Performance Management Program that drives the professional development of our employees while also providing fair and equitable rewards and recognition.

The principles of performance management include:

- align performance expectations with strategy and goals of the business,
- ongoing open dialogue regarding performance and development,
- foster accountability for behaviors and actions which contribute to a positive culture, and
- commitment to deliver results which drive our business.

To help promote employee career development, we started in 2021 and are planning to launch in 2022, SCOUT, which is an AI powered talent management tool that will help us deliver internal mobility and career development opportunities for our employees.

Employee Health and Well-Being and Comprehensive Benefits Program

Cboe's vision is to support the overall wellness of employees and their families through education and activities that encourage a healthy lifestyle, resulting in improved health and productivity. Our programs and benefit plans provide a corporate atmosphere of collective well-being that incorporate strategies for physical, emotional, mental and financial wellness. Our programs focused on enhanced employee assistance programs, wellness programs and challenges, that include both mental and physical wellbeing, and webinars and classes through our retirement vendor to support the financial health of our employees.

To further these efforts, we launched the CboeFit program that creates an opportunity to elevate these programs and strengthen employee engagement as we execute against our wellness vision and strategies. With the global pandemic in 2020 and 2021, there was further focus on our Employee Assistance program that was strengthened across the globe with a diverse set of mental health resources aimed at supporting our employees during a unique and challenging time.

Employee Engagement and Pulse Surveys, Town Halls and an Open-Door Policy

In 2021, Cboe conducted our fourth annual employee engagement survey and has implemented career, leadership, and culture focused programs in response to the survey findings. Our participation rate exceeds standard benchmarks and a significant majority of our employees would recommend Cboe as a great place to work. To further cement our commitment to Diversity and Inclusion, we added new, enhanced questions in this area. Our Diversity Leadership Council hosted a special focus group to review these specific results to listen to the voices of our diverse population, prioritize their feedback and ideas, and create commitments for actionable improvements.

Our senior management team continues to hold the commitment to an open-door policy and encourages the free flow of information and communication in furtherance of active transparency. With the global pandemic, our ability to tap into the voice of our employees was critically important. We conducted regular pulse surveys to gauge sentiment in making critical decisions. Our CEO also issues weekly letters to help connect with our employees. Human Resources also provided ongoing regular resources and tips to help support the variety of challenges from the new reality of fully remote work to childcare and elder care that our employees faced throughout 2021.

Cboe also continues to create an open and frank atmosphere in which any grievance, complaint, suggestion or question receives a timely response. Cboe offers a whistleblower hotline for complaints, which can be made anonymously. Additionally, employees can raise questions and suggestions to the Cboe Human Resources team either in-person or via a group email address and are either responded to individually or addressed at our Global Town Hall meetings. The objective of these town halls is to provide employees an update on Company news, share updates from major business lines, as well as provide a forum to ask questions and offer feedback. Town halls can include updates on anything from legislation that may impact our business to ESG topics. Employees are encouraged to participate in free flow of information and communication and to offer positive and constructive feedback in furtherance of active transparency.

To further reinforce our commitment to employee engagement as a result of changing work styles due to COVID-19, we began in late 2021 a future-of-work study with a third party to help determine where Cboe employees might be best suited to work from in the future, whether it is in the office, remotely, or a hybrid mix.

Training and Succession Planning

We believe that the development of all Cboe employees helps drive our collective success. Through skill and competency development we signal our investment in all while also enabling enhanced productivity. Through our tuition reimbursement program, our employees receive financial support in their pursuit of specialized university courses and degrees. In addition to our ongoing offering of online courses on diverse topics through our corporate university, CboeU, employees can participate in the CboeLearns hybrid program focused on virtual classroom instruction combined with work application and CboeLive, which is focused on business topics to foster organizational-wide knowledge sharing and education.

Leadership is another critical element to our success at Cboe. People managers globally participated in a two-day training focused on the “4 Essential Roles of Leadership” (1. Inspire Trust; 2. Create Vision; 3. Execute Strategy; 4. Coach Potential). We expanded on our leadership training through the design and launch of a bespoke 8-week program, CboeLeads, expanding on the development of our high potential leaders further strengthening the leadership bench and accelerating readiness of this key talent pool. The senior management team participated in an additional one-day workshop focused on their roles that was also accompanied by Leadership toolkits to guide an enhanced approach to coaching and career conversations.

Cboe has held several succession planning discussions with the Compensation Committee and Board of Directors to plan for the fulfillment of essential roles, such as the CEO and other senior officers. This process includes investments in advanced development planning for targeted successors to accelerate their readiness through key internal projects and assignments as well as tailored training. Diversity and inclusion are a formal part of Cboe's succession planning process as we work to identify and advance internal diverse talent and, in parallel, continually scan external talent pools for successors.

Employees

As of December 31, 2021, we employed 1,196 individuals, 820 of whom are based in the United States, 128 of whom are located in London, England, 9 of whom are located in Belfast, Northern Ireland, 9 of whom are located in the Greater Toronto Area, Ontario, Canada, 18 of whom are located in Calgary, Alberta, Canada, 1 of whom are located in Coquitlam, British Columbia, 86 of whom are located in Amsterdam, Netherlands, 35 of whom are located in Sydney, Australia, 17 of whom are located in Tokyo, Japan, 51 of whom are located in Manila, Philippines, 15 of whom are located in Hong Kong, 5 of whom are located in Singapore, and 2 of whom are located in Switzerland. Of these employees, 447 were involved in technology or operations and 123 were involved in direct support of trading operations. The remaining 626 employees provide business development, financial, regulation, human resources, compliance, legal, planning and research, administrative, and managerial support.

We have 6 building engineers that are covered by a collective bargaining agreement, which expires on May 31, 2022, with the International Union of Operating Engineers Local 399, AFL-CIO. Management believes that we have strong relationships with our employees, and we have never experienced a work stoppage.

Information about our Executive Officers

Set forth below is information regarding our executive officers:

Name	Age	Position
Edward T. Tilly	58	Chairman of the Board, President and Chief Executive Officer
Christopher A. Isaacson . .	43	Executive Vice President and Chief Operating Officer
Brian N. Schell	56	Executive Vice President, Chief Financial Officer and Treasurer
Catherine R. Clay.	54	Executive Vice President, Data and Access Solutions
John F. Deters	51	Executive Vice President, Chief Strategy Officer
David Howson	45	Executive Vice President, President Europe and Asia Pacific
Patrick Sexton	57	Executive Vice President, General Counsel and Corporate Secretary
Jill M. Griebenow	42	Senior Vice President, Chief Accounting Officer

Edward T. Tilly. Mr. Tilly is our Chairman, President and Chief Executive Officer. Mr. Tilly has served as our President since January 2019, Chairman since February 2017 and as CEO and director since May 2013. Prior to becoming CEO, Mr. Tilly served as President and Chief Operating Officer from November 2011, and Executive Vice Chairman from August 2006 until November 2011. He was a member of CBOE from 1989 until 2006, and served as Member Vice Chairman from 2004 through July 2006. He holds a B.A. degree in Economics from Northwestern University.

Christopher A. Isaacson. Mr. Isaacson is our Executive Vice President and Chief Operating Officer, a position he has held since January 2019. Previously he was our Executive Vice President and Chief Information Officer, a position he was appointed to upon the Company's acquisition of Bats. Prior to that, he served as Bats' Executive Vice President and Global Chief Information Officer since February 2014, he served as Bats' Senior Vice President and Chief Operation Officer from 2007 to 2014 and he has held other various senior leadership positions since 2005. Prior to being one of the founders of Bats, Mr. Isaacson was a software developer at Tradebot Systems, Inc. from 2003 to 2005. Mr. Isaacson serves on the Boards of Directors of Cboe Japan and Cboe Australia, as the Chairman of the Board of Directors of CFE and SEF and previously served on the Board of Directors of OCC. Mr. Isaacson holds a B.S. degree in information systems with a minor in math from Nebraska Wesleyan University and an M.B.A. degree from the University of Nebraska-Lincoln.

Brian N. Schell. Mr. Schell is our Executive Vice President, Chief Financial Officer and Treasurer, a position he has held since January 2018. Mr. Schell is also currently serving as interim Chief Human Resources Officer. Previously, he was Deputy Chief Financial Officer of the Company's subsidiary Cboe Exchange, Inc., a position he was appointed to upon the Company's acquisition of Bats. Prior to that, he served as Chief Financial Officer of Bats since March 2011. Prior to joining Bats, he held various senior leadership positions at H&R Block Inc., as well as various positions at the FDIC, KPMG and JP Morgan. Mr. Schell holds a B.B.A. degree with an emphasis in finance from the University of Notre Dame and an M.B.A. degree from The George Washington University.

Catherine R. Clay. Ms. Clay is our Executive Vice President, Data and Access Solutions, a position she has held since March 2021. Previously, she was Senior Vice President, Global Head of Information Solutions of the Company's subsidiary Cboe Exchange, Inc. from February 2019 to March 2021 and she has held other various senior leadership positions since 2015, including Vice President Business Development, a position she was appointed to upon the Company's acquisition of Livevol, Inc. Prior to that, she served as Chief Executive Officer of Livevol, Inc. from 2013 to 2015 and as its Chief Strategy Officer from 2010 to 2013. Prior to that, she served as Founder of Thales LLC from 2006 through 2010. Ms. Clay holds a B.S. degree from University of Colorado-Boulder.

John F. Deters. Mr. Deters is our Executive Vice President, Chief Strategy Officer, a position he has held since 2018. He has previously served as our Head of Multi-Asset Solutions from 2018 to 2019 and as Chief Strategy Officer from 2013 to 2018. Prior to joining Cboe in 2013, Mr. Deters was most recently a Vice President and Investment Banker of Financial Institutions Group, Investment Banking at Barclays from 2008 to 2013. Mr. Deters holds a B.A. degree from Wheaton College, an M.B.A. degree from the University of Chicago, and a J.D./M.S. dual degree from Georgetown University Law Center.

David Howson. Mr. Howson is our Executive Vice President, President Europe and Asia Pacific, a position he has held since July 2021. Previously, he was our Executive Vice President, President Europe from January 2020 to July 2021 and Chief Operating Officer of Cboe Europe from 2013 to 2019. Prior to that, he served as Founder, Chief Technology

Officer of Equiduct from April 2006 through June 2013. Mr. Howson holds a First Class Honours bachelor's degree from the University of Newcastle-upon-Tyne.

Patrick Sexton. Mr. Sexton is our Executive Vice President, General Counsel and Corporate Secretary, a position he has held since March 2018. Previously, he was Deputy General Counsel of the Company's subsidiary Cboe Exchange, Inc. He served in that capacity from July 2013 to March 2018 and has acted as legal, regulatory and compliance counsel with increasing responsibility and oversight since joining the Company in 1997. Mr. Sexton holds a B.A. degree from the University of Notre Dame and a J.D. degree with honors from Notre Dame Law School.

Jill M. Griebenow. Ms. Griebenow is our Senior Vice President, Chief Accounting Officer, a position she has held since August 2018. Previously, she served as Chief Financial Officer, Europe of the Company's subsidiary Cboe Europe, a position she was appointed to upon the Company's acquisition of Bats. She also previously served as Chief Financial Officer, Europe of Bats' subsidiary Bats Europe Limited since February 2014 and was employed by Bats in the financial area since 2011. Prior to that, she held various positions at Ernst & Young LLP. Ms. Griebenow is a certified public accountant and holds a bachelor's degree in accounting from the University of Northern Iowa.

Corporate Social Responsibility

The Company recognizes that operating in a socially responsible manner helps promote the long-term interests of our stockholders, organization, associates, industry and community. Our guiding principles help us deliver on our corporate mission and strategy, including good citizenship.

- Active Transparency – A commitment to proactively sharing information and knowledge.
- Creative Collaboration – An enthusiasm for working with our customers and partners to advance innovation.
- Competitive Spirit – A will to succeed and be the best.
- Superior Service – A drive to understand needs and exceed expectations.
- Good Citizenship – A dedication to the betterment of our markets, workplace and community.

We believe that being a good citizen means that we hold ourselves accountable for the integrity of the markets and to the communities we serve, seek to help resolve conflicts and build consensus, inform those impacted before taking action, lead by example and serve as part of the solution. We also seek to be good citizens to the communities we serve by being committed to being environmentally conscious. Additionally, being good citizens also means that we strive to support our associates and better serve our industry and community through our human capital development, volunteerism and policies. See "Human Capital Management" subsection above for more information.

Additional information on our approach to ESG can be found in the 2021 Cboe Global Markets, Inc. Environmental, Social and Governance Report located in the Corporate Social Responsibility section of our website at http://www.Cboe.com/aboutCboe, which does not form a part of this Form 10-K.

Available Information

Our website is www.cboe.com. The Company files annual, quarterly and current reports, proxy statements and other information with the SEC under the Exchange Act. The Company makes available, free of charge, on its website its annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the SEC. The Company's reports filed with, or furnished to, the SEC are also available on the SEC's website at www.sec.gov.

In addition, we have posted on our website the charters for our (i) Audit Committee, (ii) Compensation Committee, and (iii) Nominating and Governance Committee, as well as our Code of Business Conduct and Ethics and Corporate Governance Guidelines. We will provide a copy of these documents without charge to stockholders upon written request to Investor Relations, Cboe Global Markets, Inc., 433 West Van Buren Street, Chicago, Illinois 60607. Our website and information included in or linked to our website are not part of this Form 10-K.

Item 1A. Risk Factors.

The risks and uncertainties described below are those that we believe are material at this time relating to our business. These risks and uncertainties, however, are not the only risks and uncertainties that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also significantly impact us. Any of these risks and uncertainties may materially and adversely affect our business, financial condition or results of operations, liquidity, and cash flows.

Summary of Risk Factors

The following is a summary of the key risks and uncertainties described below that we believe are material to us at this time:

- 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 or clearing volumes, market data fees or a shift in the mix of products traded on our exchanges;
- legislative or regulatory changes or changes in tax regimes;
- our ability to protect our systems and communication networks from security risks, cybersecurity risks, insider threats and unauthorized disclosure of confidential information;
- our ability to attract and retain skilled management and other personnel;
- increasing competition by foreign and domestic entities;
- our dependence on and exposure to risk from third parties;
- fluctuations to currency exchange rates;
- factors that impact the quality and integrity of our indices;
- the impact of the COVID-19 pandemic, including changes to trading behavior broadly in the market;
- 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 minimize the risks, including our credit and default risks, associated with operating a European clearinghouse;
- our ability to accommodate trading and clearing 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 or for whom we clear transactions;
- 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;
- our ability to maintain BIDS Trading as an independently managed and operated trading venue, separate from and not integrated with our registered national securities exchanges;
- 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 and our ability to make payments on or refinance our debt obligations;
- our ability to maintain an investment grade credit rating;
- impairment of our goodwill, long-lived assets, investments or intangible assets;
- litigation risks and other liabilities; and
- if the acquisition of ErisX is consummated, operating a digital asset business.

Risks Relating to Our Business

Loss of our right to exclusively list and trade certain index options and futures could have a material adverse effect on our financial performance.

We hold exclusive licenses to list securities index options on the S&P 500 Index, the Russell 2000 Index, as well as others, granted to us by the owners of such indices, and additionally hold exclusive rights to our proprietary VIX methodology that provides the basis for VIX options and futures. In 2021, approximately 53.2% of our net transaction and clearing fees (defined below) were generated by futures and index options, the overwhelming majority of which were generated by our exclusively-licensed products (e.g., SPX options) and products based on our proprietary VIX methodology (e.g., VIX options and futures). The bulk of this revenue is attributable to our SPX options and VIX options and futures. As a result, our revenues less cost of revenues are dependent in large part on the exclusive licenses we hold for these products and our ability to maintain our exclusive proprietary rights in the VIX methodology and related products and indices.

There is a risk, with respect to each of our current exclusive licenses, that the owner of the index may not renew the license with us on an exclusive basis or at all. In the first event, we would be subject to multiple listing in the trading of what is now an index product traded by us on an exclusive basis, which could result in a loss of market share and negatively impact our profitability. In the second event, we could lose the right to list the index product entirely. The loss or limited use of any of our exclusive index licenses, especially for the S&P 500 Index, for any reason could have a material adverse effect on our business and profitability.

In addition to the risks related to our exclusive licenses, if we are unable to retain exclusive proprietary rights in the VIX methodology and related products and indices, our volatility products could be subject to multiple listing which could have a material adverse effect on us.

The EU has adopted legislation affecting providers and users of benchmark indices in the EU. MiFIR requires benchmarks used to value a financial instrument in the EU to be made available on a non-discriminatory basis to all EU trading venues and central counterparty clearinghouses for the purposes of trading and clearing. As a result, owners of such benchmarks must provide licenses on fair, reasonable and non-discriminatory terms. While similar legislation to MiFIR has not been proposed in the U.S., if it were passed, it could cause us to lose our exclusive rights to list and trade proprietary and licensed index products. Further, in 2018, the EU implemented the EU Benchmark Regulation, which regulates users, data providers and calculators of benchmarks (“administrators”) in the EU, and among other things, prohibits use of benchmarks provided by administrators outside the EU in connection with EU financial instrument unless the administrator is deemed to be subject to an EU equivalent regulatory regime and the benchmark is registered in an EU member state. These regulations and other emerging regulatory regimes around the world may impact international customers’ interest in or ability to trade index-based products listed on our U.S. exchanges, as well as impact our expansion into foreign trading of our index-based products and our ability to license proprietary indices for use outside of the U.S.

Furthermore, our competitors may succeed in developing, offering and providing a market for the trading of index-based or volatility products that are economically similar to those that we offer and they may become successful and take away volume from our products. It is also possible that a third party may offer trading in index-based products that are the same as those that are the subject of one of our exclusive licenses, but in a jurisdiction in which the index owner cannot require a license or in a manner otherwise not limited by our exclusive license.

The value of our licenses to exclusively list securities index options and futures also depends on the continued ability of index owners to require licenses for the trading of options and futures based on their indices. Although we and other index owners have prevailed in legal actions seeking to challenge our rights to exclusively license indices, we may be subject to changes in the law or other actions taken in the future that might impede our ability to exclusively offer trading in certain index options and futures.

General economic conditions and other factors beyond our control could significantly reduce demand for our products and services and harm our business.

The volume of trading and clearing transactions and the demand for our products and services are directly affected by economic, political and market conditions in the U.S., Europe and elsewhere in the world that are beyond our control, including:

- economic, political and geopolitical market conditions;
- broad trends in business and finance;
- concerns over inflation and wavering institutional or retail confidence levels;
- government or central bank actions, such as changes in government fiscal and monetary policy and foreign currency exchange rates;
- other legislative and regulatory changes;
- the availability of short-term and long-term funding and capital;
- the perceived attractiveness of the U.S., European, Canadian, Australian or Japanese capital markets;
- the availability of alternative investment opportunities;

- changes in the level of trading activity in underlying instruments;
- changes and volatility in the prices of securities;
- changes in the volume of foreign currency transactions;
- changes in supply and demand for currencies;
- movements in currency exchange rates;
- the level and volatility of interest rates;
- changes in the financial strength of market participants;
- consolidation among market participants and market data subscribers;
- unforeseen market closures, suspensions of open outcry trading or other disruptions in trading and clearing; and
- disruptions due to terrorism, war, extreme weather events, pandemics or other catastrophes.

Any of these factors, individually or collectively, could have a material adverse effect on our business, financial condition and operating results by causing a substantial decline in the financial services markets and reducing trading and clearing volumes and demand for market data.

Our business may be adversely affected by price competition.

The securities industry is characterized by intense price competition, especially with respect to transaction fees. We may be required to adjust pricing to respond to actions by new or existing competitors, which could adversely impact our business, financial condition and operating results. We also compete with respect to the pricing of market data and value-added market data, such as historical market data.

In our options segment, the pricing model for trade execution has changed in response to competitive market conditions, and our competitors have adjusted transaction fees and fee structures accordingly, including by opening new exchanges, which allow them to offer multiple pricing models that can appeal to different segments of market participants. These changes have resulted in significant pricing pressures on us, especially on transaction fees and incentives for multi-listed products. As a result of these pricing pressures, our average rate per multi-listed options contract may decrease. It is likely that this pressure will continue and even intensify as our competitors continue to seek to increase their share of trading by further reducing their transaction fees or by offering other financial incentives to order providers and liquidity providers to induce them to direct orders to their markets.

In addition, one or more competitors may engage in aggressive pricing strategies and significantly decrease or completely eliminate their profit margin for a period of time in order to capture a greater share of trading volume. Some order-providing firms on our exchanges have taken ownership positions in options exchanges that compete with us and such exchanges have given those firms added economic incentives to direct orders to them.

With respect to our proprietary products, we compete with futures exchanges and swap execution facilities that offer similar products and other financial market participants that offer over-the-counter derivatives. We also compete against certain multi-listed options products, such as SPY, which offer some of the features of our proprietary products, such as SPX.

To attract market share, we may offer “inverted” pricing specials or no-transaction fee trading from time to time, per various fee schedules across our equities exchanges. These forms of promotions, along with other supplemental liquidity programs, may adversely affect our profitability.

Further, regulatory and legal developments could also impact our ability to adjust pricing to respond to actions by new or existing competitors. In the U.S., we are generally required to file with the SEC any changes to the fees that we charge and in recent years the SEC has more heavily scrutinized pricing changes.

If we are unable to compete successfully with respect to the pricing of our services and products, our business, financial condition and operating results may be materially and adversely affected. We could lose a substantial percentage of our share of trading if we are unable to price transactions in a competitive manner. Also, our profits could decline if competitive pressures or regulatory changes force us to reduce fees.

A significant portion of our operating revenues is generated by our transaction and clearing-based business. If the amount of trading volume on our markets or clearing volume decreases, or the product mix shifts to lower revenue products, our revenues from transaction and clearing fees will most likely decrease.

In 2021, approximately 64.7% of our revenues less cost of revenues were generated by our transaction and clearing-based business. This business is dependent on our ability to attract and maintain order flow, both in absolute terms and relative to other market centers. If the amount of trading volume on our Exchanges, CFE, BIDS Trading, and MATCHNow, notional value traded on Cboe FX, Cboe SEF, Cboe Europe Equities and Derivatives, Cboe Australia, and Cboe Japan or clearing volumes at EuroCCP decreases, we are likely to see a decrease in fees.

Our total trading or clearing volumes could decline if our market participants reduce their trading or clearing activity for any reason, such as:

- heightened capital requirements;
- transaction tax;
- regulatory or legislative actions;
- reduced need to trade due to changes in volatility and/or passive investment trends;
- reduced access to capital required to fund trading activities;
- consolidation among market participants;
- suspensions of open outcry trading; or
- significant market disruptions.

Over the past few years, a number of legislative actions have been taken, both domestically and internationally, that may cause market participants to be subject to increased capital requirements and additional compliance burdens. These actions, including the Collins Amendment to Dodd-Frank, MiFID II and MiFIR, may cause market participants to reduce trading activity on our markets.

In addition, the transaction fees generated are different based on type of product and other factors, including the type of customer and certain volume discounts. If the amount of our trading volume decreases, the mix traded shifts to our lower revenue per contract products, our revenues from transaction fees will most likely decrease. We can offer no assurance that we would be able to reduce our costs to match the amount of any such decrease.

Revenues from our market data fees and access and capacity fees may be reduced due to declines in our market share, trading volumes or regulatory changes.

The occurrence of any event that reduces the amount of market data fees that we receive, whether as a result of fee reductions, fewer members subscribing to the U.S. tape plans or other market data offerings, declines in market share, trading volumes, or notional volumes, or regulatory changes may have a direct negative impact on our business, financial condition, and operating results. For example, if our market share of U.S. listed equities and options or Cboe's European equities trading volume were to decline, our share of market data fees could also decline. Moreover, market data fees could decline as a result of a reduction in the number of market data users, for example because of consolidation among market data subscribers or due to a decline in professional subscriptions as a result of staff reductions in the financial services industry or otherwise.

Regulatory and legal developments could also impact the fees we receive from market data and access and capacity, or our cost in providing such services. In the U.S., we are generally required to file with the SEC any changes to the fees that we charge for our securities market data products and access and capacity fees. In recent years, certain industry groups have objected to the ability of exchanges to charge for certain market data products. In addition, the SEC and some media have scrutinized market data and market access. As discussed above, the implementation of the new Market Data Infrastructure rules could cause Cboe's equities exchanges, BZX, BYX, EDGX, and EDGA, to require additional resources to comply with or to challenge the new rules, which may have a material impact on our business, financial condition, and operating results, including if, for example, there are lower SIP plan revenues or we must reduce the fees we charge for market data. See "Legal Proceedings" for more information.

In addition, as discussed above, the SEC approved a Consolidated Data Plan to replace the three equity data plans that govern the dissemination of real-time, consolidated market data for NMS stocks. Such plan is being challenged, but if such Consolidated Data Plan were to be implemented, it may have a negative impact on the applicable market data revenues that we receive that are generated from such new plan. See "Legal Proceedings" for more information.

We believe Cboe Europe Equities and Derivatives currently offers market data to customers on a non-discriminatory basis at a reasonable cost. As European regulators determine how market data should be disaggregated and what is a reasonable commercial basis for providing market data, it could affect our ability to offer market data products in the same manner that we do today thereby causing an adverse effect on our European market data revenues. While MiFID II and MiFIR aim to encourage a commercial solution to a consolidated tape in Europe, should this fail to materialize, policy makers might be encouraged to implement a mandatory solution that could impact our ability to develop our own commercial offering. As discussed above, the E.C. published provisions for a consolidated tape for the EU, which is expected to be implemented in late 2023 or early 2024. As proposed, these provisions may have a material impact on our business, financial condition and operating results if, for example, we must reduce the fees we charge for market data.

The technology upon which we rely, including those of our service providers, may be vulnerable to security risks, cybersecurity risks, insider threats, unauthorized disclosure of confidential information, operational disruptions, and other risks and events that could harm our business.

The secure and reliable operation of our technology, including our computer systems and communications networks, and those of our service providers, market participants and other third-parties, is a critical element of our operations. These systems and networks may be subject to various cybersecurity incidents, improper or inadvertent access to or disclosure of confidential, commercially sensitive, or personally identifiable information, data theft, corruption or destruction, cyber-attack, ransomware, supply chain attack, denial of service attack, malware and other security problems, as well as acts of terrorism, attacks by threat actors including criminal groups, political activist groups and nation-state actors, attacks in connection with geopolitical activity such as the recent escalating tensions along the Russia-Ukraine border, natural disasters, human error, criminal insider activity, employee error, power loss, service provider, market participant or third-party disruptions or security breaches and other events that are beyond our control. Our increased adoption of remote working, initially driven by the COVID-19 pandemic, usage of mobile and cloud-based technologies and amount of newly acquired companies and related integrations may increase our risk for a cybersecurity incident. Moreover, given our position in the global financial services industry and as critical infrastructure, we may be more likely than other companies to be a direct target, or an indirect casualty, of such events. While we have experienced in the past, and we expect to continue to experience, cybersecurity threats and events of varying degrees, we are not aware of any of these threats or events having a material impact on our business, financial condition or operating results to date, however we cannot assure you that we will not experience future threats or events that may be material.

We currently maintain policies, procedures and controls designed to reasonably protect the confidentiality, integrity, availability and reliability of our systems, networks and information more broadly, and to guard against cybersecurity incidents and unauthorized access. These policies, procedures and controls are subject to periodic monitoring, auditing, and evaluation practices, pursuant to our enterprise risk management program, which is supported by a three lines of defense approach, and our other governance practices. Further, we developed and maintain cybersecurity and data privacy training programs for our employees and our third-party consultants who have access to our systems, which includes simulations, tabletop exercises, and response readiness tests. Independent third-party cybersecurity penetration assessments are also routinely performed. Collectively, these safeguards and measures or those of our third-party providers, including any cloud technologies, may prove inadequate to prevent the attendant risk posed by cybersecurity incidents, subjecting us to contractual restrictions, liability and damages, loss of business, penalties, unfavorable publicity, and increased scrutiny by our regulators, and materially impacting our business, financial condition and operating results. We may be required to expend significant resources in the event of any real or threatened breaches in security or system failures, including to protect against threatened breaches, to alleviate harm caused by an actual breach, and to address any reputational harm or litigation or regulatory liability. Despite our cybersecurity measures, it is possible for security vulnerabilities or breaches to remain undetected for an extended period of time. Such harms also could cause us to lose market participants, experience lower trading volume, and negatively impact our competitive advantage and business, financial condition and operating results.

Additionally, as threats continue to evolve and increase, and as the domestic and international regulatory environment related to information security, data collection and use, and privacy becomes increasingly rigorous, we may be required to devote significant additional resources to modify and enhance our security controls and to identify and remediate any security vulnerabilities, which could have an adverse effect on our business, financial condition and operating results.

If we fail to attract or retain highly skilled management and other employees our business may be harmed.

Our success largely depends on the skills, experience and continued efforts of management and other key personnel. As a result, to be successful, we must retain and motivate executives and other key employees. However, we have no assurances that these employees will remain with us. The roles and responsibilities of departing executive officers and employees will need to be filled either by existing or new officers and employees, which may require us to devote time and resources to identifying, hiring and integrating replacements for the departed executives and employees that could otherwise be used to pursue business opportunities, which could have a material adverse effect on our overall business, financial condition and operating results.

There is substantial competition for qualified and capable personnel in the technology space, which may make it difficult for us to retain and recruit qualified employees in sufficient numbers. This competition has become exacerbated by the increase in employee resignations currently taking place throughout the United States as a result of the COVID-19 pandemic, which is commonly referred to as the "great resignation," as well as the growth of new asset classes such as the digital asset space. During this great resignation, we have faced increased challenges in retaining and attracting qualified employees. If we fail to retain our current employees, it would be difficult and costly to identify, recruit and train replacements needed to continue to conduct and expand our business. In particular, failure to retain and attract qualified technology personnel could result in systems failures. Consequently, our reputation may be harmed, we may incur additional costs and our profitability could decline. There can be no assurance that we will be able to retain and motivate our employees in the same manner as we have historically done.

Additionally, effective succession planning is also important to our long-term success. Failure to ensure effective transfer of knowledge and smooth transitions involving our management team and key employees could hinder our strategic planning and execution.

Intense competition could materially adversely affect our market share and financial performance.

The market for trade execution services, clearing and products is intensely competitive in the asset classes and geographies in which we operate. Increased competition may result in a decline in our share of trading activity and a decline in our revenues from transaction and clearing fees and market data fees, thereby materially adversely affecting our operating results. We compete with a number of entities on several different fronts, including the cost, quality and speed of our trade execution, functionality and ease of use of our trading and clearing platforms, range of our products and services, our technological innovation and adaptation and our reputation. In particular, we have seen increased competition from off-exchange venues, which have increased their share of trading activity. See "Business – Competition" for more information.

Some of our competitors and potential competitors have greater financial, marketing, technological, personnel and other resources than we do. These factors may enable them to develop similar or more innovative products, to offer lower transaction and clearing fees or better execution to their customers or to execute their business strategies more quickly or efficiently than we can. In addition, our business, financial condition and operating results may be materially adversely affected if we cannot successfully develop, introduce and/or market new services and products or if we need to adopt costly and customized technology for our services and products.

Furthermore, new or existing competitors may:

- respond more quickly to competitive pressures;
- develop products that compete with our products or are preferred by our customers;
- offer products and services at prices below ours to gain market share and to promote other businesses;
- develop and expand their technology and service offerings more efficiently;
- provide better, more user-friendly and more reliable technology;
- take greater advantage of acquisitions, alliances and other opportunities;
- market, promote, bundle and sell their products and services more effectively;
- leverage existing relationships with customers and alliance partners more effectively or exploit brand names to market and sell their services; and
- exploit regulatory disparities between traditional, regulated exchanges and alternative markets, including over-the-counter markets, that benefit from a reduced regulatory burden and lower-cost business model.

If our products, markets, services and technology are not competitive or we fail to anticipate or respond adequately to changes in technology, customer preferences and regulatory requirements or any significant delays in product development efforts our business, financial condition and operating results could be materially harmed.

We depend on third-party service providers for certain services that are important to our business. An interruption, significant increase in fees or cessation or impairment of such service by any third party could have a material adverse effect on our business, financial condition and operating results.

We depend on a number of service providers, including clearing organizations such as OCC, NSCC, DTC, CDS, LCH, EuroCCP, our wholly-owned subsidiary, JSCC, ASX Clear Pty Ltd, and SIX x-clear; securities information processors such as the CTA, UTP Securities Information Processor and OPRA; regulatory and other service providers such as FINRA and OCC; the hosts of our data and disaster recovery centers; and various vendors of communications and networking products and services. In addition, we also depend on third party routing and clearing firms that are involved in processing transactions on our behalf. More specifically:

- If OCC, NSCC, DTC, CDS, LCH, EuroCCP, JSCC, ASX Clear Pty Ltd, and SIX x-clear were unable to perform clearing services for existing or new products, or their clearing members were unable or unwilling to clear through them, transactions could likely not occur on our markets or there may be delays, including until clearing is moved to another clearing agency. In 2021, approximately 53.2% of our net transaction and clearing fees were generated by options and futures that were cleared through OCC.
- OPRA, UTP Securities Information Processor and the CTA consolidate options and equities market information, respectively, such as last sale reports and quotations. If any of them were unable to provide this information for a sustained period of time, we may be unable to offer trading on our options and equities markets.
- We are heavily dependent on technology for our markets, including our data and disaster recovery centers, some of which are housed by third parties, and certain communications and networking products and services. If this technology is unavailable, and cannot be replaced in a sufficiently short time period, we may be unable to operate our markets.
- We utilize a third-party cloud service provider to maintain secondary offsite backups of our and our customers' data and to distribute real-time data, and we may utilize third-party cloud service providers in the future for additional services. We do not control the operations of third-party cloud service providers or their facilities and may be vulnerable to disruptions in our access to the platform as a result of a number of potential causes, including technical failure, natural disasters, fraud or security attacks that we cannot predict or prevent. Additionally, any vulnerability of third-party cloud service providers could expose our or our customers' confidential data, which could result in harm to our business reputation.
- FINRA and OCC provide certain regulatory services and functions for our options, equities and futures exchanges, while we retain regulatory responsibilities for such services. If FINRA or OCC stopped providing services, or provided inadequate services, we may be subject to action by the SEC or CFTC, or may have limitations placed upon our markets.
- We rely on FINRA CAT LLC, a subsidiary of FINRA, to provide services for the implementation of the CAT. If FINRA CAT LLC stops providing services or provides inadequate services, we and the other execution venues may incur regulatory liability including enforcement action by the SEC or limitations placed upon our markets. In addition, until the SEC approves a funding model that shares the cost of the CAT between the SROs and industry members, the SROs may continue to incur additional significant costs, including as a result of replacing the plan processor, or result in not being able to collect on the promissory notes related to the funding of the implementation and operation of the CAT.
- We rely on third party routing and clearing firms to clear trades in U.S. listed equity securities routed by us to other markets, and to execute trades in options that we route to other markets.

With respect to options, all contracts traded on our exchanges must be cleared through clearing members of OCC. At December 31, 2021, there were 97 TPHs that are clearing members of OCC. Two clearing members accounted for approximately 61.5% of transaction and other fees collected through OCC in 2021. The next largest clearing member accounted for approximately 23.5% of transaction and other fees collected through OCC. Additionally, the two largest clearing members clear the majority of the market-maker sides of transactions at Cboe Options, C2, BZX, EDGX and at all of the options exchanges. Should one of these clearing members or liquidity providers exit the business or withdraw from our options exchanges, impose additional market-maker financial requirements or if market-makers were unable to transfer to another clearing member or other liquidity providers were unable to provide additional liquidity, this could create a significant disruption to the options markets, including ours.

We cannot provide assurance that any of these providers will be able to continue to provide these services in an efficient manner or that they will be able to adequately expand their services to meet our needs. An interruption or malfunction in or the cessation or impairment of an important service by a third party or disruption of a third party's operations could cause us to halt trading in some or all of our products or our services, make us unable to conduct other aspects of our business, cause us to experience the loss of a significant number of market participants or cause us to experience a significant reduction in trading activity on our options and futures markets, each of which could have a material adverse effect on our business, financial condition and operating results. In addition, our inability to make alternative arrangements, such as moving clearing to another clearing agency, in a timely manner, or at all, could have a material adverse impact on our business, financial condition and operating results.

If an index provider from which we have a license or a service provider with respect to proprietary products fails to maintain the quality and integrity of their indices or fails to perform under our agreements with them, if we fail to maintain the quality and integrity of our proprietary indices or indices and other values that we calculate as an index provider, or if customer preferences change, the revenues that are generated from the trading of proprietary products or the calculation and dissemination of index values may suffer.

We are a party to a number of license agreements that permit us to list tradeable products related to various indices that are among the most actively traded products on our exchanges. We also enter into agreements pursuant to which we act as an index provider and calculate and disseminate proprietary indices and other values. We believe that demand for our products is based in part on market perception of the quality and integrity of these indices. The quality and integrity of these indices are dependent on the ability of index providers, including us, to maintain the index. Maintenance includes ongoing index calculation, index rebalancing and dependance on index providers for a number of things, including the provision of index data. We also rely on index providers to enforce intellectual property rights against unlicensed uses of the indices and uses of the indices that infringe on our licenses. Some of our agreements concerning our proprietary products obligate the parties to those agreements to provide important services to us. If any of our index providers, including us, are unable to maintain the quality and integrity of indices, or if any of the index providers or service providers, including us, fail to perform their obligations under the agreements, trading in these products, and therefore transaction fees we receive, may be materially adversely affected or we may not receive the financial benefits of the agreements that we negotiated.

Differences in the calculations from methodologies described in published materials or incorrect calculations of spot VIX Index values or our other spot volatility indices, including those instances that we announced on July 30, 2021, or the failure to implement any planned remedial changes may result in the loss of perceived quality and integrity of our indices, loss of demand for our products, increased potential for investigations and enforcement proceedings, increased potential for failure to perform our obligations under agreements concerning our products or in our capacity as an index provider, and increased exposure to third party claims and related litigation expenses, which could have a material adverse effect on our business, financial condition and operating results.

The COVID-19 pandemic and its effects have had significant impacts on economies around the world. Further impacts of the COVID-19 pandemic could have a material adverse effect on our business, financial condition, operating results and cash flows.

The COVID-19 pandemic has had significant impacts on economies around the world. Governments, public institutions, and other organizations around the world have taken, and may take additional or reimpose previous, emergency measures to combat COVID-19's spread, including vaccination requirements, implementation of travel bans, stay-at-home orders, border closures, and closures of offices, factories, schools, public buildings and businesses. These measures may disrupt the supply chain and may interfere with the ability of our employees, vendors, technology equipment suppliers, data and disaster recovery centers, and other service providers to perform their respective responsibilities and obligations relative to the conduct of our business. In addition to uncertain expenses and impacts to our business we may incur due to COVID-19 as part of us providing a safe and healthy work and trading environment, employees working remotely from different locations and in connection with our return to our offices, we may also be subject to claims from employees or customers alleging failure to maintain safe premises and restrictions with respect to protocols relating to COVID-19. Further, changes in trading behavior, impacts to trading behavior due to market disruptions, additional temporary suspensions of open outcry trading, temporary regulatory measures and other future developments caused by the effects of COVID-19, including a re-occurrence of cases and the emergence of variants, could impact trading volumes and the demand for our products, market data and services, which could have a material adverse effect on our business, financial condition, operating results and cash flows and could heighten many of the other risks described herein.

Our operations outside of the U.S. expose us to currency risk.

In addition to our operations in the U.S., we have operations in the UK, continental Europe, Canada, Hong Kong, Australia, Japan, Philippines, and Singapore. We, therefore, have exposure to exchange rate movements between the British pound, the Euro, the Canadian dollar, the Hong Kong dollar, the Australian dollar, the Japanese Yen, the

Philippine Peso, and the Singapore dollar against the U.S. dollar. Significant inflation or changes in foreign exchange rates with respect to one or more of these currencies could occur as a result of general economic or political conditions, acts of war or terrorism, changes in governmental monetary or tax policy, or changes in local interest rates. These exchange rate differences would affect the translation of our non-U.S. results of operations and financial condition into U.S. dollars as part of our consolidated financial statements.

We and our licensors may not be able to protect our respective intellectual property rights.

We rely on patent, trade secret, copyright and trademark laws, the law of the doctrine of misappropriation and contractual provisions to protect our proprietary technology, proprietary products, index methodologies and other proprietary rights. In addition, we rely on the intellectual property rights of our licensors in connection with our listing of exclusively-licensed index options and futures products. We and our licensors may not be able to prevent third parties from copying, or otherwise obtaining and using, our intellectual property without authorization, listing our proprietary or exclusively-licensed index products without licenses or otherwise infringing on our rights. We and our licensors may have to rely on litigation to enforce our intellectual property rights, determine the validity and scope of the proprietary rights of others or defend against claims of infringement or invalidity. We and our licensors may not be successful in this regard. Such litigation, whether successful or unsuccessful, could result in substantial costs to us, diversion of our resources or a reduction in our revenues, any of which could materially adversely affect our business.

Our clearinghouse operations expose us to associated risks, including credit, liquidity, market and other risks related to the defaults of clearing participants and other counterparties.

We are subject to risks related to operating our clearinghouse, EuroCCP, including the risks of failing to meet strict business continuity requirements and regulatory oversight, risks of default by clearing participants and counterparties, due to bankruptcy, lack of liquidity, operational failure or other reasons, and the risks associated with the adequacy of participants' margin and default funds. These risks could subject our business to substantial losses, reputational harm, regulatory consequences, including litigation, fines and enforcement actions, and the inability to operate our business, including the continued development of the European derivatives buildout.

To mitigate the credit risks related to defaults of clearing participants and other counterparties, including the market risk that we would only be able to close out a defaulting participant's positions at a loss, there are minimum participation criteria to become a clearing participant and clearing participants are required to provide collateral to cover the margin requirement and default fund contributions. No guarantee can be given that the collateral provided will at all times be sufficient or provide absolute assurance against us experiencing financial losses from defaults by the participants or counterparties on their obligations. In addition, although such collateral is preferably held in European central banks and central securities depositories, there are occasions where commercial banks are used, which can expose us to risk of default by those banks. In addition, EuroCCP entered into a €1.5 billion committed syndicated multicurrency revolving and swingline credit facility that is available to be drawn by EuroCCP towards (a) financing unsettled amounts in connection with the settlement of transactions in securities and other items processed through EuroCCP's clearing system and (b) financing any other liability or liquidity requirement of EuroCCP incurred in the operation of its clearing system, however we can give no assurance that this facility will be sufficient to meet all such obligations or sufficiently mitigate EuroCCP's liquidity risk to meet its payment obligations when due. Substantial amounts of the collateral, and any amounts drawn under this facility, may be at risk if a clearing participant defaults on its obligations to our clearinghouse and its margin and default fund deposits are insufficient to meet its obligations. This facility is expected to terminate on June 30, 2022 and we may not be able to enter into a replacement facility on commercially reasonable terms, or at all. We cannot assure you that the mitigating measures, policies, safeguards and risk management procedures will be sufficient to detect problems or to protect us from a default or that we will not be materially and adversely affected in the event of a significant default.

Computer and communications systems failures and capacity constraints could harm our reputation and our business.

Our business depends on the integrity and performance of our computer and communications systems. If our systems cannot expand to cope with increased demand or otherwise fail to perform, we could experience unanticipated disruptions in service, slower response times and delays in the introduction of new products and services. These consequences could result in trading outages, lower trading and clearing volumes, financial losses, decreased customer service and satisfaction and regulatory sanctions and could have a material adverse effect on our ability to conduct our business. Although we have a back-up plan with respect to our significant trading and key corporate systems, the back-up systems or disaster recovery plans may prove to be inadequate in the event of a systems failure or cyber-security breach. Despite having disaster recovery facilities, there can be no guarantees that we will be able to open an efficient, transparent and liquid marketplace, if we can open at all, following a systems failure. Moreover, with extended trading hours, we have to operate our systems longer and have fewer non-trading hours to address any potential concerns with the systems on which we rely.

Our markets and clearinghouse have experienced occasional systems failures and delays in the past and in the future our systems may fail, in whole or in part, or may operate slowly, causing one or more of the following:

- unanticipated disruption in service to our participants;
- failures or delays during peak trading times or times of unusual market volatility;
- slower response times and delays in trade execution, clearing and processing;
- incomplete or inaccurate accounting, recording, clearing or processing of trades; and
- distribution of inaccurate or untimely market data to participants who rely on this data in their trading activity.

Any of these events may cause:

- a loss in transaction, clearing or other fees due to the inability to provide services for a time;
- requests by market participants or others that we reimburse them for financial loss, either within the constraints of the limited liability provisions of our exchanges' rules or in excess of those amounts;
- trading and clearing volumes to diminish on our markets and clearinghouse due to dissatisfaction with the platforms; and
- one or more of our regulators to investigate or take enforcement action against us.

As a consequence of any of these events, our business, financial condition and results of operations could suffer materially.

In addition to other measures, we test our systems to confirm whether they will be able to handle anticipated present and future peak trading and clearing activity or times of unusual market volatility. However, we cannot assure you that our estimates of future trading or clearing volume will be accurate or that our systems will always be able to accommodate actual trading or clearing volume without failure or degradation of performance.

