MarketAxess®

2022

Proxy Statement and Notice of Annual Meeting of Stockholders

Dear Fellow Stockholders and Clients,

MarketAxess made substantial progress in our long-term growth strategy in 2021. In a year when market conditions were markedly less favorable than in 2020, we reported a record $699 million in revenue in 2021, the 13th consecutive year of record annual revenue. As a result, over the two pandemic years of 2020 and 2021, revenue grew at a 2-year compound annual growth rate of 17%, above our long-term revenue CAGR of 15%.

Six areas of progress stand out as drivers of our 2021 revenue increase and important contributors to future growth:

1. **Maintained strong leadership position in institutional electronic credit trading by leveraging Open Trading® across all of our products, delivering significant transaction cost savings and improved liquidity to our clients.**

   Open Trading reinforced its position as the preferred all-to-all marketplace in global fixed income in 2021. A cornerstone of our growth strategy, Open Trading now underpins nearly all of our trading protocols and products, with approximately 1,700 active counterparty firms. Despite historically low volatility and tight bid/ask spreads, Open Trading saved clients over $570 million in estimated transaction costs in 2021.

   In addition to our market leading credit RFQ capabilities, we made important strides in 2021 building out Live Markets order book trading for both Corporate Bonds and U.S. Treasuries. This investment led to record trading volumes in Q1 2022 and offers our clients new access to live pricing and additional market liquidity. We believe that our all-to-all trading environment and the growth of trading automation create a strong foundation for long-term success in fixed income order books.

2. **Extended our leadership in data and analytics to drive automated trading solutions for the global fixed-income markets.**

   Our leading presence at the heart of the global credit markets generates a uniquely rich, valuable source of data that is powering the automation of fixed-income trading. In 2021, we expanded the application of Composite+, our A.I.-powered predictive pricing engine, to new trading protocols that give clients extensive choice in how they access liquidity across our platform. Investors are now seeing that they can significantly reduce their cost of trading by leveraging our data and automation tools to execute much of their order flow in a "no-touch" environment. Dealers are increasingly using Composite+ and other data tools to expand their use of market making algorithms to increase trading activity with our broad global client network while simultaneously reducing their costs.

   We are now leveraging our data and the increasing interest in Live Markets to support the launch of the MKTX U.S. Investment Grade 400 Bond Index (MKTX 400), our first tradable index. The key differentiators between the MKTX 400 and other fixed income indices is the improved liquidity, transparency, and the high availability of the constituent bonds in the MKTX 400. The launch of this index, which we hope will be the first of a series, underscores our commitment to creating innovative and actionable data solutions in the fixed-income market, supported by our unique, all-to-all Live Markets protocol where dedicated market makers will create continuous, tight, live markets for the 400 bonds in the index.

3. **Further diversified our revenue base through expansion in the U.S. Treasury market, the world's largest, and in municipal bonds.**

   In 2021, we reported record trading volume of $4.1 trillion in U.S. Treasuries, a powerful complement to our established leadership in credit. Integrating our Treasury offering into the MarketAxess platform opened the way for the introduction of an innovative electronic order book based on our all-to-all marketplace Open Trading. This unique liquidity pool, which has 20 of the 24 primary dealers active on the platform, brings together our extensive institutional client base with an innovative protocol for one of the most liquid markets in the world.

   We are excited about the progress we are making to improve trading efficiency and liquidity in the $1.1 trillion municipal bond business. Here again, Open Trading is a focal point in both RFQ trading, as well as our acquisition of MuniBrokers. The MuniBrokers integration connects two disparate trading communities into one with greater access to order flow and trading counterparties. Our municipal bond platform had a total of 320 active clients on the platform at the end of the year, generating record trading volume of $24 billion, a 71% increase from the prior year.

4. **Significantly grew our global client base, underscored by exceptional results in international markets.**

   Revenue and trading volume from international clients grew at a compound annual growth rate of approximately 22% from 2017-2021, with our institutional investor and broker-dealer clients now based in 80 countries. Active international clients grew from approximately 560 firms to 960 firms during this time period. In 2021, our emerging markets debt and Eurobond businesses turned in strong trading volume and market share gains. Emerging markets and Eurobond trading volume increased 16% and 12%, respectively, compared to the prior year.

   In 2021, we added four new local currency emerging market bond markets to the platform, including onshore Chinese debt. That brought the number of local currency markets on MarketAxess to a total of 28. Local currency bond trading volume reached a record $201 billion, an increase of 22%, compared to the prior year. By offering liquidity in both hard- and local-currency debt on a single trading platform, we have created an efficient emerging market trading ecosystem for our institutional investor and broker-dealer clients.

5. **Significant growth in post-trade and information services, adding to our base of recurring revenue.**

   Last year also saw an expanded footprint for our post-trade and information services in Europe with our acquisition of Regulatory Reporting Hub, which was fully integrated into our post-trade business in 2021, adding approximately 500 clients across Europe. The expansion of our regulatory reporting services positions us to offer still more differentiated data products. We moved in early 2022 to capitalize on this opportunity with the launch of Axess All Prints, an enhanced real-time trade tape for the most actively traded fixed-income instruments in the EU and UK.

   Given our strong growth in post-trade and information services, as well as the increase in our distribution fees, our base of recurring revenues increased to a record $197 million in 2021, up 21%, compared to 2020.

6. **ESG strategy advances critical to our long-term business success and our Company's values.**

   Last year also brought significant advances in our ESG strategy, which includes initiatives that MarketAxess believes are critical to our long-term business success and an important expression of our company's values. We see ESG and our commitment to strengthening the resilience of communities and to a diverse workforce as deeply aligned with our Company's purpose: to open global markets, creating more opportunities for the companies, institutions, and individuals who depend on them.

   In 2021, we completed our first comprehensive, non-financial ESG materiality and prioritization assessment. Drawing on the framework of the Sustainability Accounting Standards Board (SASB) and the criteria of ESG rating agencies, our team engaged with internal and external stakeholders to identify the factors driving long-term business performance and societal impact. To drive our efforts in this area, our Board has adopted long-term diversity and human capital goals that will be among the factors considered when determining the compensation of our Global Management Team. I recommend that you download our full 2021 ESG Report in the *Investor Relations – Corporate Governance* section of our website to learn more about these initiatives.

As we move into 2022, our foundation for growth has never been stronger, with an expanding client base, an increasingly diversified product base and a wide range of trading protocols to capture the long-term e-trading opportunity in the global fixed-income markets. Market conditions turned significantly more favorable in early 2022, with credit-spreads and credit-spread volatility moving back into more normal historical levels, which we believe will benefit our platform in the coming quarters.

The commitment and resilience of our employees played a leading role in sustaining our growth and innovation in 2021. Throughout the two years of pandemic disruption, they have demonstrated exemplary dedication and an amazing resourcefulness. We thank them for their hard work and resolute focus on delivering results for our clients and our stockholders.

Sincerely,

Richard M. McVey
Chairman of the Board and Chief Executive Officer
April 27, 2022

MarketAxess Holdings Inc.
55 Hudson Yards, 15th Floor
New York, New York 10001

April 27, 2022

TO THE STOCKHOLDERS OF MARKETAXESS HOLDINGS INC.:

You are invited to attend the 2022 Annual Meeting of Stockholders (the "*Annual Meeting*") of MarketAxess Holdings Inc. (the "*Company*") scheduled for Wednesday, June 8, 2022 at 10:00 a.m., Eastern Daylight Time. The Annual Meeting will be a virtual meeting of stockholders. You will be able to participate in the Annual Meeting, vote and submit your questions via live webcast by visiting *www.virtualshareholdermeeting.com/MKTX2022.* The Company's Board of Directors and management look forward to your participation.

Details of the business to be conducted at the Annual Meeting are given in the attached Notice of Annual Meeting and Proxy Statement, which you are urged to read carefully.

We are pleased to take advantage of the U.S. Securities and Exchange Commission ("SEC") rules that allow issuers to furnish proxy materials to their stockholders on the Internet. We believe these rules allow us to provide our stockholders with the information they need, while lowering the costs of delivery and reducing the environmental impact of our Annual Meeting. On April 27, 2022, we expect to mail to our stockholders a Notice of Internet Availability of Proxy Materials ("Notice") containing instructions on how to access our Proxy Statement and Annual Report on Form 10-K for the year ended December 31, 2021 online and how to vote. The Notice contains instructions on how you can receive a paper copy of the Proxy Statement, proxy card and Annual Report if you only received a Notice by mail.

Your vote is important to us. Whether or not you plan to attend the Annual Meeting, your shares should be represented and voted. After reading the Proxy Statement, please cast your vote via the Internet or telephone or complete, sign, date and return the proxy card in the pre-addressed envelope that we have included for your convenience if you received paper copies. If you hold your shares in a stock brokerage account, please check your proxy card or contact your broker or nominee to determine whether you will be able to vote via the Internet or by telephone or how to instruct your broker to vote on your behalf.

On behalf of the Board of Directors, thank you for your continued support.

Sincerely,

Richard M. McVey
Chief Executive Officer and Chairman of the Board of Directors

NOTICE OF 2022 ANNUAL MEETING OF STOCKHOLDERS

Attend the Annual Meeting at:

www.virtualshareholdermeeting.com/MKTX2022

Your vote is very important, regardless of the number of shares you own. Please read the attached Proxy Statement carefully and complete and submit your proxy card via the Internet or sign and date your paper proxy card as promptly as possible and return it in the envelope that was enclosed if you received paper copies. Alternatively, you may be able to submit your proxy by touch-tone phone as indicated on the Notice or proxy card.

TO THE STOCKHOLDERS OF MARKETAXESS HOLDINGS INC.:

NOTICE IS HEREBY GIVEN that the 2022 Annual Meeting of Stockholders (the "*Annual Meeting*") of MarketAxess Holdings Inc., a Delaware corporation (the "*Company*"), will be held via live webcast on Wednesday, June 8, 2022, at 10:00 a.m., Eastern Daylight Time. You can participate in the Annual Meeting, vote and submit your questions during the Annual Meeting by visiting *www.virtualshareholdermeeting.com/MKTX2022.* You must have your 16-digit control number included on your Notice of Internet Availability of Proxy Materials or your proxy card (if you received a printed copy of the proxy materials) to join the Annual Meeting.

At the Annual Meeting we will:

1. vote to elect the 13 nominees named in the attached Proxy Statement as members of the Company's Board of Directors for terms expiring at the 2023 Annual Meeting of Stockholders;
2. vote to ratify the appointment of PricewaterhouseCoopers LLP as the Company's independent registered public accounting firm for the year ending December 31, 2022;
3. hold an advisory vote to approve the compensation of the Company's named executive officers as disclosed in the attached Proxy Statement;
4. approve the MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan (the "*2022 ESPP*"); and
5. transact such other business as may properly come before the Annual Meeting or any adjournment or postponement thereof.

BY INTERNET
Visit 24/7
www.proxyvote.com

BY PHONE
Call 1-800-690-6903
in the U.S. or Canada to vote your shares

BY MAIL
If you received printed copies of the proxy materials, cast your ballot, sign your proxy card and return

PARTICIPATE IN THE ANNUAL MEETING
Vote during the Annual Meeting at www.virtualshareholdermeeting.com/MKTX2022 using your 16-digit control number

These items are more fully described in the Company's Proxy Statement accompanying this notice.

The record date for the determination of the stockholders entitled to notice of, and to vote at, the Annual Meeting, or any adjournment or postponement thereof, was the close of business on April 11, 2022. You have the right to receive this Notice and vote at the Annual Meeting if you were a stockholder of record at the close of business on April 11, 2022. Please remember that your shares cannot be voted unless you cast your vote by one of the following methods: (1) vote via the Internet or call the toll-free number as indicated on the Notice or proxy card; (2) sign and return a paper proxy card; or (3) vote during the Annual Meeting at *www.virtualshareholdermeeting.com/MKTX2022*.

By Order of the Board of Directors,

Scott Pintoff
General Counsel and Corporate Secretary
New York, New York
April 27, 2022

TABLE OF CONTENTS

PROXY SUMMARY

This summary contains highlights about MarketAxess Holdings Inc. ("*MarketAxess*", the "*Company*", "*we*" or "*our*") and the upcoming 2022 Annual Meeting of Stockholders (the "*Annual Meeting*"). This summary does not contain all of the information you should consider in advance of the Annual Meeting and we encourage you to read the entire Proxy Statement before voting. This Proxy Statement, the accompanying Notice of Annual Meeting of Stockholders and proxy card are first being mailed to stockholders on or about April 27, 2022. Whenever we refer in this Proxy Statement to the "Annual Meeting," we are also referring to any meeting that results from any postponement or adjournment of the June 8, 2022 meeting.

Annual Meeting information

Date and Time:	Wednesday, June 8, 2022, at 10:00 a.m., Eastern Daylight Time
Virtual Meeting:	www.virtualshareholdermeeting.com/MKTX2022
Record Date:	Monday, April 11, 2022

Due to the continuing public health impact of the coronavirus outbreak (COVID-19) (the "Pandemic") and to support the health and well-being of our stockholders and other participants at the Annual Meeting, the Annual Meeting will be held in virtual format only.

Voting items

The following table summarizes the items that we are asking our stockholders to vote on at the Annual Meeting, along with the voting recommendations of our Board of Directors (the "Board" or "Board of Directors").

Item	Board Recommendation	Required Approval	Page Reference
1. Election of Directors	FOR	Majority of votes cast for each nominee	2
2. Ratification of the appointment of PricewaterhouseCoopers LLP as the Company's independent registered public accounting firm for the year ending December 31, 2022	FOR	Majority of shares of Common Stock having voting power present in person or represented by proxy	26
3. Advisory vote to approve the compensation of the Company's named executive officers as disclosed in the attached Proxy Statement	FOR	Majority of shares of Common Stock having voting power present in person or represented by proxy	81
4. Approval of the 2022 ESPP	FOR	Majority of shares of Common Stock having voting power present in person or represented by proxy	82

How to vote

Your vote is important. Stockholders of record as of the Record Date are entitled to vote through one of the following options:

By Mail: If you received printed copies of the proxy materials, cast your ballot, sign your proxy card and return.

Via the Internet: To vote before the meeting, visit www.proxyvote.com.
To vote at the meeting, visit www.virtualshareholdermeeting.com/MKTX2022. You will need the control number printed on your Notice, proxy card or voting instruction form.

By Telephone: Call the phone number located on your Notice or proxy card.