We anticipate that we will need to continue to make significant investments in hardware, software and telecommunications infrastructure to accommodate the increases in traffic. If we cannot increase the capacity and capabilities of our systems to accommodate increasing trading or clearing activity and to execute our business strategy, our ability to maintain or expand our businesses would be materially adversely affected.

Our use of open source software code may subject our software to general release or require us to re-engineer our software, which could harm our business.

Our technology platform uses open source software code. Companies that incorporate open source software into their products have, from time to time, faced claims challenging the ownership of open source software. As a result, we could be subject to suits by parties claiming ownership of what we believe to be open source software. In addition, some open source software licenses require users who distribute open source software as part of their software to publicly disclose all or part of the source code in their software and make any derivative works of the open source code available on unfavorable terms or at no cost. Open source license terms may be ambiguous, and many of the risks associated with usage of open source software cannot be eliminated. We believe that our use of open source software is in compliance with the relevant open source software licenses and does not require disclosure of any of our source code. However, if we were found to have inappropriately used open source software, we may be required to release our proprietary source code, re-engineer or discontinue use of our software or take other remedial action any or all of which could cause disruptions in, or impose significant costs on, our business.

Damage to our reputation could have a material adverse effect on our business, financial condition and operating results.

We believe one of our competitive strengths is our strong industry reputation. Various issues may give rise to reputational risk, including issues relating to:

- the representation of our business in the media;
- the quality and benefits of using our proprietary products, including the reliability, integrity and functionality of our transaction-based business and index calculations and the accuracy of our market data;

- the ability to execute our business plan, key initiatives or new business ventures and the ability to keep up with changing customer demands and regulatory initiatives;
- our regulatory compliance and our enforcement of compliance on our customers;
- the accuracy of our financial statements and other financial and statistical information;
- the quality of our corporate governance structure;
- the quality of our disclosure controls and internal controls over financial reporting, including any failures in supervision;
- the integrity and performance of our computer and communications systems;
- the ability to successfully complete technology migrations;
- the failure to successfully expand into new asset classes, such as the digital asset space or U.S. Treasuries, or new geographies;
- security breaches, including any unauthorized delivery of proprietary data to third parties;
- management of our outsourcing relationships, including our relationship with FINRA and NFA;
- any misconduct or fraudulent activity by our employees, especially senior management, or other persons formerly or currently associated with us;
- our listings business and our enforcement of our listing rules; and
- any negative publicity surrounding the ETPs that we serve as the listing destination.

Damage to our reputation could cause a reduction in the trading volume of our proprietary products or on our markets or cause us to lose customers. This, in turn, may have a material adverse effect on our business, financial condition and operating results.

Financial or other problems experienced by third parties could have an adverse effect on our business.

We are exposed to credit risk from third parties, including customers, clearing agents and counterparties. For example, we are exposed to credit risk for transaction fees we bill to customers on a monthly basis in arrears. Our customers and other third parties may default on their obligations to us due to a lack of liquidity, operational failure, bankruptcy or other reasons. For additional credit risks related to our clearinghouse operations, see the Risk Factor "Our clearinghouse operations expose us to associated risks, including credit, liquidity, market and other risks related to the defaults of clearing participants and other counterparties."

In addition, with respect to orders Cboe Trading routes to other markets for execution on behalf of our customers, Cboe Trading is exposed to counterparty credit risk in the case of failure to perform on the part of our routing and clearing firms that are involved in processing equities and options transactions on our behalf, as well as failure on the part of such brokers to pass back any transactional rebates. Wedbush and Morgan Stanley guarantee equity trades until one day after the trade date, after which time NSCC provides a guarantee. Thus, Cboe Trading is potentially exposed to credit risk to the counterparty to an equity trade routed to another market center between the trade date and one day after the trade date in the event that Wedbush or Morgan Stanley fails to perform. Additionally, BIDS Trading has counterparty credit risk exposure to BOA related to clearing until the day following the trade date, after which time NSCC provides a guarantee. With respect to U.S. listed equity options and futures, we deliver matched trades of our customers to the OCC, which acts as a central counterparty on all transactions occurring on Cboe Options, C2, BZX, EDGX, and CFE and, as such, guarantees clearance and settlement of all of our matched options and futures trades. With respect to Canadian equities, we deliver reports of matched trades of our customers to CDS, which acts as a central counterparty on all transactions occurring on MATCHNow and, as such, guarantees clearance and settlement of all of our matched Canadian equities trades. With respect to Australian equities and derivatives, we deliver matched trades of our customers to ASX Clear Pty Ltd and ASX Settlement Pty Ltd. ASX Clear Pty Ltd acts as a central counterparty on all transactions occurring on Cboe Australia and, as such, guarantees clearance and settlement on all of our matched trades in Australia. With respect to Japanese equities, we deliver matched trades of our customers to the JSCC, which acts as a central counterparty on all transactions occurring on Cboe Japan and, as such, guarantees clearance and settlement on all of our matched trades in Japan.

With respect to routed U.S. equity transactions, Cboe Trading has counterparty credit risk exposure to Wedbush and Morgan Stanley related to clearing until the day following the trade date. Cboe Trading uses Wedbush to clear trades routed through affiliates of Credit Suisse Securities (USA) LLC as well as for trades routed directly to other exchanges and optionally dark pools. Morgan Stanley clears trades routed through the Morgan Stanley routing brokers and also clears executions routed to most dark pools. Cboe Trading maintains counterparty credit risk exposure from routing brokers with respect to rebates earned until completion of the routing brokers next invoice cycle following the execution.

With respect to U.S. listed equity and exchange traded product options, Cboe Trading is subject to counterparty credit risk exposure with respect to rebates earned from routing brokers until completion of the routing brokers' next invoice cycle has completed for an execution.

Our exposure to credit risk may be further impacted by volatile securities markets that may affect the ability of our customers, counterparties and other third parties to satisfy their obligations to us. Moreover, we may not be successful in managing our credit risk through mitigating measures, policies, safeguards and risk management procedures, reporting and control procedures or by maintaining credit standards. Any losses arising from such defaults or other credit losses could materially adversely affect our financial condition and operating results.

While neither Cboe FX nor Cboe SEF has direct counterparty risk, Cboe FX or Cboe SEF may suffer a decrease in transaction volume if a bank or prime broker experiences an event that causes other prime brokers to decrease or revoke the credit available to the prime broker experiencing the event. Therefore, Cboe FX and Cboe SEF may have risk that is related to the credit of the banks and prime brokers that trade spot FX on the Cboe FX platform, or NDFs on Cboe SEF.

We may be required to assume ownership of a position in securities in connection with our order routing service, which could subject us to trading losses when our broker-dealer disposes of that position.

We offer a smart-order routing service through our broker-dealer subsidiary, Cboe Trading, which provides its customers with access to other market centers when we route their orders to those market centers for execution. In connection with this service, we may assume ownership of a position in securities. This may occur, for example, when a market center to which we have routed a customer's order experiences systemic issues and is unable to determine the status of that order. When this happens, we may make a business decision to provide a cancellation notice to our customer, relieving our customer of any liability with respect to the order. We may be informed later, however, that the order was executed at the market center to which we routed it, in which case Cboe Trading would be required to take ownership of that securities position. Our third party clearing brokers maintain error accounts on behalf of Cboe Trading into which such positions settle, and we require the respective clearing broker to trade out of those positions as expeditiously as possible, which could result in our incurring trading losses.

We may not effectively manage our growth, which could materially harm our business, financial condition and operating results.

We expect that our business will continue to grow, which may place a significant strain on our management, personnel, systems and resources. We must continually improve our operational, financial and regulatory systems and managerial controls and procedures, and may need to continue to expand, train and manage our workforce. We must also maintain close coordination among our technology, legal, accounting, finance, marketing, sales, regulatory and compliance functions. If we fail to manage our growth effectively, our business, financial condition and operating results could be materially harmed. Furthermore, failure to successfully expand into new asset classes, such as the digital asset space or U.S. Treasuries, or new geographies may materially adversely affect our growth strategy and our future profitability.

Our continued growth will require increased investment by us in technology, facilities, personnel, and financial and management systems and controls. It also will require expansion of our procedures for monitoring and assuring our compliance with applicable regulations, and we will need to integrate, train and manage a growing employee base. The expansion of our existing businesses, any expansion into new businesses and the resulting growth of our employee base will increase our need for internal audit and monitoring processes, which may be more extensive and broader in scope than those we have historically required. We may not be successful in identifying or implementing all of the processes that are necessary. Further, unless our growth results in an increase in our revenues that is proportionally greater than or equal to the increase in our costs associated with this growth, our business, financial condition and operating results may be materially adversely affected.

We selectively explore acquisition opportunities and strategic alliances relating to other businesses, products or technologies. We may not be successful in integrating other businesses, products or technologies with our business. Any such transaction also may not produce the results we anticipate, which could materially adversely affect our business, financial condition and operating results.

We selectively explore and pursue acquisition and other opportunities to strengthen our business and grow our Company. We may enter into business combination transactions, make acquisitions or enter into strategic partnerships, joint ventures or alliances, any of which may be material. The market for acquisition targets and strategic alliances is highly competitive, which could make it more difficult to find appropriate merger or acquisition opportunities. If we are required to raise capital by incurring debt or issuing additional equity for any reason in connection with a strategic acquisition or investment, financing may not be available or the terms of such financing may not be favorable to us and our stockholders, whose interests may be diluted by the issuance of additional stock.

For example, at the end of 2021, we announced the planned acquisitions of ErisX, an operator of a U.S. based digital asset spot market, a regulated futures exchange and a regulated clearinghouse, and NEO, a Canadian securities exchange with a diverse product and services set ranging from corporate listings to cash equity trading. These planned acquisitions are expected to close in the first half of 2022, subject to regulatory approvals and other customary closing conditions. Further, in 2021 we purchased Chi-X Asia Pacific, a holding company of alternative market operators in Australia and Japan, and in 2020, we purchased Hanweck and the assets of FT Options, which are providers of risk analytics market data, the assets of Trade Alert, a real-time alerts and order flow analysis service provider, EuroCCP, an operator of a European clearinghouse, and MATCHNow, an operator of an equities ATS in Canada. At the end of 2020, we also purchased BIDS Trading, a registered broker-dealer and operator of the BIDS ATS in the U.S., which is not a registered national securities exchange or a facility thereof. Cboe intends to maintain the BIDS ATS as an independently managed and operated trading venue, separate from and not integrated with the Exchanges.

The process of integration, including in new geographies and asset classes with new regulatory regimes, may expose us to a number of unforeseen risks and operating difficulties, including risks relating to information technology integration and security, regulatory issues and employee issues, and may divert the attention of management from the ongoing operation of our business and harm our reputation. We may not successfully achieve the integration objectives, and we may not realize the anticipated cost savings, revenue growth and synergies in full or at all, or it may take longer to realize them than expected, any of which could negatively impact our business, financial condition and operating results.

For additional risks related to our potential consummation of the ErisX acquisition, see the Risk Factors Section entitled “Risks Relating to Our Business Following Consummation of ErisX Acquisition” below.

Risks Relating to Legal and Regulatory Matters

We operate in a highly regulated industry and may be subject to censures, fines and other legal proceedings if we fail to comply with legal and regulatory obligations.

Cboe Options, C2, BZX, BYX, EDGX, and EDGA are registered national securities exchanges and SROs, and, as such, are subject to comprehensive regulation by the SEC. CFE is a DCM and Cboe SEF is a SEF, each registered with the CFTC and subject to comprehensive regulation by the CFTC. In addition to its other SRO responsibilities, BZX, as a listing market, also is responsible for evaluating applications submitted by issuers interested in listing their securities on BZX and monitoring each issuer’s compliance with BZX’s continued listing standards. The Exchanges may be subject to additional responsibilities in other international jurisdictions where the Exchanges may be authorized to act as foreign exchanges. Failure to comply with these SRO and other responsibilities could result in potential sanctions or fines and a negative impact on Cboe’s reputation and/or branding.

Our European businesses are subject to regulatory oversight in the UK by the FCA and in the Netherlands by the DNB and the AFM, which, through the “passporting” regime, provides authorization to carry on business in other Member States of the EU and the EEA in accordance with the applicable EU legislation and regulation to which our European business is subject. MATCHNow is subject to regulatory oversight in Canada by the IIROC and the OSC. Cboe Australia is subject to regulatory oversight in Australia by the ASIC. Cboe Japan is subject to regulatory oversight in Japan by the JFSA and the JSDA. BIDS Trading is a registered broker-dealer subject to regulatory oversight in the U.S. by the SEC and FINRA and is expected to be maintained as an independently managed and operated trading venue, separate from and not integrated with the SROs. The Chief Executive Officer of BIDS Trading is expected to lead BIDS Trading as an independent business within Cboe, reporting into an independent committee of the Board of Directors of Cboe Global Markets. If a regulatory authority makes a finding of non-compliance, conditional fines could be imposed, and our licenses could be revoked. Any such fine or revocation of a license could have a material adverse effect on our business, financial condition and operating results.

In addition to the requirements related to operating our U.S. markets imposed by the SEC and the CFTC, we also have certain responsibilities for regulating the TPHs and members that trade on our Exchanges. While we have entered into agreements under which FINRA, with respect to our options and equities exchanges provides certain regulatory services, we retain ultimate responsibility for the regulation of our TPHs and members. We have begun to perform internally more of the regulatory services that FINRA used to handle and now perform internally the regulatory functions that NFA previously handled on behalf of CFE.

Our ability to comply with applicable laws and rules is largely dependent on the establishment and maintenance of appropriate systems and procedures, our ability to attract and retain qualified personnel, the ability of FINRA and OCC to perform under their respective RSAs, the ability of FINRA and OCC to transition to us any other potential responsibilities under their respective RSAs, our ability to complete the new additional responsibilities for regulating our TPHs and members and our oversight of the work done by FINRA and OCC. The SEC and CFTC have broad powers to audit, investigate and enforce compliance and to punish noncompliance by, as applicable, SROs, DCMs and SEFs pursuant to applicable laws, rules and regulations.

If a regulatory authority were to find one of our programs of enforcement or compliance to be deficient, our SROs, DCM, or SEF could be the subject of investigations and enforcement proceedings that may result in substantial sanctions, including revocation of registration as a national securities exchange, DCM, or SEF. Any such investigations or proceedings, whether successful or unsuccessful, could result in substantial costs, the diversion of resources, including management time, and potential harm to our reputation, which could have a material adverse effect on our business, financial condition and operating results. In addition, our SROs, DCM, or SEF may be required to modify or restructure their regulatory functions in response to any changes in the regulatory environment, or they may be required to rely on third parties to perform regulatory and oversight functions, each of which may require us to incur substantial expenses and may harm our reputation if our regulatory services are deemed inadequate.

In addition, SROs are required by federal law to perform a variety of regulatory functions. In light of these responsibilities, some courts have held that SROs are immune to certain private causes of action relating to the performance of these regulatory functions. There is a risk that some courts may not apply this immunity doctrine to all claims. There is also a risk that legislative or regulatory developments may change the application of this immunity doctrine. Limitations on the application of the immunity doctrine could result in an increased exposure to litigation, and increase liability and/or other legal expenses. Further under the Commodity Exchange Act, CFE and Cboe SEF may be subject to litigation alleging that they have acted in bad faith. We also could be exposed to liability to regulators or other governmental authorities even in situations where immunity would bar a civil claim.

Legislative or regulatory changes affecting our markets could have a material adverse effect on our business, financial condition and operating results.

Changes in regulation by the SEC, CFTC, FCA, Central Bank of the Netherlands (“DNB”), AFM, IIROC, OSC, ASIC, JFSA, JSDA, other foreign regulators or other government action, including SEC approval of rule filings by other SROs or entities, including OCC, could materially affect our markets, products and clearinghouse. In recent years, the securities and derivatives industries have been subject to regulatory changes as a result of increasing government and public scrutiny of the securities and derivatives industries. We have also experienced, and we may also experience due to changes in administrations in the U.S. and expansion into other asset classes, such as the digital asset space or U.S. Treasuries and geographies, an increase in rulemaking and legislation that could affect our business.

Further, Congress, regulators and some media have been increasingly scrutinizing electronic trading, payment for order flow and other forms of remuneration, and the structure of equity markets in recent years. The SEC continues to consider various potential market structure changes, which could result in reduced trading volumes, or which could negatively affect our business. To the extent the SEC adopts regulatory changes, our business, financial condition and operating results could be negatively impacted. In addition, high frequency trading has been the subject of private litigation and we are party to one such matter. See Note 23 (“Commitments, Contingencies, and Guarantees—Legal Proceedings”) for more information. To the extent the SEC adopts additional regulatory changes related to market data and access and capacity, our business, financial condition and operating results could be negatively impacted.

Under EU and UK regulations, European and UK banks and other European and UK financial institutions become subject to punitive capital charges if they transact options or futures through a third country central counterparty (“CCP”) that is not recognized in the applicable jurisdiction. OCC, our clearinghouse for U.S. options and futures, is not currently recognized as a third country CCP by the EU or the UK. However, the European Commission has issued equivalency determinations for CCPs regulated by the CFTC and SEC, which includes OCC, and OCC’s application for recognition as a third country CCP in the EU is pending. The UK has not issued any equivalency determination with respect to U.S. CCPs, and accordingly OCC has not yet submitted its application for recognition in the UK but is instead operating under the UK’s temporary recognition regime. As a prerequisite to ultimately achieving recognition in the EU or UK, it is possible that OCC could be required by the EU or UK to contribute capital to its default waterfall applicable in the event of clearing member default. This capital could be required to be drawn before the default fund contributions of non-defaulting clearing members in the event that a defaulting clearing member's margin and other contributions were to be exhausted. OCC's stockholders, including Cboe Options, could effectively be required to fund this capital. If the EU or UK do not recognize OCC as a third country CCP, then European or UK market participants that clear through OCC would become subject to punitive capital charges. As a result, we could experience the loss of a significant number of European or UK market participants and a significant reduction in trading activity on our options and futures markets, which could have a material adverse effect on our business, financial condition and operating results.

The implementation of MiFID II and MiFIR in Europe at the beginning of 2018 has encouraged competition among market centers in Europe. MiFID II and MiFIR have introduced a number of new rules, including enhanced internal organizational and compliance monitoring requirements, which apply directly to European trading venues such as our MTF and RM. The impact of MiFID II and MiFIR is significant, and the increased competition among market centers could reduce trading volumes and trading fees, while increasing our costs of operating in Europe. Additionally, European authorities are planning to continue to review MiFID in the second half of 2021 as a result of which new rules may come into effect that could have a material impact on our business.

As discussed above, in 2021 the E.C. and ESMA published proposals for the review of EU market structure, including provisions for a consolidated tape for the EU, changes to the transparency regime for equities, increased pre-trade transparency for periodic auctions, and post-trade flagging. These proposals are expected to be implemented from the middle of 2022 to late 2023 or early 2024. As proposed, these new rules may have a material adverse effect on our business, financial condition and operating results.

The legislative and regulatory environment in which the spot FX market operates is evolving and has undergone significant changes in the recent past, and there may be future regulatory changes in the spot FX industry. The FX Global Code was published in 2017 and sets forth standards of conduct agreed by market participants and central banks on a global basis to apply to the wholesale FX market, and the effect of its publication on conduct and future regulation continues to evolve. Cboe FX issued a Statement of Commitment declaring its commitment to conduct its FX market activities in a manner consistent with the principles of the FX Global Code. Amendments to the FX Global Code, changes in the interpretation or enforcement of existing laws and regulations by applicable governmental bodies and regulatory organizations, or the adoption of new legal or regulatory requirements, may also adversely affect our spot FX business. Further, our FX NDF business may also be adversely affected by proposed regulatory changes to the rules governing swap execution facilities.

It is also possible that there will be additional legislative and regulatory changes or efforts in the environment in which we operate, or plan to operate, our businesses. Actions on any of the specific regulatory issues currently under review in the U.S. or internationally and other proposals could have a material impact on our business.

In addition, U.S. and foreign legislatures and regulators could impose legislative or regulatory changes that could materially adversely impact the ability of our market participants to use our markets or participate in the securities industry at all. Any such changes could result in the loss of a significant number of market participants or a reduction in trading activity on our markets, either of which could have a material adverse effect on our business, financial condition and operating results. Changes or proposed changes in regulation may also result in additional costs of compliance and modification of market participants' trading activity on our Exchanges and markets.

Any infringement by us on intellectual property rights of others could result in litigation and could have a material adverse effect on our operations.

Our competitors, as well as others, have obtained, or may obtain, patents or may otherwise hold intellectual property rights that are related to our technology or the types of products and services we offer or plan to offer. We may not be aware of all intellectual property that may pose a risk of infringement by our products, services or technologies. In addition, some potential patent applications in the U.S. are confidential until a patent is issued, and therefore we cannot evaluate the extent to which our products, services or technologies may be covered or asserted to be covered in pending patent applications. Thus, we cannot be sure that our products, services or technologies do not infringe on the rights of others or that others will not make claims of infringement against us. Claims of infringement are not uncommon in our industry, and even if we believe that such claims are without merit, they can be time-consuming and costly to defend and divert management resources and attention. If one or more of our products, services or technologies were determined to infringe a patent or other intellectual property right held by another party, we may be required to pay damages, stop using, developing or marketing those products, services or technologies, obtain a license from the intellectual property rights holders, or redesign those products, services or technologies to avoid infringement. If we were required to stop using, developing or marketing certain products, services or technologies, our business, financial condition and operating results could be materially harmed. Moreover, if we were unable to obtain required licenses, we may not be able to redesign our products, services or technologies to avoid infringement, which could materially adversely affect our business, financial condition and operating results.

Misconduct by our TPHs, members, participants or others could harm us.

We run the risk that our TPHs, members, participants, other persons who use our markets or our products, other persons for whom we clear transactions, our employees or those with which we have business relationships may engage in fraud, market or product manipulation, or other misconduct, which could result in regulatory and legal sanctions and penalties and serious harm to our reputation, especially because we are the parent company of SROs. It is not always possible to deter misconduct, or market or product manipulation, and the precautions we take to prevent and detect this activity may not be effective in all cases. In addition, misconduct, or market or product manipulation by, or failures of, participants on our or other exchanges may discourage trading on our Exchanges or of our products, which could reduce revenues.

Potential conflicts of interest between our for-profit status and our regulatory responsibilities may adversely affect our business.

As a for-profit business with regulatory responsibilities, we are responsible for disciplining TPHs and members for violating our rules, including by imposing fines and sanctions. This may create a conflict of interest between our business interests and our regulatory responsibilities. Any failure by us to fulfill our regulatory obligations could significantly harm our reputation, increase regulatory scrutiny or cause the SEC or CFTC to take action against us, all of which could materially adversely affect our business, results of operations or financial condition.

BIDS Trading's ability to operate under its current regulatory framework is dependent upon the sufficiency of a novel operational and governance framework we have developed to govern our relationship with BIDS Trading and our ability to comply with such framework and if we fail to adhere to such framework or the BIDS Trading ATS is otherwise deemed a "facility" of our registered national securities exchanges, our business, financial condition and operating results may be adversely affected.

The U.S. equities ATS operated by BIDS Trading is regulated as a broker-dealer sponsored alternative trading system and not a registered national securities exchange. Because we acquired BIDS Trading, it is now under common ownership with our registered national securities exchanges that, in some cases, offer trading in the same securities as those traded on the BIDS Trading ATS. Absent sufficient separation, this common ownership of an ATS and registered national securities exchanges offering trading in the same securities presents the potential for the BIDS Trading ATS to be deemed a "facility" of our registered national securities exchanges. If the BIDS Trading ATS were to be deemed to be a "facility" of our registered national securities exchanges, certain exchange regulations could be extended to the BIDS Trading ATS, which could have a material adverse impact on BIDS Trading's business model. This could reduce the BIDS Trading ATS' competitiveness and volumes and could result in a reduction of the value of the BIDS Trading ATS to us. This could also potentially result in fines or other penalties being assessed against us for our failure to operate the BIDS Trading ATS as a "facility," which could have a material adverse effect on our business, financial condition and operating results.

To mitigate the risk that the BIDS Trading ATS is deemed a "facility" of our registered national securities exchanges, we have developed and implemented an operational and governance framework for our ownership of BIDS Trading that is intended to preserve the strategic, technological, business, and operational independence of the BIDS Trading ATS from our registered national securities exchange businesses, such that the BIDS Trading ATS and our registered national securities exchanges would not be deemed to be integrated or otherwise linked for "facility" purposes. This framework is supported by highly detailed policies, procedures and controls. However, because of the lack of precedent for common ownership of an ATS and registered national security exchanges offering trading in the same securities, there is risk that our framework and supporting policies, procedures and controls could be deemed to be insufficient to prevent the BIDS Trading ATS from being deemed to be a "facility" of our registered national securities exchanges. In addition, because of the comprehensive and highly detailed nature of our framework and supporting policies, procedures and controls, there is risk that we could inadvertently fail to fully adhere to our operational and governance framework and related policies, procedures and controls. There is also risk that new legislation or regulation, or changes in existing regulation or other government action, relating to "facilities" of registered national securities exchanges and/or the common ownership of an ATS and registered national securities exchanges offering trading in the same securities could materially affect our ability to own and operate the BIDS Trading ATS under the current operational and governance framework, including without the BIDS Trading ATS being deemed a "facility" of our registered national securities exchanges. Occurrence of any of the risks described in this paragraph could result in the BIDS Trading ATS being deemed to be a “facility” of our registered national securities exchanges, which could reduce the BIDS Trading ATS’ competitiveness and volumes and could result in a reduction of the value of the BIDS Trading ATS to us, and could also potentially result in fines or other penalties being assessed against us for our failure to operate the BIDS Trading ATS as a “facility,” which could have a material adverse effect on our business, financial condition and operating results.

If our risk management and compliance methods are not effective, our business, financial condition and operating results may be adversely affected.

Our ability to comply with applicable laws and rules is largely dependent on our establishment and maintenance of compliance, risk, audit, and reporting systems and procedures, as well as our ability to attract and retain qualified compliance, risk and audit management personnel. These systems and procedures may not be fully effective. We face the risk of intervention by regulatory authorities, including extensive examination and surveillance activity. In the case of actual or alleged non-compliance with applicable laws or regulations, we could be subject to investigations and judicial or administrative proceedings that may result in penalties, settlements or civil lawsuits, including by customers, or third parties, for damages, which may be substantial. For example, the SEC has previously brought actions against exchange operators, including us, for failing to fulfill their obligations to have an effective regulatory system. Any failure to comply with applicable laws and rules could materially adversely affect our business, reputation, financial condition and operating results and, in extreme cases, our ability to conduct our business or portions thereof. As the parent company for SROs, other markets, and a clearinghouse, we are responsible for maintaining markets that comply with securities and futures laws, SEC, FCA, AFM, DNB, IIROC, OSC, ASIC, JFSA, JSDA, ESMA, and CFTC regulations and the rules of the respective exchanges, markets and clearinghouse.

We have methods to identify, monitor and manage our risks. Management of legal, compliance, and regulatory risk, among other risks, requires policies and procedures to properly monitor and manage risk. If our policies, procedures, and compliance systems are not effective or we are not successful in monitoring or evaluating the risks to which we are or may be exposed, our business, reputation, financial condition and operating results could be materially adversely affected. We cannot provide assurance that our policies and procedures will always be effective, or that our management, compliance department, risk department and related enterprise risk management program and internal audit department would be able to identify any such ineffectiveness. If these departments or the enterprise risk program, and related policies and procedures are not effective, we may be subject to monetary or other penalties by our regulators, and our insurance policies may not provide adequate coverage.

Our ability to implement or amend rules could be limited or delayed because of regulation, which could negatively affect our ability to implement needed changes.

Our Exchanges registered with the SEC must submit proposed rule changes to the SEC for its review and, in many cases, its approval. Even where a proposed rule change may be effective upon filing with the SEC, the SEC retains the right to suspend and disapprove such a rule change. Also, the CFTC may stay or disapprove rules that we file with it for CFE or Cboe SEF. The rule review process can be lengthy and can significantly delay the implementation of proposed rule changes that we believe are necessary to the operation of our markets. If the SEC or CFTC delays, including because of a government shutdown, or does not allow one of our Exchanges to implement a rule change, this could negatively affect our ability to make needed changes or implement business activities.

Similarly, the SEC must approve amendments to our exchange subsidiaries’ certificates of incorporation and bylaws as well as certain amendments to the certificate of incorporation and bylaws of Cboe Global Markets. The SEC may decide not to approve a proposed amendment or may delay such approval in a manner that could negatively affect our ability to make a desired change, which could prevent or delay us from improving the operations of our markets or recognize income from new products.

Changes in the tax laws and regulations affecting us, our products and our market participants could have a material adverse effect on our business.

Legislation may be proposed, both domestically and internationally, that could add a transaction tax on our products or change the way that our market participants are taxed on the products they trade on our markets. More recently, a number of federal, state and local jurisdictions in the U.S. and EU Member States have considered a financial transaction tax, but many details remain to be discussed and agreed, including how to assess the tax. Additionally, the proposed Modernization of Derivatives Tax Act of 2021 would introduce in the U.S. mark-to-market tax treatment for all derivatives contracts and require gains and losses be taxed at ordinary income tax rates. If such proposals were to become law, they could have a negative impact on the securities industry and on us by making transactions more costly to market participants, which may impact derivatives trading behavior, reduce trading or clearing and could make our markets less competitive, and they could result in a reduction in volumes and liquidity, which would have a negative impact on our operations.

In addition to proposed tax changes that could affect our market participants, like other corporations, we are subject to taxes at federal, state and local levels, as well as in non-U.S. jurisdictions. Changes in tax laws, regulations or policies or successful claims by tax authorities could result in our having to pay higher taxes, which would in turn reduce our net income. If this occurs, we may experience a higher effective tax rate.

We are subject to litigation risks and other liabilities.

Many aspects of our business involve substantial risks of litigation and other liabilities. Although under current law we expect to be immune from private suits arising from conduct within our regulatory authority and from acts and forbearances incident to the exercise of our regulatory authority, we expect this immunity will only cover certain of our activities in the U.S., and we could be exposed to liability under foreign, national and local laws, court decisions and rules and regulations promulgated by regulatory agencies.

Some of our other liability risks arise under the laws and regulations relating to the tax, employment, intellectual property, anti-money laundering, technology export, cybersecurity, foreign asset controls, foreign corrupt practices, employee labor and employment areas, including anti-discrimination and fair-pay laws and regulations. Liability could also result from disputes over the terms of a trade executed on one of our markets, claims that a system failure or delay cost a customer money, claims we entered into an unauthorized transaction or claims that we provided materially false or misleading statements in connection with a transaction.

For example, we are subject to on-going legal disputes that could result in the payment of fines, penalties or damages and could expose us to additional liability in the future. See Item 3 “Legal Proceedings” in this Annual Report for a general description of our legal proceedings and claims and Note 23 (“Commitments, Contingencies, and Guarantees – Legal Proceedings”) to the consolidated financial statements and related notes, which are included elsewhere in this Annual Report, for a summary of specific legal proceedings.

Further, we could incur significant expenses vigorously defending the claims mentioned above (including those found to be barred due to immunity) and any future claims, even those without merit, which could adversely affect our business, financial condition and operating results. The outcomes of existing claims and any future claims cannot be determined and an adverse resolution of any lawsuit or claim against us may require us to pay substantial damages or impose restrictions on how we conduct business, either of which could adversely affect our business, financial condition and operating results. In addition, we may have to establish accruals for those matters in circumstances when a loss contingency is considered probable and the related amount is reasonably estimable. Any such accruals may be adjusted as circumstances change.

Risks Related to Our Common Stock and Indebtedness

We have outstanding indebtedness, which may decrease our business flexibility and adversely affect our business, financial condition and operating results.

As of December 31, 2021, we had $159.5 million outstanding under our term loan facility, $646.5 million of senior unsecured notes due 2027, $493.3 million of senior unsecured notes due 2030, no funds outstanding under our revolving credit facility and no funds outstanding under the EuroCCP credit facility. The financial and other covenants to which we have agreed and our indebtedness may have the effect of reducing our flexibility to respond to changing business and economic conditions, thereby placing us at a competitive disadvantage compared to competitors that have less indebtedness and making us more vulnerable to general adverse economic and industry conditions. Further, we may default on our obligations or violate the covenants, in which case, we may be required to seek a waiver of such default or the debt obligations may be accelerated. A default under any of our indebtedness with cross default provisions could result in a default on our other indebtedness. Our indebtedness may also increase future borrowing costs, and the covenants pertaining thereto may also limit our ability to repurchase shares of our common stock, increase dividends or obtain additional financing to fund working capital, capital expenditures, acquisitions or general corporate requirements. We are also required to dedicate a larger portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow for other purposes, including working capital, capital expenditures and general corporate purposes. Further, a portion of our borrowings are at variable rates of interest, which exposes us to the risk of increased interest rates unless we enter into offsetting hedging transactions.

Our ability to make payments on and to refinance our debt obligations and to fund planned capital expenditures depend on our ability to generate cash from our operations. This, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

We may not be able to refinance any of our indebtedness on commercially reasonable terms, or at all. If we cannot service our indebtedness, we may have to take actions such as selling assets, seeking additional equity or reducing or delaying capital expenditures, strategic acquisitions, investments and alliances, any of which could impede the implementation of our business strategy or prevent us from entering into transactions that would otherwise benefit our business. Additionally, we may not be able to affect such actions, if necessary, on commercially reasonable terms, or at all. Any of the foregoing consequences could materially adversely affect our business, financial condition and operating results.

Deterioration in our credit profile may increase our costs of borrowing money.

As of December 31, 2021, we have investment grade credit ratings from S&P Global Ratings (A-) and Moody's Investor Service (A3). Ratings from credit agencies are not recommendations to buy, sell or hold our securities, and each rating should be evaluated independently of any other rating. There is no assurance that we will maintain such credit ratings, since credit ratings may be lowered or withdrawn entirely by a rating agency if, in its judgment, the circumstances warrant. If a rating agency were to downgrade our rating below investment grade, our borrowing costs could increase.

If our goodwill, long-lived assets, investments in non-consolidated subsidiaries and intangible assets become impaired, the resulting charge to earnings may be significant.

We are required to assess investments in non-consolidated subsidiaries and intangible assets for impairment at least annually. Goodwill impairment testing is performed annually in the fiscal fourth quarter or more frequently if conditions exist that indicate that the asset may be impaired. In the future, we may take charges against earnings resulting from impairment. Any determination requiring the write-off of a significant portion of our goodwill, long-lived assets, intangible assets or investments in non-consolidated subsidiaries could materially adversely affect our results of operations and financial condition.

Any decision to pay dividends on our common stock is at the discretion of our Board of Directors and depends upon the earnings and cash flow of our operating subsidiaries. Accordingly, there can be no guarantee that we will pay dividends to our stockholders.

Any decision to pay dividends on our common stock in the future will be at the discretion of our Board of Directors, which may determine not to declare dividends at all or at a reduced amount. The board's determination to declare dividends will depend upon our profitability and financial condition, contractual restrictions, restrictions imposed by applicable law and the SEC and other factors that the board deems relevant. As a holding company with no significant business operations of its own, Cboe Global Markets depends entirely on distributions, if any, it may receive from its subsidiaries to meet its obligations and pay dividends to its stockholders. If these subsidiaries are not profitable, or even if they are and they determine to retain their profits for use in their businesses, we will be unable to pay dividends to our stockholders.

Certain provisions in our organizational documents and governing law could prevent or delay a change of control.

Our organizational documents contain provisions that could block actions that stockholders might find favorable, including discouraging, delaying or preventing a change of control or any unsolicited acquisition proposals for us. These include provisions:

- prohibiting stockholders from acting by written consent;
- requiring advance notice of director nominations and of business to be brought before a meeting of stockholders; and
- limiting the persons who may call special stockholders' meetings.

In addition, our organizational documents include provisions that:

- restrict any person from voting or causing the voting of shares of stock representing more than 20% of our outstanding voting capital stock; and
- restrict any person from beneficially owning shares of stock representing more than 20% of the outstanding shares of our capital stock.

Furthermore, our Board of Directors has the authority to issue shares of preferred stock in one or more series and to fix the rights and preferences of these shares without stockholder approval. Any series of our preferred stock is likely to be senior to our common stock with respect to dividends, liquidation rights and, possibly, voting rights. The ability of the Board of Directors to issue preferred stock also could have the effect of discouraging unsolicited acquisition proposals, thus materially adversely affecting the market price of our common stock.

Delaware law makes it difficult for stockholders that have recently acquired a large interest in a corporation to cause the merger or acquisition of the corporation against the board's wishes. Under Section 203 of the Delaware General Corporation Law, a Delaware corporation may not engage in any merger or other business combination with an interested stockholder for a period of three years following the date that the stockholder became an interested stockholder except in limited circumstances, including by approval of the corporation's Board of Directors.

Furthermore, the European countries where we operate regulated entities, such as the UK and Netherlands, may require prior governmental approval before an investor acquires 10% or more of the outstanding shares of our common stock.

Risks Relating to Our Business Following Consummation of Pending ErisX Acquisition

We may not realize the expected benefits of our pending acquisition of ErisX and the acquisition introduces additional risks to our business due to its evolving business model.

We expect to acquire ErisX, a U.S.-based digital asset spot market, a regulated futures exchange and a regulated clearinghouse, which we plan to rebrand as Cboe Digital following close. This planned acquisition is expected to close in the first half of 2022, subject to regulatory approvals and other customary closing conditions. Leveraging digital asset data from ErisX's and our existing index calculation capabilities, we intend to develop and distribute digital asset indices for potential use in exchange traded products and other derivative product opportunities. We also plan to develop a robust market data offering based on actionable bid and offer prices from the ErisX spot crypto market, and ultimately intend to develop a benchmark to help ErisX's industry partners and other market participants evaluate the appropriateness of crypto execution prices and offer digital asset trading to their clients. We expect to have increased financial and reputational risks if there is a failure to develop and launch one or more of anticipated products resulting from this potential acquisition, or if the development or launch of a new product is unsuccessful. Also, there can be no assurance that we will be able to maintain the necessary regulatory approvals or receive support from market participants, industry partners and users to develop and launch products as planned, that ErisX will continue to operate as anticipated, or that we will realize the expected return on our investment. Furthermore, our potential investment in ErisX entails numerous risks, including risks relating to our ability to:

- manage the complexity of its business model to stay current with the industry;
- successfully enter categories and markets in which it may have limited or no prior experience;
- successfully develop and integrate products, systems or personnel into its business operations; and
- maintain required licenses and regulatory approvals for its business.

In addition, we expect that certain market participants intend to acquire minority ownership interests in Cboe Digital and to serve as partners in the growth of the business. If these market participants do not acquire minority ownership interests or serve as partners in the growth of the business, then we may not be able to realize the expected return on our investment. Insufficient participation from market participants in ownership and partnership may adversely affect the ability of ErisX to operate as anticipated or grow, which may have a material adverse effect on our business following the acquisition.

As digital assets technologies evolve, once under our management, ErisX may add, modify or discontinue certain aspects of its business model relating to the product mix and service offerings. Future additions and modifications to ErisX's business will increase the complexity of its business and may place significant strain on ErisX's management, personnel, operations, systems, technical performance, financial resources and internal financial control and reporting functions. We cannot offer any assurance that these or any other additions or modifications will be successful or will not result in harm to our business following the acquisition. Additionally, sources of ErisX revenue are dependent on digital assets and the broader blockchain ecosystem. Due to the highly volatile nature of the blockchain ecosystem and the prices of digital assets, ErisX's operating results have fluctuated, and may continue to fluctuate, significantly from period to period in accordance with market sentiments and movements in the broader blockchain ecosystem.

Additionally, the blockchain ecosystem is highly innovative, rapidly evolving and characterized by intense competition, experimentation and frequent introductions of new products and services, and is subject to uncertain and evolving industry and regulatory requirements. We expect competition to increase in the future as existing and new competitors introduce new products or enhance existing products that may compete with ErisX. We have limited experience in the digital assets space, and ErisX has limited experience applying its digital platform to a global exchange and clearing infrastructure for digital assets. The creation and operation of a global cryptocurrency spot and derivatives trading market is subject to potential technical, legal and regulatory constraints. Any problems that we encounter with the operation of the ErisX systems, including technical, legal and regulatory problems, could negatively impact our business and plan of operations following the acquisition.

ErisX may be unsuccessful in retaining its key personnel.

The success of ErisX will depend in part on the ability to retain its key employees, while the acquisition is pending and following our acquisition of ErisX. If ErisX is unable to retain key employees, including management, who are critical to the successful integration and future operations, we and ErisX could face disruptions in our respective operations, loss of customers, loss of key information, expertise or know-how and unanticipated additional recruitment costs. In addition, if key employees terminate their employment, ErisX's business activities may be adversely affected and management's attention may be diverted from successfully integrating ErisX to hiring suitable replacements, all of which may cause ErisX's business to suffer. In addition, hiring qualified and experienced personnel in this specialized technology space is difficult due to the high level of competition and scarcity of experience. We and ErisX may have difficulty finding, hiring and integrating qualified employees to fill positions following the acquisition.

The characteristics of digital assets and digital asset platforms have been, and may in the future continue to be, exploited to facilitate illegal activity such as fraud, money laundering, tax evasion, ransomware scams and other types of cybercrime, as well as other technical issues, which could adversely affect ErisX.

Digital assets and the digital asset industry are relatively new and, in many cases, lightly regulated or largely unregulated. Digital asset platforms on which digital assets trade pose special risks, as these platforms are generally new and the rules governing their activities are unsettled and their activities may be largely unregulated, and may therefore be more exposed to theft, fraud, and failure than established, regulated exchanges for other products.

Some types of digital assets, particularly cryptocurrencies, have characteristics, such as the speed with which transactions can be conducted, the ability to conduct transactions without the involvement of regulated intermediaries, the ability to engage in transactions across multiple jurisdictions, the irreversible nature of certain transactions and encryption technology that anonymizes these transactions, that make those assets potentially susceptible to use in illegal activity such as fraud, money laundering, tax evasion, ransomware scams and other types of cybercrime. Digital asset platforms have been shut down or experienced losses of assets placed on the platform as a result of cybercrime, and any such event is likely to result in the complete loss of assets placed on such a platform. Any governmental or regulatory action against such a digital asset trading platform may cause assets on such platform to become frozen for a substantial period of time or forfeited, and could result in material opportunity costs or even in the total loss of such assets. In addition, banks may refuse to process or support wire transfers to or from digital asset trading platforms.

While we believe that ErisX's risk management and compliance framework is reasonably designed to detect any such illicit activities, we cannot ensure that we and ErisX will be able to detect such illegal activity in all instances. Because the speed, irreversibility and anonymity of certain digital asset transactions potentially makes them difficult to track, fraudulent transactions may be more likely to occur. ErisX may be specifically targeted by individuals seeking to conduct transfers for fraudulent purposes, and it may be difficult or impossible for us and ErisX to detect and avoid such transactions in certain circumstances.

Various other technical issues with blockchain networks have also been uncovered from time to time that resulted in disabled functionality, exposure of certain users' personal data, theft of users' assets, and other negative consequences, and which required resolution with the attention and efforts of their global miner, user and development communities. If any such risks or other risks materialize, the development and growth of digital assets may be significantly affected and, as a result, ErisX’s business, operating results and financial condition could be adversely affected.

The acquisition of ErisX may increase regulatory costs and risks, and there can be no assurance that our or ErisX’s employees or agents will not violate applicable laws and regulations.

Various aspects of the business that ErisX is engaging in, or planning to engage in, are heavily regulated. ErisX's futures exchange and clearinghouse are regulated by the CFTC, and ErisX's clearinghouse is registered with the Financial Crimes Enforcement Network and is licensed as a money transmitter in many U.S. states and territories. The trading, clearance, and settlement of digital asset transactions may be subject to the federal securities laws and regulated by the SEC if the asset is considered a security. We and ErisX are also subject to federal and state anti-money laundering and counter-terrorism financing laws and regulations.

We and ErisX currently maintain policies and procedures designed to reasonably help ensure compliance with applicable laws and regulations, but there can be no assurance that our or ErisX’s employees or agents will not violate such laws and regulations. A failure by us or ErisX, including the respective employees or agents, to comply with such laws and regulations and subsequent judgment or settlement against us or ErisX under these laws could subject us or ErisX to monetary penalties, damages, and/or have a significant reputational impact.

Regulatory or other legislative changes or actions may restrict the use of digital assets in a manner that adversely affects ErisX’s business, prospects or operations and, consequently, our potential investment in ErisX.

Regulatory or other legislative changes or actions may impact the ability of ErisX to continue to operate, and such actions could affect the ability of ErisX to continue as a going concern. The regulatory and legislative framework is unsettled with respect to many forms of digital assets, which means that federal or state regulators or legislators may in the future curtail or prohibit the acquisition, use or redemption of certain digital assets. Ownership of, holding or trading in certain digital assets may become subject to sanction. Federal or state regulators or legislators may also take regulatory or legislative action that may increase the cost and/or subject companies to additional regulations and laws regarding custody or facilitating the trading of digital assets.

In addition, as ErisX expands its business to new products and services, it will come under the jurisdiction of additional regulators - both with respect to jurisdiction and subject matter. Any failure or perceived failure to comply with existing or new laws, regulations, or orders of any governmental authority (including changes to or expansion of the interpretation of those laws, regulations, or orders), including those discussed in this risk factor, may subject us and ErisX to significant fines, penalties, criminal and civil lawsuits, forfeiture of significant assets, and enforcement, result in additional compliance and licensure requirements, increase regulatory scrutiny of its business, restrict ErisX’s operations, and force ErisX to change its business practices, make product or operational changes, or delay planned product launches or improvements. We and ErisX currently maintain policies and procedures designed to reasonably help ensure compliance with applicable laws and regulations, but there can be no assurance that our or ErisX’s employees, contractors, or agents will not violate such laws and regulations.