PROPOSAL 1 — ELECTION OF DIRECTORS

The first proposal to be voted on at the Annual Meeting is the election of directors. Our Board currently consists of 13 directors, 11 of whom are not our employees, and all of whom are nominees for election at the Annual Meeting. Each of the nominees for director was elected by the Company's stockholders on June 9, 2021, except for Xiaojia Charles Li, who was appointed to the Board as of July 13, 2021. The directors are nominated for a term that begins at the Annual Meeting and ends at the 2023 Annual Meeting of Stockholders. Each director will hold office until such director's successor has been elected and qualified, or until such director's earlier resignation, retirement or removal. The Board will continue to evaluate its composition as part of its focus on self-assessment and board refreshment.

Your vote

If you sign the attached or enclosed proxy card and return it to the Company, your proxy will be voted **FOR** all directors, for terms expiring at the 2023 Annual Meeting of Stockholders, unless you specifically indicate on the proxy card that you are casting a vote against one or more of the nominees or abstaining from such vote.

A vote of the majority of the votes cast is required for the election of each director. Abstentions and broker non-votes are not treated as votes cast and will therefore have no effect on the outcome of the vote.

VOTE FOR PROPOSAL 1

BOARD RECOMMENDATION

The board unanimously recommends that you vote "FOR" the election of each of the following nominees:

- Richard M. McVey
- Nancy Altobello
- Steven L. Begleiter
- Stephen P. Casper
- Jane Chwick
- Christopher R. Concannon
- William F. Cruger
- Kourtney Gibson
- Justin G. Gmelich
- Richard G. Ketchum
- Xiaojia Charles Li
- Emily H. Portney
- Richard L. Prager

Each of these nominees is currently serving as a director on our Board, and each nominee has agreed to continue to serve on the Board if such nominee is elected at the Annual Meeting. If any nominee is unable (or for good cause declines) to serve as a director at any time before the Annual Meeting, proxies may be voted for the election of a qualified substitute designated by the current Board, or else the size of the Board will be reduced accordingly. Biographical information about each of the nominees is included below under "*Director information*."

Qualifications for director nominees

Our Board has adopted minimum qualifications for our directors:

- substantial experience working as an executive officer for, or serving on the board of, a public company;
- significant accomplishment in another field of endeavor; or
- an ability to make a meaningful contribution to the oversight and governance of a company having a scope and size similar to our Company.

A director must have an exemplary reputation and record for honesty in his or her personal dealings and business or professional activity. All directors must demonstrate strong leadership skills and should possess a basic understanding of financial matters; have an ability to review and understand the Company's financial and other reports; and be able to discuss such matters intelligently and effectively. A director also needs to exhibit qualities of independence in thought and action. A candidate should be committed first and foremost to the interests of the stockholders of the Company. The key experience, qualifications and skills each of our directors brings to the Board that are important in light of our business are included in their individual biographies below.

Board of Directors skills and expertise

The Company's directors are selected on the basis of specific criteria set forth in our Corporate Governance Guidelines. All of our directors possess financial industry experience and a history of strategic leadership. In addition to those qualifications, listed below are the skills and experience that we consider important for our director nominees. More detailed information is provided in each director nominee's biography.

	Corporate Governance	Fixed Income/ Electronic Trading	Regulatory	Technology/ Cybersecurity	Mergers and Acquisitions	Finance / Accounting	Risk Management	Other Public Company Board Experience	Talent Management
Richard M. McVey	●	●	●	●	●		●		●
Nancy Altobello	●		●		●	●	●	●	●
Steven L. Begleiter	●				●	●	●	●	●
Stephen P. Casper	●	●	●		●	●	●		●
Jane Chwick	●	●		●			●	●	●
Christopher R. Concannon	●	●	●	●	●		●	●	
William F. Cruger	●	●			●	●	●	●	
Kourtney Gibson		●	●			●	●		●
Justin G. Gmelich		●	●			●	●		●
Richard G. Ketchum	●	●	●				●	●	
Xiaojia Charles Li	●	●	●		●		●	●	
Emily H. Portney	●				●	●	●		●
Richard L. Prager	●	●		●	●		●		●

Director diversity

30.7%
women

15.4%
racial/ethnic diversity

38.5%
total diversity

The Company recognizes and embraces that having a diverse Board enhances both the Board's effectiveness in fulfilling its oversight role and the Company's performance. See "*Corporate governance and Board matters — Board diversity policy*" for more information. Shown below are the number of director nominees that self-identify as diverse directors (four women directors and two underrepresented minority directors).

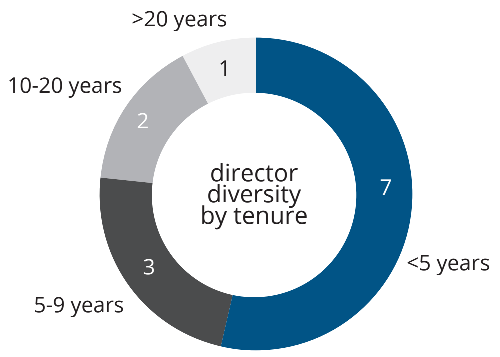
We are subject to the new Nasdaq Listing Rule 5605(f), which after a transition period, will require us to have, or explain why we do not have, at least two members of our Board who are diverse, including at least one diverse director who self-identifies as female and at least one director who self-identifies as an underrepresented minority or LGBTQ+. We welcome this important step in diversifying corporate boards and we currently meet the diversity objectives of this requirement.

In addition, we are also subject to the new Nasdaq Listing Rule 5606, which requires each Nasdaq-listed company, subject to certain exceptions, to provide statistical information about the company's board of directors, related to each director's self-identified gender, race, and self-identification as LGBTQ+. Below, please find the board diversity matrix for the Company:

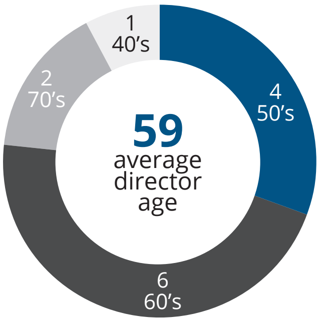
Board Diversity Matrix (As of April 27, 2022)		
Total Number of Directors	13	
	Female	**Male**
Part I: Gender Identity		
Directors	4	9
Part II: Demographic Background		
African American or Black	1	0
Asian	0	1
White	3	8

Listed below is the tenure and age of our director nominees:

TENURE



AGE



Director information

At the recommendation of the Nominating and Corporate Governance Committee, the Board has nominated the persons named below to serve as directors of the Company for a term beginning at the Annual Meeting and ending at the 2023 Annual Meeting of Stockholders.

Richard M. McVey

Age: 62
Director since: April 2000
Chairman of the Board of Directors
Board Committees:

- None

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Richard M. McVey has been our Chief Executive Officer and Chairman of our Board of Directors since our inception. As an employee of J.P. Morgan & Co., one of our founding broker-dealers, Mr. McVey was instrumental in the founding of MarketAxess in April 2000. Prior to founding MarketAxess, Mr. McVey was Managing Director and Head of North America Fixed-Income Sales at J.P. Morgan, where he managed the institutional distribution of fixed-income securities to investors. Mr. McVey led MarketAxess through the Company's IPO in 2004, and since that time, MarketAxess has been one of the fastest growing financial technology companies in the U.S. public markets, with industry leading total stockholder returns. Mr. McVey was named the Ernst & Young National Entrepreneur of the Year for financial services in 2012, and he has been named to the Institutional Investor Tech 40 list 15 times. Mr. McVey was a member of the SEC Fixed Income Market Structure Advisory Committee, for which he chaired the Technology and Electronic Trading Sub-Committee from November 2017 to March 2021. Mr. McVey serves on the Board of Trustees of Colby College. He previously served on the Board of Directors of Miami (Ohio) University Foundation and Blue Mountain Credit Alternatives L.P., an asset management fund focused on the credit markets and equity derivatives markets. Mr. McVey received a B.A. in finance from Miami (Ohio) University and an M.B.A. from Indiana University.

Mr. McVey's role as one of our founders and his service as our Chief Executive Officer for over 20 years give him deep knowledge and understanding of all aspects of the business and operations of MarketAxess. Mr. McVey's extensive experience in the financial services industry, including significant leadership roles at J.P. Morgan, has provided the Company with comprehensive knowledge of the financial markets that we serve and the institutions and dealers that are our clients.

Nancy Altobello

Age: 64
Director since: April 2019
Board Committees:

- Audit (Chair)
- Compensation and Talent

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)
- Amphenol Corporation (NYSE: APH)
- Wex Inc. (NYSE: WEX)

Qualifications and Career Highlights:

Nancy Altobello was most recently Global Vice Chair, Talent of Ernst & Young ("EY"), a professional services firm, where she was responsible for EY's talent and people strategy worldwide from July 2014 until her retirement in June 2018. Previously, Ms. Altobello held a number of senior positions at EY, including Americas Vice Chair, Talent from 2008 to 2014, Managing Partner, Northeast Region Audit and Advisory Practices from 2003 to 2008 and Managing Partner, North American Audit Practice from 1999 to 2003. Throughout this time, Ms. Altobello also served as an audit partner for a number of leading global organizations. She currently serves on the Board of Directors of Amphenol Corporation and Wex Inc. as well as on the Board of Trustees of Fidelity Charitable. She previously served on the Board of Directors of CA Technologies, Cornerstone OnDemand and MTS Systems Corporation until each of their respective acquisitions. Ms. Altobello received a B.S. in accounting from Fairfield University, earned a Corporate Director Certificate from Harvard Business School and is a licensed Certified Public Accountant in New York and Connecticut.

Ms. Altobello was selected to serve on the Board due to her financial, audit and Sarbanes Oxley compliance expertise, her knowledge of talent and people strategy, and her global business experience.

Steven L. Begleiter

Age: 60
Director since: April 2012
Board Committees:
- Finance (Chair)

Public Company Directorships:
- MarketAxess (NASDAQ: MKTX)
- Great Ajax Corp. (NYSE: AJX)

Qualifications and Career Highlights:

Steven L. Begleiter has been employed with Flexpoint Ford, LLC, a private equity group focused on investments in financial services and healthcare, since October 2008, where he currently serves as Managing Director. Prior to joining Flexpoint Ford, Mr. Begleiter spent 24 years at Bear Stearns & Co., serving first as an investment banker in the Financial Institutions Group and then as Senior Managing Director and member of its Management and Compensation Committee from 2002 to September 2008. Mr. Begleiter also served as head of Bear Stearns' Corporate Strategy Group. Mr. Begleiter currently serves on the Board of Directors of Great Ajax Corp. and certain portfolio companies of Flexpoint Ford, LLC. He previously served on the Board of Directors of WisdomTree Investments, Inc. Mr. Begleiter received a B.A. with Honors in economics from Haverford College.

Mr. Begleiter brings many years of leadership experience in the financial services and private equity industries to the Board. Mr. Begleiter also has extensive industry knowledge and expertise relating to mergers and acquisitions and capital formation.

Stephen P. Casper

Age: 72
Director since: April 2004
Lead Independent Director
Board Committees:
- Nominating and Governance

Public Company Directorships:
- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Stephen P. Casper was most recently the President of TRG Management L.P., the investment manager of the TRG Global Opportunity Master Fund, Ltd., a private equity fund from April 2010 to August 2012. From September 2008 to April 2010, Mr. Casper was a partner of Vastardis Capital Services, which provides fund administration and securities processing outsourcing services to hedge funds, funds of funds and private equity funds and their investment management sponsors. Prior to this, Mr. Casper was Chairman and Chief Executive Officer of Charter Atlantic Corporation, the holding company of Fischer Francis Trees & Watts, Inc. ("FFTW"), a specialist manager of U.S., global and international fixed-income portfolios for institutional clients, and Malbec Partners, a manager of single-strategy hedge funds. From April 2004 to January 2008, Mr. Casper was the President and CEO of FFTW. Mr. Casper joined FFTW as Chief Financial Officer in 1990 and was appointed Chief Operating Officer in May 2001. From 1984 until 1990, Mr. Casper was Treasurer of the Rockefeller Family Office. Mr. Casper has been a member of the Board of Directors of multiple fixed income hedge funds managed by KLS Diversified Asset Management since July 2012. Mr. Casper is Vice-Chairman of the Board of Directors of GMO LLC, a global investment management firm providing clients with asset management solutions and services, since May 2014 and a member of the Investment Committee of the Brooklyn Museum. Mr. Casper is a Certified Public Accountant and received a B.B.A. in accounting from Baruch College, from which he graduated magna cum laude, Beta Gamma Sigma, and an M.S. in finance and accounting from The Wharton School at the University of Pennsylvania.

Mr. Casper's experience in the fixed-income markets and financial services industry and his experience in financial reporting and accounting roles bring extensive public accounting, financial reporting, risk management and leadership skills to the Board.

Jane Chwick

Age: 59
Director since: October 2013
Board Committees:

- Nominating and Governance
- Risk (Chair)

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)
- M&T Bank Corporation (NYSE: MTB)
- Thoughtworks Holding, Inc. (NASDAQ: TWKS)
- Voya Financial, Inc. (NYSE: VOYA)

Qualifications and Career Highlights:

Jane Chwick was most recently the Co-Founder and Co-CEO of Trewtec, Inc., a technology advisory firm designed to help board members and CEOs evaluate the technology function in their companies, from September 2014 until the firm ceased operations in August 2017. Prior to this role, she was a Partner and Co-Chief Operating Officer of the Technology Division of Goldman Sachs Group, Inc. where she was responsible for financial and business planning, technical strategy and ongoing management of an 8,000-person organization until her retirement in April 2013. During her 30-year career at Goldman Sachs, Ms. Chwick held a number of senior positions, including Global Head of Technology of the Securities Division and Global Head of Derivatives Technology. Ms. Chwick served on many governance committees at Goldman Sachs, including the firm's Finance Committee, the firm-wide New Activity Committee and the Technology Risk Committee, and served as co-chair of the Technology Division Operating Committee. During her tenure, she drove the design, build and integration of technology across all of Goldman Sachs' derivatives businesses, including fixed income, commodities, currencies and equities. Ms. Chwick is a member of the Board of Directors of M&T Bank Corporation, Thoughtworks Holding, Inc. and Voya Financial, Inc., and Ms. Chwick previously served on the Board of Directors of Essent Group and People's United Financial, Inc. until its acquisition by M&T Bank Corporation. Ms. Chwick received a B.A. in mathematics from Queens College and an M.B.A. from St. John's University with a concentration in MIS and quantitative analysis.

Ms. Chwick's extensive technology leadership experience gained in a global financial services firm, combined with her depth of market knowledge and industry insight, bring valuable skills and strategic perspective to the Board.