Digital asset custodial solutions and related technology, including ErisX’s systems and custodial arrangements, are subject to risks related to a loss of funds due to theft of digital assets, employee or vendor sabotage, security and cybersecurity risks, system failures and other operational issues which could cause damage to our and ErisX’s reputation and brand.

The secure storage and transmission of digital assets and data over networks is a critical element of ErisX’s operations. Threats to ErisX’s storage and transmission of digital assets and data may come from external factors such as governments, organized crime, hackers and other third parties such as outsourced or infrastructure-support providers and application developers, or may originate internally from an employee or service provider to whom ErisX has granted access to its systems.

Digital asset transactions may be irrevocable, and stolen or incorrectly transferred digital assets may be irretrievable. Once a transaction has been verified and recorded in a block that is added to the blockchain, an incorrect transfer of a digital asset generally will not be reversible, and ErisX may not be capable of seeking compensation for any such transfer or theft. It is possible that, through computer or human error, or through theft or criminal action, the digital asset could be transferred in incorrect amounts or to unauthorized third parties, or to uncontrolled accounts. Such events would have a material adverse effect on the ability of ErisX to continue as a going concern, which may have an adverse effect on our business following the acquisition.

While we and ErisX maintain cybersecurity procedures and policies, those procedures and policies may not be adequate to avoid the potential losses caused by security breaches, and ErisX may lose digital assets without any recourse. Unlike bank accounts or accounts at some other financial institutions, in the event of loss or loss of utility value, there is no public insurer, such as the Securities Investor Protection Corporation or the FDIC, to offer recourse to us, ErisX, or to any investor and the misappropriated digital assets may not easily be traced to the bad actor.

Further, when cryptocurrency custodial solutions (whether involving ErisX systems or others) experience system failures or other operational issues, such events could result in a reduction in cryptocurrency prices or confidence and impact the success of ErisX and have a material adverse effect on the ability of ErisX to continue as a going concern, which may have an adverse effect on our business following the acquisition.

ErisX's clearinghouse operations are exposed to risks, including credit, liquidity, market and other risks related to the potential defaults of clearing members and other counterparties.

ErisX is subject to risks related to operating its clearinghouse, Eris Clearing, which is a derivatives clearing organization ("DCO"), registered with the CFTC. Risks associated with the operation of Eris Clearing include failing to meet strict business continuity requirements and regulatory oversight, risks of default by clearing members and counterparties due to bankruptcy, lack of liquidity, operational failure or other reasons, and the risks associated with the adequacy of participants' margin and guaranty funds. There is no guarantee the collateral deposited will continue to maintain its value, and the use of digital assets as collateral may introduce additional volatility in value. Please also refer to the risk factors above for a discussion of other risks associated with the use of digital assets. These risks could subject ErisX to substantial losses, reputational harm, regulatory consequences, including litigation, fines and enforcement actions, and the inability to operate its business.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

The Company is headquartered in Chicago with a network of domestic and global offices across the Americas, Europe, Asia and Australia, including main hubs in New York, London, Kansas City and Amsterdam. Our principal properties as of December 31, 2021 are listed in the table below:

Location	Classification	Owned/Leased	Lease Expiration	Approximate Size
400 South La Salle Street, Chicago, Illinois	Former global headquarters and office space; current trading floor	Owned*	N/A	300,000 sq. ft.
433 W. Van Buren Street, Chicago, Illinois	New global headquarters and office space	Leased	August 2035	185,000 sq. ft.
8050 Marshall Drive, Lenexa, Kansas	Office space	Leased	February 2027, with two 5 year renewal options	62,000 sq. ft.
8050 Marshall Drive, Lenexa, Kansas	Office space	Leased	May 2023	18,500 sq. ft.
141 W. Jackson Boulevard, Chicago, Illinois	Planned new trading floor and office space	Leased	October 2032	40,000 sq. ft.
17 State Street, New York, New York	Office space	Leased	April 2024, with one 5 year renewal option	22,000 sq. ft.
11 Monument Street, London, United Kingdom	Principal UK office space	Leased	March 2027, with one 5 year renewal option	21,000 sq. ft.
Rockwell Business Center Sheridan, Sheridan Street Corner United Street, Highway Hills Mandaluyong City 1550 Philippines	Office space	Leased	December 2023	10,500 sq. ft.
Strawinskylaan 1847 Amsterdam, Netherlands	Office space	Leased	August 2023	8,000 sq. ft.

*Through our wholly-owned subsidiary, Cboe Building Corporation, we own the building that was previously the global headquarters. The building is currently classified as held and used.

In addition to the offices listed above, the Company has entered into a lease that will commence in 2022 for a new principal office space in Amsterdam. See Note 24 (“Leases”) to the consolidated financial statements included herein for further information.

We believe that our properties are in good operating condition and adequately serve our current business operations. Generally, our properties are not earmarked for use by a particular segment. Instead, most of our properties are used by two or more segments. We also anticipate that suitable additional or alternative space will be available at commercially reasonable terms for future expansion to the extent necessary.

Our disaster recovery sites in the United States are located in Chicago, Illinois, Kansas City, Missouri, and Secaucus, New Jersey. In addition, we have agreements with a primary data center in Secaucus, New Jersey and a secondary data center in Chicago, Illinois. In Europe, our primary data center is in Slough, England. The secondary data center for Cboe Europe is in Park Royal, London. We operate a back-up location for our London operations in the United Kingdom.

See Note 7 (“Property and Equipment, Net”) and Note 24 (“Leases”) to the consolidated financial statements included herein for further information.

Item 3. Legal Proceedings

Cboe incorporates herein by reference the discussion set forth in Note 21 ("Income Taxes") and Note 23 ("Commitments, Contingencies, and Guarantees") of the consolidated financial statements included herein.

CT Plan Order (Continuation of Consolidated Data Plans Proceeding)

On May 6, 2020, the SEC issued an order (the "Consolidated Data Plan Order") that directed the U.S. equities exchanges and FINRA to submit a new National Market System ("NMS") Plan regarding Consolidated Equity Market Data. The contemplated new NMS Plan is referred to as the "CT Plan" and it will replace three Equity Data Plans that govern the dissemination of real-time, consolidated market data for NMS stocks. The Consolidated Data Plan Order set forth certain changes to be included in the proposed CT Plan, including governance structure changes related to voting rights and a deadline of August 11, 2020 by which the proposed CT Plan had to be filed.

On June 29, 2020, the Company filed a Petition for Review ("PFR") with the Court of Appeals for the D.C. Circuit Court ("D.C. Circuit) challenging the Consolidated Data Plan Order. Briefing concluded on March 12, 2021 and oral argument was held on April 26, 2021. On June 15, 2021, the D.C. Circuit issued an order dismissing the PFR for lack of jurisdiction, holding that the Consolidated Data Plan Order was not a "final order" because the SEC had not determined whether the challenged features would make it into the new CT Plan.

On August 6, 2021, the SEC issued an order approving the CT Plan that was previously filed on August 11, 2020 (as mandated by the Consolidated Data Plan Order) and subject to public comment ("CT Plan Order"). On August 9, 2021, the Company filed another PFR with the D.C. Circuit challenging the CT Plan Order and the prior Consolidated Data Plan Order. On September 13, 2021, the Company filed a motion requesting that the D.C. Circuit stay the CT Plan Order pending resolution of the appeal and also requesting that the D.C. Circuit expedite the appeal. On October 13, 2021, the D.C. Circuit granted the motion to stay the CT Plan order and to expedite the appeal and established a briefing schedule. Briefing concluded in January 2022 and oral argument is scheduled for March 24, 2022.

The new CT Plan approved by the SEC may cause the Company's equities exchanges, BZX, BYX, EDGX, and EDGA, to require additional resources to comply with or challenge such new consolidated data plan and it may have a material impact on our business, financial condition and operating results if, for example, there is a negative impact on the applicable market data revenues that we receive that are generated from such new plan.

Market Data Infrastructure Final Rule

On December 9, 2020, the SEC issued a Market Data Infrastructure Final Rule ("Final Rule"), which makes significant additions to the content available on the Securities Information Processors ("SIPs") and replaces the exclusive processors with a competing consolidator model. The Final Rule is limited to market data disseminated by the equities SIPs and does not apply to proprietary market data, or the dissemination of options market data through OPRA.

On February 5, 2021, the Company filed a Petition for Review (the "2/5 PFR") with the Court of Appeals for the D.C. Circuit challenging the Final Order. Additionally, on February 5, 2021, the Company filed a motion for stay of the Final Rule with the SEC, which the SEC denied on March 24, 2021.

On March 24, 2021, the SEC filed a Motion to Dismiss ("MTD") with the D.C. Circuit: (1) arguing that the PFR is not ripe because the Final Rule had not been published in the Federal Register ("FR"), (2) suggesting (if there is ambiguity) that the D.C. Circuit clarify whether publication in the FR opens the filing window, and (3) suggesting that the D.C. Circuit could hold the case in abeyance pending filing of a PFR after publication in the FR.

On April 9, 2021, the Final Rule was published in the FR. On April 13, 2021, the Company filed another PFR (the "4/ PFR"") as a protective measure in the event the D.C. Circuit determined that the time to file a PFR does not commence until publication of the Final Rule in the FR.

On June 15, 2021, the D.C. Circuit entered an order granting the SEC's MTD respecting the 2/5 PFR. This order does not affect the 4/13 PFR, which was filed after publication of the Final Rule in the FR on April 9, 2021. On July 9, 2021, the D.C. Circuit entered a briefing schedule, which concluded in January 2022. Oral argument is scheduled for March 18, 2022.

The implementation of the Final Rule could cause Cboe's equities exchanges, BZX, BYX, EDGX, and EDGA, to require additional resources to comply with or to challenge the new rules and they may have a material impact on our business, financial condition and operating results if, for example, there are lower SIP plan revenues or we must reduce the fees we charge for market data. The Company intends to litigate the matter vigorously.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Common Stock

The Company’s common stock is listed on Cboe BZX under the trading symbol CBOE. As of January 31, 2022, there were approximately 123 holders of record of our common stock.

Dividends

Each share of common stock, including restricted stock awards and restricted stock units, is entitled to receive dividend and dividend equivalents, respectively, if, as and when declared by the Board of Directors of the Company.

The Company’s expectation is to continue to pay dividends. The decision to pay a dividend, however, remains within the discretion of the Company's Board of Directors and may be affected by various factors, including our earnings, financial condition, capital requirements, level of indebtedness and other considerations our Board of Directors deems relevant. Future debt obligations and statutory provisions, among other things, may limit, or in some cases prohibit, our ability to pay dividends.

As a holding company, the Company’s ability to declare and continue to pay dividends in the future with respect to its common stock will also be dependent upon the ability of its subsidiaries to pay dividends to it under applicable corporate law.

Recent Sales of Unregistered Securities

Not applicable.

Use of Proceeds

Not applicable.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

Share Repurchase Program

In 2011, the Board of Directors approved an initial authorization for the Company to repurchase shares of its outstanding common stock of $100 million and approved additional authorizations of $100 million in each of 2012, 2013, 2014, 2015 and 2016, $250 million in each of 2018, 2019 and 2020, and $200 million in February 2021, for a total authorization of $1.6 billion. The program permits the Company to purchase shares through a variety of methods, including in the open market or through privately negotiated transactions, in accordance with applicable securities laws. It does not obligate the Company to make any repurchases at any specific time or situation.

Under the program, for the year ended December 31, 2021, the Company repurchased 822,005 shares of common stock at an average cost per share of $98.82, totaling $81.3 million. Since inception of the program through December 31, 2021, the Company has repurchased 18,072,129 shares of common stock at an average cost per share of $68.12, totaling $1.2 billion. As of December 31, 2021, the Company had $318.9 million of availability remaining under its existing share repurchase authorizations.

Purchase of common stock from employees

During the fiscal quarter ended December 31, 2021, we purchased shares from employees in connection with the settlement of employee tax withholding obligations arising from the vesting of restricted stock units and restricted stock awards. The table below represents repurchases made by or on behalf of us or any “affiliated purchaser” of our common stock during the fiscal quarter ended December 31, 2021:

Period	Total number of shares purchased	Average price paid per share
October 1 to October 31, 2021	—	$ —
November 1 to November 30, 2021	1,525.0	130.22
December 1 to December 31, 2021	281.0	129.48
Total	1,806.0	

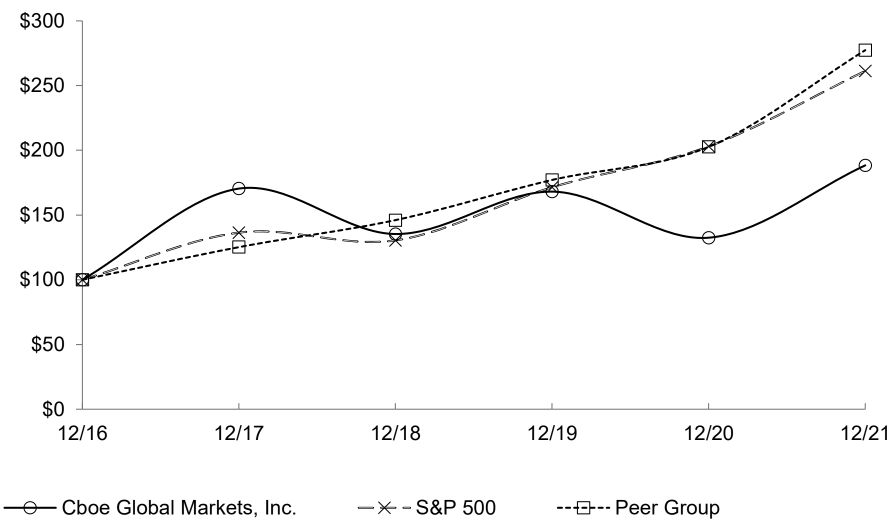
Stockholder Return Performance Graph

The following graph compares the cumulative total return provided to stockholders on our common stock since December 31, 2016 against the return of the S&P 500 Index and a customized peer group that includes CME Group Inc., Intercontinental Exchange Inc., and Nasdaq, Inc.

An investment of $100, with reinvestment of all dividends, is assumed to have been made in our common stock, the index and the peer groups on December 31, 2016, and its performance is tracked on an annual basis through December 31, 2021.

Comparison of Cumulative Total Return of the
Company, Peer Groups, Industry Indices and/or Broad Markets

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*
Among Cboe Global Markets, Inc., the S&P 500 Index
and a Peer Group



*$100 invested on 12/31/16 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

Data Source: Yahoo Finance, Closing Price(s)

	12/16	12/17	12/18	12/19	12/20	12/21
Cboe Global Markets, Inc.	100.00	170.47	135.35	168.06	132.49	188.43
S&P 500	100.00	136.40	130.42	171.49	203.04	261.32
Peer Group	100.00	125.23	146.02	177.08	202.63	277.30

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is provided to assist the reader in understanding the results of operations, liquidity and capital resources, and critical accounting estimates and policies through the eyes of our management team. The following discussion should be read in conjunction with the consolidated financial statements of the Company and the notes thereto included in Item 8 of this Annual Report on Form 10-K. The following discussion contains forward-looking statements. Actual results could differ materially from the results discussed in the forward-looking statements. See "Risk Factors" and "Forward-Looking Statements" above.

A detailed comparison of the Company's 2020 operating results to its 2019 operating results can be found in the Management's Discussion and Analysis of Financial Condition and Results of Operations section in the Company's 2020 Annual Report on Form 10-K filed February 19, 2021 at www.sec.gov.

INTRODUCTION

Management's Discussion and Analysis of Financial Condition and Results of Operations is organized as follows:

- **Executive Summary** – Includes an overview of the Company's business; a description of notable recent developments, current economic, competitive and regulatory trends relevant to our business; the Company's current business strategy; and the Company's primary sources of operating and non-operating revenues and expenses.

- **Results of Operations** – Includes an analysis of the Company's 2021 and 2020 financial results and a discussion of any known events or trends which are likely to impact future results.

- **Liquidity and Capital Resources** – Includes a discussion of the Company's future cash requirements, capital resources, and financing arrangements.

- **Critical Accounting Estimates –** Provides an explanation of accounting estimates which may have a significant impact on the Company's financial results and the judgments, assumptions, and uncertainties associated with those estimates.

- **Recent Accounting Pronouncements** – Includes an evaluation of recent accounting pronouncements and the potential impact of their future adoption on the Company's financial results.

EXECUTIVE SUMMARY

Overview

Cboe Global Markets, Inc. ("Cboe" or "the Company"), a leading provider of market infrastructure and tradable products, delivers cutting-edge trading, clearing and investment solutions to market participants around the world. The Company is committed to operating a trusted, inclusive global marketplace, providing leading products, technology and data solutions that enable participants to define a sustainable financial future. Cboe provides trading solutions and products in multiple asset classes, including equities, derivatives and FX, across North America, Europe, and Asia Pacific.

Cboe's subsidiaries include the largest options exchange and the third largest stock exchange operator in the U.S. In addition, the Company operates one of the largest stock exchanges by value traded in Europe, and owns EuroCCP, a leading pan-European equities and derivatives clearinghouse, BIDS Trading, a leading block-trading ATS by volume in the U.S., MATCHNow, a leading equities ATS in Canada, and Cboe Australia, an operator of trading venues in Australia, and Cboe Japan, an operator of trading venues in Japan. Cboe also is a leading market globally for exchange-traded products ("ETPs") listings and trading.

The Company is headquartered in Chicago with offices in Amsterdam, Belfast, Calgary, Hong Kong, Kansas City, London, Manila, New York, San Francisco, Sarasota Springs, Singapore, Sydney, Tokyo and Toronto.

Recent Developments

Acquisition of BIDS Holdings

On December 31, 2020, the Company completed the acquisition of BIDS Holdings, which is included in the Company's North American Equities segment. BIDS Holdings owns BIDS Trading, a registered broker-dealer and the operator of the BIDS ATS, the largest block-trading ATS by volume in the U.S. The BIDS ATS is not a registered national securities exchange or a facility thereof. The acquisition follows Cboe and BIDS Trading's successful partnership in Europe, which began in 2016 with the creation of Cboe LIS for European equities block-trading. Since its launch, Cboe LIS has grown to become one of the largest block-trading platforms in Europe. BIDS Trading's proven block-trading capability provides the Company a foothold in the off-exchange segment of the U.S. equities market. Additionally, BIDS Trading's differentiated network of global buy-side investment managers and sell-side constituents provides the foundation for Cboe to potentially build more off-exchange products and services in non-U.S. equities or options products and in geographies beyond the U.S.

Acquisition of Chi-X Asia Pacific

On July 1, 2021, the Company completed the acquisition of Chi-X Asia Pacific Holdings, Ltd., a holding company of alternative market operators and providers of innovative market solutions. This acquisition provides the Company with a single point of entry into two key capital markets, Australia and Japan, helps enable it to expand its global equities and market data business into the Asia Pacific region, bring other products and services to the region, and further expand access to its unique proprietary product suite in the region. The transaction closed on July 1, 2021 based upon the time zone of both the acquiree, Chi-X Asia Pacific, and the acquiror, Cboe Worldwide Holdings Limited, a subsidiary of the Company.

Investment in Trading Technologies

On October 31, 2021, the Company, through a wholly-owned subsidiary, became a limited partner of 7Ridge Investments 3 LP ("7Ridge Fund") in connection with 7Ridge Fund's planned acquisition of Trading Technologies International, Inc. ("Trading Technologies"). On December 13, 2021, the Company's subsidiary provided its financial commitment to 7Ridge Fund, and on December 21, 2021, 7Ridge Fund completed the acquisition of Trading Technologies. Trading Technologies is a global provider of next-generation professional trading software, connectivity and data solutions. The Company is strategically aligned with Trading Technologies' vision of delivering a leading trading, connectivity and data network to the global trading community.

Planned acquisition of ErisX

On October 20, 2021, the Company announced it entered into a definitive agreement to acquire Eris Digital Holdings, LLC ("ErisX"). ErisX operates a U.S.-based digital asset spot market, a regulated futures exchange and a regulated clearinghouse. Ownership of ErisX presents a unique opportunity for the Company to enter the digital asset spot and derivatives marketplaces through a digital-first platform developed with industry partners to focus on robust regulatory compliance, data and transparency. The transaction is expected to close in the first half of 2022; subject to regulatory review and other customary closing conditions.

Planned acquisition of NEO

On November 15, 2021, the Company announced it entered into a definitive agreement to acquire Aequitas Innovations, Inc. ("NEO"). NEO is a fintech organization that is comprised of a fully registered Tier-1 Canadian securities exchange with a diverse product and services set ranging from corporate listings to cash equity trading. Ownership of NEO will help allow the Company to provide a more fulsome Canadian equities offering, operating the NEO Exchange, a national securities exchange with trading, listings, and other services, in addition to MATCHNow, the ATS acquired by the Company in 2020. The transaction is expected to close in the first half of 2022; subject to regulatory review and other customary closing conditions.

Business Segments

The Company reports five business segments: Options, North American Equities, Europe and Asia Pacific, Futures, and Global FX. Segment performance is primarily based on operating income (loss). The Company has aggregated all of its corporate costs and eliminations, as well as other business ventures, within Corporate Items and Eliminations;

however, operating expenses that relate to activities of a specific segment have been allocated to that segment. Our management allocates resources, assesses performance and manages our business according to these segments:

Options. The Options segment includes options on market indices ("index options"), as well as on the stocks of individual corporations ("equity options"), and options on ETPs, such as exchange-traded funds ("ETFs") and exchange-traded notes ("ETNs"), which are "multi-listed" options and listed on a non-exclusive basis. These options are eligible to trade on Cboe Options, C2, BZX, EDGX, and other U.S. national security exchanges. Cboe Options is the Company's primary options market and offers trading in listed options through a single system that integrates electronic trading and traditional open outcry trading on the Cboe Options trading floor in Chicago. C2 Options, BZX Options, and EDGX Options are all-electronic options exchanges, and typically operate with different market models and fee structures than Cboe Options. The Options segment also includes applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary options market data, index licensing, and access and capacity services.

North American Equities. The North American Equities segment includes listed U.S. equities and ETP transaction services that occur on fully electronic exchanges owned and operated by BZX, BYX, EDGX, and EDGA, equities transactions that occur on the BIDS Trading platform, and Canadian equities and other transaction services that occur on or through the MATCHNow ATS. The North American Equities segment also includes ETP listings on BZX, the Cboe Global Markets, Inc. common stock listing, applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary equities market data, routing services, and access and capacity services.

Europe and Asia Pacific. The Europe and Asia Pacific segment includes the pan-European listed equities and derivatives transaction services, ETPs, exchange-traded commodities, and international depository receipts that are hosted on MTFs operated by Cboe Europe Equities (Cboe Europe and Cboe NL) and Cboe Europe Derivatives ("CEDX"). It also includes the ETP listings business on RMs and clearing activities of EuroCCP, as well as the equities transaction services of Cboe Australia and Cboe Japan, each operators of trading venues in Australia and Japan. This segment was previously referred to as the European Equities segment but was updated to the Europe segment in the first quarter of 2021 as a result of the launch of Cboe Europe Derivatives, a pan-European derivatives platform in September 2021. The segment was subsequently updated to Europe and Asia Pacific to reflect the acquisition of Chi-X Asia Pacific in July 2021. Cboe Europe operates lit and dark books, a periodic auctions book, and a Large-in-Scale ("LIS") trading negotiation facility for UK symbols. Cboe NL, launched in October 2019 and based in Amsterdam, operates similar business functionality to that offered by Cboe Europe, and provides for trading only in European Economic Area ("EEA") symbols. The new Cboe Europe Derivatives venue offers futures and options based on Cboe Europe equity indices. This segment also includes Cboe Europe, Cboe NL, CEDX, Cboe Australia, and Cboe Japan revenue generated from the licensing of proprietary market data and from access and capacity services.

Futures. The Futures segment includes transaction services provided by the Company's fully electronic futures exchange, CFE, which includes offerings for trading of VIX futures and other futures products, the licensing of proprietary market data, as well as access and capacity services.

Global FX. The Global FX segment includes institutional FX trading services that occur on the Cboe FX fully electronic trading platform, non-deliverable forward FX transactions ("NDFs") offered for execution on Cboe SEF and Cboe Swiss, as well as revenue generated from the licensing of proprietary market data and from access and capacity services.

General Factors Affecting Results of Operations

In broad terms, our business performance is impacted by a number of drivers, including macroeconomic events affecting the risk and return of financial assets, investor sentiment, the regulatory environment for capital markets, geopolitical events, tax policies, central bank policies and changing technology, particularly in the financial services industry. We believe our future revenues and net income will continue to be influenced by a number of domestic and international economic trends, including:

- trading volumes on our proprietary products such as VIX options and futures and SPX options;
- trading volumes in listed equity securities, options, futures, and ETPs in North America, Europe, and Asia Pacific, clearing volumes in listed equity securities and ETPs in Europe, volumes in listed equity options, and volumes in institutional FX trading;
- the demand for and pricing structure of the U.S. tape plan market data distributed by the Securities Information Processors ("SIPs"), which determines the pool size of the industry market data revenue we receive based on our market share;
- consolidation and expansion of our customers and competitors in the industry;

- the demand for information about, or access to, our markets and products, which is dependent on the products we trade, our importance as a liquidity center, quality and integrity of our proprietary indices, and the quality and pricing of our data and access and capacity services;
- continuing pressure in transaction fee pricing due to intense competition in the North American, European, and Asia Pacific markets;
- significant fluctuations in foreign currency translation rates or weakened value of currencies; and
- regulatory changes and obligations relating to market structure and increased capital requirements, and those which affect certain types of instruments, transactions, products, pricing structures, capital market participants or reporting or compliance requirements.

A number of significant structural, political and monetary issues and the COVID-19 pandemic continue to confront the global economy, and instability could continue, resulting in an increased or subdued level of inflation, market volatility, supply chain constraints, changes in trading volumes and greater uncertainty. Inflationary increases in our expenses, such as compensation inflation, may have an adverse effect on our financial results.

We continue to closely monitor developments around COVID-19 and follow guidance provided by governmental and public health agencies. In response to COVID-19, we have provided frequent communications to employees, customers, regulators, critical vendors, technology equipment suppliers, data and disaster recovery centers, and other service providers and instructed non-essential employees to work from home on a temporary basis, implemented travel restrictions, and temporarily suspended open outcry trading between March 13, 2020 and June 14, 2020, without any known significant disruptions to our business or control processes. We expect to continue to take further actions as necessary in response to addressing COVID-19. Our business and operations could be materially and adversely affected by the effects of COVID-19, however, the extent to which our results could be affected by COVID-19 largely depends on future developments which cannot be accurately predicted and are uncertain. Further, changes in trading behavior, additional suspensions of open outcry trading, market disruptions and other future developments caused by the effects of COVID-19 could impact trading volumes and the demand for our products, market data, and services, which could have a material adverse effect on our business, financial condition, operating results and cash flows for fiscal year 2021 and could be material during any future period impacted either directly or indirectly by this pandemic.

Components of Revenues

Transaction and Clearing Fees

Transaction fees represent fees charged by the Company for the performance obligation of executing a trade on its markets. These fees can be variable based on trade volume tiered discounts; however, as all tiered discounts are calculated monthly, the actual discount is recorded on a monthly basis. Transaction fees are recognized across all segments. Clearing fees, which include settlement fees, are charged by the Company for transactions cleared and settled by EuroCCP. Clearing fees can be variable based on trade volume tiered discounts; however, as all tiered discounts are calculated monthly, the actual discount is recorded on a monthly basis. Clearing fees are recognized in the Europe and Asia Pacific segment. Transaction and clearing fees, as well as any tiered volume discounts, are calculated and billed monthly in accordance with the Company's published fee schedules.

Access and Capacity Fees

Access and capacity fees represent fees assessed for the opportunity to trade, including fees for trading-related functionality across all segments, terminal and other equipment rights, maintenance services, trading floor space and telecommunications services. Facilities, systems services and other fees are generally monthly fee-based. These fees are billed monthly in accordance with the Company's published fee schedules and recognized on a monthly basis when the performance obligation is met. All access and capacity fees associated with the trading floor are recognized in the Options segment. There is no remaining performance obligation after revenue is recognized.

Market Data Fees

Market data fees represent the fees from the U.S. tape plans and fees from customers for proprietary market data. Fees from the U.S. tape plans are collected monthly based on published fee schedules and distributed quarterly to the Exchanges based on a known formula using trading and/or quoting activity. A contract for proprietary market data is entered into and charged on a monthly basis in accordance with the Company's published fee schedules as the service is provided. Both types of market data are satisfied over time, and revenue is recognized on a monthly basis as the customer receives and consumes the benefit as the Company provides the data. U.S. tape plan market data is recognized in the North American Equities and Options segments. Proprietary market data fees are recognized across all segments.

Regulatory Fees

Regulatory fees primarily represent fees collected by the Company to cover the Section 31 fees charged to the Exchanges under the authority of the SEC (Cboe Options, C2, BZX, BYX, EDGX, and EDGA) and are charged by the SEC. Consistent with industry practice, the fees charged to customers are based on the fee set by the SEC per notional value of U.S. Equities exchange transactions and per round turn of Options transactions executed on the Company's U.S. securities markets. These fees are calculated and billed monthly and are recognized in the North American Equities and Options segments. As the Exchanges are responsible for the ultimate payment to the SEC, the Exchanges are considered the principals in these transactions. Regulatory fees also include the options regulatory fee ("ORF") which supports the Company's regulatory oversight function in the Options segment, along with other miscellaneous regulatory fees, and neither can be used for non-regulatory purposes. The ORF and miscellaneous fees are recognized when the performance obligation is fulfilled.

Other Revenue

Other revenue primarily consists of revenue from various licensing agreements, interest income from clearing operations, all fees related to the trade reporting facility operated in the Europe and Asia Pacific segment, and listing fees.

Components of Cost of Revenues

Liquidity Payments

Liquidity payments are directly correlated to the volume of securities traded on our markets. As stated above, we record the liquidity rebates paid to market participants providing liquidity, in the case of C2, BZX, EDGX, and Cboe Europe, as cost of revenue. BYX and EDGA offer a pricing model where we rebate liquidity takers for executing against an order resting on our book, which is also recorded as a cost of revenues.

Routing and Clearing

Various rules require that U.S. options and equities trade executions occur at the NBBO displayed by any exchange. Linkage order routing consists of the cost incurred to provide a service whereby Cboe equities and options exchanges deliver orders to other execution venues when there is a potential for obtaining a better execution price or when instructed to directly route an order to another venue by the order provider. The service affords exchange order flow providers an opportunity to obtain the best available execution price and may also result in cost benefits to those clients. Such an offering improves our competitive position and provides an opportunity to attract orders which would otherwise bypass our exchanges. We utilize third-party brokers or our broker-dealer, Cboe Trading, to facilitate such delivery. Also included within routing and clearing are the Order Management System and Execution Management System ("OMS" and "EMS", respectively) fees incurred for U.S. Equities Off-Exchange order execution, as well as settlement costs incurred for the settlement process executed by EuroCCP.

Section 31 Fees

Exchanges under the authority of the SEC (Cboe Options, C2, BZX, BYX, EDGX, and EDGA) are assessed fees pursuant to the Exchange Act designed to recover the costs to the U.S. government of supervision and regulation of securities markets and securities professionals. We treat these fees as a pass-through charge to customers executing eligible listed equities and listed equity options trades. Accordingly, we recognize the amount that we are charged under Section 31 as a cost of revenues and the corresponding amount that we charge our customers as regulatory transaction fees revenue. Since the regulatory transaction fees recorded in revenues are equal to the Section 31 fees recorded in cost of revenues, there is no impact on our operating income. CFE, Cboe Europe, Cboe NL, BIDS, MATCHNow, Cboe FX, Cboe Australia and Cboe Japan are not U.S. national securities exchanges, and accordingly are not charged Section 31 fees.

Royalty Fees

Royalty fees primarily consist of license fees paid by us for the use of underlying indices in our proprietary products usually based on contracts traded. The Company has licenses with the owners of the S&P 500 Index, S&P 100 Index and certain other S&P indices, FTSE Russell indices, the DJIA, MSCI, and certain other index products. This category also includes fees related to the dissemination of market data related to S&P indices and other products through Cboe Streaming Market Indices ("CSMI").

Other Cost of Revenues

Other cost of revenues primarily consists of interest expense from clearing operations, electronic access permit fees and other miscellaneous costs associated with other revenue.

Components of Operating Expenses

Compensation and Benefits

Compensation and benefits represent our largest expense category and tend to be driven by our staffing requirements, financial performance, and the general dynamics of the employment market. Stock-based compensation is a non-cash expense related to equity awards. Stock-based compensation can vary depending on the quantity and fair value of the award on the date of grant and the related service period.

Depreciation and Amortization

Depreciation and amortization expense results from the depreciation of long-lived assets purchased, the amortization of purchased and internally developed software, and the amortization of intangible assets.

Technology Support Services

Technology support services consists primarily of costs related to the maintenance of computer equipment supporting our system architecture, circuits supporting our wide area network, support for production software, operating system license and support fees, fees paid to information vendors for displaying data and off-site system hosting fees.

Professional Fees and Outside Services

Professional fees and outside services consist primarily of consulting services, which include supplemental staff activities primarily related to systems development and maintenance, legal, regulatory and audit, and tax advisory services.

Travel and Promotional Expenses

Travel and promotional expenses primarily consist of advertising, costs for special events, sponsorship of industry conferences, options education seminars and travel-related expenses.

Facilities Costs

Facilities costs primarily consist of expenses related to owned and leased properties including rent, maintenance, utilities, real estate taxes and telecommunications costs.

Acquisition-Related Costs

Acquisition-related costs relate to acquisitions and other strategic opportunities, including the Merger. The acquisition-related costs include fees for investment banking advisors, lawyers, accountants, tax advisors, public relations firms, severance and retention costs, impairment of goodwill, capitalized software and facilities, and other external costs directly related to the mergers and acquisitions.

Other Expenses

Other expenses represent costs necessary to support our operations that are not already included in the above categories.

Non-Operating (Expenses) Income

Income and expenses incurred through activities outside of our core operations are considered non-operating and are classified as other (expense) income. These activities primarily include interest earned on the investing of excess cash, interest expense related to outstanding debt facilities, dividend income, income and unrealized gains and losses related to investments held in a trust for the Company’s non-qualified retirement and benefit plans, and equity earnings or losses from our investments in other business ventures.

RESULTS OF OPERATIONS

The following are summaries of changes in financial performance and include certain non-GAAP financial measures. Management uses these non-GAAP measures internally in conjunction with GAAP measures to help evaluate our performance and to help make financial and operational decisions. These non-GAAP financial measures assist management in comparing our performance on a consistent basis for purposes of business decision making by removing the impact of certain items management believes do not reflect our underlying operations.

We believe our presentation of these measures provides investors with greater transparency into financial measures used by management and is useful to investors for period-to-period comparisons of our ongoing operating performance.

These non-GAAP financial measures are not presented in accordance with, or as an alternative to, GAAP financial measures and may be calculated differently from non-GAAP measures used by other companies, which reduces their usefulness as comparative measures. We encourage analysts, investors and other interested parties to use these non-GAAP measures as supplemental information to the GAAP financial measures included herein, including our consolidated financial statements, to enhance their analysis and understanding of our performance and in making comparisons. Please see the footnotes below for definitions, additional information, and reconciliations from the closest GAAP measure.

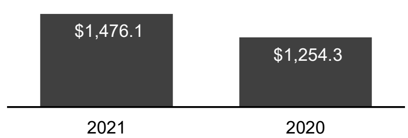
Comparison of Years Ended December 31, 2021 and 2020

Overview

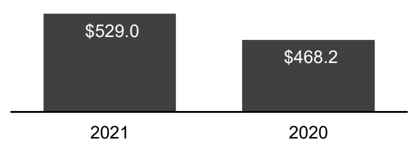
The following summarizes changes in financial performance for the year ended December 31, 2021, compared to the year ended December 31, 2020:

Total Revenues (in millions)

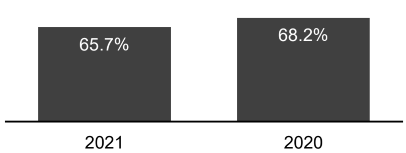
Revenues Less Cost of Revenues (in millions)



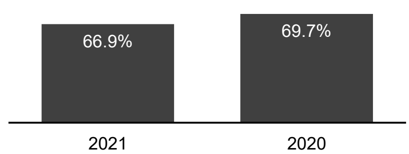
Net Income (in millions)



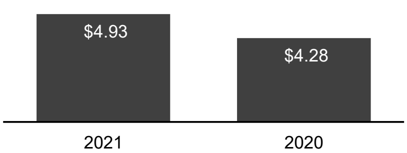
EBITDA Margin(1)



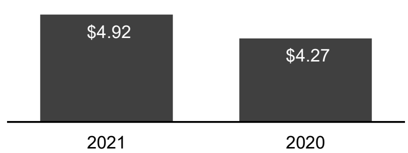
Adjusted EBITDA Margin(1)



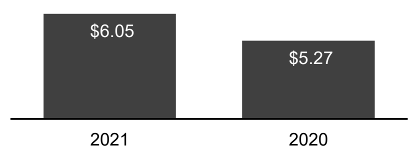
Basic Earnings Per Share



Diluted Earnings Per Share



Adjusted Diluted Earnings Per Share(1)



(1) These are Non-GAAP figures for which reconciliations are provided below (in millions, except percentages, earnings per share, and as noted below).

	Year Ended December 31, 2021	Year Ended December 31, 2020	Increase/ (Decrease)	Percent Change
Total revenues	$ 3,494.8	$ 3,427.1	$ 67.7	2 %
Total cost of revenues	2,018.7	2,172.8	(154.1)	(7)%
Revenues less cost of revenues	1,476.1	1,254.3	221.8	18 %
Total operating expenses	670.2	592.1	78.1	13 %
Operating income	805.9	662.2	143.7	22 %
Income before income tax provision	756.1	660.4	95.7	14 %
Income tax provision	227.1	192.2	34.9	18 %
Net income	$ 529.0	$ 468.2	$ 60.8	13 %
Basic earnings per share	$ 4.93	$ 4.28	$ 0.65	15 %
Diluted earnings per share	4.92	4.27	0.65	15 %
Organic net revenue (1)	$ 1,393.3	$ 1,254.3	$ 139.0	11 %
EBITDA (2)	$ 969.2	$ 855.3	$ 113.9	13 %
EBITDA margin (3)	65.7 %	68.2 %	(2.5)%	*
Adjusted EBITDA (2)	$ 987.1	$ 874.6	$ 112.5	13 %
Adjusted EBITDA margin (4)	66.9 %	69.7 %	(2.8)%	*
Adjusted earnings (5)	$ 648.8	$ 576.5	$ 72.3	13 %
Adjusted earnings margin (5)	44.0 %	46.0 %	(2.0)%	*
Diluted weighted average shares outstanding	107.2	109.3	(2.1)	(2)%
Adjusted Diluted earnings per share (6)	$ 6.05	$ 5.27	$ 0.78	15 %

* Not meaningful

(1) Organic net revenue is defined as revenues less cost of revenues excluding revenues less cost of revenues of any acquisition that has been owned for less than one year. Revenues from acquisitions that have been owned at least one year are considered organic and are no longer excluded from organic net revenue from either period for comparative purposes. Organic net revenue does not represent, and should not be considered as, an alternative to revenues less cost of revenues, or net revenue, as determined in accordance with GAAP. We have presented organic net revenue because we consider it an important supplemental measure of our performance and we use it as the basis for monitoring our operating financial performance before the effects of acquisitions. We also believe that it is frequently used by analysts, investors and other interested parties in the evaluation of companies. We believe that investors may find this non-GAAP measure useful in evaluating our performance compared to that of peer companies in our industry. Other companies may calculate organic net revenue differently than we do. Organic net revenue has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our results as reported under GAAP.

	Year Ended December 31, 2021	Year Ended December 31, 2020
Revenues less cost of revenues	$ 1,476.1	$ 1,254.3
Recent acquisitions:		
Acquisition revenues less cost of revenues	$ (82.8)	$ —
Organic net revenue	$ 1,393.3	$ 1,254.3

(2) EBITDA is defined as income before interest, income taxes, depreciation and amortization. Adjusted EBITDA is defined as EBITDA before acquisition-related costs, provision for notes receivable, bargain purchase gain, impairment of investment, and change in contingent consideration. EBITDA and adjusted EBITDA do not represent, and should not be considered as, alternatives to net income as determined in accordance with GAAP. We have presented EBITDA and adjusted EBITDA because we consider them important supplemental measures of our performance and believe that they are frequently used by analysts, investors and other interested parties in the evaluation of companies. In addition, we use adjusted EBITDA as a measure of operating performance for preparation of our forecasts and evaluating our leverage ratio for the debt to earnings covenant included in our outstanding credit facility. Other companies may calculate EBITDA and adjusted EBITDA differently than we do. EBITDA and adjusted EBITDA have limitations as analytical tools, and you should not consider them in isolation or as substitutes for analysis of our results as reported under GAAP.

(3) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

(4) Adjusted EBITDA margin represents adjusted EBITDA divided by revenues less cost of revenues.

(5) Adjusted earnings is defined as net income adjusted for amortization of purchased intangibles, acquisition-related costs, provision for notes receivable, bargain purchase gain, impairment of investment, change in contingent consideration, release of tax reserves, deferred tax re-measurements, and net income allocated to participating securities, net of the income tax effects of these adjustments. Adjusted earnings does not represent, and should not be considered as, an alternative to net income, as determined in accordance with GAAP. We have presented adjusted earnings because we consider it an important supplemental measure of our performance and we use it as the basis for monitoring our own core operating financial performance relative to other operators of exchanges. We also believe that it is frequently used by analysts, investors and other interested parties in the evaluation of companies. We believe that investors may find this non-GAAP measure useful in evaluating our performance compared to that of peer companies in our industry. Other companies may calculate adjusted earnings differently than we do. Adjusted earnings has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our results as reported under GAAP.

(6) Adjusted diluted earnings per share represents adjusted earnings divided by diluted weighted average shares outstanding.

The following is a reconciliation of net income (loss) allocated to common stockholders to EBITDA and adjusted EBITDA (in millions):

	Year Ended December 31, 2021						
	Options	North American Equities	Europe and Asia Pacific	Futures	Global FX	Corporate	Total
Net income (loss) allocated to common stockholders	$ 364.7	$ 133.5	$ 18.6	$ 34.9	$ 2.6	$ (27.0)	$ 527.3
Interest expense, net	—	—	12.4	—	—	35.0	47.4
Income tax provision (benefit)	171.3	22.1	26.5	30.9	—	(23.7)	227.1
Depreciation and amortization	29.4	75.7	35.1	2.9	24.3	—	167.4
EBITDA	565.4	231.3	92.6	68.7	26.9	(15.7)	969.2
Acquisition-related costs	0.3	2.8	1.4	—	—	11.1	15.6
Impairment of investment	—	—	—	—	—	5.0	5.0
Change in contingent consideration	—	(2.7)	—	—	—	—	(2.7)
Adjusted EBITDA	$ 565.7	$ 231.4	$ 94.0	$ 68.7	$ 26.9	$ 0.4	$ 987.1

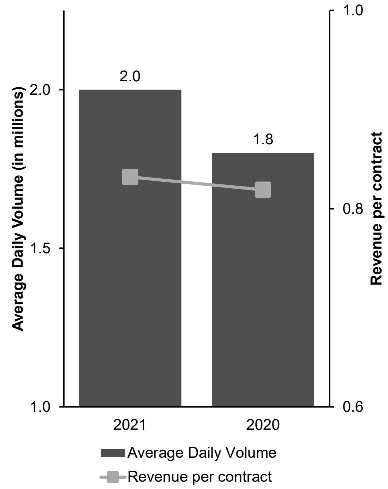
	Year Ended December 31, 2020						
	Options	North American Equities	Europe and Asia Pacific	Futures	Global FX	Corporate	Total
Net income (loss) allocated to common stockholders	$ 278.6	$ 132.0	$ 46.7	$ 25.4	$ 5.8	$ (21.5)	$ 467.0
Interest expense, net	—	—	6.9	—	—	30.7	37.6
Income tax provision (benefit)	151.8	27.3	12.4	28.3	—	(27.6)	192.2
Depreciation and amortization	30.9	68.7	29.1	3.2	26.6	—	158.5
EBITDA	461.3	228.0	95.1	56.9	32.4	(18.4)	855.3
Acquisition-related costs	12.9	15.1	—	—	—	17.2	45.2
Provision for notes receivable	1.7	5.0	—	—	—	—	6.7
Bargain purchase gain	—	—	(32.0)	—	—	(0.6)	(32.6)
Adjusted EBITDA	$ 475.9	$ 248.1	$ 63.1	$ 56.9	$ 32.4	$ (1.8)	$ 874.6

The following is a reconciliation of net income allocated to common stockholders to adjusted earnings (in millions):

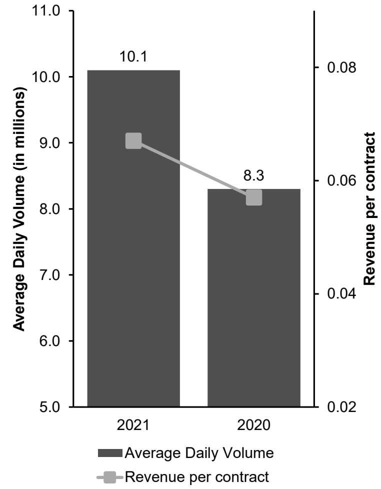
	Year Ended December 31,	
	2021	2020
Net income allocated to common stockholders	$ 527.3	$ 467.0
Amortization	126.6	124.7
Acquisition-related costs	15.6	45.2
Provision for notes receivable	—	6.7
Bargain purchase gain	—	(32.6)
Impairment of investment	5.0	—
Change in contingent consideration	(2.7)	—
Tax effect of adjustments	(31.8)	(38.0)
Release of tax reserves	(5.4)	—
Deferred tax re-measurements	14.6	4.1
Net income allocated to participating securities	(0.4)	(0.6)
Adjusted earnings	$ 648.8	$ 576.5

The following summarizes changes in certain operational and financial metrics for the year ended December 31, 2021 compared to the year ended December 31, 2020:

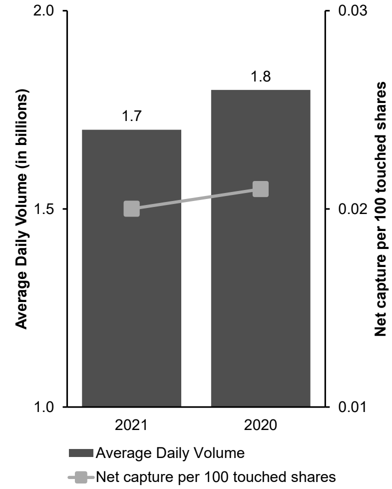
Index Options



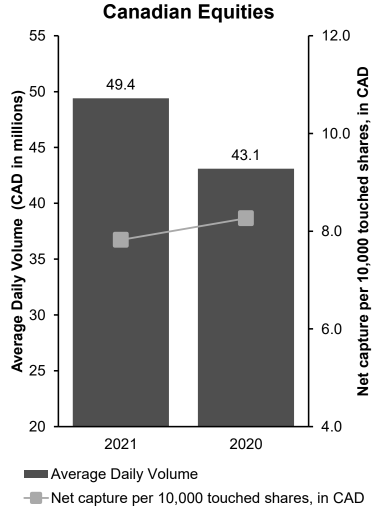
Multi-Listed Options



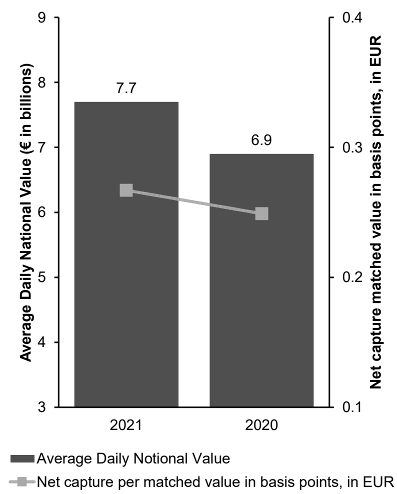
U.S. Equities - Exchange



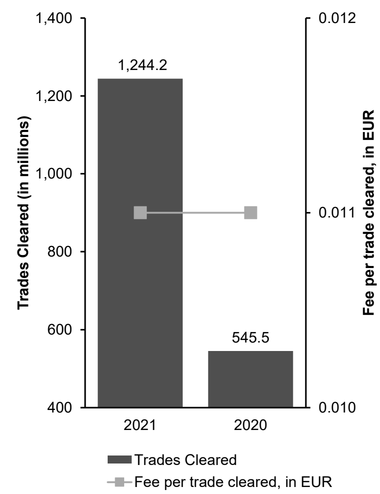
Canadian Equities



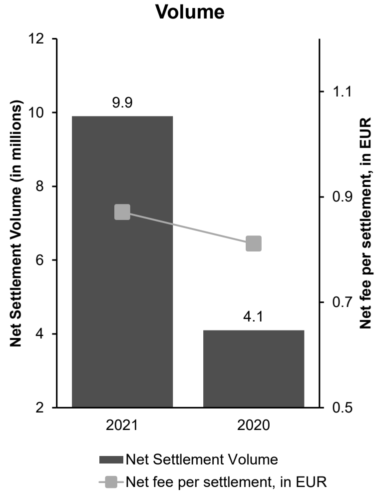
European Equities



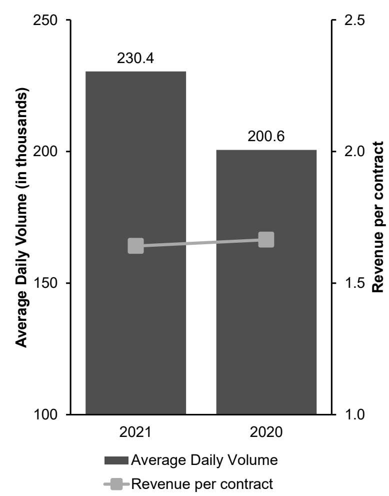
EuroCCP - Trades Cleared



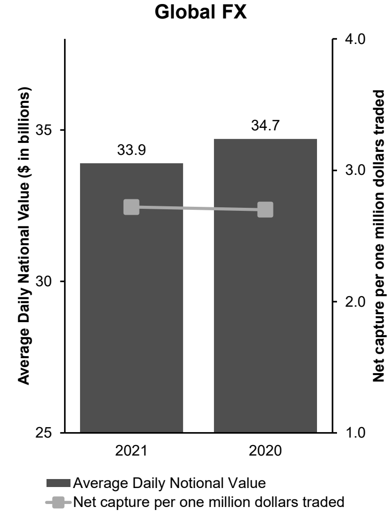
EuroCCP - Net Settlement Volume



Futures



Global FX



The following table includes operational and financial metrics for our Options, North American Equities, Europe and Asia Pacific, Futures, and Global FX segments. The metrics listed for Canadian Equities, EuroCCP, BIDS Trading, Australian Equities, and Japanese Equities in the table below are included as a result of acquisitions completed during 2020 and 2021. Therefore, the table does not include results from the periods preceding each acquisition for the applicable metrics. The following summarizes changes in certain operational and financial metrics for the year ended December 31, 2021, compared to the year ended December 31, 2020.

	Year Ended December 31,			
	2021	2020	Increase/ (Decrease)	Percent Change
	(in millions, except percentages, trading days, and as noted below)			
Options:				
Average daily volume (ADV) (in millions of contracts):				
Market ADV	39.2	29.5	9.7	33 %
Total touched contracts (1)	12.1	10.1	2.0	20 %
Index contract ADV	2.0	1.8	0.2	11 %
Multi-Listed contract ADV	10.1	8.3	1.8	22 %
Number of trading days	252	253	(1)	(0)%
Total Options revenue per contract (RPC) (2)	$ 0.192	$ 0.193	$ (0.001)	(1)%
Multi-Listed Options RPC (2)	0.067	0.057	0.010	18 %
Index Options RPC (2)	0.832	0.819	0.013	2 %
Total Options Market Share	30.8 %	34.3 %	(3.5)%	*
Multi-Listed Options Market Share	27.1 %	30.0 %	(2.9)%	*
Index Options Market Share	98.7 %	99.2 %	(0.5)%	*
North American Equities:				
U.S. Equities:				
U.S. Equities - Exchange:				
ADV:				
Total touched shares (in billions) (1)	1.7	1.8	(0.1)	(6)%
Market ADV (in billions)	11.4	10.9	0.5	5 %
Market share	14.2 %	15.8 %	(1.6)%	*
U.S. Equities (net capture per one hundred touched shares) (3)	$ 0.020	$ 0.021	$ (0.001)	(5)%
U.S. ETPs: launches (number of launches)	117	114	3	3 %
U.S. ETPs: listings (number of listings)	539	437	102	23 %
U.S. Equities - Off-Exchange (3):				
ADV:				
Total touched shares (in millions) (1)	83.0	—	83	— %
U.S. Equities - Off-Exchange (net capture per one hundred touched shares) (5)	$ 0.120	$ —	$ 0.120	— %
Trading days	252	253	(1)	— %
Canadian Equities:				
ADV (matched shares, in millions) (6)	49.4	43.1	6.3	15 %
Trading days	251	104	147	141 %
Net capture (per 10,000 touched shares, in Canadian dollars) (7)	7.822	8.264	(0.442)	(5)%
Europe and Asia Pacific:				
European Equities:				
ADNV:				
Matched ADNV (in billions) (8)	€ 7.7	€ 6.9	€ 0.8	12 %
Market ADNV (in billions)	42.6	40.1	2.5	6 %
Trading days	258	258	—	— %
Market share	18.1 %	17.2 %	0.9 %	*
Net capture (per matched notional value in basis points) (9)	0.267	0.249	0.018	7 %
EuroCCP:				
Trades cleared (10)	1,244.2	545.5	698.7	128 %
Fee per trade cleared (11)	€ 0.011	€ 0.011	€ —	— %
Net settlement volume (12)	9.9	4.1	5.8	141 %
Net fee per settlement (13)	€ 0.871	€ 0.811	€ 0.060	7 %
Australian Equities:				
ADNV (AUD billions)	$ 0.8	$ —	$ 0.8	— %
Trading days	130	—	130	— %
Market share - Continuous	15.9 %	— %	15.9 %	*
Net capture (per matched notional value in basis points) (14)	0.172	—	0.172	— %
Japanese Equities:				
ADNV (JPY billions)	¥ 100.1	¥ —	¥ 100.1	— %
Trading days	123	—	123	— %
Market share - Lit Continuous	2.7 %	— %	2.7 %	*
Net capture (per matched notional value in basis points) (15)	0.361	—	0.361	— %
Futures:				
ADV (in thousands)	230.4	200.6	29.8	15 %
Trading days	252	253	(1)	(0)%
Revenue per contract	$ 1.641	$ 1.665	$ (0.024)	(1)%
Global FX:				
ADNV (in billions)	$ 33.9	$ 34.7	$ (0.8)	(2)%
Trading days	260	260	—	— %
Global FX (net capture per one million dollars traded) (16)	2.73	2.70	0.03	1 %
Average British pound/U.S. dollar exchange rate	$ 1.375	$ 1.283	$ 0.092	7 %
Average Canadian dollar/U.S. dollar exchange rate	$ 0.798	$ 0.746	$ 0.052	7 %
Average Euro/U.S. dollar exchange rate	$ 1.183	$ 1.141	$ 0.042	4 %
Average Euro/British pound exchange rate	£ 0.860	£ 0.889	£ (0.029)	(3)%
Average Australian dollar/U.S. dollar exchange rate	$ 0.726	$ —	$ 0.726	— %
Average Japanese Yen/U.S. dollar exchange rate	$ 0.009	$ —	$ 0.009	— %

* Not meaningful

(1) Touched volume represents the total number of shares of equity securities and ETFs internally matched on our exchanges or routed to and executed on an external market center.
(2) 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.
(3) Net capture per one hundred 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.
(4) U.S. Equities – Off-Exchange data reflects Cboe’s acquisition of BIDS Trading, effective December 31, 2020.
(5) Net capture per 100 touched shares refers to transaction fees less order and execution management system (OMS/EMS) fees and clearing costs divided by the product of one-hundredth ADV of touched shares on BIDS Trading and the number of trading days for the period.
(6) Matched volume represents the total number of shares of equity securities and ETFs activity executed on our exchanges.
(7) Net capture per 10,000 touched shares refers to transaction fees divided by the product of one-ten thousandth ADV of shares for MATCHNow and the number of trading days.
(8) Matched ADNV represents the average daily notional value of shares or contracts executed on our exchanges.
(9) Net capture per matched notional value refers to transaction fees less liquidity payments in British pounds divided by the product of ADNV in British pounds of shares matched on Cboe Europe Equities and Derivatives and the number of trading days.
(10) Trades cleared refers to the total number of non-interoperable trades cleared.
(11) Fee per trade cleared refers to clearing fees divided by number of non-interoperable trades cleared.
(12) Net settlement volume refers to the total number of settlements executed after netting.
(13) Net fee per settlement refers to settlement fees less direct costs incurred to settle divided by the number of settlements executed after netting.
(14) Net capture per matched notional value refers to transaction fees less liquidity payments in Australian dollars divided by the product of ADNV in Australian dollars of shares matched on Cboe Australia and the number of Australian Equities trading days.
(15) Net capture per matched notional value refers to transaction fees less liquidity payments in Japanese Yen divided by the product of ADNV in Japanese Yen of shares matched on Cboe Japan and the number of Japanese Equities trading days.
(16) Net capture per one million dollars traded refers to net transaction fees less liquidity payments, if any, divided by the Spot and SEF products of one-thousandth of ADNV traded on the Cboe FX Markets and the number of trading days, divided by two, which represents the buyer and seller that are both charged on the transaction.

Revenues

Total revenues for the year ended December 31, 2021 increased $67.7 million, or 2%, compared to the prior period primarily due to a $275.1 million, or 11%, increase in transaction and clearing fees as a result of increased volumes traded on the Options exchanges and additional revenues attributable to acquisitions made in 2020 and 2021, partially offset by a decrease in regulatory fees as a result of a decline in the Section 31 fee rate. The following summarizes changes in revenues for the year ended December 31, 2021 compared to the year ended December 31, 2020 (in millions, except percentages):

	Year Ended December 31, 2021	Year Ended December 31, 2020	Increase/ (Decrease)	Percent Change
Transaction and clearing fees	$ 2,693.1	$ 2,418.0	$ 275.1	11 %
Access and capacity fees	280.7	236.7	44.0	19 %
Market data fees	252.1	232.0	20.1	9 %
Regulatory fees	208.3	500.2	(291.9)	(58)%
Other revenue	60.6	40.2	20.4	51 %
Total revenues	$ 3,494.8	$ 3,427.1	$ 67.7	2 %

Transaction and Clearing Fees

Transaction and clearing fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a 33% increase in overall options market ADV, including a 22% increase in multi-listed options ADV, additional transaction and clearing fees attributed to EuroCCP and BIDS, which the Company acquired in the third quarter of 2020 and the end of the fourth quarter of 2020, respectively, and a 12% increase in European Equities matched ADNV.

Access and Capacity Fees

Access and capacity fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to increases in subscribers which results in an increase in logical port revenue across the Options, Europe and Asia Pacific, and North American Equities segments, coupled with an increase in physical port revenue in the North American Equities and Options segments.

Market Data Fees

Market data fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in subscribers and additional revenue attributed to Chi-X Asia Pacific, which the Company acquired in the third quarter of 2021.

Regulatory Fees

Regulatory fees decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a decrease in Section 31 fees as the result of a 64% decline in the Section 31 fee rate, from an average rate of $21.90 per million dollars of covered sales in 2020 to an average rate of $7.80 per million dollars of covered sales in 2021.

Other Revenue

Other revenue increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to additional interest income from EuroCCP, as well as an increase in trade reporting revenue within the Europe and Asia Pacific segment.

Cost of Revenues

Cost of revenues decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to lower Section 31 fees as a result of a decline in the Section 31 fee rate, partially offset by higher liquidity payments as a result of increased volumes traded on the Options exchanges. The following summarizes changes in cost of revenues for the year ended December 31, 2021 compared to the year ended December 31, 2020 (in millions, except percentages):

	Year Ended December 31,		Increase/	Percent
	2021	2020	(Decrease)	Change
Liquidity payments	$ 1,650.7	$ 1,554.1	$ 96.6	6 %
Routing and clearing	87.8	70.4	17.4	25 %
Section 31 fees	179.6	465.0	(285.4)	(61)%
Royalty fees	86.3	83.4	2.9	3 %
Other	14.3	(0.1)	14.4	*
Total	$ 2,018.7	$ 2,172.8	$ (154.1)	(7)%

* Not meaningful

Liquidity Payments

Liquidity payments increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in volumes traded on the Options exchanges.

Routing and Clearing

The increase in routing and clearing fees for the year ended December 31, 2021 compared to the same period in 2020 was primarily due to an increase in routing and clearing fees attributed to EuroCCP and BIDS, partially offset by a decrease in routed shares on the U.S. Equities exchanges.

Section 31 Fees

Section 31 fees decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a 64% decline in the Section 31 fee rate, from an average rate of $21.90 per million dollars of covered sales in 2020 to an average rate of $7.80 per million dollars of covered sales in 2021.

Royalty Fees

Royalty fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in trading volume in licensed products and increased fees related to the dissemination of market data through CSMI, partially offset by a decline in fees from PULSe, which was decommissioned in the fourth quarter of 2020.

Other Cost of Revenues

Other cost of revenue increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to additional interest expense from EuroCCP.

Revenues Less Cost of Revenues

Revenues less cost of revenues increased $221.8 million, or 18%, for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a $161.1 million, or 20%, increase in transaction and clearing fees less liquidity payments and routing and clearing costs, coupled with increases in access and capacity fees and market data fees.

The following summarizes the components of revenues less cost of revenues for the year ended December 31, 2021, presented as a percentage of revenues less cost of revenues and compared to the year ended December 31, 2020 (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Revenues Less Cost of Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Transaction and clearing fees less liquidity payments and routing and clearing costs	$ 954.6	$ 793.5	20 %	65 %	63 %
Access and capacity fees	280.7	236.7	19 %	19 %	19 %
Market data fees	252.1	232.0	9 %	17 %	18 %
Regulatory fees, less Section 31 fees	28.7	35.2	(18)%	2 %	3 %
Royalty fees	(86.3)	(83.4)	(3)%	(6)%	(7)%
Other	46.3	40.3	15 %	3 %	3 %
Revenues less cost of revenues	$ 1,476.1	$ 1,254.3	18 %	100 %	100 %

Transaction and Clearing Fees Less Liquidity Payments and Routing and Clearing Costs

Transaction and clearing fees less liquidity payments and routing and clearing costs (“Net Transaction and Clearing Fees”) increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a 33% increase in overall options market ADV, additional net transaction and clearing fees attributed to BIDS and EuroCCP, and a 12% increase in European Equities matched ADNV, partially offset by a 5% decrease in net capture on the U.S. Equities exchanges.

Access and Capacity Fees

Access and capacity fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in logical port revenue across the Options, Europe and Asia Pacific, and North American Equities segments, coupled with an increase in physical port revenue in the North American Equities and Options segments.

Market Data Fees

Market data fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in subscribers and additional revenue attributed to Chi-X Asia Pacific.

Regulatory Fees, Less Section 31 Fees

Regulatory fees, less Section 31 fees, decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a decline in the ORF rate effective August 2, 2021, coupled with a decrease in fines and assessment fees.

Royalty Fees

Royalty fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in trading volume in licensed products and increased fees related to the dissemination of market data through CSMI, partially offset by a decline in fees from PULSe, which was decommissioned in the fourth quarter of 2020.

Other

Other revenue increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to additional net interest income from EuroCCP, as well as an increase in trade reporting revenue within the Europe and Asia Pacific segment.

Operating Expenses

For the year ended December 31, 2021 compared to the year ended December 31, 2020, total operating expenses increased primarily due to increases in compensation and benefits, professional fees and outside services, and technology support services, partially offset by a decline in acquisition-related costs. The following summarizes changes in operating expenses for the year ended December 31, 2021 compared to the year ended December 31, 2020 (in millions, except percentages):

	Year Ended December 31, 2021	Year Ended December 31, 2020	Increase/ (Decrease)	Percent Change
Compensation and benefits	$ 288.5	$ 224.9	$ 63.6	28 %
Depreciation and amortization	167.4	158.5	8.9	6 %
Technology support services	66.7	54.5	12.2	22 %
Professional fees and outside services	83.7	60.6	23.1	38 %
Travel and promotional expenses	9.7	6.6	3.1	47 %
Facilities costs	22.2	17.6	4.6	26 %
Acquisition-related costs	15.6	45.2	(29.6)	(65)%
Other expenses	16.4	24.2	(7.8)	(32)%
Total operating expenses	$ 670.2	$ 592.1	$ 78.1	13 %

Compensation and Benefits

Compensation and benefits increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a $62.4 million increase in salaries, wages, bonuses, and benefits, driven by a $30.9 million increase in compensation and benefits expense related to acquisitions made in 2020 and 2021, as well as a $30.5 million increase in compensation and benefits expense related to increased headcount excluding acquisitions, partially offset by a $3.7 million increase in capitalized wages due to an increase in software projects eligible for capitalization.

Depreciation and Amortization

Depreciation and amortization increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in depreciation and amortization expense resulting from acquisitions made in 2020 and 2021, coupled with an increase in leasehold improvements related to the new headquarters location, partially offset by a decline in amortization under the discounted cash flow method for the intangibles acquired in the Bats acquisition.

Technology Support Services

Technology support services costs increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to increased market data support services fees, data center hosting, network and phone connectivity support services fees, and hardware maintenance fees related to acquisitions made in 2020 and 2021.

Professional Fees and Outside Services

Professional and outside services fees increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to increases in legal fees of $7.8 million driven by additional litigation fees and higher general legal fees, regulatory fees of $5.4 million driven by rising CAT costs, $3.7 million in contract services, and $2.4 million in consulting fees in connection with acquisitions made in 2020 and 2021.

Travel and Promotional Expenses

Travel and promotional expenses increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in marketing and advertising expenses attributable to promotional efforts.

Facilities Costs

Facilities costs increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to an increase in rent expense related to the new headquarters building, additional office locations due to acquisitions made in 2020 and 2021, and the new trading floor location.

Acquisition-Related Costs

Acquisition-related costs decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a decrease in overall acquisition activity, partially offset by the $11.0 million write-off of the Company's investment in Signal Trading Systems, LLC in the fourth quarter of 2020, coupled with the $8.1 million facilities-related impairment charge in the second quarter of 2020.

Other Expenses

Other expenses decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to a $6.7 million provision for notes receivable recorded in the third quarter of 2020, related to the CAT, as well as a gain on change in contingent consideration related to MATCHNow recorded in the fourth quarter of 2021, partially offset by increases in taxes, licenses, permits, and training and education expenses.

Operating Income

As a result of the items above, operating income for the year ended December 31, 2021 was $805.9 million, compared to $662.2 million for the year ended December 31, 2020, an increase of $143.7 million, or 22%.

Interest Expense, Net

Net interest expense increased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to commitment fees related to the EuroCCP Credit Facility, which was entered into in July 2020 and subsequently amended and restated in July 2021, as well as additional interest expense related to the 1.625% Senior Notes issued in the fourth quarter of 2020.

Other (Expense) Income, Net

Net other (expense) income decreased for the year ended December 31, 2021 compared to the same period in 2020 primarily due to the $32.6 million bargain purchase gain related to the EuroCCP acquisition recorded in the third quarter of 2020, coupled with a $5.0 million impairment on investment recorded in the third quarter of 2021.

Income Before Income Tax Provision

As a result of the above, income before income tax provision for the year ended December 31, 2021 was $756.1 million compared to $660.4 million for the year ended December 31, 2020, an increase of $95.7 million, or 14%.

Income Tax Provision

For the year ended December 31, 2021, the income tax provision was $227.1 million compared to $192.2 million for the year ended December 31, 2020, an increase of $34.9 million, primarily due to the increase in income before income tax provision and a higher effective tax rate for the year ended December 31, 2021. The effective tax rate for the year ended December 31, 2021 was 30.0%, compared to a rate of 29.1% for the year ended December 31, 2020.

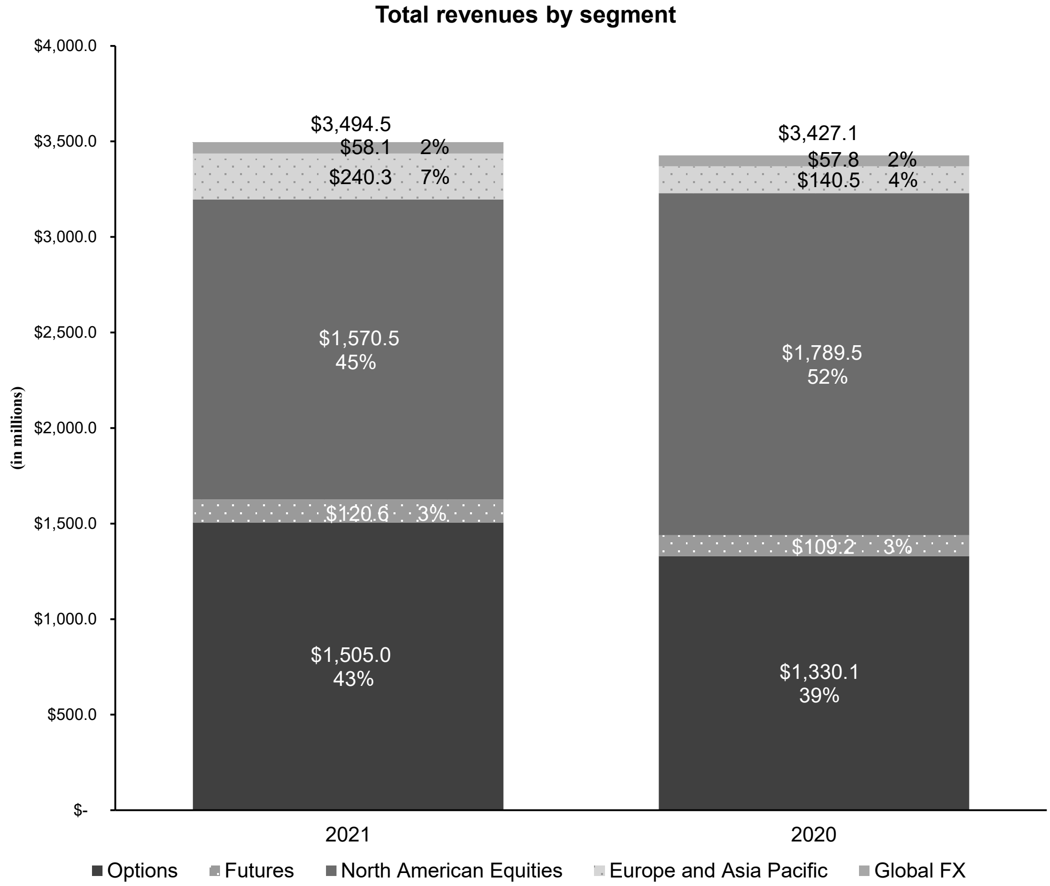
Net Income

As a result of the items above, net income for the year ended December 31, 2021 was $529.0 million, or 36% of revenues less cost of revenues, compared to $468.2 million, or 37% of revenues less cost of revenues, for the year ended December 31, 2020, an increase of $60.8 million, or 13%.

Segment Operating Results

We report results from our five segments: Options, North American Equities, Europe and Asia Pacific, Futures, and Global FX. Segment performance is primarily based on operating income (loss). We have aggregated all corporate costs, as well as other business ventures, within Corporate Items and Eliminations as those activities should not be used to evaluate a segment's operating performance. All operating expenses that relate to activities of a specific segment have been allocated to that segment.

The following summarizes our total revenues by segment (in millions, except percentages):

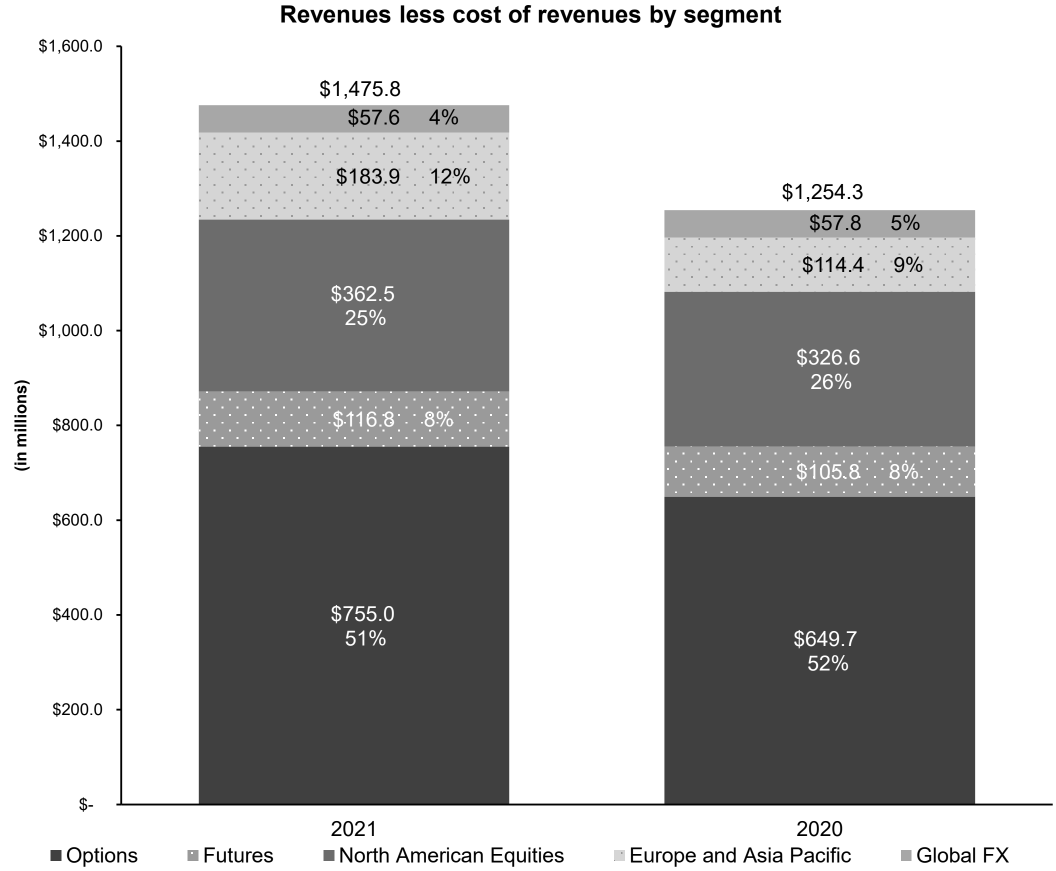


Note, the chart excludes Corporate revenues of $0.3 million for the year ended December 31, 2021.

	Year Ended December 31, 2021	Year Ended December 31, 2020	Percent Change	Percentage of Total Revenues Year Ended December 31, 2021	Percentage of Total Revenues Year Ended December 31, 2020
Options	$ 1,505.0	$ 1,330.1	13 %	43 %	39 %
North American Equities	1,570.5	1,789.5	(12)%	45 %	52 %
Europe and Asia Pacific	240.3	140.5	71 %	7 %	4 %
Futures	120.6	109.2	10 %	3 %	3 %
Global FX	58.1	57.8	1 %	2 %	2 %
Corporate	0.3	—	*	— %	— %
Total revenues	$ 3,494.8	$ 3,427.1	2 %	100 %	100 %

* Not meaningful

The following summarizes our revenues less cost of revenues by segment (in millions, except percentages):



Note, the chart excludes Corporate revenues less cost of revenues of $0.3 million for the year ended December 31, 2021.

	Year Ended December 31,		Percent	Percentage of Total Revenues less Cost of Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Options	$ 755.0	$ 649.7	16 %	51 %	52 %
North American Equities	362.5	326.6	11 %	25 %	26 %
Europe and Asia Pacific	183.9	114.4	61 %	12 %	9 %
Futures	116.8	105.8	10 %	8 %	8 %
Global FX	57.6	57.8	(0)%	4 %	5 %
Corporate	0.3	—	*	— %	— %
Total revenues less cost of revenues	$ 1,476.1	$ 1,254.3	18 %	100 %	100 %

* Not meaningful

Options

The following summarizes revenues less cost of revenues, operating expenses, operating income, EBITDA and EBITDA margin for our Options segment (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Total Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Revenues less cost of revenues	$ 755.0	$ 649.7	16 %	50 %	49 %
Operating expenses	217.0	219.3	(1)%	14 %	16 %
Operating income	$ 538.0	$ 430.4	25 %	36 %	32 %
EBITDA (1)	$ 565.4	$ 461.3	23 %	38 %	35 %
EBITDA margin (2)	74.9 %	71.0 %	*	*	*

* Not meaningful

(1) See footnote (2) to the table under “Overview” above for a reconciliation of net income to EBITDA, and management’s reasons for using such non-GAAP measures.
(2) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

Revenues less cost of revenues increased $105.3 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to a 22% increase in multi-listed options ADV, coupled with an 11% increase in index options ADV and an 18% increase in multi-listed options RPC. For the year ended December 31, 2021, operating income increased $107.6 million compared to the year ended December 31, 2020 primarily due to an increase in revenues less cost of revenues. Operating expenses decreased $2.3 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to a decrease in acquisition-related costs, partially offset by increases in compensation and benefits, facilities costs, and travel and promotional expenses.

North American Equities

The following summarizes revenues less cost of revenues, operating expenses, operating income, EBITDA and EBITDA margin for our North American Equities segment (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Total Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Revenues less cost of revenues	$ 362.5	$ 326.6	11 %	23 %	18 %
Operating expenses	206.4	167.1	24 %	13 %	9 %
Operating income	$ 156.1	$ 159.5	(2)%	10 %	9 %
EBITDA (1)	$ 231.3	$ 228.0	1 %	15 %	13 %
EBITDA margin (2)	63.8 %	69.8 %	*	*	*

* Not meaningful

(1) See footnote (2) to the table under “Overview” above for a reconciliation of net income to EBITDA, and management’s reasons for using such non-GAAP measures.
(2) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

Revenues less cost of revenues increased $35.9 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to additional revenue attributed to BIDS. For the year ended December 31, 2021, operating income decreased $3.4 million compared to the year ended December 31, 2020 due to an increase in operating expenses, partially offset by an increase in revenues less cost of revenues. Operating expenses increased $39.3 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to increases in compensation and benefits and professional fees and outside services, partially offset by decreases in acquisition-related costs and other expenses.

Europe and Asia Pacific

The following summarizes revenues less cost of revenues, operating expenses, operating income, EBITDA and EBITDA margin for our Europe and Asia Pacific segment (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Total Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Revenues less cost of revenues	$ 183.9	$ 114.4	61 %	77 %	81 %
Operating expenses	127.9	80.9	58 %	53 %	58 %
Operating income	$ 56.0	$ 33.5	67 %	23 %	24 %
EBITDA (1)	$ 92.6	$ 95.1	(3)%	39 %	68 %
EBITDA margin (2)	50.4 %	83.1 %	*	*	*

* Not meaningful

(1) See footnote (2) to the table under "Overview" above for a reconciliation of net income to EBITDA, and management's reasons for using such non-GAAP measures.
(2) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

Revenues less cost of revenues increased $69.5 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to additional revenue attributed to EuroCCP, Cboe Australia, and Cboe Japan, as well as a 12% increase in European Equities matched ADNV. For the year ended December 31, 2021, operating income increased $22.5 million compared to the year ended December 31, 2020 due to an increase in revenues less cost of revenues, partially offset by an increase in operating expenses. Operating expenses increased $47.0 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to increases in compensation and benefits, technology support services, depreciation and amortization, and professional fees and outside services.

Futures

The following summarizes revenues less cost of revenues, operating expenses, operating income, EBITDA, and EBITDA margin for our Futures segment (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Total Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Revenues less cost of revenues	$ 116.8	$ 105.8	10 %	97 %	97 %
Operating expenses	50.8	52.0	(2)%	42 %	48 %
Operating income	$ 66.0	$ 53.8	23 %	55 %	49 %
EBITDA (1)	$ 68.7	$ 56.9	21 %	57 %	52 %
EBITDA margin (2)	58.8 %	53.8 %	*	*	*

* Not meaningful

(1) See footnote (2) to the table under "Overview" above for a reconciliation of net income to EBITDA, and management's reasons for using such non-GAAP measures.
(2) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

Revenues less cost of revenues increased $11.0 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to a 15% increase in Futures ADV. For the year ended December 31, 2021, operating income increased $12.2 million compared to the year ended December 31, 2020 due to an increase in revenues less cost of revenues. Operating expenses decreased $1.2 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to decreases in other expenses, compensation and benefits, and technology and support services, partially offset by an increase in travel and promotional expenses.

Global FX

The following summarizes revenues less cost of revenues, operating expenses, operating income, EBITDA and EBITDA margin for our Global FX segment (in millions, except percentages):

	Year Ended December 31,		Percent	Percentage of Total Revenues Year Ended December 31,	
	2021	2020	Change	2021	2020
Revenues less cost of revenues	$ 57.6	$ 57.8	(0)%	99 %	100 %
Operating expenses	54.9	51.8	6 %	94 %	90 %
Operating income (loss)	$ 2.7	$ 6.0	(55)%	5 %	10 %
EBITDA (1)	$ 26.9	$ 32.4	(17)%	46 %	56 %
EBITDA margin (2)	46.7 %	56.1 %	*	*	*

* Not meaningful

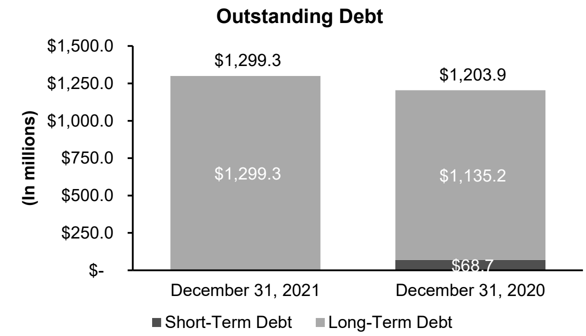
(1) See footnote (2) to the table under "Overview" above for a reconciliation of net income to EBITDA, and management's reasons for using such non-GAAP measures.

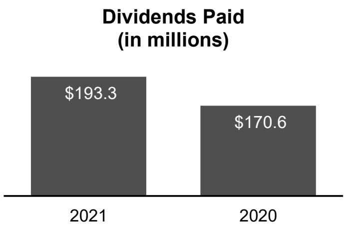
(2) EBITDA margin represents EBITDA divided by revenues less cost of revenues.

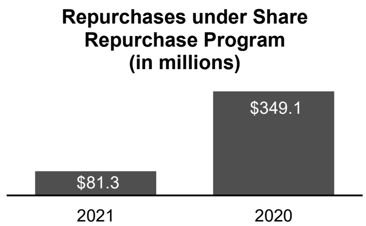
Revenues less cost of revenues decreased $0.2 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to a 2% decrease in Global FX ADNV. For the year ended December 31, 2021, operating income decreased $3.3 million compared to the year ended December 31, 2020 due to an increase in operating expenses. Operating expenses increased $3.1 million for the year ended December 31, 2021 compared to the year ended December 31, 2020 primarily due to increases in compensation and benefits and professional fees and outside services, partially offset by a decrease in depreciation and amortization.

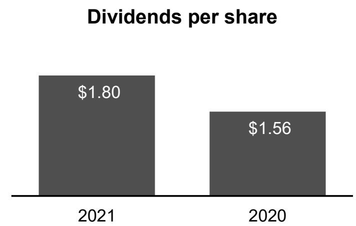
LIQUIDITY AND CAPITAL RESOURCES

Below are charts that reflect elements of our capital allocation:









We expect our cash on hand at December 31, 2021 and other available resources, including cash generated from operations, to be sufficient to continue to meet our cash requirements for the foreseeable future. In the near term, we expect that our cash from operations and availability under the Revolving Credit Facility will meet our cash needs to fund our operations, capital expenditures, interest payments on debt, debt repayments, any dividends, and opportunities for common stock repurchases under the previously announced program. We may also utilize excess cash on hand to pay down amounts outstanding under the Term Loan Agreement. See Note 12 ("Debt") to the consolidated financial statements for further information. To the extent that our cash sources are insufficient to fund our potential acquisitions, we may participate in future financing transactions to obtain additional capital.

EuroCCP also has a €1.5 billion committed syndicated multicurrency revolving and swingline credit facility agreement with EuroCCP as borrower and the Company as guarantor of scheduled interest and fees on borrowings (but not the principal amount of any borrowings), (the "Facility"). The Facility is available to be drawn by EuroCCP towards (a) financing unsettled amounts in connection with the settlement of transactions in securities and other items processed through EuroCCP's clearing system and (b) financing any other liability or liquidity requirement of EuroCCP incurred in the operation of its clearing system. Borrowings under the Facility are secured by cash, eligible bonds and eligible equity assets deposited by EuroCCP into secured accounts. As a result, should the Facility be drawn by EuroCCP it could potentially impact EuroCCP's liquidity, and we can give no assurance that this Facility will be sufficient to meet all of such obligations or sufficiently mitigate EuroCCP's liquidity risk to meet its payment obligations when due. Additionally, a default of the Facility may allow lenders, under certain circumstances, to accelerate any related drawn amounts and may result in the acceleration of the Company's other outstanding debt to which a cross-acceleration or cross-default provision applies, which may limit the Company's liquidity, business and financing activities. The Facility is expected to terminate on June 30, 2022 and we may not be able to enter into a replacement facility on commercially reasonable terms, or at all.

Our long-term cash needs will depend on many factors, including an introduction of new products, enhancements of current products, the geographic mix of our business and any potential acquisitions. We believe our cash from operations and the availability under our Revolving Credit Facility will meet any long-term needs unless a significant acquisition or acquisitions are identified, in which case we expect that we would be able to borrow the necessary funds and/or issue additional shares of our common stock to complete such acquisition(s). In addition, we do not expect COVID-19 to have a material impact on our liquidity or capital resources, including cash from operations or uses of cash, or change our ability to access capital markets in the near term or the foreseeable future.

Cash and cash equivalents include cash in banks and all non-restricted, highly liquid investments with original maturities of three months or less at the time of purchase. Cash and cash equivalents as of December 31, 2021 increased

$96.5 million from December 31, 2020 primarily due to results of operations, adjustment for depreciation expense, proceeds from available-for-sale financial investments, and proceeds from the term loan modification, partially offset by contributions to investments, cash dividends paid on common stock, and acquisitions, net of cash acquired. See “Cash Flow” below for further discussion.

Our cash and cash equivalents held outside of the United States in various foreign subsidiaries totaled $185.9 million and $128.2 million as of December 31, 2021 and December 31, 2020, respectively. The remaining balance was held in the United States and totaled $156.0 million and $117.2 million as of December 31, 2021 and December 31, 2020, respectively. The majority of cash held outside the United States is available for repatriation, but under current law, could subject us to additional United States income taxes, less applicable foreign tax credits.

Our financial investments include deferred compensation plan assets as well as investments with original or acquired maturities longer than three months but that mature in less than one year from the balance sheet date and are recorded at fair value. As of December 31, 2021, financial investments consisted of U.S. Treasury securities and deferred compensation plan assets.

Our off-balance sheet arrangements include clearing operations related to EuroCCP. See Note 14 (“Clearing Operations”) for discussion of contingent assets and liabilities related to clearing operations in connection with the Company’s acquisition of EuroCCP.

Cash Flow

The following table summarizes our cash flow data for the years ended December 31, 2021, 2020 and 2019 (in millions):

	For the Year Ended December 31,		
	2021	2020	2019
Net cash provided by operating activities	$ 596.8	$ 1,458.8	$ 632.8
Net cash used in investing activities	(352.7)	(430.5)	(15.9)
Net cash used in financing activities	(200.3)	(201.7)	(662.9)
Effect of foreign currency exchange rate changes on cash, cash equivalents, and restricted cash and cash equivalents	(9.1)	1.6	0.2
Increase (decrease) in cash, cash equivalents, and restricted cash and cash equivalents	$ 34.7	$ 828.2	$ (45.8)

	As of December 31,		
	2021	2020	2019
Reconciliation of cash, cash equivalents, and restricted cash and cash equivalents:			
Cash and cash equivalents	$ 341.9	$ 245.4	$ 229.3
Restricted cash and cash equivalents (margin deposits and clearing funds)	745.9	812.1	—
Restricted cash and cash equivalents (included in other current assets)	4.4	—	—
Total	$ 1,092.2	$ 1,057.5	$ 229.3

Net Cash Flows Provided by Operating Activities

During the year ended December 31, 2021, net cash provided by operating activities was $67.8 million higher than net income. The variance is primarily attributable to the adjustment for depreciation and amortization expense of $167.4 million, the change in accounts payable and accrued liabilities of $45.0 million, and the change in unrecognized tax benefits of $33.2 million, partially offset by the change in Section 31 fees payable of $112.1 million and the change in restricted cash and cash equivalents, driven by a $66.2 million decrease in margin deposits and clearing funds related to EuroCCP for the year ended December 31, 2021.

Net cash flows provided by operating activities were $596.8 million and $1,458.8 million for the years ended December 31, 2021 and 2020, respectively. The change in net cash flows provided by operating activities was primarily due to the change in restricted cash and cash equivalents, driven by margin deposits and clearing funds related to EuroCCP, as well as the change in Section 31 fees payable, partially offset by the change in accounts receivable, as well as the change in the bargain purchase gain and provision for deferred income taxes for the year ended December 31, 2021 compared to the year ended December 31, 2020.

Net cash provided by operating activities was $990.6 million higher than net income for the fiscal year ended December 31, 2020. The variance is primarily attributed to the addition of $812.1 million of restricted cash and cash equivalents, driven by margin deposits and clearing funds related to EuroCCP, the adjustment for depreciation and amortization expense of $158.5 million, the change in accounts payable and accrued liabilities of $59.4 million, and the change in Section 31 fees payable of $53.9 million, partially offset by the change in accounts receivable of $90.0 million.