Christopher R. Concannon

Age: 54
Director since: January 2019
Board Committees:

- None

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Christopher R. Concannon has been our President and Chief Operating Officer since January 2019. Mr. Concannon previously served as President and Chief Operating Officer of Cboe Global Markets, Inc., one of the world's largest exchange holding companies, a position he was appointed to upon Cboe's acquisition of Bats Global Markets, Inc. in 2017. At Cboe, he was responsible for the company's transaction businesses, including global derivatives, U.S. and European equities, and global foreign exchange – as well as overseeing Cboe's technology, operations, risk, and marketing divisions. Until Bats' acquisition by Cboe, Mr. Concannon served as President of Bats from December 2014, director from February 2015, and Chief Executive Officer from March 2015. Mr. Concannon has more than 20 years of experience as an executive at Nasdaq, Virtu Financial, Instinet and as an attorney at Morgan, Lewis & Bockius, LLP and the SEC. Mr. Concannon has received a B.A. from Catholic University, an M.B.A. from St. John's University, and a J.D. from Catholic University's Columbus School of Law.

Mr. Concannon brings to the Board extensive experience leading companies in the global exchange industry. Mr. Concannon also has deep and critical knowledge regarding automated trading, the delivery of innovative technology solutions, market structure and clearing operations.

William F. Cruger

Age: 63
Director since: November 2013
Board Committees:

- Audit
- Finance
- Nominating and Governance (Chair)

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)
- M&T Bank Corporation (NYSE: MTB)
- Virtu Financial, Inc. (NASDAQ: VIRT)

Qualifications and Career Highlights:

William F. Cruger was most recently Vice Chairman of Investment Banking at JPMorgan Chase & Co., a multinational investment bank and financial services company, where he was responsible for key client relationships on a global basis until his retirement in August 2013. Previously, Mr. Cruger held a number of senior positions at J.P. Morgan, including Managing Director in the Financial Institutions group from 1996 to 2011. During this time, he oversaw the rationalization of the firm's private equity investments in trading platforms and related ventures at LabMorgan from 2000 to 2001. Prior to this, Mr. Cruger ran the firm's investment banking practices in Japan from 1991 to 1996, Latin America from 1989 to 1991 and Emerging Asia from 1984 to 1988. He currently serves on the Board of Directors of M&T Bank Corporation and Virtu Financial, Inc., and has previously served on the Boards of Directors of Archipelago, Credittrade, Capital IQ. and People's United Financial, Inc. until its acquisition by M&T Bank Corporation. Mr. Cruger received a B.A. from Clark University and an M.B.A. from Columbia University.

Mr. Cruger's diverse experience in investment banking at a global financial services firm, his extensive knowledge of financial institutions and financial markets, his leadership roles as a director of other financial services firms, and his international business experience bring critical skills and strategic insight to the Board.

Kourtney Gibson

Age: 40
Director since: July 2020
Board Committees:

- Audit
- Compensation and Talent

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)
- lululemon athletica inc. (NASDAQ: LULU)

Qualifications and Career Highlights:

Kourtney Gibson has been the Executive Vice Chairman of Loop Capital Markets, an investment bank, brokerage and advisory firm, since March 2022. Prior to this role, Ms. Gibson served in various roles at Loop Capital Markets, including as President from June 2016 to March 2022, Head of the Fixed Income Division from January 2015 to June 2016 and Head of the Equity Division from June 2005 to December 2015. Ms. Gibson currently serves on the Board of lululemon athletica inc. and is a member of The Economic Club of Chicago and the Treasury Market Practices Group sponsored by the Federal Reserve Bank of New York. Ms. Gibson also currently serves on the Board of Trustees at the University of Miami and Viterbo University, the Board of the Dibia Dream Foundation and the Board of the Chicago Scholars Foundation. Ms. Gibson received an M.B.A. from the Kellogg School of Management at Northwestern University and a B.B.A. from the University of Miami.

Ms. Gibson brings to the Board her wealth of experience relating to the evolving market structure of both the fixed income and equity markets, as well her broad-based experience with institutional investor clients.

Justin G. Gmelich

Age: 53
Director since: October 2019
Board Committees:

- Audit
- Finance

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Justin G. Gmelich has been a Partner and Global Head of Markets with King Street Capital Management, a global investment management company, since January 2020, where he is also a member of the Management Committee, the Global Investment Committee and the Real Estate Investment Committee. Prior to this, Mr. Gmelich was the Global Chief Operating Officer for Fixed Income, Commodities, and Currencies ("FICC") at Goldman Sachs from November 2017 to March 2019, prior to which he was Global Head of Credit at Goldman Sachs since March 2012. Additionally, while at Goldman Sachs, he was a member of the Firm's Management Committee, Firmwide Risk Committee, Securities Division Executive Committee, Securities Division Volcker Committee and the Global Recruiting Council. Earlier in his career, Mr. Gmelich worked as an associate trader at Chase and was a vice president at Salomon Brothers. Mr. Gmelich serves as the Chair of the Villanova University Board of Trustees, where he also chairs the Investment Committee, and serves on the Boards of Teddy's Fund and Trinity Hall. Mr. Gmelich received a B.S. in Finance from Villanova University, an M.S. in Accounting/Taxation from the University of Southern California and an M.B.A. in Finance from Columbia University.

Mr. Gmelich brings to the Board a deep knowledge of fixed income market structure and valuable experience in electronic trading. Mr. Gmelich also provides key insight into the perspectives of our dealer customer base.

Richard G. Ketchum

Age: 71
Director since: April 2017
Board Committees:

- Risk

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Richard G. Ketchum was most recently Chief Executive Officer of the Financial Industry Regulatory Authority, Inc. ("FINRA") from March 2009 to July 2016 and served as Chairman of FINRA's Board of Governors from March 2009 to August 2016. Prior to joining FINRA, Mr. Ketchum held a range of senior regulatory positions in the financial industry over twenty years, including as Chief Executive Officer of NYSE Regulation, Inc., President of the NASDAQ OMX Group Inc., a predecessor of Nasdaq, Inc., President and Chief Operating Officer of the National Association of Securities Dealers Inc., a predecessor of FINRA, and Director of the Division of Market Regulation at the SEC. Mr. Ketchum was also the General Counsel of the Corporate and Investment Bank of Citigroup Inc. Mr. Ketchum is on the Board of Directors of GSS, a subsidiary of BNY Mellon. He previously served as Non-Executive Chairman of the Board of Directors of Sculptor Capital Management, Inc. Mr. Ketchum received a B.A. from Tufts University and a J.D. from New York University School of Law.

Mr. Ketchum brings to the Board substantial regulatory experience in the securities industry and deep knowledge of the legal and compliance issues facing companies in the financial services industry.

Xiaojia Charles Li

Age: 61
Director since: July 2021
Board Committees:
- None

Public Company Directorships:
- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Xiaojia Charles Li has been Founder and Chairman of Micro Connect, a Hong Kong-based exchange group, since January 2021. Previously, he was Chief Executive of Hong Kong Exchanges and Clearing Limited ("HKEX") from January 2010 to December 2020. During this time, he orchestrated some of the most significant strategic initiatives in HKEX's history, including the launch of the Shanghai-Hong Kong Stock Connect cross-border trading scheme in 2014, Shenzhen-Hong Kong Stock Connect in 2016 and Bond Connect in 2017. Prior to joining HKEX in 2009, Mr. Li served as Chairman of JP Morgan China from 2003 to 2009 and worked at Merrill Lynch from 1994 to 2003, where he served as President of Merrill Lynch China from 1999 to 2003. Earlier in his career, Mr. Li practiced law in New York as an Associate at Brown & Wood LLP from 1993 to 1994 and Davis Polk & Wardwell LLP from 1991 to 1993. He currently serves on the Council of the University of Hong Kong and the Board of Trustees of Asia Business Council. Mr. Li received a B.A. in English Literature from Xiamen University in China, an M.A. in Journalism from the University of Alabama and a J.D. from Columbia Law School.

Mr. Li brings to the Board his international leadership experience in the financial services sector, in particular his expertise in market infrastructure development in Asia. Mr. Li also provides key insights into the evolving financial regulatory landscape in China.

Emily H. Portney

Age: 50
Director since: October 2017
Board Committees:
- Risk

Public Company Directorships:
- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Emily H. Portney has been Chief Financial Officer of BNY Mellon, a global investment banking services company, since July 2020. In this role, she is responsible for global financial strategy and finance functions, including controllership, business CFO teams, treasury, capital management, tax, corporate development, investor relations, procurement and real estate. Prior to this role, Ms. Portney was Head of Asset Servicing, Americas for BNY Mellon from October 2018 to July 2020. In that role, she oversaw the business unit that provides investment administration, and operational and technology solutions to alternative investment managers, asset managers, asset owners, insurance companies, banks and broker-dealers. Ms. Portney was Chief Financial Officer of Barclays International, a division of Barclays PLC, a British universal bank from September 2016 to September 2018, where she helped to establish the non-ring-fenced bank, and led a global organization spanning the Corporate and Investment Bank, the Private Bank, and the Cards and Payments businesses. From April 2016 to August 2016, she served as North America Chief Financial Officer for Visa, Inc. Prior to that, from June 1993 to January 2016, Ms. Portney worked at JPMorgan Chase & Co., serving in various senior roles including Global Head of Clearing, Collateral Management, and Execution; Chief Financial Officer of Equities and Prime Services; and Chief Operating Officer of Futures and Options. Ms. Portney previously served on the Board of Directors of The Depository Trust & Clearing Corporation (DTCC). Ms. Portney received a B.A. from Duke University and an M.B.A. from Columbia University.

Ms. Portney brings leadership experience from a number of financial institutions. Ms. Portney also has in-depth experience relating to clearing operations and strategies and the requirements of operating a firm in a highly regulated industry.

Richard L. Prager

Age: 62
Director since: July 2019
Board Committees:

- Compensation and Talent (Chair)
- Risk

Public Company Directorships:

- MarketAxess (NASDAQ: MKTX)

Qualifications and Career Highlights:

Richard L. Prager has been a Senior Advisor at Tresata, a data analytics firm, since July 2019. From May 2016 to July 2019, Mr. Prager was a Senior Managing Director of BlackRock Inc. and served on the firm's Global Executive Committee. In that role, he led the firm's global trading, cash management and securities lending teams and played a leadership role in managing BlackRock's global investment platform for both active portfolios and the iShares ETF business. Mr. Prager joined BlackRock in 2008 during the financial crisis as a Managing Director in their Financial Market Advisory business where BlackRock assisted the U.S. Government and many financial firms navigating the crisis. After BlackRock acquired BGI in 2009, Mr. Prager moved internally to the investment platform where he initially headed fixed income trading and soon thereafter, oversaw all asset class trading. In 2012 he assumed responsibility of the firm's cash management and securities lending businesses in addition to global trading. Before joining BlackRock in 2008, Mr. Prager worked in various senior roles for Bank of America from 2000 to 2008 including Global Head of Rates, Currencies and Commodities. He has also held senior roles at GenRe from 1999 to 2000, ING from 1993 to 1999 and Westpac from 1984 to 1993. Mr. Prager received a B.S. from Duke University.

Mr. Prager possesses valuable expertise in the financial markets, and has been an industry leader in the areas of electronic trading and trading technology. Mr. Prager also brings significant experience in the areas of global asset management, risk management and settlements.

CORPORATE GOVERNANCE AND BOARD MATTERS

Director independence

The Board of Directors has determined that each of our current directors, other than Mr. McVey, our Chief Executive Officer ("CEO") and Chairman of the Board of Directors ("Chairman") and Mr. Concannon, our President and Chief Operating Officer ("President & COO"), currently meet the independence requirements contained in the NASDAQ listing standards and applicable securities rules and regulations. In determining the independence of each of our non-employee directors, the Board considered the transactions described under "Certain relationships and related person transactions – Other transactions." None of our non-employee directors has a relationship with the Company or its subsidiaries that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director.

Board refreshment

We do not have director age or term limits, as we believe our efforts to regularly refresh the Board with new directors, as well as natural turnover, have achieved the appropriate balance between maintaining longer-term directors with deep institutional knowledge and new directors who bring new perspectives and diversity to our Board. Our Board reviews director tenure every year in connection with its director independence determinations. We plan to continue to refresh our Board of Directors to ensure that it is composed of high functioning, qualified and diverse members.

Currently, 7 of our 13 directors have served for less than five years. See "*Proposal 1 — Election of Directors — Director Diversity*" for more information.

In addition, on an annual basis, the Nominating and Governance Committee reviews and makes recommendations to the Board related to the size, structure and composition of the Board and its Committees.

Board diversity policy

The Company recognizes and embraces that having a diverse Board enhances both the Board's effectiveness in fulfilling its oversight role and the Company's performance. The Company's Board Diversity Statement, included in our Corporate Governance Guidelines, cites diversity at the Board level as an essential element in the attainment of its strategic objectives and in achieving sustainable and balanced development. In designing the Board's composition, diversity is considered in a number of respects, including but not limited to diversity of gender, age, race, ethnicity, nationality, cultural and educational background, professional experience, skills, knowledge and length of service. In any formal search for Board candidates, the Nominating and Corporate Governance Committee includes, and requests that any search firm that it engages include, qualified candidates with a diversity of race/ethnicity and gender in the initial pool from which the Committee selects director candidates. The ultimate decision on all Board nominations is based on merit and the contributions that the selected candidates will bring to the Board, having due regard for the benefits of diversity.

The Nominating and Corporate Governance Committee annually reviews the approval criteria for the selection of new directors and the evaluation and renomination of existing directors, including with regard to the Board Diversity Statement. This annual evaluation enables the Board and the Nominating and Corporate Governance Committee to update the skills and experience they seek in the Board as a whole, and in individual directors, as the Company's needs evolve and change over time, and to assess the effectiveness of efforts at promoting diversity.

We are subject to the new Nasdaq Listing Rule 5605(f), which, after a transition period, will require us to have, or explain why we do not have, at least two members of our Board who are diverse, including at least one diverse director who self-identifies as female and at least one director who self-identifies as an underrepresented minority or LGBTQ+. We welcome this important step in diversifying corporate boards and we currently meet the diversity objectives of this requirement. See "*Proposal 1 — Election of Directors — Director Diversity*" for more information.

How nominees to our Board are selected

Candidates for election to our Board of Directors are nominated by our Nominating and Corporate Governance Committee and ratified by our full Board of Directors for election by the stockholders. The Nominating and Corporate Governance Committee operates under a charter, which is available in the *Investor Relations — Corporate Governance* section of our corporate website at *www.marketaxess.com*.

The Nominating and Corporate Governance Committee will give the same consideration to properly submitted candidates recommended by stockholders as they do candidates suggested by other parties. Stockholders may recommend candidates for the Nominating and Corporate Governance Committee's consideration by submitting such recommendations directly to the Nominating and Corporate Governance Committee as described below under "*— Communicating with our Board members*." In making recommendations, stockholders should be mindful of the discussion of minimum qualifications set forth above under "*— Qualifications for director nominees"* though meeting such minimum qualification standards does not imply that the Nominating and Corporate Governance Committee will necessarily nominate the person recommended by a stockholder. The Nominating and Corporate Governance Committee may also engage outside search firms to assist in identifying or evaluating potential nominees.

Board leadership structure

Our CEO also serves as the Chairman of our Board, and we have a Lead Independent Director who is responsible for, among other things, consulting with the Chairman regarding the agenda and meeting schedules for each Board meeting, coordinating the activities of the non-employee directors, including presiding over the executive sessions of non-employee directors, and serving as a liaison between the Chairman and the non-employee directors. We believe that this structure is appropriate for the Company because it allows one person to speak for and lead the Company and the Board, while also providing for effective oversight by an independent Board through a Lead Independent Director. Our CEO, as the individual with primary responsibility for managing the Company's strategic direction and day-to-day operations, is in the best position to provide Board leadership that is aligned with our stockholders' interests, as well as the Company's needs. Our overall corporate governance policies and practices, combined with the strength of our independent directors, serve to minimize any potential conflicts that may result from combining the roles of CEO and Chairman.

Mr. Casper has been appointed by our independent directors to serve as our Lead Independent Director. Our Corporate Governance Guidelines provide that the Chairman of the Nominating and Corporate Governance Committee shall act as the Lead Independent Director, unless otherwise determined by a majority vote of the independent directors of the Board.

The Board has established other structural safeguards that serve to preserve the Board's independent oversight of management. The Board is comprised almost entirely of independent directors who are highly qualified and experienced, and who exercise a strong, independent oversight function. The Board's Audit Committee, Compensation and Talent Committee, Nominating and Corporate Governance Committee, Risk Committee and Finance Committee are comprised entirely of, and are chaired by, independent directors. Independent oversight of our CEO's performance is provided through a number of Board and committee processes and procedures, including regular executive sessions of non-employee directors and annual evaluations of our CEO's performance against pre-determined goals. The Board believes that these safeguards preserve the Board's independent oversight of management and provide a balance between the authority of those who oversee the Company and those who manage it on a day-to-day basis.

Board committees

Audit Committee

The Audit Committee of the Board of Directors oversees the accounting and financial reporting process of the Company and the audits of the financial statements of the Company. The Audit Committee is also responsible for preparing the audit committee report required to be included in this Proxy Statement, and the Audit Committee is directly responsible for the appointment, retention, compensation and oversight of the Company's outside auditor. The Audit Committee currently consists of Ms. Altobello (Chair), Mr. Cruger, Ms. Gibson and Mr. Gmelich.

The Board of Directors has determined that each member of the Audit Committee is an independent director in accordance with NASDAQ listing standards and Rule 10A-3 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). The Board has determined that each member of the Audit Committee is able to read and understand fundamental financial statements, including the Company's balance sheet, income statement and cash flow statement, as required by NASDAQ rules. In addition, the Board has determined that each member of the Audit Committee satisfies the NASDAQ rule requiring that at least one member of our Board's Audit Committee have past employment experience in finance or accounting, requisite professional certification in accounting, or any other comparable experience or background that results in the member's financial sophistication, including being or having been a chief executive officer, chief financial officer or other senior officer with financial oversight responsibilities. The Board has also determined that each member of the Audit Committee is an "audit committee financial expert" as defined by the SEC. For information regarding the experience and qualifications of our Audit Committee members, see the information in this Proxy Statement under the section heading "*Proposal 1 – Election of Directors — Director information.*"

Compensation and Talent Committee

The Compensation and Talent Committee of the Board of Directors (the "Compensation Committee") is responsible for reviewing and approving, and, as applicable, recommending to the full Board for approval, the compensation of the CEO and all other officers of the Company, as well as the Company's compensation philosophy, strategy, program design and administrative practices. The compensation programs reviewed and approved by the Compensation Committee consist of all forms of compensation, including salaries, cash incentives, and stock-based awards and benefits. The Compensation Committee is also responsible for oversight of the Company's talent management processes, including talent acquisition, leadership development and succession planning for key roles, reviewing the Company's diversity, equity and inclusion programs, and reviewing the Company's corporate culture. The Compensation Committee currently consists of Mr. Prager (Chair), Ms. Altobello and Ms. Gibson. The Board of Directors has determined that each member of the Compensation Committee is an "independent director" in accordance with NASDAQ listing standards and a "non-employee director" under the applicable SEC rules and regulations.

Finance Committee

The Finance Committee assists the Board with its oversight of the Company's global treasury activities, mergers, acquisitions, divestitures, strategic investments, capital structure and capital allocation strategy, financing and liquidity requirements, dividends, stock repurchase authorizations, investor relations activities and insurance and self-insurance programs. The Finance Committee currently consists of Messrs. Begleiter (Chair), Cruger and Gmelich.

Nominating and Corporate Governance Committee

The Nominating and Corporate Governance Committee of the Board of Directors identifies individuals qualified to become Board members and recommends for selection by the Board the director nominees to stand for election at each annual meeting of the Company's stockholders. In connection therewith, the Nominating and Corporate Governance Committee reviews certain policies regarding the nomination of directors and recommends any changes in such policies to the Board for its approval; identifies individuals qualified to become directors; evaluates and recommends for the Board's selection nominees to fill positions on the Board; and recommends changes in the Company's corporate governance policies, including the Corporate Governance Guidelines, to the Board for its approval. The Nominating and Corporate Governance Committee oversees the annual review of the performance of the Board of Directors, each director and each committee. The Nominating and Corporate Governance Committee also oversees the Company's environmental, social and governance strategy and initiatives. See "*Environmental, social and governance strategy and initiatives.*" The Nominating and Corporate Governance Committee currently consists of Mr. Cruger (Chair), Mr. Casper and Ms. Chwick. The Board of Directors has determined that each member of the Nominating and Corporate Governance Committee is an independent director in accordance with NASDAQ listing standards.

Risk Committee

The Risk Committee assists the Board with its oversight of the Company's risk management activities, with particular responsibility for overseeing designated areas of risk that are not the primary responsibility of another committee of the Board or retained for the Board's direct oversight. Items delegated to the Risk Committee by the Board include technology and cyber-security risk, credit risk, clearing risk and regulatory risk. The Risk Committee also oversees and receives reports related to the Company's cyber-security insurance policies and data security policies and procedures. The Risk Committee currently consists of Ms. Chwick (Chair), Mr. Ketchum, Ms. Portney and Mr. Prager.

Meetings and attendance

The following table sets forth the chairs and membership structure of the Board and each standing Board committee as of April 27, 2022, and the number of Board and Board committee meetings held during 2021.

BOARD STRUCTURE AND MEETINGS
Chair: McVey
Lead Independent Director: Casper
Members: 13 Meetings: 6

	Audit	Compensation/Talent	Finance	Nominating/Governance	Risk
Chair:	Altobello	Prager	Begleiter	Cruger	Chwick
Members:	4	3[(2)]	3	3	4
Meetings:	5[(1)]	6	3	3	6[(1)]

(1) The Audit and Risk Committees held one joint Audit and Risk Committee meeting in 2021.
(2) As of December 31, 2021, there were four members of the Compensation and Talent Committee. Mr. Begleiter rotated off the Committee in January 2022.

The non-management directors met in executive session without management directors or employees at each of the meetings of the Board during 2021. We expect each director to attend each meeting of the full Board and of the committees on which such director serves and to attend the annual meeting of stockholders. All directors, except Xiaojia Charles Li, attended at least 75% of the meetings of the full Board and the meetings of the committees on which they served. Mr. Li joined the Board in July 2021 and attended two of the three Board meetings held during 2021 during the time he was serving as a director. He missed the October 2021 meeting due to the time difference and travel restrictions imposed on travel between the Unites States and China during the Pandemic. Twelve of the thirteen directors who were serving on our Board at the time attended our 2021 annual meeting of stockholders (the "2021 Annual Meeting").

Board involvement in risk oversight

The Company's management is responsible for defining the various risks facing the Company, formulating risk management policies and procedures, and managing the Company's risk exposures on a day-to-day basis. The Board's responsibility is to oversee the Company's risk management processes by informing itself of the Company's material risks and evaluating whether management has reasonable controls in place to address the material risks. The Board is not responsible, however, for defining or managing the Company's various risks.

The Board of Directors and its committees oversee risk through regular reports from management. The Board's committees report on the matters discussed at the committee level to the full Board. The Risk Committee assists the Board with its oversight of the Company's risk management activities, including operational risks, technology risks relating to information security, business resiliency and continuity, software change management and deployment and system capacity, credit and settlement risks and regulatory risks. The Audit Committee assists the Board in its oversight of the Company's significant financial risk exposures. In addition, the Compensation Committee is charged with reviewing and assessing risks arising from the Company's compensation policies. Risk management is a factor that the Board and the Nominating and Corporate Governance Committee consider when determining who to nominate for election as a director of the Company and which directors serve on each Committee. In addition, the Nominating and Corporate Governance Committee is charged with overseeing risk related to the Company's environmental, social and governance strategy and initiatives. The Board believes this division of responsibilities provides an effective and efficient approach for addressing risk management.

The Company's Global Management Team assists management's efforts to assess and manage risk. The Global Management Team is chaired by the CEO and is comprised of the Company's senior managers with global oversight. The Global Management Team assesses the Company's business strategies and plans and ensures that appropriate policies and procedures are in place for identifying, evaluating, monitoring, managing and measuring significant risks. The Chief Risk Officer regularly prepares updates and reports for the Global Management Team, Risk Committee and the Board of Directors.

We have assembled a cross-functional team, which includes several of our executive officers, for continuously monitoring the impact of the Pandemic on our employee base and business operations. Throughout the Pandemic, the Board has overseen this risk management initiative, working closely with management to maintain information flow and timely review of issues arising from the Pandemic. For information on the effect of the Pandemic on our business, see "*Management's Discussion and Analysis — Critical Factors Affecting our Industry and our Company — Economic, Political and Market Factors*" in the Company's Annual Report on Form 10-K.

Board evaluations

Each year, the members of the Board of Directors conduct a confidential written assessment of the Board's performance that is reviewed and summarized by the Company's Lead Independent Director and the Chair of the Nominating and Corporate Governance Committee. As part of the evaluation process, the Board reviews its overall composition, including director tenure, board leadership structure, diversity, including the effectiveness of its diversity policy, and individual skill sets, to ensure it serves the best interests of stockholders and positions the Company for future success. Each Board committee also conducts an annual written self-assessment of its performance during the prior year. The results of the assessments are then summarized and communicated back to the appropriate committee chairpersons and our Lead Independent Director. After the evaluations, the Board and management work to improve upon any issues or focus points disclosed during the evaluation process. As part of the evaluation process, each committee reviews its charter annually.

Succession planning and talent management

The Board is committed to positioning MarketAxess for further growth through ongoing talent management, succession planning and the deepening of our leadership bench. Management facilitates a formal talent management and leadership development review on an annual basis for the Board. The review is focused on both immediate, short-term coverage plans for all executives in the event of an unforeseen situation, as well as longer-term, strategic succession planning. A critical element of the review is an evaluation of the Company's formal leadership development and talent acquisition initiatives in order to ensure that our leadership team has the skills, capabilities and experience to effectively lead our existing, and future, global business. The review also focuses on the retention of key managers. The annual talent management and leadership development review is supplemented by an additional year-end review by the Board of the individual performance and year-end compensation proposals for the executive management team and other key staff.

The Board values diversity among the management team and strives to increase the diversity of the executive management team, as well as the management teams reporting to them. The Board considers formal and informal initiatives to promote diversity as part of their annual talent management review. In addition, in any external searches for executive management team candidates in which the Company considers candidates that are not employees of the Company, the Company will request that any search firm that it engages include qualified candidates with a diversity of race/ethnicity and gender in the initial pool from which the Company selects such executive management team candidates.

The Board has formal exposure to the executive team at Board meetings, as well as at Board committee meetings and other discussions. There are other opportunities for more informal interaction with employees across the organization throughout the year through various events and collaborative experiences.

Code of Conduct, Code of Ethics and other governance documents

The Board has adopted a Code of Conduct that applies to all officers, directors and employees, and a Code of Ethics for the CEO and Senior Financial Officers, which includes Mr. Gerosa, our Chief Financial Officer ("CFO"). Both the Code of Conduct and the Code of Ethics for the CEO and Senior Financial Officers can be accessed in the *Investor Relations — Corporate Governance* section of our website at *www.marketaxess.com*. We intend to satisfy any disclosure obligations regarding waivers of or amendments to our Code of Conduct and Code of Ethics for the CEO and Senior Financial Officers by posting such information on our website at *www.marketaxess.com*.

You may also obtain a copy of these documents without charge by writing to MarketAxess Holdings Inc., 55 Hudson Yards, 15th Floor, New York, New York 10001, Attention: Investor Relations.

Copies of the charters of our Board's Audit Committee, Compensation Committee, Finance Committee, Risk Committee and Nominating and Corporate Governance Committee, as well as a copy of the Company's Corporate Governance Guidelines, can be accessed in the *Investor Relations — Corporate Governance* section of our website.

Communicating with our Board members

Although our Board of Directors has not adopted a formal process for stockholder communications with the Board, we make every effort to ensure that the views of stockholders are heard by the Board or by individual directors, as applicable, and we believe that this has been an effective process to date. Stockholders may communicate with the Board by sending a letter to the MarketAxess Holdings Inc. Board of Directors, c/o General Counsel, 55 Hudson Yards, 15th Floor, New York, New York 10001. The General Counsel will review the correspondence and forward it to our CEO and Chairman and the Lead Independent Director, or to any individual director or directors to whom the communication is directed, as appropriate. Notwithstanding the above, the General Counsel has the authority to discard or disregard any communication that is unduly hostile, threatening, illegal or otherwise inappropriate or to take any other appropriate actions with respect to such communications.

In addition, any person, whether or not an employee, who has a concern regarding the conduct of the Company or our employees, including with respect to our accounting, internal accounting controls or auditing issues, may, in a confidential or anonymous manner, communicate that concern in writing by addressing a letter to the Chairman of the Audit Committee, c/o Corporate Secretary, at our corporate headquarters address, which is 55 Hudson Yards, 15th Floor, New York, New York 10001, or electronically, at our corporate website, *www.marketaxess.com* under the heading "*Investor Relations — Corporate Governance*," by clicking the "*Confidential Ethics Web Form"* link.

Director compensation

For 2021, our Compensation Committee retained the services of Grahall, LLC ("Grahall") as its independent compensation consultant for purposes of advising on non-employee director compensation. Grahall reports directly to the Compensation Committee and prepares an annual review of director compensation for the Compensation Committee. The Compensation Committee then submits any proposed changes in pay level or program structure of our non-employee director compensation to the full Board for its consideration, and if appropriate, approval.