Net cash provided by operating activities was $1,458.8 million and $632.8 million for the years ended December 31, 2020 and 2019, respectively. The increase in net cash flows provided by operating activities was primarily due to the addition of margin deposits and clearing funds resulting from the EuroCCP acquisition and the increase in net income.

Net Cash Flows Used in Investing Activities

During the year ended December 31, 2021, net cash used in investing activities primarily consisted of contributions to investments of $209.8 million, acquisitions, net of cash acquired of $151.5 million, and purchases of available-for-sale financial investments of $101.2 million, partially offset by proceeds from available-for-sale financial investments of $160.2 million.

Net cash flows used in investing activities were $352.7 million and $430.5 million for the years ended December 31, 2021 and 2020, respectively. The variance is primarily due to the change in acquisitions, net of cash acquired, and the change in purchases of available-for-sale financial investments, partially offset by contributions to investments and the change in proceeds from available-for-sale financial investments for the year ended December 31, 2021 compared to the year ended December 31, 2020.

Net cash flows used in investing activities totaled $430.5 million and $15.9 million for the years ended December 31, 2020 and 2019, respectively. The variance is primarily due to acquisitions, net of cash acquired in 2020 and the return of capital from investments in 2019.

Capital expenditures are expected to be in the range of $47.0 million to $52.0 million, reflecting expenditures associated with the Company's trading floor relocation, which is anticipated to occur in the second quarter of 2022, ongoing capacity and technology-related investments, as well as anticipated project delays due to supply chain interruptions.

Net Cash Flows Used in Financing Activities

During the year ended December 31, 2021, net cash used in financing activities primarily consisted of cash dividends paid on common stock of $193.3 million and share repurchases of $81.3 million, partially offset by proceeds from long-term debt of $110.0 million.

Net cash flows used in financing activities were $200.3 million and $201.7 million for the years ended December 31, 2021 and 2020, respectively. The variance is primarily due to the change in share repurchases, as well as the change in principal payments of long-term debt, partially offset by the change in proceeds from long-term debt.

For the year ended December 31, 2020, the Company received proceeds from long-term debt of $493.7 million, of which $70.0 million was used to pay down the revolving credit facility draw taken in the third quarter of 2020, repurchased $349.1 million of common stock, paid dividends totaling $170.6 million, and paid down $155.0 million of long-term debt.

Net cash flows used in financing activities totaled $662.9 million for the year ended December 31, 2019. The Company paid down $350.0 million of long-term debt, repurchased $156.9 million of common stock, and paid dividends of $150.0 million.

Financial Assets

The following summarizes our financial assets excluding margin deposits and clearing funds as of December 31, 2021, 2020 and 2019 (in millions):

	As of December 31,		
	2021	2020	2019
Cash and cash equivalents	$ 341.9	$ 245.4	$ 229.3
Financial investments	37.1	92.4	71.0
Less deferred compensation plan assets	(28.0)	(24.5)	(23.4)
Less cash collected for Section 31 fees	(25.9)	(103.0)	(69.0)
Adjusted cash (1)	$ 325.1	$ 210.3	$ 207.9

(1) 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. 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.

Debt

The following summarizes our debt obligations as of December 31, 2021, 2020 and 2019 (in millions):

	As of December 31,		
	2021	2020	2019
Term Loan Agreement	$ 160.0	$ 70.0	$ 225.0
3.650% Senior Notes	650.0	650.0	650.0
1.625% Senior Notes	500.0	500.0	—
Revolving Credit Agreement	—	—	—
EuroCCP Credit Facility	—	—	—
Less unamortized discount and debt issuance costs	(10.7)	(16.1)	(7.4)
Total debt	$ 1,299.3	$ 1,203.9	$ 867.6

At December 31, 2021, we were in compliance with the covenants of our debt agreements.

In addition to the debt outstanding, as of December 31, 2021, we had an additional $250.0 million available through our revolving credit facility, with the ability to borrow another $100.0 million by increasing the commitments under the facility. Together with adjusted cash, we had $675.1 million available to fund our operations, capital expenditures, potential acquisitions, debt repayments and any dividends as of December 31, 2021.

Dividends

The Company’s expectation is to continue to pay dividends. The decision to pay a dividend, however, remains within the discretion of the Company's Board of Directors and may be affected by various factors, including our earnings, financial condition, capital requirements, level of indebtedness and other considerations our Board of Directors deems relevant. Future debt obligations and statutory provisions, among other things, may limit, or in some cases prohibit, our ability to pay dividends.

Share Repurchase Program

In 2011, the Board of Directors approved an initial authorization for the Company to repurchase shares of its outstanding common stock of $100 million and approved additional authorizations of $100 million in each of 2012, 2013, 2014, 2015 and 2016, $250 million in each of 2018, 2019 and 2020, and $200 million in February 2021, for a total authorization of $1.6 billion. The program permits the Company to purchase shares through a variety of methods, including in the open market or through privately negotiated transactions, in accordance with applicable securities laws. It does not obligate the Company to make any repurchases at any specific time or situation.

Under the program, for the year ended December 31, 2021, the Company repurchased 822,005 shares of common stock at an average cost per share of $98.82, totaling $81.3 million. Since inception of the program through December 31, 2021, the Company has repurchased 18,072,129 shares of common stock at an average cost per share of $68.12, totaling $1.2 billion.

As of December 31, 2021, the Company had $318.9 million of availability remaining under its existing share repurchase authorizations.

Lease and Obligations

The Company currently leases additional office space, data centers and remote network operations center, with lease terms remaining from 7 months to 186 months as of December 31, 2021. In September 2019, we entered into two leases that commenced in 2020 for a new principal office space and trading floor space, both located in Chicago, Illinois. Additionally, in October 2021, the Company signed a new lease that commenced in February 2022 for a new principal office space in Amsterdam. See Note 24 ("Leases") to the consolidated financial statements for additional information.

Total rent expense related to current and former lease obligations for the years ended December 31, 2021, 2020 and 2019 totaled $25.6 million, $20.2 million and $12.4 million, respectively. In addition to our lease obligations, we have contractual obligations related to certain operating leases, data and telecommunications agreements, and our long-term debt outstanding.

Purchase obligations include our estimate of the minimum outstanding obligations under agreements to purchase goods or services that we believe are enforceable and legally binding and that specify all significant terms, including fixed or minimum quantities to be purchased; fixed or minimum and maximum amounts to be paid; and the approximate timing of the transaction. Purchase obligations include certain licensing agreements with various licensors which contain annual minimum fee requirements as well as payments calculated using agreed upon contract rates and reported cleared volumes. Purchase obligations exclude agreements that are cancellable at any time without penalty.

We have excluded from the contractual obligations listed below $745.9 million in cash margin deposits and clearing funds. Clearing participants of EuroCCP are required to make deposits to a clearing fund. The cash deposits made by clearing participants are recorded in the consolidated balance sheet as current assets with equal and offsetting current liabilities. See Note 14 ("Clearing Operations") to the consolidated financial statements for additional information on EuroCCP and the margin deposits and clearing funds.

Future minimum payments under these leases and agreements were as follows as of December 31, 2021:

	Payments Due by Period		
Contractual Obligations	**Total**	**Less than 1 year**	**More than 1 year**
Operating leases	$ 149.1	$ 19.3	$ 129.8
Purchase obligations	871.5	69.0	802.5
Principal payments of debt	1,310.0	—	1,310.0
Interest payments on debt	194.7	33.1	161.6
Total	$ 2,525.3	$ 121.4	$ 2,403.9

Commercial Commitments and Contractual Obligations

As of December 31, 2021, our commercial commitments and contractual obligations included operating leases, data and telecommunications agreements, equipment leases, our long-term debt outstanding, contingent considerations and other obligations. See Note 23 ("Commitments, Contingencies, and Guarantees") to the consolidated financial statements for a discussion of commitments and contingencies, Note 12 ("Debt") for a discussion of the outstanding debt, Note 14 ("Clearing Operations") for information on EuroCCP's clearinghouse exposure guarantee, and Note 24 ("Leases") for discussion on operating leases and equipment leases.

Guarantees

We use Wedbush and Morgan Stanley to clear our routed equities transactions for our U.S. Equities exchanges. Wedbush and Morgan Stanley guarantee the trade until one day after the trade date, after which time the NSCC provides a guarantee. The BIDS Trading ATS platform delivers matched trades to BOA, which delivers the matched trades to the NSCC. BOA guarantees the trade until one day after the trade date, after which time the NSCC provides a guarantee. In the case of failure to perform on the part of Wedbush or Morgan Stanley on routed transactions for our U.S. Equities exchanges, we provide the guarantee to the counterparty to the trader. In the case of failure to perform on the part of BOA on transactions for the BIDS Trading ATS platform, BIDS has obligations to the counterparties to satisfy the trades. OCC acts as a central counterparty on all transactions in listed equity options in our Options segment, and as such, guarantees clearance and settlement of all of our options transactions. We believe that any potential requirement for us to make payments under these guarantees is remote and accordingly, have not recorded any liability in the consolidated financial statements for these guarantees. Similarly, with respect to U.S. listed equity options and futures, we deliver matched trades of our customers to the OCC, which acts as a central counterparty on all transactions occurring on Cboe Options, C2, BZX, EDGX, and CFE and, as such, guarantees clearance and settlement of all of our matched options and futures trades. With respect to Canadian equities, we deliver matched trades of our customers to The Canadian Depository for Securities, which acts as a central counterparty on all transactions occurring on MATCHNow and, as such, guarantees clearance and settlement of all of our matched Canadian equities trades. With respect to Australian equities and derivatives, we deliver matched trades of our customers to ASX Clear Pty Ltd and ASX Settlement Pty Ltd. ASX Clear Pty Ltd acts as a central counterparty on all transactions occurring on Cboe Australia and, as such, guarantees clearance and settlement on all of our matched trades in Australia. With respect to Japanese equities, we deliver matched trades of our customers to the Japanese Securities Clearing Corporation, which acts as a central counterparty on all transactions occurring on Cboe Japan and, as such, guarantees clearance and settlement on all of our matched trades in Japan.

CRITICAL ACCOUNTING ESTIMATES

The preparation of consolidated financial statements in conformity with U.S. GAAP requires our management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of the amounts of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates. On an ongoing basis, the Company evaluates its estimates, including those related to areas that require a significant level of judgment or are otherwise subject to an inherent degree of uncertainty. The Company bases its estimates on historical experience, observance of trends in particular areas, information available from outside sources and various other assumptions that are believed to be reasonable under the circumstances. Information from these sources form the basis for making judgments about the carrying values of assets and liabilities that may not be readily apparent from other sources.

We have identified the estimates below as critical to our business operations and the understanding of our results of operations. The impact of, and any associated risks related to, these estimates on our business operations is discussed throughout "Management's Discussion and Analysis of Financial Condition and Results of Operations." For a detailed discussion on these estimates and other accounting policies, see Note 2 (“Summary of Significant Accounting Policies”) to the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K.

Goodwill and Other Intangible Assets

Description

Our acquisitions of Bats, Cboe Vest Financial Group Inc. (“Vest”), Silexx Financial Systems, LLC (“Silexx”), LiveVol, Hanweck, FT Options, Trade Alert, MATCHNow, BIDS Holdings and Chi-X APAC resulted in the recording of goodwill and other intangible assets, while our acquisition of EuroCCP, resulted in a bargain purchase gain and other intangible assets. In accordance with ASC 350—*Intangibles—Goodwill and Other*, we test the carrying values of goodwill and indefinite-lived intangible assets for impairment at least annually, or more frequently when events or changes in circumstances signal indicators of impairment are present.

Judgments and Uncertainties

The estimated fair values of our reporting units are based on the market approach and the income approach (using discounted estimated future cash flows). The estimated fair values of indefinite-lived intangibles used the income approach. The discounted estimated future cash flow analysis requires judgments about the discount rate, forecasted revenue growth rate, and operating expenses, that are inherent in these fair value estimates over the estimated remaining operating period. Additionally, the analysis contains uncertainty surrounding future events. As such, actual results may differ from these estimates and lead to a revaluation of our goodwill and indefinite-lived intangible assets.

Effect if Actual Results Differ from Assumptions

If updated estimates indicate that the fair value of goodwill or any indefinite-lived intangibles is less than the carrying value of the asset, an impairment charge is expected to be recorded in the consolidated statements of income in the period of the change in estimate, which could result in a material change to the consolidated financial statements. However, due to the results of our impairment analyses in 2021, in which all reporting units estimated fair value exceeded their carrying value, we do not consider our goodwill and indefinite-lived intangibles to have a significant risk of impairment.

Income Taxes

Description

The Company's consolidated global income tax provision, deferred tax assets and liabilities, valuation allowances, and liabilities for unrecognized tax benefits are determined through the interpretation of tax laws and assumptions of future events to calculate an expectation of future tax consequences.

Judgments and Uncertainties

On an ongoing basis, the Company evaluates its tax estimates and judgments. This evaluation is based on factors including historical experience, such as the conclusions of examinations by tax authorities, changes in tax laws or rates, new examination activity, and results of any related legal processes. We use judgment in the evaluation of uncertain tax positions and the estimation of unrecognized tax benefits when determining the largest amount greater than 50% likely to be realized upon ultimate settlement with the taxing authority, assessing the likelihood of the benefit being realized upon settlement, and the calculating expected ultimate settlement amount.

Effect if Actual Results Differ from Assumptions

Significant changes in these estimates or judgments may result in an increase or decrease to our tax provision in a future period. Additionally, it is possible that the ultimate settlement may differ from the liabilities for unrecognized tax benefits currently reported if tax authorities ultimately reach a conclusion that differs from the Company's expectation. We believe assumptions made regarding income taxes to be reasonable and do not believe any change in the judgments made by management would result in a material change to the consolidated financial statements.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 3 ("Recent Accounting Pronouncements") to the consolidated financial statements for further discussion of recently adopted and recently issued accounting pronouncements that are applicable to the Company.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

As a result of our operating activities, we are exposed to market risks such as foreign currency exchange rate risk, equity risk, credit risk, interest rate risk, and liquidity risk. We have implemented policies and procedures to measure, manage and monitor and report risk exposures, which are reviewed regularly by management and our Board of Directors.

Foreign Currency Exchange Rate Risk

Our operations in Europe, Canada and Asia are subject to increased currency translation risk as revenues and expenses are denominated in foreign currencies, primarily the British pound, Canadian dollar, Singapore dollar, Hong Kong dollar, Euro, Australian dollar, and Japanese Yen. We also have de minimis exposure to other foreign currencies, including the Swiss Franc, Norwegian Kroner, Swedish Krona, Danish Kroner, and Philippine Peso.

For the year ended December 31, 2021, our exposure to foreign-denominated revenues and expenses is presented by primary foreign currency in the following table (in millions, except percentages):

	Year Ended December 31, 2021		
	British Pounds (1)	Euros (1)	Australian Dollars (1)
Foreign denominated % of:			
Revenues	1.9 %	2.8 %	0.3 %
Cost of revenues	0.2 %	2.1 %	0.0 %
Operating expenses	3.5 %	5.7 %	1.4 %
Impact of 10% adverse currency fluctuation on:			
Revenues	$ 6.6	$ 9.5	$ 1.1
Cost of revenues	0.4	4.0	0.0
Operating expenses	2.3	3.8	0.9

(1) An average foreign exchange rate to the U.S. dollar for the period was used. See Item 7 ("Management's Discussion and Analysis of Financial Condition and Results of Operations") for the table summarizing the changes in certain operational and financial metrics for more information.

Equity Risk

Our investment in European, Canadian, and Asia Pacific operations is exposed to volatility in currency exchange rates through translation of our net assets or equity to U.S. dollars. The assets and liabilities of our European businesses are denominated in British pounds or Euros. The assets and liabilities of our Canadian businesses are denominated in Canadian dollars. The assets and liabilities of our Asia Pacific businesses are denominated in Hong Kong dollars, Australian dollars, Japanese Yen, or Philippine Pesos. Fluctuations in currency exchange rates may create volatility in our reported results as we are required to translate foreign currency reported statements of financial condition and operational results into U.S. dollars for consolidated reporting. The translation of these non-U.S. dollar statements of financial condition into U.S. dollars for consolidated reporting results in a cumulative translation adjustment, which is recorded in accumulated other comprehensive income, net within stockholders' equity on our consolidated balance sheet.

Our primary exposure to this equity risk as of December 31, 2021 is presented by foreign currency in the following table (in millions):

	British Pounds (1)	Euros (1)	Canadian Dollars (1)
Net equity investment in Cboe Europe, EuroCCP, and MATCHNow	$ 657.0	$ 101.5	$ 151.9
Impact on consolidated equity of a 10% adverse currency fluctuation	65.7	10.1	15.2

(1) Converted to U.S. dollars using the foreign exchange rate of British pounds per U.S. dollar, Euros per U.S. dollar, and Canadian dollars per U.S. dollar, respectively, as of December 31, 2021.

Credit Risk

We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations due to bankruptcy, lack of liquidity, operational failure or other reasons. We limit our exposure to credit risk by considering such risk when selecting the counterparties with which we make investments and execute agreements.

We do not have counterparty credit risk with respect to trades matched on our exchanges in the U.S., Canada, and Europe. With respect to listed equities, we deliver matched trades of our customers to the NSCC without taking on counterparty risk for those trades. NSCC acts as a central counterparty on all equity transactions occurring on BZX, BYX, EDGX and EDGA and, as such, guarantees clearance and settlement of all of our matched equity trades. Similarly, with respect to U.S. listed equity options and futures, we deliver matched trades of our customers to the OCC, which acts as a central counterparty on all transactions occurring on Cboe Options, C2, BZX, EDGX and CFE and, as such, guarantees clearance and settlement of all of our matched options and futures trades. With respect to Canadian equities, we deliver matched trades of our customers to The Canadian Depository for Securities, which acts as a central counterparty on all transactions occurring on MATCHNow and, as such, guarantees clearance and settlement of all of our matched Canadian equities trades. The BIDS Trading ATS platform delivers matched trades to BOA, which delivers the matched trades to the NSCC. BOA guarantees the trade until one day after the trade date, after which time the NSCC provides a guarantee.

Thus, BIDS Trading is potentially exposed to credit risk to the counterparty between the trade date and one day after the trade date in the event BOA fails. With respect to Australian equities and derivatives, we deliver matched trades of our customers to ASX Clear Pty Ltd and ASX Settlement Pty Ltd. ASX Clear Pty Ltd acts as a central counterparty on all transactions occurring on Cboe Australia and, as such, guarantees clearance and settlement on all of our matched trades in Australia. With respect to Japanese equities, we deliver matched trades of our customers to the Japanese Securities Clearing Corporation, which acts as a central counterparty on all transactions occurring on Cboe Japan and, as such, guarantees clearance and settlement on all of our matched trades in Japan.

With respect to orders Cboe Trading routes to other markets for execution on behalf of our customers, Cboe Trading is exposed to some counterparty credit risk in the case of failure to perform on the part of our clearing firms, Morgan Stanley or Wedbush. Morgan Stanley and Wedbush guarantee trades until one day after the trade date, after which time NSCC provides a guarantee. The BIDS Trading ATS platform delivers matched trades to BOA, which delivers the matched trades to the NSCC. Thus, Cboe Trading is potentially exposed to credit risk to the counterparty to a trade routed to another market center between the trade date and one day after the trade date in the event that Morgan Stanley or Wedbush fails. The BIDS Trading ATS platform is potentially exposed to counterparty credit risk on equities trades between the trade date and one day after the trade date in the event that BOA fails. We believe that any potential requirement for us to make payments under these guarantees is remote and accordingly, have not recorded any liability in the consolidated financial statements for these guarantees.

Historically, we have not incurred any liability due to a customer’s failure to satisfy its contractual obligations as counterparty to a system trade. Credit difficulties or insolvency, or the perceived possibility of credit difficulties or insolvency, of one or more larger or more visible market participants could also result in market-wide credit difficulties or other market disruptions.

We do not have counterparty credit risk with respect to institutional spot FX trades occurring on our platform because Cboe FX is not a counterparty to any FX transactions. All transactions occurring on our platform occur bilaterally between two banks or prime brokers as counterparties to the trade. While Cboe FX does not have direct counterparty risk, Cboe FX may suffer a decrease in transaction volume if a bank or prime broker experiences an event that causes other prime brokers to decrease or revoke the credit available to the prime broker experiencing the event. Therefore, Cboe FX may have risk that is related to the credit of the banks and prime brokers that trade FX on the Cboe FX platform.

We also have credit risk related to transaction fees that are billed in arrears to customers on a monthly basis. Our potential exposure to credit losses on these transactions is represented by the receivable balances in our balance sheet. Our customers are financial institutions whose ability to satisfy their contractual obligations may be impacted by volatile securities markets.

As a result of the acquisition of EuroCCP on July 1, 2020, the Company is exposed to further credit risk through our clearing operations. EuroCCP holds material amounts of clearing participant collateral, both cash and non-cash deposits, which are held or invested primarily to provide security of capital while minimizing credit risk as well as liquidity and market risks. The following is a summary of the risks associated with these deposits and how these risks are mitigated:

- *Credit Risk* - The credit risk is predominantly in the event a clearing participant fails to meet a financial or contractual obligation. EuroCCP attempts to mitigate this risk through minimum participant requirements for clearing participants and monitoring their financial health. To cover potential loss to EuroCCP in the event of a clearing participant default, collateral is required from clearing participants. Besides potential defaults of clearing participants, the main credit risk faced by the clearinghouse is exposure to clearing participants when a trade fails to settle. To help mitigate this risk, a fail fee is charged to discourage late settlements. This fee covers EuroCCP’s costs but also acts as a deterrent as required by Regulation (EU) No 236/2012 on short selling, together with certain aspects of credit default swaps.

- *Liquidity Risk* - Liquidity risk is the risk EuroCCP may not be able to meet its payment obligations in the right currency, in the right place and at the right time. To help mitigate this risk, EuroCCP monitors its liquidity requirements closely and maintains funds and assets in a manner which attempt to minimize the risk of loss or delay in the access by the clearinghouse to such funds and assets. For example, holding funds with a central bank where possible or making only short-term investments serves to help reduce liquidity risks. Liquidity is mainly required for securities settlement. The payment and settlement obligations generally stem from the function of EuroCCP as a cash equity clearinghouse: shares are bought and sold by clearing participants on a trading platform or OTC, and netted to settle two days later. During the settlement the actual payment for and delivery of the shares take place, this process requires intraday liquidity. If counterparties, which receive shares against payment, are unable to settle, an overnight liquidity need arises. The overnight liquidity is typically very short term, and is usually limited to a few days.

- *Market Risk* - EuroCCP is also exposed to market risk in the event that a clearing participant defaults and the market prices of the securities in its open positions have moved adversely so the clearinghouse can only close out the participant's obligations at a loss. To help mitigate market risk, EuroCCP collects collateral from clearing participants to cover for the probable loss during normal market conditions, together with contributions to the clearing fund to cover losses if a default occurred during extreme but plausible market conditions. Adverse movements in exchange rates affecting the value of obligations and collateral are factored into the calculation of the amount of collateral to be collected.

On a regular basis, we review and evaluate changes in the status of our counterparties' creditworthiness. Credit losses such as those described above could adversely affect our consolidated financial position and results of operations. Any such effects to date have been minimal.

Interest Rate Risk

We have exposure to market risk for changes in interest rates relating to our cash and cash equivalents, financial investments, and indebtedness. As of December 31, 2021 and 2020, our cash and cash equivalents and financial investments were $379.0 million and $337.8 million, respectively, of which $185.9 million and $128.0 million is held outside of the United States in various foreign subsidiaries in 2021 and 2020, respectively. The remaining cash and cash equivalents and financial investments are denominated in U.S. dollars. We do not use our investment portfolio for trading or other speculative purposes. Due to the nature of these investments, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates, assuming no change in the amount or composition of our cash and cash equivalents and financial investments.

As of December 31, 2021, we had $1,299.3 million in outstanding debt, of which $1,139.9 million relates to our Senior Notes, which bear interest at fixed interest rates. Changes in interest rates will have no impact on the interest we pay on fixed-rate obligations. The remaining amounts outstanding of $159.5 million relates to the Term Loan Agreement, which bears interest at fluctuating rates and, therefore, subjects us to interest rate risk. A hypothetical 100 basis point increase in interest rates relating to the amounts outstanding under the Term Loan Agreement as of December 31, 2021 would decrease annual pre-tax earnings by $1.6 million, assuming no change in the composition of our outstanding indebtedness. We are also exposed to changes in interest rates as a result of borrowings under our Revolving Credit Agreement and the EuroCCP Credit Facility, as these facilities bear interest at fluctuating rates. As of December 31, 2021, there were no outstanding borrowings under our Revolving Credit agreement and no outstanding borrowings under the EuroCCP Credit Facility. See Note 12 ("Debt") to the consolidated financial statements for a discussion of debt agreements.

Liquidity Risk

We are exposed to liquidity risk under certain circumstances in relation to the cross-acceleration and cross-default provisions within the Term Loan Agreement and the Revolving Credit Agreement as a result of the Company, as guarantor, entering into the EuroCCP Credit Facility. A default of the Facility may allow lenders to accelerate any related drawn amounts and may result in the acceleration of the Company's other outstanding debt to which a cross-acceleration or cross-default provision applies, which may limit the Company's liquidity, business and financing activities. See Note 12 ("Debt") to the consolidated financial statements for a discussion of debt agreements.

Item 8. Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Cboe Global Markets, Inc. and Subsidiaries

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Cboe Global Markets, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Cboe Global Markets, Inc. and subsidiaries (the Company) as of December 31, 2021 and 2020, the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 18, 2022 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Evaluation of unrecognized tax benefits

As discussed in Notes 2 and 21 to the consolidated financial statements, the Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based upon the technical merits of the position. The tax benefit recognized in the consolidated financial statements from such a position is measured based upon the largest benefit that has greater than 50% likelihood of being realized upon ultimate settlement.

We identified the evaluation of unrecognized tax benefits in certain jurisdictions as a critical audit matter. A higher degree of auditor judgment and the involvement of professionals with specialized skills and knowledge was required to evaluate the Company’s estimate of tax benefits to be realized upon ultimate settlement of its tax positions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company’s unrecognized tax benefits process, including controls over the estimate of tax benefits to be realized upon ultimate settlement of tax positions. We evaluated the Company’s ability to estimate its unrecognized tax benefits by comparing historical unrecognized tax benefits to actual results upon the conclusion of examinations by applicable taxing authorities. In addition, we involved tax professionals with specialized skills and knowledge who assisted in:

— analyzing the Company’s tax positions, including the measurement of unrecognized tax benefits

— evaluating changes in applicable laws and regulations

— inspecting settlements with applicable taxing authorities.

/s/ KPMG LLP

We have served as the Company’s auditor since 2020.

Chicago, Illinois
February 18, 2022

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Cboe Global Markets, Inc.

Opinion on the Financial Statements

We have audited the consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows of Cboe Global Markets, Inc. and subsidiaries (the "Company") for the year ended December 31, 2019, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the results of the Company's operations and its cash flows for the year ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

Chicago, Illinois
February 21, 2020

We began serving as the Company's auditor in 1973. In 2020 we became the predecessor auditor.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Cboe Global Markets, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Cboe Global Markets, Inc. and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2021 and 2020, the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements), and our report dated February 18, 2022 expressed an unqualified opinion on those consolidated financial statements.

Management's assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2021, excluded Chi-X Asia Pacific, acquired with effect from July 1, 2021. This acquired business had total assets and total stockholders' equity of $266.5 million and $242.5 million, respectively, and total revenues and revenues less costs of revenues of $17.1 million and $16.7 million, respectively, which are included in the Company's consolidated financial statements as of and for the year ended December 31, 2021. Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of Chi-X Asia Pacific.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

Chicago, Illinois
February 18, 2022

Cboe Global Markets, Inc. and Subsidiaries
Consolidated Balance Sheets
December 31, 2021 and 2020
(In millions, except share and per share data)

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 341.9	$ 245.4
Financial investments	37.1	92.4
Accounts receivable, net of $1.0 allowance for credit losses at December 31, 2021 and $0.6 at December 31, 2020	326.9	337.3
Margin deposits and clearing funds	745.9	812.1
Income taxes receivable	42.7	53.1
Other current assets	36.8	26.5
Total current assets	1,531.3	1,566.8
Investments	245.8	42.7
Land	2.3	—
Property and equipment, net	105.2	82.6
Property held for sale	—	13.0
Operating lease right of use assets	110.1	111.0
Goodwill	3,025.4	2,895.1
Intangible assets, net	1,668.6	1,729.0
Other assets, net	125.8	76.3
Total assets	$ 6,814.5	$ 6,516.5
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable and accrued liabilities	$ 295.4	$ 250.0
Section 31 fees payable	40.8	152.9
Deferred revenue	15.2	10.2
Margin deposits and clearing funds	745.9	812.1
Income taxes payable	8.2	4.2
Current portion of long-term debt	—	68.7
Current portion of contingent consideration liabilities	63.8	15.2
Total current liabilities	1,169.3	1,313.3
Long-term debt	1,299.3	1,135.2
Unrecognized tax benefits	197.9	164.7
Deferred income taxes	372.7	377.6
Non-current operating lease liabilities	129.2	132.1
Contingent consideration liabilities	6.7	17.5
Other non-current liabilities	34.6	27.2
Total liabilities	3,209.7	3,167.6
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.01 par value: 20,000,000 shares authorized, no shares issued and outstanding at December 31, 2021 and December 31, 2020	—	—
Common stock, $0.01 par value: 325,000,000 shares authorized, 108,159,319 and 106,646,498 shares issued and outstanding, respectively at December 31, 2021 and 125,998,967 and 107,299,933 shares issued and outstanding, respectively at December 31, 2020	1.1	1.2
Common stock in treasury, at cost, 1,512,821 shares at December 31, 2021 and 18,699,034 shares at December 31, 2020	(106.8)	(1,250.4)
Additional paid-in capital	1,509.4	2,713.3
Retained earnings	2,145.5	1,809.8
Accumulated other comprehensive income, net	55.6	75.0
Total stockholders' equity	3,604.8	3,348.9
Total liabilities and stockholders' equity	$ 6,814.5	$ 6,516.5

See accompanying notes to consolidated financial statements.

Cboe Global Markets, Inc. and Subsidiaries
Consolidated Statements of Income
Years ended December 31, 2021, 2020 and 2019
(In millions, except per share data)

	2021	2020	2019
Revenues:			
Transaction and clearing fees	$ 2,693.1	$ 2,418.0	$ 1,716.2
Access and capacity fees	280.7	236.7	221.9
Market data fees	252.1	232.0	213.5
Regulatory fees	208.3	500.2	311.7
Other revenue	60.6	40.2	32.8
Total revenues	3,494.8	3,427.1	2,496.1
Cost of revenues:			
Liquidity payments	1,650.7	1,554.1	964.7
Routing and clearing	87.8	70.4	35.8
Section 31 fees	179.6	465.0	271.4
Royalty fees	86.3	83.4	86.8
Other	14.3	(0.1)	0.5
Total cost of revenues	2,018.7	2,172.8	1,359.2
Revenues less cost of revenues	1,476.1	1,254.3	1,136.9
Operating expenses:			
Compensation and benefits	288.5	224.9	199.0
Depreciation and amortization	167.4	158.5	176.6
Technology support services	66.7	54.5	46.2
Professional fees and outside services	83.7	60.6	68.3
Travel and promotional expenses	9.7	6.6	11.9
Facilities costs	22.2	17.6	11.0
Acquisition-related costs	15.6	45.2	48.5
Other expenses	16.4	24.2	38.2
Total operating expenses	670.2	592.1	599.7
Operating income	805.9	662.2	537.2
Non-operating (expenses) income:			
Interest expense, net	(47.4)	(37.6)	(35.9)
Other (expense) income, net	(2.4)	35.8	0.1
Income before income tax provision	756.1	660.4	501.4
Income tax provision	227.1	192.2	130.6
Net income	529.0	468.2	370.8
Net loss attributable redeemable noncontrolling interest	—	—	4.1
Net income excluding redeemable noncontrolling interest	529.0	468.2	374.9
Change in redemption value of redeemable noncontrolling interest	—	—	(0.5)
Net income allocated to participating securities	(1.7)	(1.2)	(1.7)
Net income allocated to common stockholders	$ 527.3	$ 467.0	$ 372.7
Basic earnings per share	$ 4.93	$ 4.28	$ 3.35
Diluted earnings per share	$ 4.92	$ 4.27	$ 3.34
Basic weighted average shares outstanding	107.0	109.1	111.4
Diluted weighted average shares outstanding	107.2	109.3	111.8

See accompanying notes to consolidated financial statements.

Cboe Global Markets, Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income
Years ended December 31, 2021, 2020 and 2019
(In millions)

	2021	2020	2019
Net income	$ 529.0	$ 468.2	$ 370.8
Other comprehensive income (loss), net of income tax:			
Foreign currency translation adjustments	(19.3)	36.5	26.1
Unrealized holding losses on financial investments	—	(0.3)	—
Post-retirement benefit obligations	(0.1)	1.2	—
Comprehensive income	509.6	505.6	396.9
Comprehensive loss attributable to redeemable noncontrolling interest	—	—	4.1
Comprehensive income excluding redeemable noncontrolling interest	509.6	505.6	401.0
Change in redemption value of redeemable noncontrolling interest	—	—	(0.5)
Comprehensive income allocated to participating securities	(1.7)	(1.2)	(1.7)
Comprehensive income allocated to common stockholders, net of income tax	$ 507.9	$ 504.4	$ 398.8

See accompanying notes to consolidated financial statements.

Cboe Global Markets, Inc. and Subsidiaries
Consolidated Statements of Changes in Stockholders' Equity
Years ended December 31, 2021, 2020 and 2019
(In millions)

	Preferred Stock	Common Stock	Treasury Stock	Additional paid-in capital	Retained earnings	Accumulated other comprehensive income, net	Total stockholders' equity	Redeemable Noncontrolling Interest
Balance at December 31, 2018	$ —	$ 1.2	$ (720.1)	$ 2,660.2	$ 1,288.2	$ 11.5	$ 3,241.0	$ 9.4
Cash dividends on common stock of $1.34 per share	—	—	—	—	(150.0)	—	(150.0)	—
Stock-based compensation	—	—	—	21.8	—	—	21.8	—
Exercise of common stock options	—	—	—	9.3	—	—	9.3	—
Repurchases of common stock from employee stock plans	—	—	(11.0)	—	—	—	(11.0)	—
Purchase of common stock	—	—	(156.9)	—	—	—	(156.9)	—
Shares issued under employee stock purchase plan	—	—	0.9	—	—	—	0.9	—
Net income excluding noncontrolling interest	—	—	—	—	374.9	—	374.9	—
Other comprehensive income	—	—	—	—	—	26.1	26.1	—
Net loss attributable to redeemable noncontrolling interest	—	—	—	—	—	—	—	(4.1)
Redemption value adjustment of redeemable noncontrolling interest	—	—	—	—	(0.5)	—	(0.5)	0.5
Deconsolidation of former subsidiary with noncontrolling interest	—	—	—	—	—	—	—	(5.8)
Balance at December 31, 2019	$ —	$ 1.2	$ (887.1)	$ 2,691.3	$ 1,512.6	$ 37.6	$ 3,355.6	$ —
Transition adjustment for adoption of Current Expected Credit Losses standard at January 1, 2020	—	—	—	—	(0.4)	—	(0.4)	—
Cash dividends on common stock of $1.56 per share	—	—	—	—	(170.6)	—	(170.6)	—
Stock-based compensation	—	—	—	21.7	—	—	21.7	—
Exercise of common stock options	—	—	—	0.2	—	—	0.2	—
Repurchases of common stock from employee stock plans	—	—	(14.2)	—	—	—	(14.2)	—
Purchase of common stock	—	—	(349.1)	—	—	—	(349.1)	—
Shares issued under employee stock purchase plan	—	—	—	0.1	—	—	0.1	—
Net income excluding noncontrolling interest	—	—	—	—	468.2	—	468.2	—
Other comprehensive income	—	—	—	—	—	37.4	37.4	—
Balance at December 31, 2020	$ —	$ 1.2	$ (1,250.4)	$ 2,713.3	$ 1,809.8	$ 75.0	$ 3,348.9	$ —
Cash dividends on common stock of $1.80 per share	—	—	—	—	(193.3)	—	(193.3)	—
Stock-based compensation	—	0.1	—	26.6	—	—	26.7	—
Repurchases of common stock from employee stock plans	—	—	(6.2)	—	—	—	(6.2)	—
Purchase of common stock	—	—	(81.3)	—	—	—	(81.3)	—
Retirement of treasury stock	—	(0.2)	1,231.1	(1,230.9)	—	—	—	—
Shares issued under employee stock purchase plan	—	—	—	0.4	—	—	0.4	—
Net income	—	—	—	—	529.0	—	529.0	—
Other comprehensive loss	—	—	—	—	—	(19.4)	(19.4)	—
Balance at December 31, 2021	$ —	$ 1.1	$ (106.8)	$ 1,509.4	$ 2,145.5	$ 55.6	$ 3,604.8	$ —

See accompanying notes to consolidated financial statements.

Cboe Global Markets, Inc. and Subsidiaries
Consolidated Statements of Cash Flows
Years ended December 31, 2021, 2020 and 2019
(In millions)

	2021	2020	2019
Cash flows from operating activities:			
Net income	$ 529.0	$ 468.2	$ 370.8
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	167.4	158.5	176.6
Amortization of debt issuance cost and debt discount	2.2	2.0	2.2
Change in fair value of contingent consideration	(2.7)	—	2.6
Realized gain on available-for-sale financial investments	—	(0.4)	(1.3)
Provision for accounts receivable credit losses	0.4	0.1	1.0
Provision for deferred income taxes	(18.9)	(30.9)	(37.2)
Provision for notes receivable credit losses	—	6.7	23.4
Stock-based compensation expense	26.6	21.7	21.8
Loss on disposal of property and equipment	0.4	—	4.4
Impairment of property held for sale	—	8.1	6.1
Loss related to deconsolidation of former subsidiary	—	—	2.0
Impairment of goodwill	—	—	10.5
Equity earnings in investments	0.4	(1.1)	(2.2)
Impairment of investments	5.6	15.1	—
Bargain purchase gain	—	(32.6)	—
Changes in assets and liabilities:			
Accounts receivable	12.0	(90.0)	50.3
Margin deposits and clearing funds	(66.2)	812.1	—
Income taxes receivable	10.3	5.4	13.5
Other current assets	(4.4)	(5.1)	(16.9)
Other assets	(47.4)	(23.4)	—
Accounts payable and accrued liabilities	45.0	59.4	(25.7)
Section 31 fees payable	(112.1)	53.9	17.9
Deferred revenue	4.9	4.5	(4.1)
Income taxes payable	3.9	(1.1)	0.1
Unrecognized tax benefits	33.2	28.8	21.0
Other liabilities	7.2	(1.1)	(4.0)
Net cash provided by operating activities	596.8	1,458.8	632.8
Cash flows from investing activities:			
Acquisitions, net of cash acquired	(151.5)	(351.5)	—
Proceeds from acquisition-related escrow	0.6	—	—
Contributions to investments	(209.8)	(12.1)	—
Return of capital from investments	—	—	30.0
Purchases of available-for-sale financial investments	(101.2)	(222.5)	(108.8)
Proceeds from maturities of available-for-sale financial investments	160.2	202.5	98.0
Proceeds from insurance	—	0.5	—
Purchases of property and equipment and leasehold improvements	(51.0)	(47.4)	(35.1)
Net cash used in investing activities	(352.7)	(430.5)	(15.9)
Cash flows from financing activities:			
Proceeds from long-term debt	110.0	493.7	—
Principal payments of current portion of long-term debt	(20.0)	(155.0)	(350.0)
Proceeds from credit facility	—	70.0	—
Payments of credit facility	—	(70.0)	—
Debt issuance costs	—	(4.5)	—
Cash dividends on common stock	(193.3)	(170.6)	(150.0)
Repurchases of common stock from employee stock plans	(6.2)	(14.2)	(11.0)
Exercise of common stock options	—	0.2	9.3
Shares issued under employee stock purchase plan	(0.4)	—	—
Payment of contingent consideration from acquisition	(9.1)	(2.2)	(4.3)
Purchase of common stock	(81.3)	(349.1)	(156.9)
Net cash used in financing activities	(200.3)	(201.7)	(662.9)
Effect of foreign currency exchange rates on cash, cash equivalents, and restricted cash and cash equivalents	(9.1)	1.6	0.2
Increase (decrease) in cash, cash equivalents, and restricted cash and cash equivalents	34.7	828.2	(45.8)
Cash, cash equivalents, and restricted cash and cash equivalents:			
Beginning of period	1,057.5	229.3	275.1
End of period	$ 1,092.2	$ 1,057.5	$ 229.3
Reconciliation of cash, cash equivalents, and restricted cash and cash equivalents:			
Cash and cash equivalents	341.9	245.4	229.3
Restricted cash and cash equivalents (margin deposits and clearing funds)	745.9	812.1	—
Restricted cash and cash equivalents (included in other current assets)	4.4	—	—
Total	$ 1,092.2	$ 1,057.5	$ 229.3
Supplemental disclosure of cash transactions:			
Cash paid for income taxes	$ 209.8	$ 191.5	$ 134.9
Cash paid for interest	42.1	29.2	32.7
Supplemental disclosure of noncash investing activities:			
Note receivable issued in connection with deconsolidation of former subsidiary	—	—	3.7
Investment recognized in connection with deconsolidation of former subsidiary	—	—	2.9
Net assets of former subsidiary deconsolidated	—	—	14.5
Accounts receivable acquired	3.5	11.0	—
Income taxes receivable acquired	—	1.7	—
Other current assets acquired	1.0	5.9	—
Goodwill acquired	133.6	201.2	—
Intangible assets acquired	73.8	247.7	—
Property and equipment, net acquired	3.1	4.4	—
Other assets, net acquired	0.5	0.9	—
Accounts payable and accrued expenses assumed	(1.8)	(16.7)	—
Income taxes payable assumed	(0.1)	(1.3)	—
Deferred revenue acquired	—	(1.0)	—
Contingent consideration related to acquisitions	(49.6)	(32.7)	—
Deferred income taxes acquired	(15.6)	(6.7)	—

See accompanying notes to consolidated financial statements.

1. NATURE OF OPERATIONS

Cboe Global Markets, Inc. (“Cboe” or “the Company”), a leading provider of market infrastructure and tradable products, delivers cutting-edge trading, clearing and investment solutions to market participants around the world. The Company is committed to operating a trusted, inclusive global marketplace, providing leading products, technology and data solutions that enable participants to define a sustainable financial future. Cboe provides trading solutions and products in multiple asset classes, including equities, derivatives and FX, across North America, Europe, and Asia Pacific.

Cboe’s subsidiaries include the largest options exchange and the third largest stock exchange operator in the U.S. In addition, the Company operates one of the largest stock exchanges by value traded in Europe, and owns EuroCCP, a leading pan-European equities and derivatives clearinghouse, BIDS Trading, a leading block-trading ATS by volume in the U.S., MATCHNow, a leading equities ATS in Canada, Cboe Australia, an operator of trading venues in Australia, and Cboe Japan, an operator of trading venues in Japan. Cboe also is a leading market globally for exchange-traded products (“ETPs”) listings and trading.

The Company is headquartered in Chicago with offices in Amsterdam, Belfast, Calgary, Hong Kong, Kansas City, London, Manila, New York, San Francisco, Sarasota Springs, Singapore, Sydney, Tokyo and Toronto.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Principles of Accounting

These consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (“GAAP”) as established by FASB.

(b) Basis of Presentation

The accompanying financial statements are presented on a consolidated basis to include the accounts and transactions of Cboe Global Markets, Inc. and its majority owned subsidiaries and all significant intercompany accounts and transactions have been eliminated.

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities, and reported amounts of revenues and expenses. On an ongoing basis, management evaluates its estimates based upon historical experience, observance of trends, information available from outside sources and various other assumptions that management believes to be reasonable under the circumstances. Actual results may differ from these estimates under different conditions or assumptions.

For those consolidated subsidiaries in which the Company’s ownership is less than 100% and for which the Company has control over the assets and liabilities and the management of the entity, the outside stockholders’ interest is shown as noncontrolling interest.

Segment information

The Company has five business segments: Options, North American Equities, Europe and Asia Pacific, Futures, and Global FX, which is reflective of how the Company’s chief operating decision-maker reviews and operates the business. See Note 16 (“Segment Reporting”) for more information.

(c) Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities as well as disclosure of the amounts of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates. Material estimates that are particularly susceptible to significant change in the near term include the valuation of goodwill, indefinite-lived intangible assets, and unrecognized tax benefits.

(d) Cash and Cash Equivalents

The Company's cash and cash equivalents are exposed to concentrations of credit risk. The Company maintains cash at various regulated financial institutions and brokerage firms which, at times, may be in excess of the federal depository insurance limit. The Company's management regularly monitors these institutions and believes that the potential for future loss is remote. The Company considers liquid investments with original or acquired maturities of three months or less to be cash equivalents.

(e) Financial Investments

Financial investments are classified as trading or available-for-sale.

Trading financial investments represent financial investments held by Cboe Trading that retain the industry-specific accounting classification required for broker-dealers and marketable securities held in a rabbi trust for the Company's non-qualified retirement and benefit plans. The investments held by the broker-dealer subsidiary are recorded at fair value with changes in unrealized gains and losses reflected within interest expense, net in the consolidated statements of income. The investments held in a trust are recorded at fair value with changes in unrealized gains or losses recorded within other income (expense) and the equal and offsetting charges in the related liability are recorded in compensation and benefits expense in the consolidated statements of income.