Grahall reviews and recommends compensation structure and adjustments based on the board compensation of the following:

- Proxy peer group (see "*Compensation discussion and analysis — How we determine pay levels — Peer group"*);
- ISS peer group (updated by ISS annually); and
- Industry data sources, including the National Association of Corporate Directors.

All directors, other than Mr. McVey and Mr. Concannon, are non-employee and independent directors. Mr. McVey and Mr. Concannon receive no additional compensation for service as a director.

In 2021, (i) the value of the Board member equity retainer was increased from $120,000 to $140,000 per year, (ii) the Lead Independent Director fee was increased from $45,000 to $50,000, per year; (iii) committee chair fees (other than for audit) were increased to $20,000 per year; and (iv) committee member fees (other than for audit) were increased to $10,000 per year, in each case, as recommended by Grahall. The changes were effective as of July 1, 2021. The changes were made to better align director compensation with the above-referenced market data provided by Grahall.

A summary of the structure of our director pay program that is in effect as of July 2021 is as follows:

Director Compensation Pay Structure - Effective July 2021				
	Board Cash Retainer	**Cash Committee Chair / LID Fee [1]**	**Cash Committee Membership Fee [1]**	**Board Equity Retainer**
Annual Retainer - All	$ 85,000	-	-	$ 140,000
Audit Committee	-	$ 25,000	$ 12,500	-
Compensation / Talent Committee	-	$ 20,000	$ 10,000	-
Governance / Nominating Committee	-	$ 20,000	$ 10,000	-
Finance Committee	-	$ 20,000	$ 10,000	-
Risk Committee	-	$ 20,000	$ 10,000	-
Lead Independent Director[2]	-	$ 25,000	-	$ 25,000

(1) Committee members serving as chair do not also receive a membership fee.

(2) The Lead Independent Director may choose to receive the retainer in cash or a combination of cash and equity.

In August 2021, we granted 300 shares of restricted stock or restricted stock units ("RSUs") to each non-employee director except for Mr. Li, who was granted a prorated amount of 271 RSUs in August 2021 after joining the Board in July 2021. Mr. Casper, as Lead Director, received 53 additional shares of restricted stock, equating to half of his Lead Independent Director Fee. All shares are scheduled to vest on the date of the next annual stockholders' meeting. The number of shares of restricted stock or RSUs granted was determined on the grant date by dividing the equity grant value of $140,000 (or $126,575 for Mr. Li) by the average of the closing price of our Common Stock for the ten trading days up to and including the grant date. We expect to continue to compensate our non-employee directors with a combination of cash and equity awards. All equity awards to non-employee directors are made under the Company's 2020 Equity Incentive Plan.

Below is a summary of the amount and form of actual compensation received by each non-employee director in 2021:

Director Compensation for Fiscal 2021

Name	Fees Earned or Paid in Cash [1] ($)	Stock Awards [2,4] ($)	All Other Compensation [3] ($)	Total ($)
Stephen P. Casper	117,500	167,735	713	285,948
Nancy Altobello	118,750	142,551	0	261,301
Steven L. Begleiter	110,948	142,551	0	253,499
Jane Chwick	113,750	142,551	5,557	261,858
William F. Cruger	121,250	142,551	600	264,401
Kourtney Gibson	102,953	142,551	527	246,031
Justin Gmelich	102,651	142,551	0	245,202
Richard Ketchum	93,750	142,551	600	236,901
Xiaojia Charles Li	39,728	128,771	0	168,499
Emily Portney	93,750	142,551	600	236,901
Richard Prager	108,255	142,551	600	251,406
John Steinhardt	45,337	0	600	45,936

(1) The amounts represent Board, Committee, Committee Chair and Lead Independent Director cash retainers earned in 2021. For Messrs. Li and Steinhardt, the amounts represent Board retainers earned for the portion of the year that each director served on the Board. Mr. Li joined the Board in July 2021. Mr. Steinhardt left the Board following the 2021 Annual Meeting in June 2021.

(2) The amounts represent the aggregate grant date fair value of stock awards granted by the Company in 2021, computed in accordance with FASB ASC Topic 718. For further information on how we account for stock-based compensation, see Note 11 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021. Mr. Li received a prorated number of 271 RSUs based on his length of service in 2021.

(3) Represents accrued dividends paid on restricted stock or RSUs, as applicable.

(4) The table below sets forth information regarding the aggregate number of unvested stock awards outstanding at the end of fiscal year 2021 for each non-employee director, including unvested stock awards granted in fiscal year 2021 and, in relation to Messrs. Begleiter, Cruger, and Gmelich and Ms. Altobello, RSUs for which the director previously elected to defer receipt. There are no stock option awards granted to directors in fiscal year 2021 and no stock options outstanding at fiscal year end.

Equity Awards Outstanding

Name	Aggregate Number of Stock Awards Outstanding at Fiscal Year End
Stephen P. Casper	353
Nancy Altobello	538
Steven L. Begleiter	1,056
Jane Chwick	300
William F. Cruger	1,272
Kourtney Gibson	300
Justin Gmelich	538
Richard Ketchum	300
Xiaojia Charles Li	271
Emily Portney	300
Richard Prager	300
John Steinhardt	0

Share ownership & holding guidelines

To keep the interests of non-employee directors and stockholders aligned, the Board of Directors has adopted stock ownership guidelines for our non-employee directors. Non-employee directors are required to hold not less than the number of shares of Common Stock equal in value to five times the annual cash retainer payable to a director, or $425,000. The holding requirement must be achieved within five years after the director has become a Board member and maintained throughout the non-employee director's service with the Company. All shares of Common Stock beneficially owned by the director, including shares purchased and held personally, vested and unvested restricted shares, vested and unvested restricted stock units, settled performance shares, and shares deferred under a non-qualified deferred compensation arrangement, count toward the minimum ownership requirement. Vested and unvested stock options and unearned performance shares are excluded.

In addition to the ownership guidelines, all non-employee directors must hold all shares granted for service for a minimum of five years from the date of grant. Directors are also required, for a period of six months following his or her departure from the Board, to comply with the Company's Insider Trading Policy that, among other things, prohibits trading in the Company's securities during specified blackout periods.

As of April 1, 2022, the holding requirement was equal to 1,004 shares, calculated using a price of $423.21 per share, which was the average of the daily closing price of our Common Stock for the twelve-month period ended on March 31, 2022. All of our non-employee directors have either achieved the designated level of ownership or are in the five-year period following their appointment or election to the Board during which they are expected to achieve compliance:

Directors' Stock Ownership			
Name	**Appointed**	**Requirement (multiple of cash retainer)**	**Current Holdings (multiple of cash retainer)**
Stephen P. Casper	April 2004	5.0x	267.7x
Nancy Altobello	April 2019	5.0x	4.5x
Steven L. Begleiter	April 2012	5.0x	45.0x
Jane Chwick	October 2013	5.0x	30.8x
William F. Cruger	November 2013	5.0x	30.7x
Kourtney Gibson	July 2020	5.0x	2.5x
Justin Gmelich	October 2019	5.0x	3.7x
Richard Ketchum	April 2017	5.0x	10.3x
Xiaojia Charles Li	July 2021	5.0x	1.4x
Emily Portney	October 2017	5.0x	9.0x
Richard Prager	July 2019	5.0x	9.1x

Our equity plan provides for the accrual of dividends (or dividend equivalents) on unvested shares. However, dividends are not paid and are subject to forfeiture until all restrictions on the shares have lapsed.

We do not provide any retirement benefits or other perquisites to our non-employee directors.

Certain relationships and related person transactions

Related person transactions

Our related persons include our directors, director nominees, executive officers, holders of more than five percent of the outstanding shares of our Common Stock and the foregoing persons' immediate family members. We review relationships and transactions in which the Company and our related parties are or will be participants to determine whether such related persons have a direct or indirect material interest. As required under SEC rules, related person transactions that involve in excess of $120,000 and are determined to be directly or indirectly material to a related person are disclosed in this Proxy Statement. In addition, the Audit Committee reviews and, if appropriate, approves or ratifies any related person transaction that is required to be disclosed.

Since January 1, 2021, there has not been, nor is there currently proposed, any related person transaction in which the Company was a participant, the amount involved exceeded or will exceed $120,000 and in which any related person had or will have a direct or indirect material interest.

Other transactions

Although not considered related person transactions that are required to be disclosed under SEC rules, each of the 5% stockholders that are listed under "*Security ownership of certain beneficial owners and management*" or their affiliated entities is a party to a user agreement, dealer agreement or data agreement that governs their access to, and activity on, our electronic trading platforms and access to our data products.

In addition, certain entities for which some of our directors serve as employees or officers have entered into transactions with the company, including user agreements, dealer agreements and data agreements that govern their access to, and activity on, our electronic trading platforms and access to our data products. Each of these agreements were entered into in the ordinary course of business and, subject to our usual trade terms, provide for the fees and expenses to be paid by such entities for the use of the platform or access to data. For example, in May 2021, we launched the Diversity Dealer Initiative, a series of technology enhancements that enable leading buy-side institutions and minority-, women- and veteran-owned broker dealers to more easily trade with one another on our platforms. One of our directors, Kourtney Gibson, serves as the President of Loop Capital Markets LLC, a minority-owned broker dealer that is a participating Diversity Dealer in the program. While these transactions are not considered related person transactions that are required to be disclosed under SEC rules, our Audit Committee reviews and approves such transactions on an annual basis.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE STRATEGY AND INITIATIVES

We are focused on growing our business sustainably by delivering long-term value for our customers, suppliers, stockholders, employees and the communities where we live and work. At MarketAxess, we think of our environmental, social and governance ("ESG") strategy as one that encompasses both corporate and commercial objectives. We aim to operate the Company responsibly while managing risks and using our resources wisely. As further described in the Company's 2021 ESG Report, MarketAxess demonstrated its ESG commitment in 2021 by completing its first ESG non-financial materiality and prioritization assessment and continuing our efforts to implement our effective diversity, equity and inclusion and human capital management strategies. The report also details other topics identified by the assessment, including customer privacy, data security, ethical conduct of business and employee health and wellbeing. Our 2021 ESG Report, including the results of the non-financial ESG materiality and prioritization assessment, can be accessed in the *Investor Relations — Corporate Governance* section of our website, but is not, and will not be deemed to be, a part of this Proxy Statement or incorporated by reference into any of our filings with the SEC.

Board and management oversight of ESG matters

The Company's ESG strategy and initiatives are generally overseen by the Board's Nominating and Corporate Governance Committee. In addition, other Board committees have oversight of specific topics that fall within our ESG umbrella. For example, the Compensation Committee oversees the Company's efforts with respect to diversity, equity and inclusion and the Risk Committee oversees the Company's cybersecurity policies and procedures. Our President & COO and General Counsel & Corporate Secretary share management oversight over our ESG strategy and initiatives.

During 2021, the Nominating and Governance Committee received presentations from management and discussed our ESG strategy, including the non-financial materiality and prioritization assessment. The results of this assessment are discussed in our 2021 ESG Report, which can be accessed in the *Investor Relations — Corporate Governance* section of our website.

Carbon footprint

We support the Paris Agreement Under the United Nations Framework Convention on Climate Change. Part of our support is developing an understanding of how our Company's operations contribute to global carbon emissions. For that reason, in January 2022, we began measuring our Scope 1, 2 and some of our 3 emissions and, once measured, we plan to put measurable environmental goals in place. More information can be found in our 2021 ESG Report, which can be accessed in the *Investor Relations — Corporate Governance* section of our website.

Commercial ESG initiatives

In 2021, we launched the Diversity Dealer Initiative (DDI) to enable buy side firms to trade more easily with minority-, women- and veteran-owned broker-dealers, while still achieving best execution. The DDI leverages our anonymous all-to-all Open Trading marketplace and provides enhanced trading connections by allowing institutional investor clients to select a diversity dealer to intermediate an Open Trading transaction.

In addition, in 2019 we launched our "Trading for Trees" program, under which five trees are planted by One Tree Planted, our partner charitable organization, for every $1 million of green bond trades executed on our platforms.

Green bonds are fixed income instruments designed to fund projects that have positive environmental and/or climate benefits. In 2021, $51.1 billion in corporate and municipal green bond trading volume was executed globally on the MarketAxess platforms, an increase of 89.3% from 2020. In the U.S., where public data is available, MarketAxess ranks as the largest municipal and corporate green bond marketplace with an estimated market share of 20.9% in municipal and TRACE-reported corporate green bond volume.

The third year of our "Trading for Trees" initiative proved successful. Our clients' green bond trading on the MarketAxess platform resulted in over 255,000 trees being planted across six countries, including India, Côte d'Ivoire, Rwanda, and Canada. The impact of our projects was focused on wildfire restoration and enhanced biodiversity, and provided local communities with resources to fight hunger and climate change.

PROPOSAL 2 — RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Audit Committee of our Board has appointed PricewaterhouseCoopers LLP ("*PwC*") as our independent registered public accounting firm to audit our consolidated financial statements for the year ending December 31, 2022 and to audit the Company's internal control over financial reporting as of December 31, 2022, and the Board is asking stockholders to ratify that selection. PwC has audited our consolidated financial statements each year since our formation in 2000. The Audit Committee periodically considers whether there should be a rotation of independent registered public accounting firms and the Audit Committee currently believes that the continued retention of PwC is in the best interests of the Company and our stockholders. Although current law, rules and regulations, as well as the charter of the Audit Committee, require our independent registered public accounting firm to be engaged, retained and supervised by the Audit Committee, the Board considers the selection of our independent registered public accounting firm to be an important matter of stockholder concern and considers a proposal for stockholders to ratify such selection to be an important opportunity for stockholders to provide direct feedback to the Board on an important issue of corporate governance. In the event that stockholders fail to ratify the appointment, the Audit Committee will reconsider whether or not to retain PwC, but may ultimately determine to retain PwC as our independent registered public accounting firm. Even if the appointment is ratified, the Audit Committee, in its sole discretion, may direct the appointment of a different independent registered public accounting firm at any time during the year if the Audit Committee determines that such a change would be in the best interests of the Company and its stockholders.

In 2011, the Company, in the ordinary course of its business, entered into a bulk data agreement with PwC for the purpose of supporting valuation conclusions reached by PwC in the normal course of PwC's audit and other work for its clients, which has been amended from time to time. Pursuant to the agreement, the Company provides bond pricing data to PwC on terms consistent with the terms of similar data sales agreements entered into by the Company. The aggregate annual revenue to the Company from the data agreement is $295,000. On an annual basis, the Audit Committee evaluates the effect of such agreement on the independence of PwC and has concurred with the opinion of the Company's management and PwC that the arrangement constitutes an "arm's-length" transaction that would not affect PwC's independence.

Representatives of PwC will be present at our Annual Meeting, will have the opportunity to make a statement if they desire to do so, and will be available to respond to appropriate questions from stockholders.