Available-for-sale financial investments are comprised of the financial investments not held by Cboe Trading, including highly liquid U.S. Treasury securities. Unrealized gains and losses, net of income taxes, are included as a component of accumulated other comprehensive income in the accompanying consolidated balance sheets.

Interest on financial investments, including amortization of premiums and accretion of discounts, is recognized as income when earned. Realized gains and losses on financial investments are calculated using the specific identification method and are included in interest expense, net in the accompanying consolidated statements of income.

A decline in the fair value of any available-for-sale investment below carrying value that is deemed to be other-than-temporary results in an impairment to reduce the carrying value to realizable value. To determine whether an impairment is other-than-temporary, the Company considers all available information relevant to the collectability of the investment, including past events, current conditions, and reasonable and supportable forecasts when developing estimate of cash flows expected to be collected. Evidence considered in this assessment includes the reasons for the impairment, the severity and duration of the impairment, changes in value subsequent to year-end, forecasted performance of the investee, and the general market condition in the geographic area or industry in which the investee operates.

(f) Accounts Receivable, Net

Accounts receivable are concentrated with the Company's member firms and market data distributors and are carried at amortized cost. The Company nets transaction fees and liquidity payments for each member firm on a monthly basis and recognizes the total owed from a member firm as accounts receivable, net and the total owed to a member firm as accounts payable and accrued liabilities in the consolidated balance sheets. On a periodic basis, management evaluates the Company's accounts receivable and records an allowance for expected credit losses using an aging schedule. The aging schedule applies loss rates based on historical loss information and, as deemed necessary, is adjusted for differences in the nature of the receivables that exist at the reporting date from the historical period. Due to the short-term nature of the accounts receivable, changes in future economic conditions are not expected to have a significant impact on the expected credit losses.

The accounts receivable are presented net of allowance for credit losses on the consolidated balance sheets and the associated losses are presented in other operating expenses on the consolidated statements of income.

(g) Property and Equipment, Net

Property and equipment, net is stated at cost less accumulated depreciation. Depreciation is computed using the straight-line method over the estimated lives of the assets, generally ranging from three to seven years. Expenditures for repairs and maintenance are charged to expense as incurred. Depreciation of leasehold improvements is calculated using the straight-line method over the shorter of the related lease term or the estimated useful life of the assets.

Long-lived assets to be held and used are reviewed to determine whether any events or changes in circumstances indicate that the carrying values of the assets may not be recoverable. The Company bases this evaluation on such impairment indicators as the nature of the assets, the future economic benefit of the assets, any historical or future profitability measurements, as well as other external market conditions or factors that may be present. If such impairment indicators are present that would indicate that the carrying value of any asset may not be recoverable, the Company determines whether an impairment has occurred through the use of an undiscounted cash flow analysis of the asset at the lowest level for which identifiable cash flows exist. In the event of impairment, the Company recognizes a loss for the difference between the carrying value and the estimated value of the asset as measured using quoted market prices or, in the absence of quoted market prices, a discounted cash flow analysis.

The Company expenses software development costs as incurred during the preliminary project stage, while capitalizing costs incurred during the application development stage, which includes design, coding, installation and testing activities.

(h) Goodwill and Intangible Assets, Net

Goodwill represents the excess of purchase price over the value assigned to the net tangible and identifiable intangible assets of a business acquired. Goodwill is allocated to the Company's reporting units based on the assignment of the fair values of each reporting unit of the acquired company. The Company tests goodwill for impairment at the reporting unit level annually, or in interim periods if certain events occur indicating that the carrying value may be impaired. The impairment test is performed during the fourth quarter using October 1^{st} carrying values, and if the fair value of the reporting unit is found to be less than the carrying value, an impairment loss is recorded. The Company performed its 2021 annual goodwill impairment test and determined that no impairment existed.

Intangible assets, net, primarily include acquired trademarks and trade names, customer relationships, strategic alliance agreements, licenses and registrations and non-compete agreements. Intangible assets with finite lives are amortized based on the discounted cash flow method applied over the estimated useful lives of the intangible assets and are tested for impairment if certain events occur indicating that the carry value may be impaired.

Intangible assets deemed to have indefinite useful lives are not amortized, but instead are tested for impairment at least annually, usually concurrently with goodwill. Impairment exists if the fair value of the asset is less than the carrying value, and in that case, an impairment loss is recorded. The Company performed its 2021 annual intangible assets impairment test using October 1, 2021 carrying values and determined that no impairment existed.

(i) Treasury Stock

The Company accounts for the purchase of treasury stock under the cost method with the shares of stock repurchased reflected as a reduction to Cboe stockholders' equity and included in common stock in treasury, at cost in the consolidated balance sheets. Shares repurchased under the Company's share repurchase program are either available to be redistributed or they are retired. The Company accounts for the retirement of treasury stock by deducting its par value from common stock and reflecting any excess of cost over par value as a deduction from additional paid-in-capital on the consolidated balance sheets.

(j) Foreign Currency

The financial statements of foreign subsidiaries where the functional currency is not the U.S. dollar are translated into U.S. dollars using the exchange rate in effect as of each balance sheet date. Statements of income and cash flow amounts are translated using the average exchange rate during the period. The cumulative effects of translating the balance sheet accounts from the functional currency into the U.S. dollar at the applicable exchange rates are included in accumulated other comprehensive income (loss), net in the accompanying consolidated balance sheets. Foreign currency gains and losses are recorded as other (expense) income, net in the consolidated statements of income. The Company's operations in the United Kingdom, Amsterdam, Canada, Singapore, Philippines, Hong Kong, Australia and Japan are recorded in Pounds sterling, Euros, Canadian dollars, Singapore dollars, Philippine pesos, Hong Kong dollars, Australian dollars and Japanese Yen, respectively.

(k) Income Taxes

Deferred taxes are recorded on a liability method whereby deferred tax assets are recognized for deductible temporary differences and operating loss and tax credit carryforwards, and deferred tax liabilities are recognized for taxable temporary differences. Temporary differences are the differences between the reported amounts of assets and liabilities and their tax bases. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based upon the technical merits of the position. The tax benefit recognized in the consolidated financial statements from such a position is measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. Also, interest and penalties expense is recognized on the full amount of deferred benefits for uncertain tax positions. The Company's policy is to include interest and penalties related to unrecognized tax benefits in the income tax provision within the consolidated statements of income.

The Company elected to account for global intangible low-taxed income ("GILTI") in the period in which it is incurred, and therefore, has not provided any deferred tax impacts of GILTI in the consolidated financial statements.

(l) Revenue Recognition

For further discussion related to revenue recognition of fees, such as transaction and clearing fees and liquidity payments, access and capacity fees, market data fees, and regulation transaction and Section 31 fees, see Note 4 ("Revenue Recognition").

Concentrations of Revenue and Liquidity Payments

For the years ended December 31, 2021, 2020, and 2019, no customer accounted for more than 13% of the Company's total revenue.

No customer is contractually or otherwise obligated to continue to use the Company's services. The loss of, or a significant reduction of, participation by these customers may have a material adverse effect on the Company's business, financial position, results of operations and cash flows. The two largest clearing members clear the majority of the market-maker sides of transactions at all of the Company's U.S. options exchanges. If either of these clearing members were to withdraw from the business of market-maker clearing and market-makers were unable to transfer to another clearing member, this could create significant disruption to the U.S. options markets, including Cboe's.

(m) Earnings Per Share

The computation of basic earnings per share is calculated by reducing net income for the period by dividends paid or declared and undistributed net income for the period that are allocated to participating securities to arrive at net income allocated to common stockholders. Net income allocated to common stockholders is divided by the weighted average number of common shares outstanding during the period to determine net income per share allocated to common stockholders.

The computation of diluted earnings per share is calculated by dividing net income allocated to common stockholders by the sum of the weighted average number of common shares outstanding plus all additional common shares that would have been outstanding if the potentially dilutive common shares had been issued. The dilutive effect is calculated using the more dilutive of the two-class or treasury stock method.

(n) Stock-Based Compensation

The Company grants stock-based compensation to its employees through awards of restricted stock units. Additionally, in connection with the acquisition of Bats, the Company inherited stock options and restricted stock awards that had been previously awarded by Bats. As all stock options were exercised in 2020, none were outstanding in 2021. The Company grants stock-based compensation to its employees through restricted stock units and grants restricted stock awards to its board members. The Company records stock-based compensation expense for all stock-based compensation granted based on the grant-date fair value. The Company recognizes stock-based compensation expense related to stock-based compensation awards with graded vesting that have a service condition on a straight-line basis over the requisite service period of the entire award.

The amount of stock-based compensation expense related to awards of restricted stock and restricted stock units is based on the fair value of Cboe Global Markets, Inc. common stock at the date of grant. The fair value is based on a current market-based transaction of the Company's common stock. If a market-based transaction of the Company's common stock is not available, then the fair value is based on an independent third-party valuation using equal weighting of two valuation analysis techniques, discounted cash flows and valuation multiples observed from publicly traded companies in a similar industry.

(o) Business Combinations

The Company records identifiable assets, liabilities and goodwill acquired in a business combination at fair value at the acquisition date. Additionally, transaction-related costs are expensed in the period incurred.

(p) Debt Issuance Costs

All costs incurred to issue debt are capitalized as a contra-liability and amortized over the life of the debt using the interest method.

(q) Investments

The Company generally accounts for investments using the measurement alternative when it owns less than 20% of the outstanding voting stock of a company, there is an absence of readily determinable fair value for the respective investment, and the Company has an inability to exercise significant influence over the investment based upon the respective ownership interests held. The Company recognizes dividend income when declared.

In general, the equity method of accounting is used when the Company owns 20% to 50% of the outstanding voting stock of a company and when it is able to exercise significant influence over the operating and financial policies of a company. For equity method investments, the Company records the pro-rata share of earnings or losses each period and records any dividends received as a reduction in the investment balance. The equity method investment is inclusive of other-than-temporary declines in value, recognized by the investee, who considers a variety of factors such as the earnings capacity of the investment and the fair value of the investment compared to its carrying value. If the estimated fair value of the investment is less than the carrying value and the decline in value is considered to be other than temporary, the excess of the carrying value over the estimated fair value is recognized in the financial statements as an impairment.

(r) Leases

The Company determines if an arrangement contains a lease at inception. For arrangements where the Company is the lessee, operating leases are included in operating lease right of use ("ROU") assets, accrued liabilities, and non-current operating lease liabilities on the balance sheet as of December 31, 2021. The Company does not have any finance leases as of December 31, 2021.

ROU assets and operating lease liabilities are recognized based on the present value of the future lease payments over the lease term at commencement date. ROU assets also include any initial direct costs incurred and any lease payments made at or before the lease commencement date, less lease incentives received. The Company uses its incremental borrowing rate based on the information available at the lease commencement date in determining the lease liabilities, as the rate implicit in the Company's leases are generally not reasonably determinable. Lease terms may include options to extend or terminate when the Company is reasonably certain that the option will be exercised. Lease expense is recognized on a straight-line basis over the lease term.

The Company also has lease arrangements with lease and non-lease components. The Company elected the practical expedient not to separate non-lease components from lease components for the Company's leases. The Company elected to apply the short-term lease measurement and recognition exemption in which ROU assets and lease liabilities are not recognized for short-term leases. For short-term operating leases, lease expense is recognized on a straight-line basis over the lease term.

Leases with an initial term of 12 months or less are not recorded on the consolidated balance sheet and the Company recognizes lease expense in facilities costs within the consolidated statements of income for these leases on a straight-line basis over the lease term. Certain leases include one or more options to renew, with renewal terms that can extend the lease term from one to five years or more, and some of which include the Company's option to terminate the leases within one year. When the implicit rate in the Company's lease is not reasonably determinable, the Company applies an incremental borrowing rate based on the information available at the lease commencement date in determining the present value of lease payments.

(s) Margin Deposits and Clearing Funds

Margin deposits and clearing funds in the form of cash contributions by EuroCCP's clearing participants where title has transferred to EuroCCP are included as current assets with equal and offsetting current liabilities in the consolidated balance sheet. These margin deposits and clearing funds are deposited with De Nederlandsche Bank ("DNB"), can only be used for specified EuroCCP operations, and fluctuate over time due to changes in deposit requirements. Certain non-cash margin deposits and clearing fund deposits, as well as interoperability fund deposits, are not reflected in the accompanying consolidated balance sheet, as EuroCCP does not take economic ownership of these balances. Cash held as margin deposits and clearing fund deposits may be invested at an approved bank in accordance with EuroCCP's investment policy, and any interest or gain received, or loss incurred on invested funds is recorded in other revenue in the consolidated statements of income.

3. RECENT ACCOUNTING PRONOUNCEMENTS

Recent Accounting Pronouncements – Adopted

In December 2019, the FASB issued Accounting Standards Update ("ASU") 2019-12, Income Taxes (Topic 740) – Simplifying the Accounting for Income Taxes. This ASU removed certain income tax exceptions and modifies existing guidance to simplify the accounting for income taxes. For public entities, the update was effective for fiscal years and interim period within those fiscal years, beginning after December 15, 2020. The Company adopted this ASU on January 1, 2021, which did not result in a material impact to the consolidated financial statements and disclosures.

Recent Accounting Pronouncements – Issued, not yet Adopted

There were no applicable material accounting pronouncements that have been issued but were not yet adopted as of December 31, 2021.

4. REVENUE RECOGNITION

The Company's main types of revenue contracts are:

- *Transaction and clearing fees* - Transaction fees represent fees charged by the Company for meeting the point-in-time performance obligation of executing a trade on its markets. These fees can be variable based on trade volume tiered discounts; however, as all tiered discounts are calculated monthly, the actual discount is recorded on a monthly basis. Transaction fees are recognized across all segments. Clearing fees, which include settlement fees, represent fees charged by the Company for meeting the point-in-time performance obligation for transactions cleared and settled by EuroCCP. Clearing fees can be variable based on trade volume tiered discounts; however, as all tiered discounts are calculated monthly, the actual discount is recorded on a monthly basis. Clearing fees are recognized in the Europe and Asia Pacific segment. Transaction and clearing fees, as well as any tiered volume discounts, are calculated and billed monthly in accordance with the Company's published fee schedules.

- *Access and capacity fees* - Access and capacity fees represent fees assessed for the opportunity to trade, including fees for trading-related functionality across all segments, terminal and other equipment rights, maintenance services, trading floor space and telecommunications services. Facilities, systems services and other fees are generally monthly fee-based. These fees are billed monthly in accordance with the Company's published fee schedules and recognized on a monthly basis when the performance obligations are met. All access and capacity fees associated with the trading floor are recognized over time in the Options segment, as the performance obligations are met.

- *Market data fees* - Market data fees represent the fees received by the Company from the U.S. tape plans and fees charged to customers for proprietary market data. Fees from the U.S. tape plans are collected monthly based on published fee schedules and distributed quarterly to the Exchanges based on a known formula. A contract for proprietary market data is entered into and charged on a monthly basis in accordance with the Company's published fee schedules as the service is provided. Both types of market data are satisfied over time, and revenue is recognized on a monthly basis as the customer receives and consumes the benefit as the Company provides the data to meet its performance obligation. U.S. tape plan market data is recognized in the North American Equities and Options segments. Proprietary market data fees are recognized across all segments.

- *Regulatory fees* - There are two types of regulatory fees that the Company recognizes. The first type represents fees collected by the Company to cover the Section 31 fees charged to the Exchanges by the SEC for meeting the point-in-time performance obligation of executing a trade on its markets. The fees charged to customers are based on the fee set by the SEC per notional value of U.S. Equities exchange transactions and per round turn of Options transactions executed on the Company's U.S. securities markets. These fees are calculated and billed monthly and are recognized in the North American Equities and Options segments. As the Exchanges are responsible for the ultimate payment to the SEC, the Exchanges are considered the principal in these transactions. Regulatory fees also include the options regulatory fee ("ORF") which supports the Company's regulatory oversight function in the Options segment, along with other miscellaneous regulatory fees, and neither can be used for non-regulatory purposes. The ORF and miscellaneous fees are recognized when the performance obligation is fulfilled.

- *Other revenue* - Other revenue primarily includes revenue from various licensing agreements, interest income from clearing operations, all fees related to the trade reporting facility operated in the Europe and Asia Pacific segment, listing fees, and revenue associated with advertisements through the Company's websites.

All revenue recognized in the consolidated statements of income is considered to be revenue from contracts with customers, with the exception of interest income from clearing operations. The following table depicts the disaggregation of revenue according to segment (in millions):

	Options	North American Equities	Europe and Asia Pacific	Futures	Global FX	Corporate Items and Eliminations	Total
Year Ended December 31, 2021							
Transaction and clearing fees	$ 1,231.2	$ 1,173.1	$ 145.3	$ 95.2	$ 48.3	$ —	$ 2,693.1
Access and capacity fees	124.0	98.0	31.2	18.7	8.8	—	280.7
Market data fees	84.3	134.6	25.6	6.6	1.0	—	252.1
Regulatory fees	46.6	161.6	—	0.1	—	—	208.3
Other revenue	18.9	3.2	38.2	—	—	0.3	60.6
	1,505.0	1,570.5	240.3	120.6	58.1	0.3	3,494.8
Timing of revenue recognition							
Services transferred at a point in time	$ 1,296.7	$ 1,337.9	$ 183.5	$ 95.3	$ 48.3	$ 0.3	$ 2,962.0
Services transferred over time	208.3	232.6	56.8	25.3	9.8	—	532.8
	1,505.0	1,570.5	240.3	120.6	58.1	0.3	3,494.8
Year Ended December 31, 2020							
Transaction and clearing fees	$ 1,046.3	$ 1,147.2	$ 90.9	$ 84.5	$ 49.1	$ —	$ 2,418.0
Access and capacity fees	107.0	84.2	20.6	17.0	7.9	—	236.7
Market data fees	74.2	137.0	13.4	6.6	0.8	—	232.0
Regulatory fees	83.4	416.8	—	—	—	—	500.2
Other revenue	19.2	4.3	15.6	1.1	—	—	40.2
	1,330.1	1,789.5	140.5	109.2	57.8	—	3,427.1
Timing of revenue recognition							
Services transferred at a point in time	$ 1,148.9	$ 1,568.3	$ 106.5	$ 85.6	$ 49.1	$ —	$ 2,958.4
Services transferred over time	181.2	221.2	34.0	23.6	8.7	—	468.7
	1,330.1	1,789.5	140.5	109.2	57.8	—	3,427.1
Year Ended December 31, 2019							
Transaction and clearing fees	$ 742.9	$ 744.6	$ 73.1	$ 110.2	$ 45.4	$ —	$ 1,716.2
Access and capacity fees	104.1	78.9	16.5	15.6	6.8	—	221.9
Market data fees	55.7	138.1	12.6	6.5	0.6	—	213.5
Regulatory fees	64.0	247.0	—	0.7	—	—	311.7
Other revenue	16.4	4.5	8.6	2.9	0.2	0.2	32.8
	983.1	1,213.1	110.8	135.9	53.0	0.2	2,496.1
Timing of revenue recognition							
Services transferred at a point in time	$ 823.3	$ 996.1	$ 81.7	$ 113.8	$ 45.6	$ 0.2	$ 2,060.7
Services transferred over time	159.8	217.0	29.1	22.1	7.4	—	435.4
	983.1	1,213.1	110.8	135.9	53.0	0.2	2,496.1

Contract liabilities as of December 31, 2021 primarily represent prepayments of transaction fees and certain access and capacity and market data fees to the Exchanges. The revenue recognized from contract liabilities and the remaining balance is shown below (in millions):

	Balance at January 1, 2021	Cash Additions	Revenue Recognized	Balance at December 31, 2021
Liquidity provider sliding scale (1)	$ —	$ 7.2	$ (7.2)	$ —
Other, net	10.2	17.6	(12.5)	15.3
Total deferred revenue	$ 10.2	$ 24.8	$ (19.7)	$ 15.3

(1) Liquidity providers are eligible to participate in the sliding scale program, which involves prepayment of transaction fees, and to receive reduced fees based on the achievement of certain volume thresholds within a calendar month. These transaction fees are amortized and recorded ratably as the transactions occur over the period.

5. ACQUISITIONS

On February 3, 2020, the Company purchased Hanweck Associates, LLC ("Hanweck") and the assets of FT Providers, LLC ("FT Options"). Hanweck and FT Options are both providers of risk analytics market data and included in the Company's Options segment. On June 1, 2020, the Company purchased the assets of Trade Alert, LLC ("Trade Alert"), a real-time alerts and order flow analysis service provider included in the Company's Options segment. On August 4, 2020, the Company completed the acquisition of MATCHNow, one of the largest equities ATSs in Canada, which is included in the Company's North American Equities segment. Of these acquisitions' aggregate purchase price, $100.7 million was allocated to goodwill, $59.0 million was allocated to intangible assets, and $2.2 million was allocated to working capital. In connection with these acquisitions, approximately $32.7 million in contingent consideration (in the aggregate) related to future financial performance of the acquired business or developmental milestones has been recorded in the Company's consolidated financial statements. These amounts represent the allocation of the purchase price. See below for further discussion of intangible assets acquired.

On July 1, 2020, the Company completed the acquisition of the remaining 80% interest in EuroCCP, a pan-European equities clearinghouse, which is included in the Company's Europe and Asia Pacific segment. Of the acquisition's purchase price of the remaining interest, $32.3 million was allocated to intangible assets and $56.0 million was allocated to working capital upon consolidation. Prior to signing the agreement to acquire the remaining 80% of EuroCCP, the Company agreed on the purchase price with the other shareholders, as they were looking to liquidate their investments in EuroCCP. That agreement gave way to a $32.6 million bargain purchase gain, which was included in other non-operating (expense) income, net in the consolidated statement of income. These amounts represent the allocation of the purchase price and are subject to revision during the remainder of the measurement period, a period not to exceed twelve months from the acquisition date. In connection with the acquisition, EuroCCP put in place a committed revolving credit facility of up to €1.5 billion, see Note 12 ("Debt") for more information. See below for further discussion of intangible assets acquired.

On December 31, 2020, the Company purchased BIDS Holdings ("BIDS"). BIDS Holdings owns BIDS Trading, LP, a registered broker-dealer and the operator of the BIDS ATS, the largest block-trading ATS by volume in the U.S. The ATS operated by BIDS is not a registered national securities exchange or a facility thereof. The acquisition of BIDS provided the Company with a foothold in the off-exchange segment of the U.S. equities market, which allowed the Company's presence in the North American Equities segment to expand. Of the acquisition's purchase price, $100.0 million was allocated to goodwill, $156.4 million was allocated to intangible assets, and $23.3 million was allocated to working capital. See below for further discussion of intangible assets acquired.

On July 1, 2021, the Company purchased Chi-X Asia Pacific. Chi-X Asia Pacific is a holding company of alternative market operators and providers of market solutions, which is included in the Company's Europe and Asia Pacific segment. The acquisition of Chi-X Asia Pacific provided the Company with a single point of entry into two key capital markets, Australia and Japan, to help enable it to expand its global equities and market data business into Asia Pacific, bring other products and services to the region, and further expand access to its proprietary product suite in the region. Of the acquisition's purchase price, $133.6 million was allocated to goodwill, $73.8 million was allocated to intangible assets, $25.7 million was allocated to working capital, and $49.6 million in contingent consideration, which is earned based on developmental milestones of the acquired business. These amounts represent the allocation of the purchase price and are subject to revision during the remainder of the measurement period, a period not to exceed twelve months from the acquisition date. See below for further discussion of intangible assets acquired.

The following table presents the details of intangible assets at the dates of acquisition (in millions, except as stated). All acquired intangible assets with finite lives are amortized using the straight-line method.

	Hanweck	Useful Life (Years)	FT Options	Useful Life (Years)	Trade Alert	Useful Life (Years)	EuroCCP	Useful Life (Years)	MATCHNow	Useful Life (Years)	BIDS	Useful Life (Years)	Chi-X Asia Pacific	Useful Life (Years)
Trading registrations and licenses	$ —		$ —		$ —		$ 28.1	Indefinite	$ 18.4	Indefinite	$ —		$ 6.2	Indefinite
Customer relationships	4.9	13	2.2	13	0.7	13	—		17.4	15	137.0	17	60.1	30
Technology	2.1	4	0.9	4	0.3	4	3.6	6	0.7	7	17.8	11	7.5	2
Trademarks and tradenames	7.0	10	3.2	10	1.0	10	0.6	10	0.2	2	1.6	10	—	
Total identifiable intangible assets	$ 14.0		$ 6.3		$ 2.0		$ 32.3		$ 36.7		$ 156.4		$ 73.8	

Acquisition-related costs relate to acquisitions and other strategic opportunities. The Company expensed $15.6 million of acquisition-related costs during the year ended December 31, 2021, which primarily included $15.0 million of professional fees and other expenses and $0.6 million of impairment charges related to investments. These acquisition-related expenses are included in acquisition-related costs in the consolidated statements of income.

The Company expensed $45.3 million of acquisition-related costs during the year ended December 31, 2020, which included $22.1 million of professional fees, $15.1 million of impairment charges related to investments, and other expenses and $8.1 million of impairment charges related to facilities. These acquisition-related expenses are included in acquisition-related costs in the consolidated statements of income.

The Company expensed $48.5 million of acquisition-related costs during the year ended December 31, 2019 that included $19.3 million of compensation-related costs, $10.5 million of impairment of goodwill charges, $6.1 million of impairment of facilities charges, $4.5 million loss on disposal of data processing software, $3.9 million of professional fees, $2.2 million of termination fees related to an assigned lease agreement, and $2.0 million of general and administrative expenses. These acquisition-related expenses are included in acquisition-related costs in the consolidated statements of income.

6. INVESTMENTS

As of December 31, 2021 and 2020, the Company's investments were comprised of the following (in millions):

	As of December 31,	
	2021	2020
Equity method investments:		
Investment in Signal Trading Systems, LLC	$ —	$ 2.0
Investment in 7Ridge Investments 3 LP	209.5	—
Total equity method investments	209.5	2.0
Other equity investments:		
Investment in Eris Exchange Holdings, LLC	20.0	20.0
Investment in American Financial Exchange, LLC	10.6	10.6
Investment in Cboe Vest Financial Group, Inc.	2.9	2.9
Investment in Eris Digital Holdings, LLC	1.1	0.8
Investment in OCC	0.3	0.3
Other equity investments	1.4	6.1
Total other equity investments	36.3	40.7
Total investments	$ 245.8	$ 42.7

Equity Method Investments

Equity method investments included investments in Signal Trading Systems, LLC (“Signal”), a 50% joint venture with FlexTrade System, Inc. (“FlexTrade”) to develop and market PULSe, a multi-asset front-end order entry system. In 2020, the Company commenced an initiative to migrate PULSe, and its related activity to Cboe Silexx, LLC, a wholly-owned subsidiary of the Company. PULSe was decommissioned as of December 31, 2020, and the joint venture with FlexTrade was wound down during the first quarter of 2021. The Company concluded that the remaining investment in Signal had no future economic value and the remaining balance was written off as of March 31, 2021. The loss related to the write-off was included within acquisition-related costs in the consolidated statements of income.

On October 31, 2021, the Company, through a wholly-owned subsidiary, became a limited partner of 7Ridge Investments 3 LP (“7Ridge Fund”) in connection with 7Ridge Fund’s planned acquisition of Trading Technologies International, Inc. (“Trading Technologies”). On December 13, 2021, the Company’s subsidiary provided its financial commitment to 7Ridge Fund, and on December 21, 2021, 7Ridge Fund completed the acquisition of Trading Technologies. Trading Technologies is a global provider of next-generation professional trading software, connectivity and data solutions. The Company is strategically aligned with Trading Technologies’ vision of delivering a leading trading, connectivity and data network to the global trading community.

The Company’s investment in the 7Ridge Fund, represents a nonconsolidated variable interest entity (“VIE”). The Company has determined that consolidation of the VIE is not required as the Company is not the primary beneficiary of the 7Ridge Fund, as it does not have controlling financial interest and lacks the ability to unilaterally remove the general partner, 7Ridge Investments 3 GP Limited, direct material strategic decisions, or dissolve the entity (i.e. the Company does not have unilateral substantive “kick-out” or “liquidation” rights).

The Company’s interest in the 7Ridge Fund investment is equal to the carrying value of the investment as of December 31, 2021, or $209.5 million, which is included in investments within the consolidated balance sheets. The Company’s maximum loss exposure, in the unlikely event that all of the VIE’s assets become worthless, is limited to the carrying value of Company’s investment.

Other Equity Investments

The carrying value of other equity investments is included in investments in the consolidated balance sheets. The Company accounts for these investments using the measurement alternative given the absence of readily determinable fair values for the respective investments and due to the Company’s inability to exercise significant influence over the investments based upon the respective ownership interests held. As of December 31, 2021, other equity investments primarily reflect a 20% investment in OCC and minority investments in Eris Exchange Holdings, LLC, American Financial Exchange, LLC, and Cboe Vest Financial Group, Inc.

In January 2016, the Company, through its subsidiary Cboe Vest, LLC (“Cboe Vest”), acquired a majority of the outstanding equity of Vest, an asset investment manager focused on Target Outcome Investment strategies. The purchase price consisted of $18.9 million in cash, reflecting payments of $14.9 million to former stockholders and $4.0 million to Vest for newly issued shares, and represented an ownership interest of 60% resulting in the consolidation of Vest operations. The remaining 40% noncontrolling interest was held by the remaining Vest stockholders. The remaining Vest stockholders had a put option that could have been exercised to Vest and Vest had a call option that could have been exercised to the remaining stockholders. The put and call options could have been exercised after five years though they could have been accelerated by certain employment-related actions. The combination of the noncontrolling interest and a redemption feature resulted in a redeemable noncontrolling interest, which was classified outside of permanent equity on the consolidated balance sheet. The Company’s ownership interest decreased in August 2019 which resulted in the deconsolidation of Vest operations and the elimination of the redeemable noncontrolling interest.

In May 2020, Eris Exchange Holdings, LLC completed a restructuring transaction to spin out Eris Digital Holdings, LLC into a stand-alone entity. The restructuring qualifies as an exchange of ownership interest, though it required no additional consideration exchanged to execute the exchange of units. The restructuring did not result in a change in number of units owned by the Company or a substantial change in the Company’s ownership interest percentage. No gain or loss is recognized as a result of the restructuring. As discussed below, on October 19, 2021, the Company entered into an agreement to acquire all of the outstanding equity interests of Eris Digital Holdings, LLC. However, Eris Exchange Holdings, LLC is not a part of this transaction and the Company retains its minority equity ownership interest in Eris Exchange Holdings, LLC.

In August 2020, the Company recorded within acquisition-related costs in the consolidated statements of income an impairment charge of $4.1 million on its investment in AFX based on management’s assessment of the fair value of the investment.

On September 21, 2021, CurveGlobal Limited (“CurveGlobal”), a minority investment of the Company included within other equity investments, announced plans to wind down the company in January 2022. The Company concluded that the remaining investment in CurveGlobal had no future economic value, and thus, wrote off the investment as of September 30, 2021. CurveGlobal ceased operations on January 28, 2022. The loss related to the write-off was included within other (expense) income, net in the consolidated statements of income.

As announced on October 20, 2021, the Company plans to acquire the remaining interest in Eris Digital Holdings, LLC. The closing of the transaction is subject to regulatory review and other customary closing conditions. As a result, the timing of the closing is uncertain, but the Company presently anticipates a closing in the first half of 2022. See Item 7 (“Management’s Discussion and Analysis of Financial Condition and Results of Operations”) for more information.

7. PROPERTY AND EQUIPMENT, NET

Property and equipment consisted of the following as of December 31, 2021 and 2020 (in millions):

	December 31, 2021	December 31, 2020
Construction in progress	$ 17.3	$ 2.0
Building	68.8	—
Furniture and equipment	256.5	227.1
Total property and equipment	342.6	229.1
Less accumulated depreciation	(237.4)	(146.5)
Property and equipment, net	$ 105.2	$ 82.6

Depreciation expense using the straight-line method was $33.5 million, $26.8 million and $24.5 million for the years ended December 31, 2021, 2020 and 2019, respectively.

As a result of the Merger, there was a reduction in employee workspace needed in Chicago, which led to the decision to market for sale the headquarters location. The Company classified the associated land, building, and certain furniture and equipment of the headquarters location as held for sale, performed an impairment assessment, and ceased depreciation effective May 1, 2019, as the Company anticipated selling the property held for sale in less than twelve months. As of December 31, 2021, the headquarters location remains on the market for sale and management's intent to sell the property is unchanged. However, due to the time elapsed since active marketing for sale of the building commenced, the Company has reclassified the property to held and used, effective May 1, 2021, and the building was once again subject to depreciation. The total value of the property classified as property held and used was $11.7 million, which includes $2.3 million of land and $9.4 million of property and equipment, net on the consolidated balance sheet as of December 31, 2021. As a result of the headquarters location's classification as held for sale during the second quarter of 2020, an impairment assessment was performed and an additional impairment charge of $8.1 million was recorded in acquisition related costs within the Options segment in the accompanying consolidated statements of income.

8. CREDIT LOSSES

Current expected credit losses are estimated for accounts receivable and certain notes receivable. The notes receivable included within other assets, net on the consolidated balance sheets primarily relate to the consolidated audit trail ("CAT"), which involves the creation of an audit trail that strives to enhance regulators' ability to monitor trading activity in the U.S. markets through a phased implementation. The funding of the CAT is ultimately expected to be provided by both self-regulatory organizations ("SROs") (which includes the Exchanges) and industry members; however, the funding to date has solely been provided by the SROs in exchange for promissory notes, which are expected to be repaid once fee filings and plan amendments associated with a funding model are approved by the SEC and such industry member fees are collected. Until those fees are collected, the SROs may continue to incur additional significant costs, including additional promissory notes to fund CAT operations. The allowance for notes receivable credit losses associated with the CAT are calculated using a probability of default methodology that is primarily based on various potential outcomes of the funding model proposals being discussed with the SEC. Accounts receivable represent amounts due from the Company's member firms. The allowance for accounts receivable credit losses is calculated using an aging schedule.

The following represents the changes in allowance for credit losses for the year ended December 31, 2021 (in millions):

	Balance at January 1, 2021	Current period provision for expected credit losses	Write-offs charged against the allowance	Recoveries collected	Balance at December 31, 2021
Allowance for notes receivable credit losses	$ 30.1	$ —	$ —	$ —	$ 30.1
Allowance for accounts receivable credit losses	0.6	0.7	(0.3)	—	1.0
Total allowance for credit losses	$ 30.7	$ 0.7	$ (0.3)	$ —	$ 31.1

9. OTHER ASSETS, NET

Other assets, net consisted of the following as of December 31, 2021 and 2020 (in millions):

	December 31, 2021	December 31, 2020
Software development work in progress	$ 5.6	$ 8.4
Data processing software	103.8	92.6
Less accumulated depreciation and amortization	(70.9)	(63.5)
Data processing software, net	38.5	37.5
Other assets (1)	87.3	38.8
Other assets, net	$ 125.8	$ 76.3

(1) At December 31, 2021 and December 31, 2020, the majority of the balance included long-term prepaid assets and notes receivable. See Note 8 ("Credit Losses") for more information on the notes receivable included within other assets, net on the consolidated balance sheets. As of December 31, 2021 and December 31, 2020, the notes receivable, net balance was $79.3 million and $32.6 million, respectively.

Amortization expense related to data processing software was $7.3 million, $6.9 million, and $13.5 million for the years ended December 31, 2021, 2020, and 2019, respectively.

10. GOODWILL AND INTANGIBLE ASSETS, NET

The following table presents the details of goodwill by segment (in millions):

	Options	North American Equities	Europe and Asia Pacific	Global FX	Total
Balance as of December 31, 2019	$ 239.4	$ 1,740.4	$ 435.1	$ 267.2	$ 2,682.1
Additions	66.4	134.8	—	—	201.2
Changes in foreign currency exchange rates	—	2.1	9.7	—	11.8
Balance as of December 31, 2020	$ 305.8	$ 1,877.3	$ 444.8	$ 267.2	$ 2,895.1
Adjustment	—	(0.5)	(0.4)	—	(0.9)
Additions	—	—	134.0	—	134.0
Changes in foreign currency exchange rates	—	0.1	(2.9)	—	(2.8)
Balance as of December 31, 2021	$ 305.8	$ 1,876.9	$ 575.5	$ 267.2	$ 3,025.4

Goodwill has been allocated to specific reporting units for purposes of impairment testing - Options, North American Equities, Europe and Asia Pacific and Global FX. No goodwill has been allocated to Futures. Goodwill impairment testing is performed annually in the fiscal fourth quarter or more frequently if conditions exist that indicate that the asset may be impaired.

The following table presents the details of the intangible assets (in millions):

	Options	North American Equities	Europe and Asia Pacific	Global FX	Total
Balance as of December 31, 2019	$ 166.6	$ 921.4	$ 363.7	$ 138.2	$ 1,589.9
Additions	22.3	193.1	32.3	—	247.7
Amortization	(15.5)	(61.0)	(23.4)	(24.9)	(124.8)
Changes in foreign currency exchange rates	—	2.0	14.2	—	16.2
Balance as of December 31, 2020	$ 173.4	$ 1,055.5	$ 386.8	$ 113.3	$ 1,729.0
Additions	—	—	73.8	—	73.8
Amortization	(14.3)	(64.4)	(26.3)	(21.6)	(126.6)
Changes in foreign currency exchange rates	—	0.3	(7.9)	—	(7.6)
Balance as of December 31, 2021	$ 159.1	$ 991.4	$ 426.4	$ 91.7	$ 1,668.6

For the years ended December 31, 2021, 2020 and 2019, amortization expense was $126.6 million, $124.8 million and $138.6 million, respectively. The estimated future amortization expense is $116.1 million for 2022, $103.0 million for 2023, $79.5 million for 2024, $68.9 million for 2025, and $61.5 million for 2026.

The following tables present the categories of intangible assets at December 31, 2021 and 2020 (in millions):

	December 31, 2021				Weighted Average Amortization Period (in years)
	Options	North American Equities	Europe and Asia Pacific	Global FX	
Trading registrations and licenses	$ 95.5	$ 592.0	$ 221.1	$ —	Indefinite
Customer relationships	46.6	378.3	232.3	140.0	17
Market data customer relationships	53.6	322.0	65.2	64.4	10
Technology	28.1	41.1	35.6	22.5	5
Trademarks and tradenames	12.9	7.8	2.5	1.2	8
Accumulated amortization	(77.6)	(349.8)	(130.3)	(136.4)	
	$ 159.1	$ 991.4	$ 426.4	$ 91.7	

	December 31, 2020				Weighted Average Amortization Period (in years)
	Options	North American Equities	Europe and Asia Pacific	Global FX	
Trading registrations and licenses	$ 95.5	$ 592.0	$ 219.3	$ —	Indefinite
Customer relationships	46.6	378.3	175.7	140.0	16
Market data customer relationships	53.6	322.0	65.9	64.4	11
Technology	28.1	41.1	28.6	22.5	5
Trademarks and tradenames	12.9	7.8	2.6	1.2	9
Accumulated amortization	(63.3)	(285.7)	(105.3)	(114.8)	
	$ 173.4	$ 1,055.5	$ 386.8	$ 113.3	

11. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Accounts payable and accrued liabilities consisted of the following as of December 31, 2021 and 2020 (in millions):

	December 31, 2021	December 31, 2020
Compensation and benefit-related liabilities	$ 68.4	$ 49.1
Termination benefits	0.2	0.5
Royalties	23.0	17.2
Accrued liabilities	73.3	55.5
Rebates payable	95.3	85.1
Marketing fee payable	15.7	14.1
Accounts payable	19.5	28.5
Total accounts payable and accrued liabilities	$ 295.4	$ 250.0

12. DEBT

The Company's debt consisted of the following as of December 31, 2021 and 2020 (in millions):

	December 31, 2021	December 31, 2020
Term Loan Agreement due December 2023, floating rate	$ 159.5	$ 68.7
$500 million fixed rate Senior Notes due December 2030, stated rate of 1.625%	493.3	489.3
$650 million fixed rate Senior Notes due January 2027, stated rate of 3.650%	646.5	645.9
Revolving Credit Agreement	—	—
EuroCCP Credit Facility	—	—
Total debt	$ 1,299.3	$ 1,203.9

As described below in further detail, on June 25, 2021, the Company further amended the Term Loan Agreement (as defined below) to extend the maturity date from December 15, 2021 to December 15, 2023 and to allow for an additional draw of $110 million, which the Company borrowed on June 25, 2021 in order to fund a portion of the acquisition of Chi-X Asia Pacific.

Term Loan Agreement

On March 22, 2018, the Company, as borrower, entered into a Term Loan Credit Agreement (the “Term Loan Agreement”) with Bank of America, N.A. (“Bank of America”), as administrative agent and initial lender, and the several banks and other financial institutions from time to time party thereto as lenders. Bank of America also acted as sole lead arranger and sole bookrunner with respect to the Term Loan Agreement. The Term Loan Agreement provided for a senior unsecured term loan facility in an aggregate principal amount of $300 million. The proceeds of the loan under the Term Loan Agreement were used to repay the $300 million of outstanding indebtedness under the prior term loan agreement entered into on December 15, 2016.

Loans under the Term Loan Agreement bear interest, at the Company’s option, at either (i) the London Interbank Offered Rate (“LIBOR”) periodically fixed for an interest period (as selected by the Company) of one, two, three or six months plus a margin (based on the Company’s public debt ratings) ranging from 1.00 percent per annum to 1.50 percent per annum or (ii) a daily floating rate based on the agent’s prime rate (subject to certain minimums based upon the federal funds effective rate or LIBOR) plus a margin (based on the Company’s public debt ratings) ranging from zero percent per annum to 0.50 percent per annum. The Company was required to pay an up-front fee of 0.05 percent to the agent for the entry into the Term Loan Agreement.

On May 29, 2020, the Company amended the Term Loan Agreement to, among other items, (i) permit liens on assets of the EuroCCP settlement and clearing business that secures indebtedness incurred in support of its settlement and clearing activities, and permit the Company’s subsidiaries to incur such indebtedness, provided that such amounts are repaid within 35 days; and (ii) provide that LIBOR, as used in the Term Loan Agreement, may be succeeded by one or more secured overnight financing rates (“SOFR”) published by the Federal Reserve Bank of New York or another alternate benchmark rate giving due consideration to any evolving or then-existing convention for similar agreements.

On June 25, 2021, the Company further amended the Term Loan Agreement to, among other items, (i) extend the maturity date from December 15, 2021 to December 15, 2023; (ii) allow for an additional draw of $110 million, which the Company borrowed on June 25, 2021 in order to fund a portion of the previously announced acquisition of Chi-X Asia Pacific; (iii) modify the applicable margin paid on the loans to 65 basis points regardless of the Company’s debt rating; (iv) add LIBOR replacement provisions, generally transitioning to a hardwired approach based on SOFR, with certain adjustments as further described in the amendment; (v) increase the amount of indebtedness certain subsidiaries may incur from the greater of $250 million and 35% consolidated EBITDA for four consecutive quarters to the greater of $350 million and 35% consolidated EBITDA for four consecutive quarters; (vi) allow the Company to increase the maximum permitted consolidated leverage ratio to 4.00 to 1.00 (from 3.50 to 1.00) for four consecutive fiscal quarters following certain acquisitions, provided this increase may be made only once; and (vii) modify certain other provisions to be consistent with the Company’s Revolving Credit Agreement (as defined below).

The Term Loan Agreement, which matures on December 15, 2023, contains customary representations, warranties and affirmative and negative covenants for facilities of its type, including financial covenants, events of default, including cross-defaults from the Company’s other indebtedness, and indemnification provisions in favor of the lenders thereunder. The negative covenants include restrictions regarding the incurrence of liens, the incurrence of indebtedness by the Company’s subsidiaries and fundamental changes, subject to certain exceptions in each case. The financial covenants require the Company to meet a quarterly financial test with respect to a minimum consolidated interest coverage ratio of not less than 4.00 to 1.00 and a maximum consolidated leverage ratio of not greater than 3.50 to 1.00. At December 31, 2021, the Company was in compliance with these covenants.

Senior Notes

On January 12, 2017, the Company entered into an indenture (the “Indenture”), by and between the Company and Wells Fargo Bank, National Association, as trustee, in connection with the issuance of $650 million aggregate principal amount of the Company’s 3.650% Senior Notes due 2027 (“3.650% Senior Notes”). The form and terms of the 3.650% Senior Notes were established pursuant to an Officer’s Certificate, dated as of January 12, 2017, supplementing the Indenture. The Company used a portion of the net proceeds from the 3.650% Senior Notes to fund, in part, the Merger, including the payment of related fees and expenses and the repayment of Bats’ existing indebtedness, and the remainder for general corporate purposes. The 3.650% Senior Notes mature on January 12, 2027 and bear interest at the rate of 3.650% per annum, payable semi-annually in arrears on January 12 and July 12 of each year, commencing July 12, 2017.