Your vote

Unless proxy cards are otherwise marked, the persons named as proxies will vote **FOR** the ratification of PwC as the Company's independent registered public accounting firm for the year ending December 31, 2022. Approval of this proposal requires the affirmative vote of the holders of a majority of the shares of Common Stock having voting power present in person or represented by proxy. Abstentions will have the same effect as a vote AGAINST this proposal. Brokers have discretionary authority to vote on Proposal 2 and, therefore, there will be no broker non-votes on Proposal 2.

VOTE FOR PROPOSAL 2

BOARD RECOMMENDATION

The board unanimously recommends that you vote "FOR" ratification of PwC as the Company's independent registered public accounting firm for the year ending December 31, 2022.

Audit and other fees

The aggregate fees billed by our independent registered public accounting firm for professional services rendered in connection with the audit of our annual financial statements set forth in our Annual Report on Form 10-K for the years ended December 31, 2021 and 2020 and the audit of our broker-dealer subsidiaries' annual financial statements, as well as fees paid to PwC for tax compliance and planning, if any, and other services, are set forth below.

Except as set forth in the following sentence, the Audit Committee, or a designated member thereof, pre-approves 100% of all audit, audit-related, tax and other services rendered by PwC to the Company or its subsidiaries. The Audit Committee has authorized the CEO and the CFO to purchase permitted non-audit services rendered by PwC to the Company or its subsidiaries up to, and including, a limit of $10,000 per service and an annual aggregate limit of $20,000 for all such services.

Immediately following the completion of each fiscal year, the Company's independent registered public accounting firm submits to the Audit Committee (and the Audit Committee requests from the independent registered public accounting firm), as soon as possible, the written disclosures and the letter required by the applicable requirements of the Public Company Accounting Oversight Board ("PCAOB") regarding the independent registered public accounting firm's communications with the Audit Committee concerning independence.

Immediately following the completion of each fiscal year, the independent registered public accounting firm also submits to the Audit Committee (and the Audit Committee requests from the independent registered public accounting firm), a formal written statement of the fees billed by the independent registered public accounting firm to the Company in each of the last two fiscal years for each of the following categories of services rendered by the independent registered public accounting firm: (i) the audit of the Company's annual financial statements and the reviews of the financial statements included in the Company's Quarterly Reports on Form 10-Q or services that are normally provided by the independent registered public accounting firm in connection with statutory and regulatory filings or engagements; (ii) assurance and related services not included in clause (i) that are reasonably related to the performance of the audit or review of the Company's financial statements, in the aggregate and by each service; (iii) tax compliance, tax advice and tax planning services, in the aggregate and by each service; and (iv) all other products and services rendered by the independent registered public accounting firm, in the aggregate and by each service.

Set forth below is information regarding fees paid by the Company to PwC during the fiscal years ended December 31, 2021 and 2020.

Fee Category		2021		2020
Audit Fees(1)	$	2,690,747	$	2,765,478
All Other Fees(2)		1,720		4,460
Total	$	2,692,467	$	2,769,938

(1) The aggregate fees incurred include amounts for the audit of the Company's consolidated financial statements (including fees for the audit of our internal control over financial reporting), the audit of our broker-dealer subsidiaries' annual financial statements and the audits of our foreign subsidiaries' annual statutory financial statements.

(2) Other Fees are comprised of annual subscription fees for accounting related research and service fees related to XBRL conversion services.

REPORT OF THE AUDIT COMMITTEE OF THE BOARD OF DIRECTORS

The Audit Committee currently consists of Ms. Altobello (Chair), Mr. Cruger, Ms. Gibson and Mr. Gmelich. Each member of the Audit Committee is independent, as independence is defined for purposes of Audit Committee membership by the listing standards of NASDAQ and the applicable rules and regulations of the SEC.

The Audit Committee appoints our independent registered public accounting firm, reviews the plan for and the results of the independent audit, approves the fees of our independent registered public accounting firm, reviews with management and the independent registered public accounting firm our quarterly and annual financial statements and our internal accounting, financial and disclosure controls, reviews and approves transactions between the Company and its officers, directors and affiliates, and performs other duties and responsibilities as set forth in a charter approved by the Board of Directors.

During fiscal year 2021, the Audit Committee met five times. The Company's senior financial management and independent registered public accounting firm were in attendance at such meetings. Following each quarterly meeting during 2021, the Audit Committee conducted a private session with the independent registered public accounting firm, without the presence of management. The Audit Committee also had one joint meeting with the Risk Committee during 2021.

The management of the Company is responsible for the preparation and integrity of the financial reporting information and related systems of internal controls. The Audit Committee, in carrying out its role, relies on the Company's senior management, including particularly its senior financial management, to prepare financial statements with integrity and objectivity and in accordance with generally accepted accounting principles, and relies upon the Company's independent registered public accounting firm to review or audit, as applicable, such financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB").

We have reviewed and discussed with senior management the Company's audited financial statements for the year ended December 31, 2021 which are included in the Company's 2021 Annual Report on Form 10-K. Management has confirmed to us that such financial statements (i) have been prepared with integrity and objectivity and are the responsibility of management and (ii) have been prepared in conformity with generally accepted accounting principles.

In discharging our oversight responsibility as to the audit process, we have discussed with PwC, the Company's independent registered public accounting firm, the matters required to be discussed by the applicable requirements of the PCAOB and the SEC.

We have received the written disclosures and the letter from PwC concerning their communications with us concerning independence, as required by applicable requirements of the PCAOB, and we have discussed with PwC their independence.

Based upon the foregoing review and discussions with our independent registered public accounting firm and senior management of the Company, we recommended to our Board that the financial statements prepared by the Company's management and audited by its independent registered public accounting firm be included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021, that was filed with the SEC.

Submitted by the Audit Committee of the Board of Directors:

Nancy Altobello — Chair
William F. Cruger
Kourtney Gibson
Justin G. Gmelich

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding the beneficial ownership of the Company's Common Stock as of April 11, 2022 by (i) each person or group of persons known by us to beneficially own more than five percent of our Common Stock, (ii) each of our named executive officers ("NEOs"), (iii) each of our directors and nominees for director and (iv) all of our directors and executive officers as a group.

The following table gives effect to the shares of Common Stock issuable within 60 days of April 11, 2022 upon the exercise of all options and other rights beneficially owned by the indicated stockholders on that date. Beneficial ownership is determined in accordance with Rule 13d-3 promulgated under Section 13 of the Exchange Act and includes voting and investment power with respect to shares. The percentage of beneficial ownership is based on 37,451,233 shares of Common Stock outstanding at the close of business on April 11, 2022. Except as otherwise noted below, each person or entity named in the following table has sole voting and investment power with respect to all shares of our Common Stock that such person or entity beneficially owns.

Unless otherwise indicated, the address of each beneficial owner listed below is c/o MarketAxess Holdings Inc., 55 Hudson Yards, 15th Floor, New York, New York 10001.

	Number of Shares Beneficially Owned	Percentage of Stock Owned
5% Stockholders		
The Vanguard Group [1]	4,159,090	11.11%
T. Rowe Price Associates, Inc. [2]	3,668,968	9.80%
BlackRock, Inc. [3]	3,563,993	9.52%
NEOs and Directors		
Richard M. McVey [4]	528,929	1.41%
Nancy Altobello [5]	668	*
Steven Begleiter [6]	8,285	*
Stephen P. Casper [7]	53,761	*
Jane Chwick [8]	6,177	*
Christopher Concannon [9]	35,668	*
William F. Cruger [10]	5,192	*
Kourtney Gibson [11]	509	*
Justin Gmelich [12]	508	*
Richard G. Ketchum [13]	2,060	*
Xiaojia Charles Li [14]	271	*
Emily H. Portney [15]	1,797	*
Richard Prager [16]	1,826	*
Antonio L. DeLise [17]	8,482	*
Christopher N. Gerosa [18]	802	*
Kevin McPherson [19]	69,232	*
Naineshkumar Shantilal Panchal [20]	—	*
Scott Pintoff [21]	4,661	*
Christophe Roupie [22]	5,815	*
Nicholas Themelis [23]	5,355	*
All Executive Officers and Directors as a Group (18 persons) [24]	726,161	1.94%

* **Less than 1%.**

(1) Information regarding the number of shares beneficially owned by The Vanguard Group was obtained from a Schedule 13G filed by The Vanguard Group with the SEC on February 10, 2022. The principal business address of The Vanguard Group is 100 Vanguard Blvd., Malvern, PA 19355.

(2) Information regarding the number of shares beneficially owned by T. Rowe Price Associates, Inc. was obtained from a Schedule 13G filed by T. Rowe Price Associates, Inc. with the SEC on February 14, 2022. The principal business address of T. Rowe Price Associates, Inc. is 100 E. Pratt Street, Baltimore, MD 21202.

(3) Information regarding the number of shares beneficially owned by BlackRock, Inc. was obtained from a Schedule 13G filed by BlackRock, Inc. with the SEC on February 3, 2022. The principal business address of BlackRock, Inc. is 55 East 52nd Street, New York, NY 10055.

(4) Consists of (i) 440,273 shares of Common Stock owned individually; (ii) 2,000 shares of Common Stock owned by immediate family members; (iii) 37,742 shares of unvested restricted stock; and (iv) 48,914 shares of Common Stock issuable pursuant to stock options granted to Mr. McVey that are or become exercisable within 60 days. Does not include (i) 163,673 shares of Common Stock issuable pursuant to stock options that are not exercisable within 60 days; (ii) 4,150 unvested restricted stock units; (iii) 223,066 deferred restricted stock units or (iv) 12,531 performance shares and performance stock units.

(5) Consists of (i) 368 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock units that vest within 60 days. Does not include (i) 238 deferred restricted stock units.

(6) Consists of (i) 7,985 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock units that vest within 60 days. Does not include 756 deferred restricted stock units.

(7) Consists of (i) 8,600 shares of Common Stock owned individually; (ii) 44,808 shares of Common Stock held indirectly in a trust for which Mr. Casper's spouse is the trustee; and (iii) 353 unvested restricted stock awards that vest within 60 days.

(8) Consists of (i) 5,877 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock awards that vest within 60 days.

(9) Consists of (i) 15,273 shares of Common Stock owned individually; (ii) 18,914 shares of unvested restricted stock; and (iii) 1,481 shares of Common Stock issuable pursuant to stock options granted to Mr. Concannon that are or become exercisable within 60 days. Does not include (i) 86,008 shares of Common Stock issuable pursuant to stock options that are not exercisable within 60 days; (ii) 3,568 unvested restricted stock units or (iii) 8,953 performance shares and performance stock units.

(10) Consists of (i) 4,892 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock awards that vest within 60 days. Does not include 972 deferred restricted stock units.

(11) Consists of (i) 209 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock awards that vest within 60 days.

(12) Consists of (i) 208 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock units that vest within 60 days. Does not include (i) 238 deferred restricted stock units.

(13) Consists of (i) 1,760 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock awards that vest within 60 days.

(14) Consists of 271 unvested restricted stock units that vest within 60 days.

(15) Consists of (i) 1,497 shares of Common Stock owned individually; and (ii) 300 unvested restricted stock awards that vest within 60 days.

(16) Consists of (i) 849 shares of Common Stock owned individually; (ii) 677 shares of Common Stock beneficially owned by Mr. Prager by trust; and (iii) 300 unvested restricted stock awards that vest within 60 days.

(17) Consists of (i) 8,482 shares of Common Stock owned individually. Does not include (i) 2,251 unvested restricted stock units; (ii) 16,260 deferred restricted stock units or (iii) 3,125 performance shares and performance stock units.

(18) Consists of (i) 722 shares of Common Stock owned individually; and (ii) 80 shares of unvested restricted stock. Does not include (i) 2,455 shares of Common Stock issuable pursuant to stock options that are not exercisable within 60 days; (ii) 1,073 unvested restricted stock units or (ii) 1,381 performance stock units.

(19) Consists of (i) 69,232 shares of Common Stock owned individually. Does not include (i) 3,032 unvested restricted stock units or (ii) 4,014 performance shares and performance stock units.

(20) Does not include (i) 5,821 unvested restricted stock units; or (ii) 3,986 performance shares and performance stock units.

(21) Consists of (i) 4,661 shares of Common Stock owned individually. Does not include (i) 1,658 unvested restricted stock units or (ii) 2,316 performance shares and performance stock units.

(22) Consists of (i) 5,374 shares of Common Stock owned individually; and (ii) 441 shares of unvested restricted stock. Does not include (i) 1,243 unvested restricted stock units or (ii) 2,128 performance shares and performance stock units.

(23) Consists of (i) 5,355 shares of Common Stock owned individually. Does not include (i) 3,189 unvested restricted stock units or (ii) 4,355 performance shares and performance stock units.

(24) Consists of (i) 615,265 shares of Common Stock owned individually; (ii) 57,177 shares of unvested restricted stock; (iii) 3,324 shares of restricted stock units that vest or deliver within 60 days; and (iv) 50,395 shares of Common Stock issuable pursuant to stock options that are or become exercisable within 60 days. Does not include (i) 252,136 shares of Common Stock issuable pursuant to stock options that are not exercisable within 60 days; (ii) 20,545 restricted stock units that are unvested; (iii) 225,270 deferred restricted stock units or (iv) 35,309 performance shares and performance stock units.

EXECUTIVE OFFICERS

Set forth below is information concerning our executive officers as of the date hereof.

Name	Age	Position
Richard M. McVey	62	Chief Executive Officer and Chairman of the Board of Directors
Christopher R. Concannon	54	President, Chief Operating Officer and Director
Christopher N. Gerosa	46	Chief Financial Officer
Kevin McPherson	51	Global Head of Sales
Naineshkumar Shantilal Panchal	50	Chief Information Officer
Scott Pintoff	51	General Counsel and Corporate Secretary
Christophe Roupie	56	Head of EMEA and APAC

Richard M. McVey has been CEO and Chairman since our inception. See "*Proposal 1 – Election of Directors — Director information"* for a discussion of Mr. McVey's business experience.

Christopher R. Concannon has been President & COO, and a member of the Board of Directors, since January 2019. See "*Proposal 1 – Election of Directors — Director information"* for a discussion of Mr. Concannon's business experience.

Christopher N. Gerosa has been CFO since August 2021. Prior to his current role, Mr. Gerosa was Head of Accounting and Finance of the Company from April 2015 to August 2021, with global responsibility for accounting, tax, treasury management and financial planning and analysis functions. Prior to joining the Company, Mr. Gerosa was Chief Financial Officer of Primus Guaranty, Ltd. ("Primus") from 2010 to 2014 and Corporate Treasurer from April 2007 to 2014. Prior to these roles, Mr. Gerosa held the position of Corporate Controller and served as the Director of Investor Relations of Primus. Mr. Gerosa joined Primus in 2003 and was an integral part of taking Primus public in 2004. Before joining Primus, he worked in the product controller areas of Deutsche Bank and Goldman Sachs. Mr. Gerosa began his professional career at Arthur Andersen. He served as a U.S. Army National Guard Infantry Officer after receiving his B.B.A. from the University of Notre Dame.