On December 15, 2020, the Company issued $500 million aggregate principal amount of 1.625% Senior Notes due 2030 ("1.625% Senior Notes" and, together with the 3.650% Senior Notes, the "Senior Notes"). The form and terms of the 1.625% Senior Notes were established pursuant to an Officer's Certificate, dated as of December 15, 2020, supplementing the Indenture. The Company used the net proceeds from the 1.625% Senior Notes to finance the acquisition of BIDS Trading, repay a portion of amounts outstanding under the term loan facility and all outstanding indebtedness under the revolving credit facility and the remainder for general corporate purposes, which may include the financing of future acquisitions or the repayment of other outstanding indebtedness. The 1.625% Senior Notes mature on December 15, 2030 and bear interest at the rate of 1.625% per annum, payable semi-annually in arrears on June 15 and December 15 of each year, commencing June 15, 2021.

The Senior Notes are unsecured obligations of the Company and rank equally with all of the Company's other existing and future unsecured, senior indebtedness, but are effectively junior to the Company's secured indebtedness, to the extent of the value of the assets securing such indebtedness, and will be structurally subordinated to the secured and unsecured indebtedness of the Company's subsidiaries.

The Company has the option to redeem some or all of the Senior Notes, at any time in whole or from time to time in part, at the redemption prices set forth in the applicable Officer's Certificate. The Company may also be required to offer to repurchase the Senior Notes upon the occurrence of a Change of Control Triggering Event (as such term is defined in the applicable Officer's Certificate) at a repurchase price equal to 101% of the aggregate principal amount of Senior Notes to be repurchased.

Indenture

Under the Indenture, the Company may issue debt securities, which includes the 3.650% Senior Notes and the 1.625% Senior Notes, at any time and from time to time, in one or more series without limitation on the aggregate principal amount. The Indenture governing the 3.650% Senior Notes and the 1.625% Senior Notes contains customary restrictions, including a limitation that restricts the Company's ability and the ability of certain of the Company's subsidiaries to create or incur secured debt. Such Indenture also limits certain sale and leaseback transactions and contains customary events of default. At December 31, 2021, the Company was in compliance with these covenants.

Revolving Credit Agreement

On December 21, 2020, the Company, as borrower, entered into an Amended and Restated Credit Agreement (the "Revolving Credit Agreement"), which amended and restated the prior revolving credit agreement, with Bank of America, N.A., as administrative agent and as swing line lender, certain lenders named therein (the "Revolving Lenders"), BOFA Securities, Inc., as sole lead arranger and sole bookrunner and certain syndication agents named therein ("Syndication Agents").

The Revolving Credit Agreement provides for a senior unsecured $250 million three-year revolving credit facility (the "Revolving Credit Facility") that includes a $25 million swing line sub-facility. The Company may also, subject to the agreement of the applicable lenders, increase the commitments under the Revolving Credit Facility by up to $100 million, for a total of $350 million. Subject to specified conditions, the Company may designate one or more of its subsidiaries as additional borrowers under the Revolving Credit Agreement provided that the Company guarantees all borrowings and other obligations of any such subsidiaries under the Revolving Credit Agreement. As of December 31, 2021, no subsidiaries were designated as additional borrowers.

Funds borrowed under the Revolving Credit Agreement may be used to fund working capital and for other general corporate purposes, including the making of any acquisitions the Company may pursue in the ordinary course of its business. As of December 31, 2021, no borrowings were outstanding under the Revolving Credit Agreement. Accordingly, at December 31, 2021, $250 million of borrowing capacity was available for the purposes permitted by the Revolving Credit Agreement.

Loans under the Revolving Credit Agreement will bear interest, at the Company's option, at either (i) LIBOR plus a margin (based on the Company's public debt ratings) ranging from 0.875 percent per annum to 1.50 percent per annum or (ii) a daily floating rate based on the agent's prime rate (subject to certain minimums based upon the federal funds effective rate or LIBOR) plus a margin (based on the Company's public debt ratings) ranging from zero percent per annum to 0.50 percent per annum. The Revolving Credit Agreement includes a mechanism to replace LIBOR with an alternate benchmark rate that includes the forward-looking term rate for any interest period that is based on the SOFR published by the Federal Reserve Bank of New York, as may be adjusted pursuant to the terms of the Revolving Credit Agreement.

Subject to certain conditions stated in the Revolving Credit Agreement, the Company and any subsidiaries designated as additional borrowers may borrow, prepay and reborrow amounts under the Revolving Credit Facility at any time during the term of the Revolving Credit Agreement. The Revolving Credit Agreement will terminate and all amounts owing thereunder will be due and payable on December 21, 2023, unless the commitments are terminated earlier, either at the request of the Company or, if an event of default occurs, by the Revolving Lenders (or automatically in the case of certain bankruptcy-related events). The Revolving Credit Agreement contains customary representations, warranties and affirmative and negative covenants for facilities of its type, including financial covenants, events of default and indemnification provisions in favor of the Revolving Lenders. The negative covenants include restrictions regarding the incurrence of liens, the incurrence of indebtedness by the Company’s subsidiaries and fundamental changes, subject to certain exceptions in each case. The financial covenants require the Company to meet a quarterly financial test with respect to a minimum consolidated interest coverage ratio of not less than 4.00 to 1.00 and a maximum consolidated leverage ratio of not greater than 3.50 to 1.00; provided that the consolidated leverage ratio may, subject to certain triggering events set forth in the Revolving Credit Agreement, be increased to 4.00 to 1.00 for four consecutive fiscal quarters. At December 31, 2021, the Company was in compliance with these covenants.

EuroCCP Credit Facility

On July 1, 2020, EuroCCP, as borrower, the Company, as guarantor, entered into a Facility Agreement (the “Facility” or “EuroCCP Credit Facility”) with Bank of America Merrill Lynch International Designated Activity Company, as co-ordinator, facility agent, lender, sole lead arranger and sole bookrunner, Citibank N.A., as security agent, and certain other lenders named therein.

The Facility provides for a €1.5 billion committed syndicated multicurrency revolving and swingline credit facility (i) that is available to be drawn by EuroCCP (as borrower) towards (a) financing unsettled amounts in connection with the settlement of transactions in securities and other items processed through EuroCCP’s clearing system and (b) financing any other liability or liquidity requirement of EuroCCP incurred in the operation of its clearing system and (ii) under which the scheduled interest and fees on borrowings (but not the principal amount of any borrowings) are guaranteed by the Company. Subject to certain conditions, EuroCCP is able to increase the commitments under the Facility by up to €500 million, to a total of €2.0 billion.

Borrowings under the Facility are secured by cash, eligible government bonds and eligible equity assets deposited by EuroCCP into secured accounts. In addition, EuroCCP must ensure that at all times the aggregate of (a) each clearing participant’s contribution to the relevant clearing fund, (b) each clearing participant’s margin amount and (c) any cash equities purchased using the proceeds of the assets described in (a) and (b), less the amount of any such clearing participant contribution, margin amount or cash equities which have been transferred to (or secured in favor of) any provider of settlement or custody services to EuroCCP, is not less than €500 million. As of December 31, 2021, no borrowings were outstanding under the Facility. Accordingly, at December 31, 2021, €1.5 billion of borrowing capacity was available for the purposes permitted by the Facility.

Borrowings under the Facility’s revolving loans and non-U.S. dollar swingline loans bear interest at the relevant floating base rate plus a margin of 1.75 percent per annum and (subject to certain conditions) borrowings under the Facility’s U.S. dollar swingline loans bear interest as the higher of the relevant agent’s prime commercial lending rate for U.S. dollars and 0.5 percent per annum over the federal funds effective rate. A commitment fee of 0.30 percent per annum is payable on the unused and uncalled amount of the Facility during the availability period.

Subject to certain conditions stated in the Facility, EuroCCP may borrow, prepay and reborrow amounts under the Facility at any time during the term of the Facility. The Facility will terminate and all amounts owing thereunder will be due and payable on 364 days from the date of the agreement, unless the commitments are terminated earlier, either at the request of EuroCCP or, if an event of default occurs, by the Lenders (or automatically in the case of certain bankruptcy-related events).

The Facility contains customary representations, warranties and covenants for facilities of its type, including events of default of the Company and EuroCCP and indemnification provisions in favor of the Lenders. In particular, the covenants include restrictions regarding the incurrence of liens by EuroCCP and its subsidiaries, and an event of default will be triggered if EuroCCP ceases its business, subject to certain exceptions in each case. There is also a requirement for the net worth of (a) the Company to be no less than $1.75 billion on the date of each drawdown and delivery of compliance certificates and (b) EuroCCP to be the higher of €24 million and any such amount required for EuroCCP to meet minimum liquidity regulations under applicable regulation at all times. At December 31, 2021, the Company and EuroCCP were in compliance with these covenants.

On July 1, 2021, the Facility was amended and restated to, among other items: (i) extend the term of the Facility until June 30, 2022; (ii) update benchmark rates for U.S. dollar swingline loans and alternative term rates for revolving loans; (iii) remove references to LIBOR and clarified procedures to calculate interest rates; (iv) reduce the minimum tangible net worth requirement from €24 million to €20 million; (v) include a new tranche in the revolving and swingline facilities to increase access to certain currencies; (vi) update the borrowing base calculations to more accurately reflect the collateral held by EuroCCP; and (vii) modify certain other provisions to incorporate updates in applicable laws and regulations.

Loan and Notes Payments and Contractual Interest

The future expected loan repayments related to the Term Loan Agreement and the Senior Notes as of December 31, 2021 are as follows (in millions):

2022	$ —
2023	160.0
2024	—
2025	—
Thereafter	1,150.0
Principal amounts repayable	1,310.0
Debt issuance costs	(5.1)
Unamortized discounts on notes	(5.6)
Total debt outstanding	$ 1,299.3

Interest expense recognized on the Term Loan Agreement, the Senior Notes, and the Revolving Credit Agreement is included in interest expense, net in the consolidated statements of income. The Company is also obligated to pay commitment fees under the terms of the Facility and Revolving Credit Agreement which are also included in interest expense, net. Interest expense, net recognized in the consolidated statements of income for the years ended December 31, 2021, 2020 and 2019 are as follows (in millions):

	Year Ended December 31, 2021	Year Ended December 31, 2020	Year Ended December 31, 2019
Components of interest expense:			
Contractual interest	$ 45.7	$ 35.3	$ 35.6
Amortization of debt discount and issuance costs	2.3	3.4	2.2
Interest expense	$ 48.0	$ 38.7	$ 37.8
Interest income	(0.6)	(1.1)	(1.9)
Interest expense, net	$ 47.4	$ 37.6	$ 35.9

13. ACCUMULATED OTHER COMPREHENSIVE INCOME, NET

The following represents the changes in accumulated other comprehensive income, net by component (in millions):

	Foreign Currency Translation Adjustment	Unrealized Investment Gain/Loss	Post-Retirement Benefits	Total Accumulated Other Comprehensive Income, Net
Balance at December 31, 2019	$ 38.2	$ 0.2	$ (0.8)	$ 37.6
Other comprehensive income (loss)	36.5	(0.3)	1.2	37.4
Balance at December 31, 2020	$ 74.7	$ (0.1)	$ 0.4	$ 75.0
Other comprehensive loss	(19.3)	—	(0.1)	(19.4)
Balance at December 31, 2021	$ 55.4	$ (0.1)	$ 0.3	$ 55.6

14. CLEARING OPERATIONS

EuroCCP is a European equities central counterparty that provides post-trade services to stock exchanges, MTFs over-the-counter (“OTC”) equities trades, and an equity index derivatives exchange. EuroCCP clears equities from eighteen European markets and the United States, as well as Depositary Receipts, ETFs, and exchange traded currencies (“ETCs”). In September, 2021 EuroCCP began clearing equity index derivatives for six European markets. Through a novation process, EuroCCP becomes the buyer for every seller and the seller for every buyer, thereby protecting clearing participants from counterparty risk and allowing the settlement of trades in the event of a clearing participant default.

EuroCCP only assumes the guarantor role if it has an equal and offsetting claim against a clearing participant. For the period ended December 31, 2021, there have been no events of default for which a liability is required to be recognized in accordance with GAAP.

Clearing Participant Deposits

EuroCCP generally requires all clearing participants to deposit collateral to help mitigate EuroCCP’s exposure to credit risk in the event that a clearing participant fails to meet a financial or contractual obligation.

Margin Deposits

Margin deposits, which are predominately in the form of cash and cash equivalents, are deposits made by each clearing participant to EuroCCP to cover some or all of the credit risk of its failure to fulfill its obligations in the trade. EuroCCP maintains and manages all cash deposits related to margin deposits. Substantially all risks and rewards of margin deposit ownership, including net interest income, belong to EuroCCP and are recorded in other revenue on the consolidated statements of income. In the event of a default, EuroCCP can access the defaulting participant’s margin deposits to cover the defaulting participant’s losses. For more information, see “Default and Liquidity Waterfalls” below.

Clearing Funds

The clearing fund mutualizes the risk of default among all clearing participants. Depending on their membership, clearing participants contribute to the cash-equity and/or derivatives segment of the clearing fund. Although the entire clearing fund is available to cover potential losses in the event that the margin deposits and the clearing fund deposits of a defaulting clearing participant are inadequate to fulfill that clearing participant’s outstanding financial obligations, the clearing fund first uses the product class segment of the Clearing Fund in which the defaulting participants was active (see Default and Liquidity Waterfalls below). In the event of a default, EuroCCP is generally required to liquidate the defaulting clearing participant’s open positions. To the extent that the positions remain open, EuroCCP is required to assume the defaulting clearing participant’s obligations related to the open positions. Clearing participants are required to make contributions to the clearing fund that are proportional to their risk exposure in the form of cash or non-cash contributions, which generally consist of highly liquid securities.

Interoperability Fund

For the cash equity business line, EuroCCP has entered into interoperable arrangements with two other central counterparties (“CCPs”). Under these arrangements, margin is paid to, and received from, the other CCPs. The interoperability fund consists of collateral pledged by EuroCCP to the other interoperable CCPs, to cover margin calls EuroCCP received from other interoperable CCPs. For EuroCCP, the collateral pledged by the clearing participants is maintained in an interoperability fund designated account. EuroCCP does not have any economic interest or ownership in the collateral; therefore, these balances are not included in the consolidated balance sheet.

The following tables present the Company's total clearing participant deposits as of December 31, 2021 and December 31, 2020 (in millions):

	December 31, 2021		
	Cash Contributions	Non-Cash Contributions (1)	Total Contributions
Margin deposits	$ 600.0	$ 287.0	$ 887.0
Clearing funds	145.9	41.9	187.8
Interoperability funds (1)	423.3	92.6	515.9
Total	$ 1,169.2	$ 421.5	$ 1,590.7

	December 31, 2020		
	Cash Contributions	Non-Cash Contributions (1)	Total Contributions
Margin deposits	$ 319.5	$ 401.0	$ 720.5
Clearing funds	492.6	69.7	562.3
Interoperability funds (1)	378.5	175.2	553.7
Total	$ 1,190.6	$ 645.9	$ 1,836.5

(1) These amounts are not reflected in the consolidated balance sheet, as EuroCCP does not take economic ownership of these balances.

Default and Liquidity Waterfalls

The default waterfall is the priority order in which the capital resources are expected to be utilized in the event of a default where the defaulting clearing participant's collateral would not be sufficient to cover the cost to liquidate its portfolio. If a default occurs and the defaulting clearing participant's collateral, including margin deposits and clearing fund deposits, are depleted, then additional capital is utilized in the following order:

- EuroCCP dedicated own resources: The EuroCCP default waterfall first utilizes its own dedicated resources ahead of clearing fund contributions of non-defaulting clearing participants, up to 25% of EuroCCP capital requirements discussed in Note 18 ("Regulatory Capital").
- Clearing fund: Second, the EuroCCP default waterfall utilizes traditional CCP risk mutualization, in the event that default losses fully exhaust EuroCCP's dedicated own resources amount, whereby contributions applicable to a particular product class are applied first to any loss attributable to that product class.
- Pro rata contributions: Third, if the default losses caused cannot be covered by the first two layers, the non-defaulting clearing participants shall on demand make additional payments to EuroCCP on a pro rata basis in proportion to the amount of their clearing fund contributions to cover any such remaining losses, which is limited to an amount equal to twice their clearing fund contribution as established under EuroCCP's rules and regulations. In this scenario, contributions applicable to a particular product class are first applied to any losses attributable to that product class.

In addition to the default waterfall, the liquidity waterfall is the priority order in which the liquidity resources are expected to be utilized for EuroCCP's ordinary course business operations and in situations when additional liquidity resources and liquidity measures may be activated in case of a potential liquidity shortfall. Liquidity, intraday or overnight, is mainly required for securities settlement. In ordinary course business circumstances, liquidity resources include the collateral directly deposited with EuroCCP, FX swap arrangements, and reverse repurchase agreements, as well as the use of the Facility.

15. FAIR VALUE MEASUREMENT

Fair value is the price that would be received upon the sale of an asset or paid upon the transfer of a liability in an orderly transaction between market participants at the measurement date and in the principal or most advantageous market for that asset or liability. The fair value should be calculated based on assumptions that market participants would use in pricing the asset or liability, not on assumptions specific to the entity. In addition, the fair value of liabilities should include consideration of non-performance risk, including the Company's own credit risk.

The Company applied ASC 820— *Fair Value Measurement*, which provides guidance for using fair value to measure assets and liabilities by defining fair value and establishing the framework for measuring fair value. ASC 820 applies to financial and nonfinancial instruments that are measured and reported on a fair value basis. The three-level hierarchy of fair value measurements is based on whether the inputs to those measurements are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the

Company's market assumptions. The fair value hierarchy requires the use of observable market data when available and consists of the following levels:

- Level 1—Unadjusted inputs based on quoted markets for identical assets or liabilities.
- Level 2—Observable inputs, either direct or indirect, not including Level 1 measurements, corroborated by market data or based upon quoted prices in non-active markets.
- Level 3—Unobservable inputs that reflect management's best assumptions of what market participants would use in valuing the asset or liability.

The Company has included a tabular disclosure for financial assets and liabilities that are measured at fair value on a recurring basis in the consolidated balance sheets as of December 31, 2021 and 2020, respectively.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following tables present the Company's fair value hierarchy for those assets and liabilities measured at fair value on a recurring basis as of December 31, 2021 and 2020 (in millions):

	December 31, 2021			
	Total	Level 1	Level 2	Level 3
Assets:				
U.S. Treasury securities	$ 9.1	$ 9.1	$ —	$ —
Marketable securities:				
Mutual funds	18.4	18.4	—	—
Money market funds	9.6	9.6	—	—
Total Assets	$ 37.1	$ 37.1	$ —	$ —
Liabilities:				
Contingent consideration liabilities	$ 70.5	$ —	$ —	$ 70.5
Total Liabilities	$ 70.5	$ —	$ —	$ 70.5

	December 31, 2020			
	Total	Level 1	Level 2	Level 3
Assets:				
U.S. Treasury securities	$ 67.9	$ 67.9	$ —	$ —
Marketable securities:				
Mutual funds	15.9	15.9	—	—
Money market funds	8.6	8.6	—	—
Total Assets	$ 92.4	$ 92.4	$ —	$ —
Liabilities:				
Contingent consideration liabilities	$ 32.7	$ —	$ —	$ 32.7
Total Liabilities	$ 32.7	$ —	$ —	$ 32.7

The following is a description of the Company's valuation methodologies used for instruments measured at fair value on a recurring basis:

Financial Investments

Financial investments consist of highly liquid U.S. Treasury securities and marketable securities held in a trust for the Company's non-qualified retirement and benefit plans, also referred to as deferred compensation plan assets. The deferred compensation plan assets have an equal and offsetting deferred compensation plan liability based on the value of the deferred compensation plan assets. These securities are valued by obtaining feeds from a number of live data sources, including active market makers and inter-dealer brokers and therefore categorized as Level 1. No material adjustments were made to the carrying value of financial investments for the period ended December 31, 2021. See Note 17 ("Employee Benefit Plans") for more information.

Contingent Consideration Liabilities

In connection with the acquisitions of Hanweck, MATCHNow, and Chi-X Asia Pacific, as well as the acquisition of assets of FT Options and Trade Alert, the Company entered into contingent consideration arrangements with the former owners. The total fair value of the liabilities at December 31, 2021 was $70.5 million. That value is based on the Company's estimate of the likelihood that certain performance targets in the respective acquisition agreements are expected to be accomplished. In connection with the contingent consideration arrangements, the Company paid a total of $9.1 million in contingent consideration to Hanweck, FT Options, Trade Alert and Chi-X Asia Pacific in 2021. Because the fair value measurements relating to the contingent consideration liabilities are subject to management judgment, measurement uncertainty is inherent in the valuation of the contingent consideration liabilities as of the reporting date. Based on the recorded balance of the liabilities, any measurement uncertainty related to this Level 3 measurement is immaterial as of December 31, 2021.

Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

Certain assets, such as goodwill and intangible assets, are measured at fair value on a non-recurring basis. For goodwill, the process involves using a market approach and income approach (using discounted estimated cash flows) to determine the fair value of each reporting unit on a stand-alone basis. That fair value is compared to the carrying value of the reporting unit, including its recorded goodwill. In connection with the annual impairment evaluation of goodwill and indefinite life intangibles, impairment is considered to have occurred if the fair value of the reporting unit is lower than the carrying value of the reporting unit. For the intangible assets, the process also involves using a discounted cash flow method to determine the fair value of each intangible asset. Impairment is considered to have occurred if the fair value of the intangible asset is lower than its carrying value. These measurements are considered Level 3 and these assets are recognized at fair value if they are deemed to be impaired.

Equity investments without readily determinable fair values that are valued using the measurement alternative are measured at fair value on a non-recurring basis. See Note 6 ("Investments") for more information. During the year ended December 31, 2021, no observable transactions or impairments materially impacted the measurements of the investments accounted for as other equity investments.

Fair Value of Assets and Liabilities

The following table presents the Company's fair value hierarchy for certain assets and liabilities held by the Company, with the exception of debt which is presented at its carrying value, as of December 31, 2021 and 2020 (in millions):

	December 31, 2021			
	Total	Level 1	Level 2	Level 3
Assets:				
U.S. Treasury securities	$ 9.1	$ 9.1	$ —	$ —
Deferred compensation plan assets	28.0	28.0	—	—
Total assets	$ 37.1	$ 37.1	$ —	$ —
Liabilities:				
Contingent consideration liabilities	$ 70.5	$ —	$ —	$ 70.5
Deferred compensation plan liabilities	28.0	28.0	—	—
Debt	1,299.3	—	1,299.3	—
Total liabilities	$ 1,397.8	$ 28.0	$ 1,299.3	$ 70.5

	December 31, 2020			
	Total	Level 1	Level 2	Level 3
Assets:				
U.S. Treasury securities	$ 67.9	$ 67.9	$ —	$ —
Deferred compensation plan assets	24.5	24.5	—	—
Total assets	$ 92.4	$ 92.4	$ —	$ —
Liabilities:				
Contingent consideration liabilities	$ 32.7	$ —	$ —	$ 32.7
Deferred compensation plan liabilities	24.5	24.5	—	—
Debt	1,319.1	—	1,319.1	—
Total liabilities	$ 1,376.3	$ 24.5	$ 1,319.1	$ 32.7

Certain financial assets and liabilities, including cash and cash equivalents, accounts receivable, income tax receivable, accounts payable and Section 31 fees payable, are not measured at fair value on a recurring basis, but the carrying values approximate fair value due to their liquid or short-term nature.

Debt

The debt balance consists of fixed rate, Senior Notes and a floating rate, Term Loan Agreement. The fair values of the Senior Notes are classified as Level 2 under the fair value hierarchy and are estimated using prevailing market quotes. The fair value of the Term Loan Agreement was determined by utilizing a discounted cash flow analysis and is considered a Level 2 measurement.

The fair values of the Company's debt obligations for 2021 and 2020 were as follows (in millions):

	Fair Value	
	December 31, 2021	December 31, 2020
Term Loan Agreement	$ 160.1	$ 70.0
3.650% Senior Notes	702.6	744.0
1.625% Senior Notes	470.9	505.1

Information on Level 3 Financial Liabilities

The following table sets forth a summary of changes in the fair value of the Company's Level 3 financial liabilities during the year ended December 31, 2021 and 2020 (in millions):

	Level 3 Financial Liabilities for the Year Ended December 31, 2021					
	Balance at Beginning of Period	Realized (gains) losses during period	Additions	Settlements	Foreign Currency Translation	Balance at End of Period
Liabilities						
Contingent consideration liabilities	$ 32.7	$ (2.7)	$ 49.6	$ (9.1)	$ —	$ 70.5
Total Liabilities	$ 32.7	$ (2.7)	$ 49.6	$ (9.1)	$ —	$ 70.5

	Level 3 Financial Liabilities for the Year Ended December 31, 2020					
	Balance at Beginning of Period	Realized (gains) losses during period	Additions	Settlements	Foreign Currency Translation	Balances at End of Period
Liabilities						
Contingent consideration liabilities	$ 2.2	$ —	$ 32.7	$ (2.2)	$ —	$ 32.7
Total Liabilities	$ 2.2	$ —	$ 32.7	$ (2.2)	$ —	$ 32.7

16. SEGMENT REPORTING

The Company reports five business segments: Options, North American Equities, Europe and Asia Pacific, Futures, and Global FX, which is reflective of how the Company's chief operating decision-maker reviews and operates the business, as discussed in Note 1 ("Nature of Operations"). Segment performance is primarily evaluated based on operating income (loss). The Company's chief operating decision-maker does not use segment-level assets or income and expenses below operating income (loss) as key performance metrics; therefore, such information is not presented below. The Company has aggregated all of its corporate costs, as well as other business ventures, within the Corporate Items and Eliminations totals based on the decision that those activities should not be used to evaluate the operating performance of the segments; however, operating expenses that relate to activities of a specific segment have been allocated to that segment.

Options. The Options segment includes options on market indices ("index options"), as well as on the stocks of individual corporations ("equity options"), and options on ETPs, such as exchange-traded funds ("ETFs") and exchange-traded notes ("ETNs"), which are "multi-listed" options and listed on a non-exclusive basis. These options are eligible to trade on Cboe Options, C2, BZX, EDGX, and other U.S. national security exchanges. Cboe Options is the Company's primary options market and offers trading in listed options through a single system that integrates electronic trading and traditional open outcry trading on the Cboe Options trading floor in Chicago. C2 Options, BZX Options, and EDGX Options are all-electronic options exchanges, and typically operate with different market models and fee structures than Cboe Options. The Options segment also includes applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary options market data, index licensing, and access and capacity services.

North American Equities. The North American Equities segment includes listed U.S. equities and ETP transaction services that occur on fully electronic exchanges owned and operated by BZX, BYX, EDGX, and EDGA, equities transactions that occur on the BIDS Trading platform, and Canadian equities and other transaction services that occur on or through the MATCHNow ATS. The North American Equities segment also includes ETP listings on BZX, the Cboe Global Markets, Inc. common stock listing, applicable market data revenue generated from the consolidated tape plans, the licensing of proprietary equities market data, routing services, and access and capacity services.

Europe and Asia Pacific. The Europe and Asia Pacific segment includes the pan-European listed equities and derivatives transaction services, ETPs, exchange-traded commodities, and international depository receipts that are hosted on MTFs operated by Cboe Europe Equities (Cboe Europe and Cboe NL) and Cboe Europe Derivatives ("CEDX"). It also includes the ETP listings business on RMs and clearing activities of EuroCCP, as well as the equities transaction services of Cboe Australia and Cboe Japan, each operators of trading venues in Australia and Japan. This segment was previously referred to as the European Equities segment but was updated to the Europe segment in the first quarter of 2021 as a result of the launch of Cboe Europe Derivatives, a pan-European derivatives platform in September 2021. The segment was subsequently updated to Europe and Asia Pacific to reflect the acquisition of Chi-X Asia Pacific in July 2021. Cboe Europe operates lit and dark books, a periodic auctions book, and a Large-in-Scale ("LIS") trading negotiation facility for UK symbols. Cboe NL, launched in October 2019 and based in Amsterdam, operates similar business functionality to that offered by Cboe Europe, and provides for trading only in European Economic Area ("EEA") symbols. The new Cboe Europe Derivatives venue offers futures and options based on Cboe Europe equity indices. This segment also includes Cboe Europe, Cboe NL, CEDX, Cboe Australia and Cboe Japan revenue generated from the licensing of proprietary market data and from access and capacity services.

Futures. The Futures segment includes transaction services provided by the Company's fully electronic futures exchange, CFE, which includes offerings for trading of VIX futures and other futures products, the licensing of proprietary market data, as well as access and capacity services.

Global FX. The Global FX segment includes institutional FX trading services that occur on the Cboe FX fully electronic trading platform, non-deliverable forward FX transactions ("NDFs") offered for execution on Cboe SEF and Cboe Swiss, as well as revenue generated from the licensing of proprietary market data and from access and capacity services.

Summarized financial data of reportable segments was as follows (in millions):

	Options	North American Equities	Europe and Asia Pacific	Futures	Global FX	Corporate Items and Eliminations	Total
Year ended December 31, 2021							
Revenues	$ 1,505.0	$ 1,570.5	$ 240.3	$ 120.6	$ 58.1	$ 0.3	$ 3,494.8
Operating income (loss)	538.0	156.1	56.0	66.0	2.7	(12.9)	805.9
Year ended December 31, 2020							
Revenues	$ 1,330.1	$ 1,789.5	$ 140.5	$ 109.2	$ 57.8	$ —	$ 3,427.1
Operating income (loss)	430.4	159.5	33.5	53.8	6.0	(21.0)	662.2
Year ended December 31, 2019							
Revenues	$ 983.1	$ 1,213.1	$ 110.8	$ 135.9	$ 53.0	$ 0.2	$ 2,496.1
Operating income (loss)	334.3	132.5	20.3	83.1	(4.9)	(28.1)	537.2

17. EMPLOYEE BENEFIT PLANS

Eligible U.S. employees, which includes BIDS U.S. employees as of January 1, 2021, are eligible to participate in the Cboe Options SMART Plan ("SMART Plan"). The SMART Plan is a defined contribution plan, which is qualified under Internal Revenue Code Section 401(k). In addition, eligible employees may participate in the Supplemental Employee Retirement Plan, Executive Retirement Plan and Deferred Compensation Plan. Effective January 1, 2017, the Executive Retirement Plan is closed to new executive officers and employees. Each plan is a defined contribution plan that is non-qualified under the Internal Revenue Code. The Deferred Compensation Plan assets, held in a trust, are subject to the claims of general creditors of the Company and totaled $28.0 million at December 31, 2021. Although the value of the plans are recorded in financial investments on the consolidated balance sheets, there are equal and offsetting liabilities in other non-current liabilities. The investment results of these plans have no impact on net income as the investment results are recorded in equal amounts to both other expense, net and compensation and benefits expense in the consolidated statements of income. The Company contributed $11.8 million, $10.5 million, and $11.3 million to the defined contribution plans for the years ended December 31, 2021, 2020, and 2019, respectively.

Eligible employees outside of the U.S., which includes employees of Cboe Europe, EuroCCP, MATCHNow, BIDS, and Chi-X Asia Pacific are eligible to participate in various employee-selected stakeholder contribution plans or plans covered by local jurisdictions or by applicable laws. The Company's contribution amounted to $2.3 million, $1.6 million, and $0.7 million for the years ended December 31, 2021, 2020, and 2019, respectively. This expense is included in compensation and benefits in the consolidated statements of income.

18. REGULATORY CAPITAL

As broker-dealers registered with the SEC, Cboe Trading and BIDS Trading are subject to the SEC's Uniform Net Capital Rule ("Rule 15c3-1"), which requires the maintenance of minimum net capital, as defined therein. The SEC's requirement also provides that equity capital may not be withdrawn or a cash dividend paid if certain minimum net capital requirements are not met. Cboe Trading and BIDS Trading compute the net capital requirements under the basic method provided for in Rule 15c3-1. As of December 31, 2021, Cboe Trading and BIDS Trading were required to maintain net capital equal to the greater of 6.67% of aggregate indebtedness items, as defined, or $0.1 million.

As entities regulated by the FCA, Cboe Europe is subject to the Financial Resource Requirement ("FRR") and Cboe Chi-X Europe is subject to the Capital Resources Requirement ("CRR"). As a RIE, Cboe Europe computes its FRR in accordance with its Financial Risk Assessment, as agreed by the FCA.

In accordance with the Markets in Financial Instruments Directive of the FCA requirements, Cboe Chi-X Europe computes its CRR as the greater of the base requirement of $0.1 million as of December 31, 2021, or the summation of the credit risk, market risk and fixed overheads requirements, as defined. Cboe Chi-X Europe is currently dormant having ceased offering its routing service in November 2018.

On March 8, 2019, Cboe NL received approval from the Dutch Ministry of Finance to operate a RM, a MTF, and an approved publication arrangement in the Netherlands. As a RM, Cboe NL is subject to minimum capital requirements, as established by the Dutch Ministry of Finance in the license dated March 8, 2019.

EuroCCP was granted authorization under European Market Infrastructure Regulation ("EMIR") by the National Competent Authority, DNB. EuroCCP is required by the EMIR, to maintain a minimum amount of capital to reflect an estimate of the capital required to wind down or restructure the activities of the clearinghouse, cover operational, legal and business risks and to reserve capital to meet credit, counterparty and market risks not covered by the clearing participants' collateral and clearing funds.

The Investment Industry Regulatory Organization of Canada ("IIROC") sets and monitors regulatory capital requirements for MATCHNow to protect its clients and counterparties. MATCHNow is required to maintain a prescribed minimum level of risk adjusted capital in accordance with such requirements as IIROC may from time to time prescribe.

As a designated contract market regulated by the CFTC, CFE is required to meet two capital adequacy tests: (i) its financial resources must be equal to at least twelve months of its projected operating costs and (ii) its unencumbered, liquid financial assets, which may include a line of credit, must be equal to at least six months of its projected operating costs. The amounts presented below represent the greater of the two capital adequacy requirements.

As a swap execution facility regulated by the CFTC, Cboe SEF is required to meet two capital adequacy tests: (i) its financial resources must exceed at least twelve months of its projected operating costs and (ii) its unencumbered, liquid financial assets must be equal to the greater of: (a) three months of projected operating costs or (b) its projected wind-down costs. The amounts presented below represent the greater of the two capital adequacy requirements.

The following table presents the Company's subsidiaries with regulatory capital requirements discussed above, as well as the actual and minimum regulatory capital requirements of the subsidiary as of December 31, 2021 (in millions):

Subsidiary	Regulatory Authority	Actual	Minimum Requirement
Cboe Trading	FINRA/SEC	$ 20.4	$ 1.3
BIDS Trading	FINRA/SEC	12.0	1.2
Cboe Europe	FCA	52.2	27.5
Cboe Chi-X Europe	FCA	0.3	0.1
Cboe NL	Dutch Authority for Financial Markets	9.8	3.8
EuroCCP	DNB	65.6	38.0
MATCHNow	IIROC	4.3	0.2
CFE	CFTC	61.0	42.2
SEF	CFTC	2.3	0.9

Cboe Australia is regulated by the Australian Securities and Investments Commission ("ASIC"). Cboe Australia is required to maintain sufficient financial resources to operate the market properly in accordance with Section 794A(d) of the Corporations Act, which Cboe Australia satisfies by maintaining a prudent cash reserve, which must be equal to at least six months of its projected operating expenses. As of December 31, 2021, Cboe Australia holds $4.4 million in cash deposits to meet this requirement.

Cboe Japan is regulated by the Japanese Financial Services Agency ("JFSA") and the Japan Securities Dealers Association ("JSDA"). Cboe Japan is required to maintain a minimum level of regulatory capital ratio of 120% in accordance with such requirements prescribed by the JFSA and JSDA. As of December 31, 2021, Cboe Japan had a regulatory capital ratio of 273%.

19. STOCK-BASED COMPENSATION

Stock-based compensation is based on the fair value of the award on the date of grant, which is recognized over the related service period, net of actual forfeitures. The service period is the period over which the related service is performed, which is generally the same as the vesting period. Vesting may be accelerated for certain officers and employees as a result of attaining certain age and service-based requirements in the Company's long-term incentive plan and award agreements.

The Company recognized stock-based compensation expense of $26.6 million, $21.7 million, and $21.8 million for the years ended December 31, 2021, 2020, and 2019, respectively. Stock-based compensation expense is included in compensation and benefits and acquisition-related costs in the consolidated statements of income.

The activity in the Company's stock options and restricted stock, consisting of restricted stock awards (“RSAs”), restricted stock units (“RSUs”), and performance-based restricted stock units (“PSUs”), was as follows:

Stock Options

Summary stock option activity is presented below:

	Number of Shares	Weighted average exercise price
Outstanding, January 1, 2019	369,483	$ 26.40
Exercised	358,649	26.63
Outstanding, December 31, 2019	10,834	$ 18.59
Exercised	10,834	18.59
Outstanding, December 31, 2020	—	$ —
Exercised	—	—
Outstanding and exercisable December 31, 2021	—	$ —

All outstanding stock options were exercised during the year ended December 31, 2020. The total intrinsic value of stock options exercised was $0.9 million and $26.0 million for the years ended December 31, 2020 and 2019, respectively.

RSAs and RSUs

The following table summarizes RSA and RSU activity during the year ended December 31, 2021:

	Number of shares	Weighted average grant date fair value
Nonvested stock at January 1, 2019	631,764	$ 85.85
Granted	216,891	93.45
Vested	(313,856)	83.25
Forfeited	(98,786)	85.50
Nonvested stock at December 31, 2019	436,013	$ 91.58
Granted	193,912	115.89
Vested	(272,258)	88.32
Forfeited	(15,585)	106.70
Nonvested stock at December 31, 2020	342,082	$ 108.40
Granted	298,084	92.32
Vested	(166,598)	106.13
Forfeited	(30,249)	97.01
Nonvested stock at December 31, 2021	443,319	$ 99.22

RSAs granted to non-employee members of the Board of Directors have a one-year vesting period and vesting accelerates upon the occurrence of a change in control of the Company. Unvested portions of the RSAs will be forfeited if the director leaves the Board of Directors prior to the applicable vesting date. The RSAs have voting rights and entitle the holder to receive dividends.

RSUs entitle the holder to one share of common stock upon vesting, typically vest over a three year period, and vesting accelerates upon the occurrence of a change in control or a termination of employment following a change in control or in the event of a participant’s earlier death or disability. Vesting will also accelerate upon a qualified retirement, where applicable and permitted. Where applicable and permitted, qualified retirement eligibility occurs once achieving 55 years of age and 10 years of service for grants awarded in and after 2017. Unvested RSUs will be forfeited if the officer, or employee leaves the Company prior to the applicable vesting date, except in limited circumstances. The RSUs have no voting rights but entitle the holder to receive dividend equivalents.

In the year ended December 31, 2021, to satisfy employees’ tax obligations upon the vesting of restricted stock, the Company purchased 53,929 shares of common stock totaling $5.3 million as the result of the vesting of 149,071 shares of restricted stock.

PSUs

The following table summarizes restricted stock units contingent upon achievement of performance conditions, also known as PSUs, activity during the year ended December 31, 2021:

	Number of Shares	Weighted average grant date fair value
Nonvested stock at January 1, 2019	151,842	$ 100.81
Granted	86,134	88.22
Vested	(69,372)	74.56
Forfeited	(36,356)	97.78
Nonvested stock at December 31, 2019	132,248	$ 107.21
Granted	72,975	125.62
Vested	(48,053)	108.91
Forfeited	(34,504)	109.85
Nonvested stock at December 31, 2020	122,666	$ 115.18
Granted	71,302	98.32
Vested	(29,468)	111.45
Forfeited	(12,090)	110.20
Nonvested stock at December 31, 2021	152,410	$ 108.41

PSUs include awards related to earnings per share during the performance period as well as awards related to total shareholder return during the performance period. The Company used the Monte Carlo valuation model method to estimate the fair value of the total shareholder return PSUs which incorporated the following assumptions: risk-free interest rate (0.15)%, three-year volatility (31.8)% and three-year correlation with S&P 500 Index (0.51). Each of these performance shares has a performance condition under which the number of units ultimately awarded will vary from 0% to 200% of the original grant, with each unit representing the contingent right to receive one share of the Company's common stock. The vesting period for the PSUs contingent on the achievement of performance conditions is three years. For each of the performance awards, the PSUs will be settled in shares of the Company's common stock following vesting of the PSU assuming that the participant has been continuously employed during the vesting period, subject to acceleration in the event of a change in control of the Company, or a termination of employment following a change in control, or in the event of a participant's earlier death or disability. Participants have no voting rights with respect to the PSUs until the issuance of the shares of common stock. Dividends are accrued by the Company and will be paid once the PSUs contingent on the achievement of performance conditions vest.

In the year ended December 31, 2021, to satisfy employees' tax obligations upon the vesting of performance stock, the Company purchased 9,982 shares of common stock totaling $0.9 million as the result of the vesting of 29,468 shares of performance stock.

As of December 31, 2021, there were $25.5 million in total unrecognized compensation costs related to restricted stock, restricted stock units, and performance stock units. These costs are expected to be recognized over a weighted average period of 1.7 years.

Employee Stock Purchase Plan

In May 2018, the Company's stockholders approved an Employee Stock Purchase Plan, ("ESPP"), under which a total of 750,000 shares of the Company's common stock will be made available for purchase to employees. The ESPP is a broad-based plan that permits employees to contribute up to 10% of wages and base salary to purchase shares of the Company's common stock at a discount, subject to applicable annual Internal Revenue Service limitations. Under the ESPP, a participant may not purchase more than a maximum of 312 shares of the Company's common stock during any single offering period. No participant may accrue options to purchase shares of the Company's common stock at a rate that exceeds $25,000 in fair market value of the Company's common stock (determined at the time such options are granted) for each calendar year in which such rights are outstanding at any time. The exercise price per share of common stock shall be 90% (for eligible U.S. employees) or 85% (for eligible international employees) of the lesser of the fair value of the stock on the first day of the applicable offering period or the applicable exercise date.

The Company records compensation expense over the offering period related to the discount that is given to employees, which totaled $0.4 million, $0.3 million, and $0.4 million for the years ended December 31, 2021, 2020, and 2019, respectively. As of December 31, 2021, 655,078 shares were reserved for future issuance under the ESPP.

20. EQUITY

Common Stock

The Company's common stock is listed on Cboe BZX under the trading symbol CBOE. As of December 31, 2021, 325,000,000 shares of the Company's common stock were authorized, $0.01 par value, and 108,159,319 and 106,646,498 shares were issued and outstanding, respectively. The holders of common stock are entitled to one vote per share.

Common Stock in Treasury, at Cost

The Company accounts for the purchase of treasury stock under the cost method with the shares of stock repurchased reflected as a reduction to Cboe stockholders' equity and included in common stock in treasury, at cost in the consolidated balance sheets. Shares repurchased under the Company's share repurchase program are retired or they are available to be redistributed. When treasury shares are redistributed, they are recorded at the average cost of the treasury shares acquired. When treasury shares are retired, they are removed from the common stock in treasury balance. The Company held 1,512,821 and 18,699,034 shares of common stock in treasury as of December 31, 2021 and December 31, 2020, respectively.

In December 2021, the Board of Directors approved the retirement of 18,072,129 shares of treasury stock. These shares represent shares that were repurchased as part of the Company's share repurchase program since inception through October 2021. The retirement is recorded as a decrease to treasury stock, common stock, and additional paid in capital on the consolidated balance sheets.

Share Repurchase Program

In 2011, the Board of Directors approved an initial authorization for the Company to repurchase shares of its outstanding common stock of $100 million and approved additional authorizations of $100 million in each of 2012, 2013, 2014, 2015 and 2016, $250 million in each of 2018, 2019 and 2020, and $200 million in February 2021, for a total authorization of $1.6 billion. The Company expects to fund repurchases primarily through the use of existing cash balances. The program permits the Company to purchase shares, through a variety of methods, including in the open market or through privately negotiated transactions, in accordance with applicable securities laws. It does not obligate the Company to make any repurchases at any specific time or situation.

Under the program, for the year ended December 31, 2021, the Company has repurchased 822,005 shares of common stock at an average cost per share of $98.82, totaling $81.3 million. Since inception of the program through December 31, 2021, the Company has repurchased 18,072,129 shares of common stock at an average cost per share of $68.12, totaling $1.2 billion.

As of December 31, 2021, the Company had $318.9 million of availability remaining under its existing share repurchase authorizations.

The table below shows the repurchased shares of common stock under the Company's share repurchase program during the periods presented as follows:

	Shares Repurchased	Average Repurchase Price Per Share	Amount of Repurchases (in millions)
2021			
Fourth quarter	—	$ —	$ —
Third quarter	—	—	—
Second quarter	331,373	101.57	33.7
First quarter	490,632	96.97	47.6
Total open market common stock repurchases	822,005		81.3
2020			
Fourth quarter	1,013,709	$ 86.79	$ 88.0
Third quarter	465,366	89.92	41.8
Second quarter	992,159	100.54	99.8
First quarter	1,062,881	112.46	119.5
Total open market common stock repurchases	3,534,115		349.1
2019			
Fourth quarter	600,442	$ 115.76	$ 69.5
Third quarter	453,319	115.49	52.4
Second quarter	100	104.75	0.01
First quarter	366,793	95.36	35.0
Total open market common stock repurchases	1,420,654		156.9

Purchase of Common Stock from Employees

The Company purchased 63,911 and 120,552 shares that were not part of the publicly announced share repurchase authorization from employees for an average price paid per share of $97.19 and $117.98 during the years ended December 31, 2021 and 2020, respectively. These shares consisted of shares retained to cover payroll withholding taxes or option costs in connection with the vesting of restricted stock awards, restricted stock units, performance share awards, and stock option exercises.