Kevin McPherson has been Global Head of Sales since June 2014. From January 2008 to June 2014, Mr. McPherson was the Company's U.S. Sales Manager. From March 1999 to December 2007, Mr. McPherson was a Sales Representative for the Company, running the Company's West Coast sales and distribution effort. From June 1996 to March 1999, Mr. McPherson worked within the Emerging Markets Fixed Income Group of Scudder Stevens & Clark, where he traded emerging market fixed income securities and supported portfolio administration. Mr. McPherson began his career at State Street Bank & Trust, where he worked from June 1994 to June 1996 as an accountant and auditor for fixed income and equities portfolios. Mr. McPherson received a B.A. in business administration from the University of Maine.

Naineshkumar Shantilal Panchal has been Chief Information Officer since March 2022. Prior to his current role, Mr. Panchal served as a Managing Director of Goldman Sachs Asset Management Technology from November 2014 to February 2022. In that role, he served in various capacities, including a Global Co-Head of Technology, Asset Management Division from 2020 to 2021, Global Head of Goldman Sachs Asset Management Portfolio Management and Trading Technology from 2019 to 2020, Global Co-Head of Goldman Sachs Asset Management Portfolio Management and Trading Technology from 2018 to 2019 and Global Head of Fixed Income and Sales Technology, Asset Management Division from 2014 to 2018. Prior to this role, he was a Managing Director, Technology of Goldman Sachs Securities Division, serving in various capacities from 1996 to 2014. Mr. Panchal began his career as a Consultant, Financial Services at Andersen Consulting prior to his tenure at Goldman Sachs. He holds a B.A. and an M.A., each in Computer Science, from Cambridge University.

Scott Pintoff has been General Counsel and Corporate Secretary since February 2014. Prior to joining us, Mr. Pintoff was General Counsel and Corporate Secretary at GFI Group, a position he held since 2003. At GFI, Mr. Pintoff was responsible for all legal, regulatory and compliance matters, including their IPO, all acquisitions and implementation of the Dodd-Frank Act. Mr. Pintoff joined GFI Group in 2000 as Associate General Counsel. Prior to GFI, Mr. Pintoff was at Dewey Ballantine LLP from 1996 to 2000 within the mergers and acquisitions group. Mr. Pintoff received a B.A. (Honors) from Wesleyan University and a J.D. from the New York University School of Law.

Christophe Roupie has been Head of EMEA and APAC since May 2020. From March 2017 through May 2020, Mr. Roupie was the Company's Head of Europe and Asia. Prior to joining us, from October 2015 until October 2016, Mr. Roupie was the CEO of HiRock AG, a family office in Switzerland. From May 2005 to October 2015, Mr. Roupie was Global Head of Trading and Securities Financing at AXA Investment Managers. While at AXA Investment Managers, he managed trading teams in Paris, London, Hong Kong and Greenwich, Connecticut across equities, fixed income, FX, derivatives, repo and stock lending. Prior to this, Mr. Roupie was the Global Head of Fixed Income Trading at IXIS AM (now Natixis Asset Management) from October 2000 to March 2005.

A LETTER FROM OUR COMPENSATION AND TALENT COMMITTEE

Dear Fellow Stockholders,

As members of MarketAxess' Compensation and Talent Committee (the "Compensation Committee"), we endeavor to create an executive compensation program that is performance-based, directly correlated with business and financial results, and designed to attract, reward and retain high caliber executives.

As detailed in the Compensation Discussion and Analysis, in 2021, the Company made significant strides in executing against its long-term growth strategy against a challenging market backdrop. Credit spreads and credit spread volatility were at historically low levels throughout most of 2021, adversely impacting the Company's financial results relative to record levels achieved in 2020. Because of difficult market conditions for credit trading, our 2021 results were below our budget and the compensation of our employees, including the NEOs, fell as a result.

In 2021, we received strong positive feedback from stockholders on our compensation program. The 2021 say-on-pay proposal received 96.2% support, and subsequent stockholder engagement in late 2021 and early 2022, has generally been positive. The Compensation Committee seeks to include the input of our stockholders in the regular evaluation of our programs and welcomes continued stockholder feedback regarding our executive compensation practices. The Company's management reached out to stockholders who collectively represented over 65% of our outstanding common stock and had conversations with 6 stockholders who requested engagement representing approximately 25% percent of our outstanding common stock. The feedback from our stockholders, including the welcomed evolution of our executive compensation programs over the last few years, was conveyed to our Compensation Committee. We remain determined to understand your perspectives and committed to considering constructive changes in response to your feedback.

Our compensation program is designed to reward the short-term and long-term success of the Company. 2021 NEO cash incentives were tied to both 2021 Adjusted Operating Income and the executive's individual performance, including contributions to the Company's growth strategy. 2021 equity incentives, granted in January 2022, were comprised 50% of performance stock units, which measure a combination of market share, revenue growth, and operating margin, over a subsequent three-year performance period.

Our Compensation Committee is and will remain committed to the ongoing evaluation and improvement of our executive compensation program. We look forward to continuing the dialogue and encourage you to reach out with any questions or concerns related to our program before making your voting decision. Thank you for your investment in MarketAxess.

Submitted by the Compensation and Talent Committee of the Board of Directors:

Richard L. Prager – Chair
Nancy Altobello
Kourtney Gibson

COMPENSATION DISCUSSION AND ANALYSIS

This Compensation Discussion and Analysis ("CD&A") describes the Company's executive compensation program and provides an overview of the Company's pay for performance methodology and compensation decisions for the following NEOs:

Name	Title
Richard M. McVey	Chief Executive Officer and Chairman of the Board of Directors
Christopher R. Concannon	President and Chief Operating Officer
Christopher N. Gerosa	Chief Financial Officer
Kevin McPherson	Global Head of Sales
Antonio L. DeLise	Former Global Head of Corporate Development and Former Chief Financial Officer
Nicholas Themelis	Former Chief Information Officer

Effective August 1, 2021, Mr. Gerosa succeeded Mr. DeLise as the Company's CFO. Mr. DeLise is a NEO for 2021 because he was the CFO of the Company for a portion of the year. Effective March 1, 2022, Mr. Panchal succeeded Mr. Themelis as Chief Information Officer. Mr. Themelis is a NEO for 2021 because Mr. Themelis was one of the Company's three most highly compensated executive officers as of December 31, 2021. Both Mr. DeLise and Mr. Themelis have retired from their respective positions as of the date of this Proxy Statement. See "*Executive compensation — Employment agreements and severance arrangements with our Named Executive Officers*."

We have not made any changes or adjustments to our executive compensation program as a result of the Pandemic. Any consideration given to the impact of the Pandemic by the Compensation Committee in their evaluation of a NEO's performance during 2021 is described below in "*2021 compensation detail – Annual Cash Incentives – 2021 Individual Performance.*"

Responding to stockholders; evolving pay practices

Say-on-Pay support & 2021 stockholder engagement

Our annual say-on-pay vote ("Say-on-Pay") is one of our opportunities to receive feedback from stockholders regarding our executive compensation program. At the 2021 Annual Meeting, approximately 96.2% of the votes cast approved the Say-on-Pay proposal, an increase from 93.7% and 73% in 2020 and 2019, respectively. Since 2019, management and the Board have conducted annual outreach with our stockholders to better understand investors' perspectives on our compensation program and incorporate their feedback. Following the 2021 Annual Meeting, we continued this dialogue by reaching out to stockholders who collectively represented over 65% of our outstanding common stock and had conversations with six stockholders who requested engagement representing more than 25% percent of our outstanding common stock. During our outreach, we discussed a range of relevant topics with stockholders, including the evolution of our executive compensation programs, for which we received consistently positive feedback.

With regard to non-compensation matters, the stockholders with whom we spoke welcomed the continued refreshment of the Board, the publication of our second ESG Report, our decision to begin measuring the Company's carbon emissions in 2022 and the success of our Trading-for-Trees and Diversity Dealer initiatives.

Stockholder feedback was relayed directly to the Board of Directors, including to relevant Board committees that oversee various ESG Topics. See "*Environmental, social and governance strategy and initiatives — Board and management oversight of ESG matters*" for more information.

Compensation highlights

Below are key elements of our executive compensation program for performance year 2021:

- ***NEO's Annual Cash Incentive Compensation Program –*** 50% of the NEOs' annual cash incentive was tied to the Company's adjusted operating income performance for the fiscal year based on the 2021 budget, and 50% was tied to the executive's delivery against individual goals and strategic corporate objectives.

- ***Annual Equity Award Performance Share Metrics –*** the performance stock units granted in January 2022, representing 50% of our NEOs' annual equity award in relation to prior year performance, were awarded with a three-year performance period based on a combination of market share, revenue growth and operating margin metrics. Performance targets for years two and three are based off of the previous year's actual results.

- ***Continued Committee Refreshment –*** In July 2021, the Chair of the Compensation Committee was rotated to Mr. Prager and Ms. Gibson joined the Compensation Committee. Following the 2021 compensation process, Mr. Begleiter was rotated off the Compensation Committee.

Executive summary

MarketAxess 2021 performance overview

In 2021, the Company made significant strides in executing against its long-term growth strategy. In terms of our core business, we maintained our strong leadership position in the U.S. credit institutional client e-trading space, and we registered very strong growth in our international credit businesses, including Eurobonds and emerging markets, reflecting the benefit of our global product diversification efforts. Open Trading continues to be a key differentiator in terms of our liquidity offering, with approximately 1,700 counterparties driving significant transaction cost savings for our clients. Beyond our core business, we made significant progress expanding our growth cylinders. Our U.S. Treasury bond platform recorded a record $4.1 trillion of volume in 2021 and we made key technology enhancements to enable investor clients to leverage our all-to-all Live Markets order book. In municipal bonds, we integrated our acquisition of MuniBrokers, a central electronic trading venue serving municipal bond inter-dealer brokers and dealers, in order to expand our existing municipal bond trading solution. And on the data and post-trade side, we significantly enhanced our service offering, with the addition of Regulatory Reporting Hub increasing combined post-trade and data revenue by 43% in 2021. We continued to grow our total active client base to nearly 1,900 active clients, with approximately 1,000 clients trading three or more products on our platform. These number of clients records enhance the network effect on our platforms.

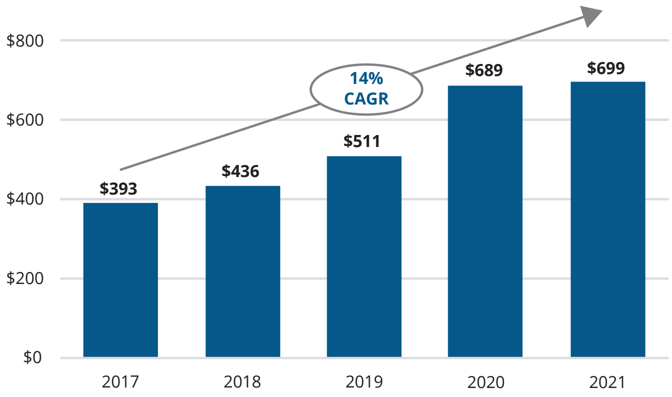
We believe that the Company improved its strategic positioning in 2021 against a challenging market backdrop. Credit spreads and credit spread volatility were at historically low levels throughout most of 2021, adversely impacting our financial results relative to record levels achieved in 2020. Because of difficult market conditions for credit trading, our 2021 results were below our budget and the compensation of our employees, including the NEOs, fell as a result.

For reference, we have included compound annual growth rates ("CAGR"), where appropriate, for the key performance metrics discussed below.

Key performance metrics

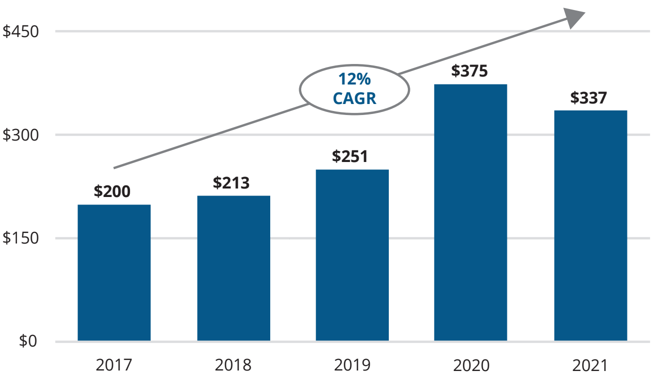
Our key performance metrics include:

Total Revenues:



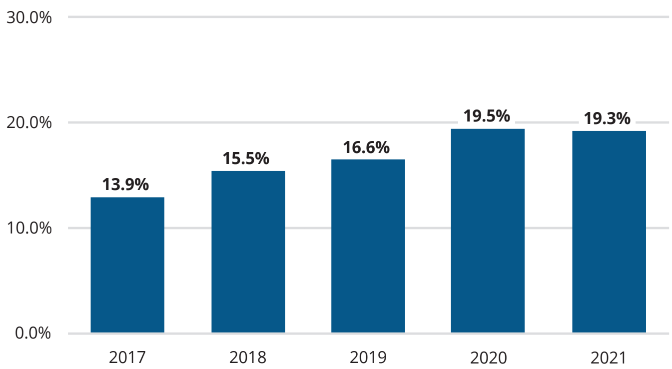
A 32% increase in revenue in 2020, driven by a significant increase in volatility during the year, made for tough year-over-year comparisons in 2021, as credit spreads and credit spread volatility decreased significantly, and estimated U.S. credit market TRACE volumes declined 7%. While market conditions were more challenging in 2021, the Company reported a record $699 million in revenue, the 13th consecutive year of record revenue. Partially offsetting the weaker U.S. credit environment was a strong performance in our international growth cylinders, Eurobond trading and emerging markets trading as well as higher post-trade revenue with the acquisition of Regulatory Reporting Hub, which closed at the end of 2020. Furthermore, revenue growth over the combined 2020-2021 period grew at a CAGR of 17%, above our 5-year revenue growth rate, and in line with the long-term revenue growth trajectory for the Company.