Preferred Stock

The Company has authorized the issuance of 20,000,000 shares of preferred stock, par value $0.01 per share, issuable from time to time in one or more series. For the years ended December 31, 2021, and 2020, the Company had no shares of preferred stock issued or outstanding.

Dividends

During the year ended December 31, 2021, the Company declared and paid cash dividends per share of $1.80, for an aggregate payout of $193.3 million. During the year ended December 31, 2020, the Company declared and paid cash dividends per share of $1.56, for an aggregate payout of $170.6 million.

Each share of common stock, including RSAs, RSUs, and PSUs, is entitled to receive dividend and dividend equivalents, respectively, if, as and when declared by the Board of Directors of the Company. The Company's expectation is to continue to pay dividends. The decision to pay a dividend, however, remains within the discretion of the Company's Board of Directors and may be affected by various factors, including earnings, financial condition, capital requirements, level of indebtedness and other considerations the Board of Directors deems relevant. Future debt obligations and statutory provisions, among other things, may limit, or in some cases prohibit, the Company's ability to pay dividends.

As a holding company, the Company's ability to declare and continue to pay dividends in the future with respect to its common stock will also be dependent upon the ability of its subsidiaries to pay dividends to it under applicable corporate law.

21. INCOME TAXES

Net deferred tax assets and liabilities consist of the following as of December 31, 2021 and 2020 (in millions):

	As of December 31,	
	2021	2020
Deferred tax assets:		
Accrued compensation and benefits	$ 14.7	$ 11.4
Property, equipment and technology, net	2.8	2.4
Operating leases	33.5	36.2
Other	54.4	39.3
Subtotal	105.4	89.3
Valuation allowance	(12.2)	(6.8)
Total deferred tax assets	93.2	82.5
Deferred tax liabilities:		
Intangibles	(372.4)	(351.1)
Property, equipment and technology, net	(19.8)	(21.8)
Investments	(44.3)	(56.6)
Prepaid expenses or assets	(4.7)	(2.8)
Operating leases	(24.7)	(27.8)
Total deferred tax liabilities	(465.9)	(460.1)
Net deferred tax liabilities	$ (372.7)	$ (377.6)

The Company provides a valuation allowance against deferred tax assets if, based on management's assessment of historical and projected future operating results and other available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. A valuation allowance of $12.2 million and $6.8 million was recorded against gross deferred tax assets for certain investments, net operating and capital losses as of December 31, 2021 and 2020, respectively.

As of December 31, 2021, the Company has capital loss carryforwards of $10.6 million, which, if unused, will expire in 2024.

The Company considers its non-U.S. earnings to be indefinitely reinvested outside of the U.S. to the extent these earnings are not subject to U.S. income tax under an anti-deferral tax regime. As of December 31, 2021, the cumulative amount of undistributed earnings in these subsidiaries is $53.0 million. Given our intent to reinvest these earnings for an indefinite period of time, we have not accrued a deferred tax liability on these earnings. A determination of an unrecognized deferred tax liability related to these earnings is not practicable.

The provision for income taxes for the years ended December 31, 2021, 2020 and 2019 consists of the following (in millions):

	Year Ended December 31,		
	2021	2020	2019
Current tax expense:			
Federal	$ 148.4	$ 143.7	$ 98.7
State	83.4	70.5	61.2
Foreign	14.2	8.9	7.9
Total current tax expense	246.0	223.1	167.8
Deferred income tax expense/(benefit):			
Federal	(24.3)	(25.2)	(28.7)
State	(7.3)	(9.1)	(3.8)
Foreign	12.7	3.4	(4.7)
Total deferred income tax benefit	(18.9)	(30.9)	(37.2)
Total	$ 227.1	$ 192.2	$ 130.6

For the years ended December 31, 2021, 2020, and 2019, income before taxes consists of the following (in millions):

	Year Ended December 31,		
	2021	2020	2019
U.S. operations	$ 714.0	$ 601.9	$ 480.0
Foreign operations	42.1	58.5	21.4
Total	$ 756.1	$ 660.4	$ 501.4

A reconciliation of the statutory federal income tax rate to the effective income tax rate for the years ended December 31, 2021, 2020, and 2019 is as follows:

	Year Ended December 31,		
	2021	2020	2019
Statutory U.S. federal income tax rate	21.0 %	21.0 %	21.0 %
Impact of federal, state and local tax law & rate changes, net	1.9 %	(0.2)%	— %
State taxes, net of federal benefit	4.3 %	4.2 %	5.0 %
Uncertain tax positions	3.2 %	2.9 %	2.6 %
Deduction for Foreign-Derived Intangible Income	(0.6)%	(1.1)%	(1.2)%
Valuation allowance	— %	0.8 %	— %
Other, net	0.2 %	1.5 %	(1.4)%
Effective income tax rate	30.0 %	29.1 %	26.0 %

A reconciliation of the beginning and ending uncertain tax positions, excluding interest and penalties, is as follows (in millions):

	2021	2020	2019
Balance as of January 1	$ 138.6	$ 116.7	$ 102.3
Gross increases on tax positions in prior period	3.4	3.3	3.1
Gross decreases on tax positions in prior period	(0.2)	—	(6.3)
Gross increases on tax positions in current period	26.5	24.3	18.5
Lapse of statute of limitations	(6.2)	(5.7)	(0.9)
Balance as of December 31	$ 162.1	$ 138.6	$ 116.7

As of December 31, 2021, 2020 and 2019, the Company had $162.1 million, $137.4 million, and $114.9 million, respectively, of uncertain tax positions, net of federal benefit, which, if recognized in the future, would affect the effective income tax rate. Reductions to uncertain tax positions from the lapse of the applicable statutes of limitations and potential audit settlements during the next twelve months are estimated to be approximately $1.0 million.

Estimated interest costs and penalties are classified as part of the provision for income taxes in the Company's consolidated statements of income and were $9.7 million, $6.9 million, and $6.6 million, for the periods ended December 31, 2021, 2020 and 2019, respectively. Accrued interest and penalties were $35.8 million, $26.1 million and $19.2 million as of December 31, 2021, 2020 and 2019, respectively.

The following table summarizes the tax years that are either currently under audit or remain open and subject to examination by the tax authorities in the most significant jurisdictions in which Cboe operates:

U.S. Federal	2008-2016, 2018-2021
California	2015-2021
Illinois	2018-2021
New York	2015-2021
New York City	2011-2021
United Kingdom	2018-2021
Netherlands	2015-2021

The Company petitioned the U.S. Tax Court on January 13, 2017, May 7, 2018 and November 29, 2018 for a redetermination of IRS notices of deficiency for Cboe and certain of its subsidiaries for tax years 2011 through 2015 related to its Section 199 claims. These petitions resulted in the establishment of three cases before the U.S. Tax Court. The Company also filed a complaint on October 5, 2018 with the Court of Federal Claims for a refund of Section 199 claims related to tax years 2008 through 2010. The complaint resulted in the establishment of a single case before the Court of Federal Claims.

The first case that went to trial involved certain subsidiaries related to electronic trading for tax years 2011, 2012 and 2013. The U.S. Tax Court held the trial remotely from May 24, 2021 to June 1, 2021. Post-trial briefing in that case concluded on October 28, 2021. On July 9, 2021, the Company sought a stay in the second U.S. Tax Court case involving certain subsidiaries related to hybrid trading for the same tax years, which was denied on August 8, 2021. As a result, two cases remain pending in U.S. Tax Court, as does the case pending before the Court of Federal Claims. Trial dates in those cases have not been established.

Although there can be no assurances, the Company continues to believe, based on its current assessment of the Section 199 claims, that the reasonably expected aggregate amount of any additional liabilities that may result from these cases, if any, will not have a material adverse effect on the financial position, results of operations, or cash flows of the Company. As of December 31, 2021, the Company has not resolved these matters, and proceedings continue in U.S. Tax Court and the Court of Federal Claims.

22. EARNINGS PER SHARE

The computation of basic net income per common share is calculated by reducing net income for the period by dividends paid or declared and undistributed net income for the period that are allocated to participating securities to arrive at net income allocated to common stockholders. Net income allocated to common stockholders is divided by the weighted average number of common shares outstanding during the period to determine net income per share allocated to common stockholders.

The computation of diluted net income per share is calculated by dividing net income allocated to common stockholders by the sum of the weighted average number of common shares outstanding plus all additional common shares that would have been outstanding if the potentially dilutive common shares had been issued. The dilutive effect is calculated using the more dilutive of the two-class or treasury stock method.

The following table sets forth the computation of basic and diluted earnings per share (in millions, except per share data):

	Year Ended December 31,		
	2021	2020	2019
Basic earnings per share numerator:			
Net income	$ 529.0	$ 468.2	$ 370.8
Net loss attributable to noncontrolling interest	—	—	4.1
Net income excluding redeemable noncontrolling interest	529.0	468.2	374.9
Change in redemption value of redeemable noncontrolling interest	—	—	(0.5)
Net income allocated to participating securities	(1.7)	(1.2)	(1.7)
Net income allocated to common stockholders	$ 527.3	$ 467.0	$ 372.7
Basic earnings per share denominator:			
Weighted average shares outstanding	107.0	109.1	111.4
Basic earnings per share	$ 4.93	$ 4.28	$ 3.35
Diluted earnings per share numerator:			
Net income	$ 529.0	$ 468.2	$ 370.8
Net loss attributable to redeemable noncontrolling interest	—	—	4.1
Net income excluding redeemable noncontrolling interest	529.0	468.2	374.9
Change in redemption value of redeemable noncontrolling interest	—	—	(0.5)
Net income allocated to participating securities	(1.7)	(1.2)	(1.7)
Net income allocated to common stockholders	$ 527.3	$ 467.0	$ 372.7
Diluted earnings per share denominator:			
Weighted average shares outstanding	107.0	109.1	111.4
Dilutive common shares issued under stock program	0.2	0.2	0.4
Total dilutive weighted average shares	107.2	109.3	111.8
Diluted earnings per share	$ 4.92	$ 4.27	$ 3.34

For the periods presented, the Company did not have shares of stock-based compensation that would have an anti-dilutive effect on the computation of diluted earnings per share.

23. COMMITMENTS, CONTINGENCIES, AND GUARANTEES

Legal Proceedings

As of December 31, 2021, the Company was subject to the various legal proceedings and claims discussed below, as well as certain other legal proceedings and claims that have not been fully resolved and that have arisen in the ordinary course of business.

The Company reviews its legal proceedings and claims, regulatory reviews and inspections and other legal proceedings on an ongoing basis and follows appropriate accounting guidance when making accrual and disclosure decisions. The Company establishes accruals for those contingencies where the incurrence of a loss is probable and can be reasonably estimated, and the Company discloses the amount accrued and the amount of a reasonably possible loss in excess of the amount accrued, if such disclosure is necessary for the consolidated financial statements to not be misleading. The Company does not record liabilities when the likelihood that the liability has been incurred is probable, but the amount cannot be reasonably estimated, or when the liability is believed to be only reasonably possible or remote. The Company's assessment of whether a loss is remote, reasonably possible, or probable is based on its assessment of the ultimate outcome of the matter following all appeals.

As of December 31, 2021, the Company does not believe that there is a reasonable possibility that any material loss exceeding the amounts already recognized for these legal proceedings and claims, regulatory reviews, inspections or other legal proceedings, if any, has been incurred. While the consequences of certain unresolved proceedings are not presently determinable, the outcome of any proceeding is inherently uncertain and an adverse outcome from certain matters could have a material effect on the financial position, results of operations, or cash flows of the Company in any given reporting period.

City of Providence

On April 18, 2014, the City of Providence, Rhode Island filed a securities class action lawsuit in the Southern District of New York against Bats and Direct Edge Holdings LLC, as well as 14 other securities exchanges. The action purports to be brought on behalf of all public investors who purchased and/or sold shares of stock in the United States since April 18, 2009 on a registered public stock exchange ("Exchange Defendants") or a U.S.-based alternate trading venue and were injured as a result of the alleged misconduct detailed in the complaint, which includes allegations that the Exchange Defendants committed fraud through a variety of business practices associated with, among other things, what is commonly referred to as high frequency trading. On May 2, 2014 and May 20, 2014, American European Insurance Company and Harel Insurance Co., Ltd. each filed substantially similar class action lawsuits against the Exchange Defendants which were ultimately consolidated with the City of Providence, Rhode Island securities class action lawsuit. On June 18, 2015, the Southern District of New York (the "Lower Court") held oral argument on the pending Motion to Dismiss and thereafter, on August 26, 2015, the Lower Court issued an Opinion and Order granting Exchange Defendants' Motion to Dismiss, dismissing the complaint in full. Plaintiff filed a Notice of Appeal of the dismissal on September 24, 2015 and its appeal brief on January 7, 2016. Respondent's brief was filed on April 7, 2016 and oral argument was held on August 24, 2016. Following oral argument, the Court of Appeals issued an order requesting that the SEC submit an amicus brief on whether the Lower Court had jurisdiction and whether the Exchange Defendants have immunity in the claims alleged. The SEC filed its amicus brief with the Court of Appeals on November 28, 2016 and Plaintiff and the Exchange Defendants filed their respective supplemental response briefs on December 12, 2016. On December 19, 2017, the Court of Appeals reversed the Lower Court's dismissal and remanded the case back to the Lower Court. On March 13, 2018, the Court of Appeals denied the Exchange Defendants' motion for re-hearing. The Exchange Defendants filed their opening brief for their motion to dismiss May 18, 2018, Plaintiffs' response was filed June 15, 2018 and the Exchange Defendants' reply was filed June 29, 2018. On May 28, 2019, the Lower Court issued an opinion and order denying the Exchange Defendants' motion to dismiss. On June 17, 2019, the Exchange Defendants filed a motion seeking interlocutory appeal of the May 28, 2019 dismissal order, which was denied July 16, 2019. Exchange Defendants filed their answers on July 25, 2019. Targeted discovery regarding class certification and legal preclusion concluded on April 26, 2021. On May 28, 2021, (1) Plaintiffs filed a Motion for Class Certification, (2) Bats and NYSE filed a joint Motion for Summary Judgment on Grounds of Legal Preclusion and a joint Motion for Summary Judgment on Grounds of Lack of Article III Standing, and (3) Nasdaq filed a Motion for Summary Judgment for Legal Preclusion. Briefing on these dispositive motions concluded in December 2021. The parties also filed motions to exclude some of the other's experts. Oral argument regarding the joint Motion for Lack of Article III Standing and Exchange Defendant's motion to exclude the testimony of one of Plaintiffs' experts is scheduled for March 11, 2022. The Company is unable to estimate what, if any, liability may result from this litigation. However, the Company believes that the claims are without merit and intends to litigate the matter vigorously.

VIX Litigation

On March 20, 2018, a putative class action complaint captioned Tomasulo v. Cboe Exchange, Inc., et al., No. 18-cv-02025 was filed in federal district court for the Northern District of Illinois alleging that the Company intentionally designed its products, operated its platforms, and formulated the method for calculating VIX and the Special Opening Quotation, (i.e., the special VIX value designed by the Company and calculated on the settlement date of VIX derivatives prior to the opening of trading), in a manner that could be collusively manipulated by a group of entities named as John Doe defendants. A number of similar putative class actions, some of which do not name the Company as a party, were filed in federal court in Illinois and New York on behalf of investors in certain volatility-related products. On June 14, 2018, the Judicial Panel on Multidistrict Litigation centralized the putative class actions in the federal district court for the Northern District of Illinois. On September 28, 2018, plaintiffs filed a master, consolidated complaint that is a putative class action alleging various claims against the Company and John Doe defendants in the federal district court for the Northern District of Illinois. The claims asserted against the Company consist of a Securities Exchange Act fraud claim, three Commodity Exchange Act claims and a state law negligence claim. Plaintiffs request a judgment awarding class damages in an unspecified amount, as well as punitive or exemplary damages in an unspecified amount, prejudgment interest, costs including attorneys' and experts' fees and expenses and such other relief as the court may deem just and proper. On November 19, 2018, the Company filed a motion to dismiss the master consolidated complaint and the plaintiffs filed their response on January 7, 2019. The Company filed its reply on January 28, 2019. On May 29, 2019, the federal district court for the Northern District of Illinois granted the Company's motion to dismiss plaintiffs' entire complaint against the Company. The state law negligence claim was dismissed with prejudice and the other claims were dismissed without prejudice with leave to file an amended complaint, which plaintiffs filed on July 19, 2019. On August 28, 2019, the Company filed its second motion to dismiss the amended consolidated complaint and plaintiffs filed their response on October 8, 2019. On January 27, 2020, the federal district court for the Northern District of Illinois granted the Company's second motion to dismiss and all counts against the Company were dismissed with prejudice. On April 21, 2020, the federal district court for the Northern District of Illinois granted plaintiffs' motion to certify the January 27, 2020 dismissal order for an immediate appeal. On May 19, 2020, plaintiffs filed a notice of appeal with the Court of Appeals for the Seventh Circuit ("7th Circuit"), seeking to appeal the April 21, 2020 order granting the entry of partial final judgment and both orders granting the Company's motions to dismiss entered on May 29, 2019 and January 27, 2020. On June 29, 2020, plaintiffs filed their opening brief with the 7th Circuit, on August 28, 2020 the Company filed its opposition brief with the 7th Circuit, on September 7, 2020, CME Group Inc., Intercontinental Exchange, Inc. and National Futures Association filed an amici curiae brief in support of the Company on the Bad Faith Standard with the 7th Circuit and on October 16, 2020, plaintiffs filed their reply brief with the 7th Circuit. Oral arguments were held remotely on November 30, 2020 and the parties are currently awaiting a decision by the 7th Circuit. The Company currently believes that the claims are without merit and intends to litigate the matter vigorously. The Company is unable to estimate what, if any, liability may result from this litigation.

Other

As self-regulatory organizations under the jurisdiction of the SEC, Cboe Options, C2, BZX, BYX, EDGX and EDGA are subject to routine reviews and inspections by the SEC. As a designated contract market under the jurisdiction of the CFTC, CFE is subject to routine rule enforcement reviews and examinations by the CFTC. Cboe SEF, LLC is a swap execution facility registered with the CFTC and subject to routine rule enforcement reviews and examinations by the CFTC. Cboe Trading and BIDS Trading are subject to reviews and inspections by FINRA. The Company has from time to time received inquiries and investigative requests from the SEC's Office of Compliance Inspections and Examinations and the CFTC's Division of Market Oversight as well as the SEC Division of Enforcement and CFTC Division of Enforcement seeking information about the Company's compliance with its obligations as a self-regulatory organization under the federal securities laws and Commodity Exchange Act as well as members' compliance with the federal securities laws and Commodity Exchange Act.

In addition, while Cboe Europe, Cboe Chi-X Europe, EuroCCP, Cboe NL, Cboe Australia, Cboe Japan, and MATCHNow have not been the subject of any material litigation or regulatory investigation in the past, there is always the possibility of such action in the future. As Cboe Europe and Cboe Chi-X Europe are domiciled in the UK, it is likely that any action would be taken in the UK courts in relation to litigation or by the FCA in relation to any regulatory enforcement action. As EuroCCP is domiciled in the Netherlands, it is likely that any action would be taken in the Dutch courts in relation to litigation or by the DNB or Dutch Authority for Financial Markets in relation to any regulatory enforcement action. For Cboe NL, also domiciled in the Netherlands, it is likely that any actions would be taken in the Dutch courts in relation to litigation or Dutch Authority for Financial Markets in relation to any regulatory enforcement action. As Cboe Australia is domiciled in Australia, it is likely that any action would be taken in the Australian courts in relation to litigation or by the ASIC, in relation to any regulatory enforcement action. As Cboe Japan is domiciled in Japan, it is likely that any action would be taken in the Japanese courts in relation to litigation or by the JFSA or the JSDA in relation to any regulatory enforcement action. As MATCHNow is domiciled in Canada, it is likely that any action would be taken in the Canadian courts in relation to litigation or by the IIROC or Ontario Securities Commission in relation to any regulatory enforcement action.

The Company is also currently a party to various other legal proceedings in addition to those already mentioned. Management does not believe that the likely outcome of any of these other reviews, inspections, investigations or other legal proceedings is expected to have a material impact on the Company’s financial position, results of operations, liquidity or capital resources.

See also Note 8 (“Credit Losses”) for information on promissory notes related to the CAT.

See also Note 21 (“Income Taxes”).

Contractual Obligations

The Company has contractual obligations related to licensing agreements with various licensors, some of which included fixed fees and/or variable fees calculated using agreed upon contracted rates and reported cleared volumes. Certain licensing agreements contain annual minimum fee requirements that total $14.0 million each year for the next five years.

See Note 14 (“Clearing Operations”) for information on EuroCCP’s clearinghouse exposure guarantee.

See Note 24 (“Leases”) for information on lease obligations.

24. LEASES

The Company currently leases office space, data centers, remote network operations centers, and equipment under non-cancelable operating leases with third parties as of December 31, 2021. Certain leases include one or more options to renew, with renewal terms that can extend the lease term from one to five years or more, and some of which include the Company’s option to terminate the leases within one year. During the year ended December 31, 2021, $14.1 million of right of use assets and $14.1 million of lease liabilities were added related to new operating leases, including the addition of $0.9 million of right of use assets and lease liabilities related to acquisitions.

In May 2021, the Company signed a new lease to secure approximately 21,000 square feet of office space in London. The initial term of the lease is 69 months from the accounting commencement date, June 24, 2021. The Company has the option to renew the lease term for an additional 60 months. The total legally binding minimum lease payments for this lease are approximately $9.5 million.

Additionally, in October 2021, the Company signed a new lease to secure approximately 29,500 square feet of office space in Amsterdam. The initial term of the lease is 120 months from the accounting commencement date, February 1, 2022. The Company has the option to renew the lease term for an additional 60 months. The total legally binding minimum lease payments for this lease are approximately $9.2 million.

The following table presents the supplemental balance sheet information related to leases as of December 31, 2021 and 2020 (in millions):

	December 31, 2021	December 31, 2020
Operating lease right of use assets	$ 110.1	$ 111.0
Total leased assets	$ 110.1	$ 111.0
Accrued liabilities	$ 15.6	$ 12.5
Non-current operating lease liabilities	129.2	132.1
Total leased liabilities	$ 144.8	$ 144.6

The following table presents operating lease costs and other information as of and for the year ended December 31, 2021 (in millions, except as stated):

	Year Ended December 31, 2021	Year Ended December 31, 2020
Operating lease costs (1)	$ 25.6	$ 20.2
Lease term and discount rate information:		
Weighted average remaining lease term (years)	11.1	12.1
Weighted average discount rate	3.3 %	3.4 %
Supplemental cash flow information and non-cash activity:		
Cash paid for amounts included in the measurement of lease liabilities	$ 17.2	$ 11.1
Lease incentive for leasehold improvements	—	25.2
Right-of-use assets obtained in exchange for lease liabilities	14.1	68.9

(1) Includes short-term lease and variable lease costs, which are immaterial.

The total rent expense related to lease obligations, reflected in technology support services and facilities costs line items on the consolidated statements of income, for the years ended December 31, 2021, 2020, and 2019 were $25.6 million, $20.2 million, and $12.4 million, respectively.

The maturities of the lease liabilities are as follows as of December 31, 2021 (in millions):

	December 31, 2021
2022	$ 19.3
2023	17.7
2024	12.0
2025	11.5
2026	12.5
After 2026 (1)	96.5
Total lease payments	$ 169.5
Less: Interest	(24.7)
Present value of lease liabilities	$ 144.8

(1) Total lease payments include $20.4 million related to options to extend lease terms that are reasonably certain of being exercised.

25. SUBSEQUENT EVENTS

On February 10, 2022, the Company's Board of Directors declared a quarterly cash dividend of $0.48 per share. The dividend is payable on March 15, 2022 to stockholders of record at the close of business on February 28, 2022.

On February 9 and 10, 2022, the Company’s Board of Directors and Compensation Committee, as applicable, approved granting 260,190 RSUs and 62,388 PSUs, with an effective date of February 19, 2022, to certain officers and employees at a fair value, based on the closing price of the Company’s stock on the grant date. The shares have a three year vesting period based on achievement of certain service, performance and/or market conditions and vesting accelerates upon the occurrence of a termination of employment following a change in control of the Company or in the event of earlier death, disability or qualified retirement.

There have been no additional subsequent events that would require disclosure in, or adjustment to, the consolidated financial statements as of and for the year ended December 31, 2021.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

The Company's management, with the participation of its Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the Company's disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Securities Exchange Act of 1934 (the “Exchange Act”)) as of the end of the period covered by this report. Based upon that evaluation, the Company's Chief Executive Officer and Chief Financial Officer have concluded that, as of the end of such period, the Company's disclosure controls and procedures are effective.

(b) Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. The Company’s internal control system has been designed to provide reasonable assurance to management and the Board of Directors regarding the preparation and fair presentation of published financial statements.

Management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2021. Management based its assessment on criteria for effective internal control over financial reporting described in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Management’s assessment included evaluating the design of our internal control over financial reporting and testing the operational effectiveness of our internal control over financial reporting. The results of its assessment were reviewed with the audit committee of the Board of Directors.

Management’s assessment of the effectiveness of the Company’s internal control over financial reporting as of December 31, 2021, excluded Chi-X Asia Pacific, acquired with effect from July 1, 2021. This acquired business had aggregate total assets and total stockholders’ equity of $266.5 million and $242.5 million, respectively, and total revenues and revenues less costs of revenues of $17.1 million and $16.7 million, respectively, which are included in the Company’s consolidated financial statements as of and for the year ended December 31, 2021.

As of the date of this Annual Report on Form 10-K, we have integrated the acquired EuroCCP, MATCHNow, and BIDS Holdings operations into our overall internal controls over financial reporting.

No changes occurred in the Company’s internal control over financial reporting during fourth quarter 2021 that have materially affected, or are reasonably likely to materially affect, the Company’s internal control over financial reporting. Based on its assessment of the Company’s internal control over financial reporting, management believes that, as of December 31, 2021, internal control over financial reporting is effective.

The effectiveness of the Company’s internal control over financial reporting as of December 31, 2021 has been audited by KPMG LLP, an independent registered public accounting firm, as stated in their report on page 95.

Item 9B. Other Information

Not applicable.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information relating to our directors, including our audit committee and audit committee financial experts and the procedures by which stockholders can recommend director nominees, and our executive officers will be in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders planned to be held on May 12, 2022, which will be filed within 120 days of the end of our fiscal year ended December 31, 2021 (“2022 Proxy Statement”) and is incorporated herein by reference. Information relating to our executive officers is included on pages 28 and 29 of this Annual Report on Form 10-K.

Code of Ethics

We have adopted a Code of Business Conduct and Ethics that applies to our Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer, as well as all other employees and directors. Our Code of Business Conduct and Ethics is available on our website at http://ir.cboe.com/governance.cfm. We will also provide a copy of the Code of Business Conduct and Ethics to stockholders at no charge upon written request.

Item 11. Executive Compensation

Information relating to our executive officer and director compensation and the compensation committee of our Board of Directors will be in the 2022 Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information relating to security ownership of certain beneficial owners of our common stock and information relating to the security ownership of our management will be in the 2022 Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information regarding certain relationships and related transactions and director independence will be in the 2022 Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

Information regarding principal accountant fees and services will be in the 2022 Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) *Documents filed as part of this report*

(1) *Financial Statements*

Our consolidated financial statements and the related reports of management and our independent registered public accounting firm which are required to be filed as part of this report are included in this Annual Report on Form 10-K beginning at page 92. These consolidated financial statements are as follows:

- Consolidated Balance Sheets as of December 31, 2021 and 2020
- Consolidated Statements of Income for the years ended December 31, 2021, 2020 and 2019
- Consolidated Statements of Comprehensive Income for the years ended December 31, 2021, 2020 and 2019
- Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2021, 2020 and 2019
- Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020 and 2019
- Notes to Consolidated Financial Statements

(2) *Financial Statement Schedules*

The Company has not included any financial statement schedules because they are not applicable or the required information is included in the consolidated financial statements or notes thereto.

(3) *List of Exhibits*

See (b) Exhibits below

(b) Exhibits

Exhibit No.	Description of Exhibit
3.1	Third Amended and Restated Certificate of Incorporation, incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on October 17, 2017.
3.2	Seventh Amended and Restated Bylaws, incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on August 5, 2021.
4.1	Indenture, dated as of January 12, 2017, by and between the Cboe Global Markets, Inc. (f/k/a CBOE Holdings, Inc.) and Wells Fargo Bank National Association, as trustee, incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on January 12, 2017.
4.2	Officer's Certificate, dated as of January 12, 2017, establishing the 3.650% Senior Notes due 2027 of Cboe Global Markets, Inc. (f/k/a CBOE Holdings, Inc.), incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on January 12, 2017.
4.3	Form of 3.650% Senior Notes due 2027 (included in Exhibit 4.2 hereto).
4.4	Officer's Certificate, dated as of December 15, 2020, establishing the 1.625% Senior Notes due 2030 of Cboe Global Markets, Inc., incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on December 15, 2020.
4.5	Form of 1.625% Senior Notes due 2030 (included in Exhibit 4.4 hereto).

4.6 Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934, incorporated by reference to Exhibit 4.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.

10.1 Term Loan Credit Agreement, dated as of March 22, 2018, by and among Cboe Global Markets, Inc., Bank of America, N.A., as administrative agent, and the lender parties thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on March 23, 2018.

10.2 Amendment No. 1 to Term Loan Credit Agreement, dated as of May 29, 2020, by and among Cboe Global Markets, Inc., Bank of America, N.A., as administrative agent, and the lender parties thereto, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on June 3, 2020.

10.3 Amendment No. 2 to Term Loan Credit Agreement, dated as of June 25, 2021, by and among Cboe Global Markets, Inc., Bank of America, N.A., as administrative agent and initial lender, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on July 1, 2021.

10.4 Amended and Restated Credit Agreement, dated as of December 21, 2020, by and among Cboe Global Markets, Inc., with Bank of America, N.A., as administrative agent and as swing line lender, certain lenders named therein, BOFA Securities, Inc., as sole lead arranger and sole bookrunner and certain syndication agents named therein, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on December 22, 2020.

10.5 Facility Agreement, dated July 1, 2020, by and among European Central Counterparty N.V. as borrower, Cboe Global Markets, Inc. as guarantor, Bank of America Merrill Lynch International Designated Activity Company, as co-ordinator, facility agent, lender, sole lead arranger and sole bookrunner, Citibank N.A., as security agent, and certain lenders named therein (the "Facility Agreement"), incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on July 1, 2020.

10.6 Amendment and Restatement Agreement, dated July 1, 2021, by and among European Central Counterparty N.V., Cboe Global Markets, Inc., as guarantor, Bank of America Europe Designated Activity Company, as co-ordinator and facility agent and Citibank N.A., London Branch as security agent relating to the Facility Agreement, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on July 2, 2021.

10.7 Restated License Agreement, dated November 1, 1994, by and between Standard & Poor's Financial Services LLC (as successor-in-interest to Standard & Poor's, a division of McGraw-Hill, Inc.) and Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) (the "S&P License Agreement"), incorporated by reference to Exhibit 10.1 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.8 Amendment No. 1 to the S&P License Agreement, dated January 15, 1995, incorporated by reference to Exhibit 10.2 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.9 Amendment No. 2 to the S&P License Agreement, dated April 1, 1998, incorporated by reference to Exhibit 10.3 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.10 Amendment No. 3 to the S&P License Agreement, dated July 28, 2000, incorporated by reference to Exhibit 10.4 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.11 Amendment No. 4 to the S&P License Agreement, dated October 27, 2000, incorporated by reference to Exhibit 10.5 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.12 Amendment No. 5 to the S&P License Agreement, dated March 1, 2003, incorporated by reference to Exhibit 10.6 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.13 Amended and Restated Amendment No. 6 to the S&P License Agreement, dated February 24, 2009, incorporated by reference to Exhibit 10.7 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+

10.14	Amended and Restated Amendment No. 7 to the S&P License Agreement, dated February 24, 2009, incorporated by reference to Exhibit 10.8 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+
10.15	Amendment No. 8 to the S&P License Agreement, dated January 9, 2005, incorporated by reference to Exhibit 10.9 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+
10.16	Amendment No. 10 to the S&P License Agreement, dated June 19, 2009, incorporated by reference to Exhibit 10.10 to Amendment No. 6 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on April 12, 2010.+
10.17	Amendment No. 11 to the S&P License Agreement, dated as of April 29, 2010, incorporated by reference to Exhibit 10 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on May 11, 2010.
10.18	Amendment No. 12 to the S&P License Agreement, dated March 9, 2013, incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-34774) filed on May 7, 2013. +
10.19	Amendment No. 13 to the S&P License Agreement, dated as of December 21, 2017, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on December 22, 2017.+
10.20	Amendment No. 14 to the S&P License Agreement, dated December 20, 2018, incorporated by reference to Exhibit 10.17 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019.
10.21	Amendment No. 15 to the S&P License Agreement, dated January 25, 2019, incorporated by reference to Exhibit 10.18 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019.
10.22	Amendment No. 16 to the S&P License Agreement, made as of April 1, 2020, incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q (File No. 001-34774) filed on July 31, 2020.
10.23	Amendment No. 17 to the S&P License Agreement, made as of August 1, 2020, incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-34774) filed on October 30, 2020. +
10.24	Amendment No. 18 to the S&P License Agreement, made as of October 26, 2021, incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-34774) filed on October 29, 2021.+
10.25	Form of Amended and Restated Director Indemnification Agreement, incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017 (File No. 001-34774) filed on August 4, 2017.
10.26	Employment Agreement, by and between Cboe Global Markets, Inc. and Edward Tilly, dated February 11, 2020, incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on February 14, 2020.*
10.27	Offer Letter Agreement for David Howson, dated December 19, 2019, incorporated by reference to Exhibit 10.28 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.*
10.28	Form of UK Executive Employment Agreement between Bats Global Markets, Inc. and certain executive officers, incorporated by reference to Exhibit 10.16 to Amendment No. 3 to Bats Global Markets, Inc.’s Registration Statement on Form S-1 (File No. 333-208565) filed on April 4, 2016.*
10.29	Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Executive Retirement Plan, incorporated by reference to Exhibit 10.13 to Amendment No. 4 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on August 14, 2009.*
10.30	Amendments to the Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Executive Retirement Plan, incorporated by reference to Exhibit 10.13 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 (File No. 001-34774) filed on February 22, 2017.*

10.31 Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Supplemental Retirement Plan, incorporated by reference to Exhibit 10.14 to Amendment No. 4 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on August 14, 2009.*

10.32 Amendment No. 1 to the Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Supplemental Retirement Plan, incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2010 (File No. 001-34774) filed on November 12, 2010.*

10.33 Amendments to the Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Supplemental Retirement Plan, incorporated by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 (File No. 001-34774) filed on February 22, 2017.*

10.34 Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Deferred Compensation Plan for Officers, incorporated by reference to Exhibit 10.15 to Amendment No. 4 to the Company's Registration Statement on Form S-4 (File No. 333-140574) filed on August 14, 2009.*

10.35 Amendments to the Cboe Exchange, Inc. (f/k/a Chicago Board Options Exchange, Incorporated) Deferred Compensation Plan for Officers, incorporated by reference to Exhibit 10.16 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016 (File No. 001-34774) filed on February 22, 2017.*

10.36 Cboe Global Markets, Inc. Executive Severance Plan, incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on August 2, 2018.*

10.37 Cboe Global Markets, Inc. Amended and Restated Executive Severance Plan, incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on February 12, 2021.*

10.38 Cboe Global Markets, Inc. Employee Stock Purchase Plan, incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on May 18, 2018.*

10.39 Second Amended and Restated Cboe Global Markets, Inc. (f/k/a CBOE Holdings, Inc.) Long-Term Incentive Plan, incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on May 24, 2016.*

10.40 Form of Restricted Stock Award Agreement (for Non-employee Directors), incorporated by reference to Exhibit 10.17 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 (File No. 001-34774) filed on May 11, 2017.*

10.41 Form of Restricted Stock Award Agreement (for Non-employee CDN Directors), incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on August 2, 2019.

10.42 Form of 2018 Restricted Stock Unit Award Agreement (for Executive Officers), incorporated by reference to Exhibit 10.58 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 001-34774) filed on February 22, 2018.*

10.43 Form of 2018 Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.59 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 001-34774) filed on February 22, 2018.*

10.44 Form of 2018 Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.60 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 001-34774) filed on February 22, 2018.*

10.45 Form of Restricted Stock Unit Award Agreement (3 Year Cliff Vest), incorporated by reference to Exhibit 10.2 to the Company’s Current Report on Form 8-K (File No. 001-34774) filed on May 18, 2018.*

10.46 Form of 2019 Restricted Stock Unit Award Agreement (for Executive Officers), incorporated by reference to Exhibit 10.64 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019.*

10.47 Form of 2019 Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.65 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019. *

10.48 Form of 2019 Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.66 to the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019.*

10.49 Form of 2019 Restricted Stock Unit Award Agreement (3 Year Cliff Vest), incorporated by reference to Exhibit 10.67 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-34774) filed on February 22, 2019.*

10.50 Form of 2020 Edward Tilly Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on February 14, 2020.*

10.51 Form of 2020 Edward Tilly Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K (File No. 001-34774) filed on February 14, 2020.*

10.52 Form of 2020 Restricted Stock Unit Award Agreement (for Executive Officers), incorporated by reference to Exhibit 10.66 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.*

10.53 Form of 2020 Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.67 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.*

10.54 Form of 2020 Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.68 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.*

10.55 Form of 2020 Restricted Stock Unit Award Agreement (3 Year Cliff Vest), incorporated by reference to Exhibit 10.69 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 (File No. 001-34774) filed on February 22, 2020.*

10.56 Form of 2021 Edward Tilly Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.67 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 001-34774) filed on February 19, 2021.*

10.57 Form of 2021 Edward Tilly Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.68 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 001-34774) filed on February 19, 2021.*

10.58 Form of 2021 Restricted Stock Unit Award Agreement (for Executive Officers), incorporated by reference to Exhibit 10.69 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 001-34774) filed on February 19, 2021.*

10.59 Form of 2021 Restricted Stock Unit Award Agreement (relative total shareholder return), incorporated by reference to Exhibit 10.70 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 001-34774) filed on February 19, 2021.*

10.60 Form of 2021 Restricted Stock Unit Award Agreement (earnings per share), incorporated by reference to Exhibit 10.71 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (File No. 001-34774) filed on February 19, 2021).*

10.61 Form of 2022 Edward Tilly Restricted Stock Unit Award Agreement (relative total shareholder return) (filed herewith).*

10.62 Form of 2022 Edward Tilly Restricted Stock Unit Award Agreement (earnings per share) (filed herewith).*

10.63 Form of 2022 Restricted Stock Unit Award Agreement (for Executive Officers) (filed herewith).*

10.64 Form of 2022 Restricted Stock Unit Award Agreement (relative total shareholder return) (filed herewith).*

10.65 Form of 2022 Restricted Stock Unit Award Agreement (earnings per share) (filed herewith).*

10.66 Form of 2022 Restricted Stock Unit Award Agreement without Retirement Vesting (relative total shareholder return) (filed herewith).*

10.67 Form of 2022 Restricted Stock Unit Award Agreement without Retirement Vesting (earnings per share) (filed herewith).*

21.1 Subsidiaries of Cboe Global Markets, Inc. (filed herewith).

23.1 Consent of Independent Registered Public Accounting Firm (filed herewith).

23.2	Consent of Independent Registered Public Accounting Firm (filed herewith).
24.1	Powers of Attorney (incorporated by reference to the signature page of this Annual Report on Form 10-K).
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14 (filed herewith).
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14 (filed herewith).
32.1	Certificate of Chief Executive Officer pursuant to Rule 13a-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (filed herewith).
32.2	Certificate of Chief Financial Officer pursuant to Rule 13a-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (filed herewith).
101.INS	iXBRL Instance Document (filed herewith).
101.SCH	iXBRL Taxonomy Extension Schema Document (filed herewith).
101.CAL	iXBRL Taxonomy Extension Calculation Linkbase Document (filed herewith).
101.DEF	iXBRL Taxonomy Extension Definition Linkbase (filed herewith).
101.LAB	iXBRL Taxonomy Extension Label Linkbase Document (filed herewith).
101.PRE	iXBRL Taxonomy Extension Presentation Linkbase Document (filed herewith).
104	Cover Page Interactive Data File (embedded as Inline XBRL document).

*Indicates Management Compensatory Plan, Contract or Arrangement.
+Certain confidential portions (as indicated therein) of this exhibit have been omitted.

Item 16. Form 10-K Summary

None.

SIGNATURES

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

Cboe Global Markets, Inc.
(Registrant)

Date: February 18, 2022

By: /s/ Brian N. Schell
Name: **Brian N. Schell**
Title: **Executive Vice President and Chief Financial Officer (Principal Financial Officer)**

POWERS OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Edward T. Tilly, as attorney-in-fact and agent, with full power of substitution and re-substitution, to sign on his or her behalf, individually and in any and all capacities, including the capacities stated below, any and all amendments to this Annual Report on Form 10-K for the year ended December 31, 2021 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting to said attorney-in-fact and agent, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities on the dates indicated.

SIGNATURE	TITLE	DATE
/s/ EDWARD T. TILLY Edward T. Tilly	Chairman, President, and Chief Executive Officer (Principal Executive Officer)	February 18, 2022
/s/ BRIAN N. SCHELL Brian N. Schell	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer)	February 18, 2022
/s/ JILL M. GRIEBENOW Jill M. Griebenow	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 18, 2022
/s/ WILLIAM M. FARROW III William M. Farrow III	Director	February 18, 2022
/s/ EDWARD J. FITZPATRICK Edward J. Fitzpatrick	Director	February 18, 2022
/s/ IVAN K. FONG Ivan K. Fong	Director	February 18, 2022
/s/ JANET P. FROETSCHER Janet P. Froetscher	Director	February 18, 2022
/s/ JILL R. GOODMAN Jill R. Goodman	Director	February 18, 2022

SIGNATURE	TITLE	DATE
/s/ ALEXANDER J. MATTURRI Alexander J. Matturri	Director	February 18, 2022
/s/ JENNIFER J. McPEEK Jennifer J. McPeek	Director	February 18, 2022
/s/ RODERICK A. PALMORE Roderick A. Palmore	Director	February 18, 2022
/s/ JAMES E. PARISI James E. Parisi	Director	February 18, 2022
/s/ JOSEPH P. RATTERMAN Joseph P. Ratterman	Director	February 18, 2022
/s/ JILL E. SOMMERS Jill E. Sommers	Director	February 18, 2022
/s/ EUGENE S. SUNSHINE Eugene S. Sunshine	Director	February 18, 2022
/s/ FREDRIC J. TOMCZYK Fredric J. Tomczyk	Director	February 18, 2022

Investor Information

Stock Listing
Cboe Global Markets, Inc.'s common stock is listed on the Cboe BZX Exchange, Inc. under the ticker symbol "CBOE." On December 31, 2021, there were 106,646,498 shares of common stock outstanding.

Annual Meeting
The 2022 Annual Meeting of Stockholders will be held on Thursday, May 12, 2022, at 9:00 a.m. Central Time, via a live webcast at www.virtualshareholdermeeting.com/cboe2022.

Holders of common stock of record at the close of business on March 17, 2022 are entitled to vote at the Annual Meeting. A notice of meeting, proxy statement and proxy card or voting instructions were provided to stockholders of record with this Form 10-K.

Transfer Agent
Registered stockholders can access their account online. Log on to www.shareholder.broadridge.com/cboe to view share balance, change address, complete certain transactions and get answers to other stock related inquiries. You can also write or call the Cboe transfer agent at:

Broadridge Corporate Issuer Solutions, Inc.
P.O. Box 1342
Brentwood, NY 11717
Telephone: 866-301-8223
720-399-2148 (Outside the U.S.)
Website: www.shareholder.broadridge.com/cboe

Investor Relations
Direct inquiries to:
Investor Relations
Cboe Global Markets, Inc.
433 W. Van Buren Street
Chicago, IL 60607
Phone: 312-786-7559
E-mail: investorrelations@cboe.com

Investor information is available on the Investor Relations section of the Cboe website, http://ir.cboe.com, including SEC filings, quarterly earnings releases, webcasts and presentations, press releases, information on corporate governance and a variety of stockholder resources, including historical stock information, dividend payments, an investor FAQ and a list of analysts who cover the company.

Corporate Social Responsibility Report
This report provides insight into Cboe's approach to ESG with the goal of demonstrating how ESG practices are integrated within our strategy, business processes and culture. You can read the report online at https://www.cboe.com/about/corporate-social-responsibility/.

Corporate Information
Cboe Global Markets (Cboe: CBOE), a leading provider of market infrastructure and tradable products, delivers cutting-edge trading, clearing and investment solutions to market participants around the world. The company is committed to operating a trusted, inclusive global marketplace, providing leading products, technology and data solutions that enable participants to define a sustainable financial future. Cboe provides trading solutions and products in multiple asset classes, including equities, derivatives and FX, across North America, Europe and Asia Pacific. To learn more, visit www.cboe.com.

Independent Auditors for the 2021 Fiscal Year
KPMG LLP
Chicago, IL

Cboe®

Global Markets

433 W. Van Buren Street • Chicago, IL 60607