Operating Income:



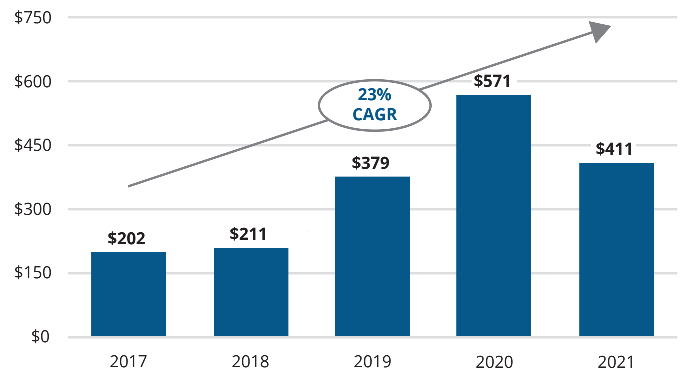
To capture the long-term growth opportunity for stockholders in the global fixed-income market, the Company is continuing to invest in new markets, trading protocols and data and content. Given challenging market conditions in 2021 and our continued investments to drive future growth, operating income declined 10% in 2021. Total expenses in 2021 increased 15%, and included $24.0 million in costs related to the acquisition of Regulatory Reporting Hub and MuniBrokers. Excluding these strategic investments, total operating expenses would have increased 7% year-over-year. Furthermore, operating income growth over the combined 2020-2021 period grew at a CAGR of 16%, above our 5-year operating income growth rate, and in line with long-term operating income growth trajectory for the Company.

Estimated U.S. Credit Market Share:



In 2021, the Company maintained its strong leadership position in the U.S. credit institutional e-trading space. The institutional client segment is the largest in the global credit markets and represents the highest-quality order flow for banks and other market makers. In 2021, approximately 92% of credit volume on the platform was executed by institutional clients and our estimated market share of the U.S. credit market was 19.3%, in line with the prior year, while estimated U.S. credit market TRACE volumes decreased 7%. Since November of 2021, credit spreads and credit spread volatility have continued to increase off the lows of 2021.

Closing Stock Prices as of December 31:



Market conditions were more challenging in 2021, dampening earnings relative to elevated 2020 levels, resulting in a decline in the 2021 closing stock price. Despite challenging market conditions, the Company continued to invest and innovate in new platforms, new trading protocols, new functionality and international expansion, expanding and creating new avenues of growth for the future. For example, in U.S. Treasuries, the company recently introduced a live, all-to-all order book, leveraging the acquisition of LiquidityEdge to curate a new and innovative trading liquidity pool for rates trading. In municipal bonds, we are enhancing the content we offer in this space with the integration of MuniBrokers. And, on the international front, we are focusing on adding new local markets to expand our leading global emerging markets product offering. We believe these growth initiatives will only enhance our already strong growth profile in 2022 and beyond.

Relative Stock Performance

All of the major product areas trading on the Company's platforms are in early stages of electronification. Given this, the Company's focus is on investing and innovating to capture the long-term opportunity over the next decade. We believe that the differentiated liquidity pool on our platforms and the trading efficiency and transaction cost savings that we provide to investors and dealers globally, will lead to greater electronification in the global fixed income market. Despite our one-year underperformance relative to the S&P 500 and our Peer Group Median, our long-term track record is reflected in the superior returns for stockholders generated over the five-to-ten-year periods noted below.

	10-Year Return	5-Year Return	3-Year Return	1-Year Return
MKTX	1,448.0	189.5	98.2	-27.5
S&P 500	362.6	133.4	100.4	28.7
Peer Group Median	524.4	178.3	85.2	17.9

Elements of executive compensation

The compensation structure for our NEOs is comprised of base salaries, annual cash incentive compensation and various forms of equity granted under our 2020 Equity Incentive Plan. The combination of these elements enables us to offer a competitive, cost-effective compensation program that balances variable, or at-risk, compensation with prudent risk-taking and the interests of our stockholders. Equity awards may be granted on an annual basis or as one-time awards, including multi-year awards that are attributed over multiple years of compensation. We believe that equity awards serve as an important part of an NEO's compensation in that they further ensure alignment of the NEO's interests with those of our stockholders.

Annual variable cash and equity compensation gives the Compensation Committee the flexibility to tie NEO compensation to individual and corporate performance, which is an important element of our pay philosophy and each NEO's compensation.

The table below summarizes the elements of our compensation program as in effect for fiscal year 2021, and how each element supports the Company's compensation objectives:

<table>
<tr><th colspan="2">Component</th><th colspan="2">Performance Link</th><th>Description</th></tr>
<tr><td>Base Salary</td><td>Cash</td><td colspan="2">N/A</td><td>• Provides a consistent minimum level of compensation that is paid throughout the year at a cost-effective level for the Company</td></tr>
<tr><td rowspan="2">Annual Cash Incentive</td><td rowspan="2">Cash</td><td colspan="2">Adjusted operating income (50%)</td><td rowspan="2">• Performance-based cash incentive opportunity
• Rewards short-term performance in a framework that discourages excessive risk-taking</td></tr>
<tr><td colspan="2">Individual performance and contributions to strategic corporate objectives (50%)</td></tr>
<tr><td rowspan="5">Long-Term Annual Equity Incentive [1]</td><td rowspan="4">50% Performance stock units (PSUs)</td><td>Granted in 2021 for 2020</td><td>Granted in 2022 for 2021</td><td rowspan="4">• Financial performance targets are pre-determined by the Compensation Committee and reflect our financial and strategic long-term goals
• Three-year performance periods with one-year calculation periods
• Targets for years two and three are tied to prior year's results
• Cliff-vest after three years</td></tr>
<tr><td rowspan="2">Market share (50%)</td><td>US credit market share (33.3%)</td></tr>
<tr><td>Revenue growth excluding US credit (33.3%)</td></tr>
<tr><td>Operating margin (50%)</td><td>Operating margin (33.3%)</td></tr>
<tr><td>50% Time vested equity (RSUs and stock options)</td><td colspan="2">Stock price performance</td><td>• Share-based awards establish direct alignment with our stock price performance and stockholder interests
• Messrs. McVey and Concannon receive the portion of their annual long-term equity award that is time-based half in restricted stock units ("RSUs") and half in stock options
• Under our "Flex Share" program, the other NEOs may choose to receive this portion of their award in all RSUs or a combination of RSUs and stock options, allowing the Company to deliver more individualized awards without incurring additional expense
• Vest ratably over three years</td></tr>
</table>

(1) In connection with his appointment as CFO, Mr. Gerosa also received a one-time multi-year equity grant. See "*— 2021 compensation detail —Multi-year awards*" below.

The NEOs also receive standard employee benefits, including healthcare, life insurance, disability and retirement savings plans. The NEOs do not receive any perquisites.

2021 compensation decisions

A significant portion of each NEO's compensation is dependent on our financial performance, with firm-wide annual cash incentives impacted by adjusted operating income. The Company generated $379.6 million of adjusted operating income in 2021, which was below our 2021 internal target goal of $474.7 million. See Appendix A for a reconciliation of adjusted operating income to operating income. Accordingly, the cash incentive plan pool funding was lower than budgeted, resulting in lower cash incentive compensation for our NEOs. Further details about how the adjusted operating income affected the NEO's cash incentive can be found under "*— 2021 compensation* detail *— Annual cash incentives"* below.

The remainder of each NEO's annual cash incentive awards for 2021 was determined by the Compensation Committee's assessment of the performance of each NEO and his contribution to our corporate objectives for 2021.

The Compensation Committee considered the Company's relative underperformance in 2021 when determining to decrease the annual cash incentives and reduce the size of the equity awards granted in January 2022 for 2021 performance.

As compared to 2020, annual cash incentives, annual long-term equity incentives and total direct compensation ("TDC"), which includes cash payments, annual equity awards made in relation to prior year performance (e.g., January 2022 awards for 2021 performance) and the annualized value of multi-year equity awards, decreased for each NEO.

2021 Total Compensation Summary *(000's)*

	2021 Base	2021 Incentive			Total Compensation [2]		
	Salary	Cash	Equity [1]	Total	2021	vs. 2020 ($)	vs. 2020 (%)
Richard M. McVey	$500	$1,800	$5,450	$7,250	$7,750	-$750	-9%
Christopher R. Concannon	$500	$1,200	$3,550	$4,750	$5,250	-$250	-5%
Christopher N. Gerosa [3]	$277	$370	$553	$923	$1,200	-	-
Kevin McPherson	$300	$1,000	$1,350	$2,350	$2,650	-$250	-9%
Antonio L. DeLise	$300	$700	$900	$1,600	$1,900	-$500	-21%
Nicholas Themelis	$300	$1,000	$1,300	$2,300	$2,600	-$600	-19%

(1) Represents equity awards attributable to 2021 performance. Messrs. McVey's, Concannon's and Gerosa's equity incentive column include $2,200,000, $1,000,000 and $333,333 in attributed multi-year compensation from previously granted multi-year equity awards. See "—Multi-Year Awards" below.

(2) "2021 Total Compensation" differs from the figures shown in the total column of the table under "*Executive compensation —Summary compensation table."* The Summary Compensation Table reflects the full grant date value of any multi-year performance equity award received by the NEOs in the year actually granted, in accordance with FASB ASC Topic 718. In addition, the 2021 figures in the Summary Compensation Table include equity awards granted in January 2021 for 2020 performance.

(3) Mr. Gerosa's base salary column shows the amount he received, reflecting a salary change from $260,000 per year to $300,000 per year effective as of August 1, 2021, in connection to his promotion to CFO.

Executive compensation practices and governance

Principles and strategy

Our executive compensation program is designed to promote the following core principles that are aligned with our Company's business strategy:

- ***Alignment*****:** we align Company and individual performance and decision-making with long-term stockholder value creation;
- ***Retention:*** attract, reward and retain high caliber executives;
- ***Motivation:*** motivate high performance from our NEOs by offering greater incentives for superior performance and reduced awards for underperformance;
- ***Prudence:*** discourage imprudent risk-taking by avoiding undue emphasis on any one metric or short-term goals; and
- ***Fairness:*** be transparent and fair to both our NEOs and our stockholders.

We believe these principles have served us well for many years, and we are continuing to refine them in response to input from our stockholders.

Our compensation principles place a majority of our executive officers' compensation at risk and emphasize incentives tied to individual and Company performance, as well as continued service. As a result, the only fixed compensation paid is base salary, which represented 6% of our CEO's total compensation and no more than 23% of the other NEO's total compensation in 2021. We also seek to promote long-term commitments from our NEOs because we believe that continuity of the Company's leadership team benefits both the Company and our stockholders. As such, we utilize long-term (three- to five-year) equity incentives in conjunction with short-term incentives (performance-based annual cash awards). Ultimately, the value realized by our NEOs from our equity incentive awards will depend on our financial performance, changes in our Common Stock price, and satisfaction of an award's vesting schedule. Taken together, we believe these factors help create a comprehensive scheme that both reinforces our long-term performance-based orientation and is aligned with the interests of our stockholders.

Best practices

Our pay practices align with our compensation principles and facilitate our implementation of those principles. They also demonstrate our commitment to sound compensation and governance policies.

Compensation Policies and Practices	
What We Do	**What We Avoid**
✓ Emphasis on performance-based compensation ✓ Use of clawbacks ✓ Stock ownership guidelines ✓ Use of long-term equity awards that align with stockholder interests ✓ Automatic reduction of severance payments subject to §280G excise tax ✓ Engage with investors ✓ Dividends and dividend equivalents on restricted stock and RSUs are paid only when the awards vest ✓ Engage independent compensation consultants	X No guaranteed bonuses except for new hires X No pension / SERP plans X No single-trigger change in control benefits X No §280G excise tax "gross-up" benefits X No recycling of options or stock appreciation rights X No "repricing" underwater options without stockholder approval X No hedging or pledging of MarketAxess stock X No perquisites for NEOs

Role of the Compensation Committee

The Compensation Committee administers the compensation program for our NEOs. The Compensation Committee reviews all components of remuneration (both cash and equity) and decides which elements of compensation, if any, should be adjusted or paid based on corporate and individual performance results and competitive benchmark data. The Compensation Committee also determines performance award payouts for the prior fiscal year based on actual results against performance goals.

In performing its duties, the Compensation Committee:

- annually reviews competitive compensation data, recent compensation trends and any other relevant market data obtained by its compensation consultants and considers the impact on our compensation architecture, policies and strategies;
- reviews all compensation earned by each NEO, including each NEO's past wealth realization and future equity incentive opportunities;
- consults with the compensation consultants and full Board regarding market and performance data when considering decisions concerning the structure and amount of our CEO's compensation;
- considers the recommendations of our CEO relating to the performance of our NEOs (other than himself) and the recommendations of its compensation consultants relating to market data and compensation trends when considering decisions concerning the structure and amount of compensation of our NEOs.

The Compensation Committee's function is fully described in its charter, which is available on our corporate website at *www.marketaxess.com* under "*Investor Relations – Corporate Governance*." In performing its duties, the Compensation Committee receives assistance from management and our independent compensation consultants. The Compensation Committee's decisions relating to compensation for our NEOs are reviewed by our full Board of Directors.

Role of independent compensation consultants

Pursuant to its charter, the Compensation Committee may retain and terminate any consultant or other advisor, as well as approve the advisor's fees and other engagement terms. For fiscal year 2021, the Compensation Committee retained FW Cook ("FW Cook") as its independent compensation consultant for purposes of advising on executive compensation. Representatives from FW Cook attended Compensation Committee meetings, participated in executive sessions and communicated directly with the Compensation Committee. During 2021, FW Cook provided the following services to the Compensation Committee:

- ***Executive Compensation Design –*** Provided the Compensation Committee with executive compensation design suggestions and alternatives;
- ***Pay Analysis –*** Reviewed and benchmarked competitive market pay levels with respect to 2021 compensation for our global management team, including the NEOs;
- ***Peer Group Construction –*** Reviewed and recommended changes to the Company's peer group composition (as discussed below in *Peer Group)*; and
- ***General Advice/Compliance –*** Provided general compensation-related recommendations to the Compensation Committee and performed other services, including providing advice regarding regulatory and advisory compliance issues, and other governance issues.

Grahall advised the Compensation Committee with regard to the compensation for our Board of Directors. See "Corporate governance and board matters — Director compensation" for more information.

Each compensation consultant reported directly, and is directly accountable, to the Compensation Committee. The Compensation Committee assessed the independence of Grahall and FW Cook pursuant to SEC rules and determined that their work did not raise any conflicts of interest. The Compensation Committee will continue to monitor the independence of its compensation consultants on an annual basis.

Role of senior management

Senior management, including the CEO, President and Chief Human Resources Officer, make recommendations for the meeting agendas and prepare the materials for Compensation Committee meetings and attend those meetings, other than during executive session. Other senior managers, such as the CFO and General Counsel, may also assist in the preparation or presentation of relevant material. The CEO recommends annual compensation for the NEOs, other than himself, to the Compensation Committee for consideration, but the Compensation Committee is responsible for the final recommendations. No member of management is present in the Compensation Committee meetings when matters related to their individual compensation are under discussion.

Compensation risk assessment

The Compensation Committee is responsible for reviewing and assessing potential risk arising from the Company's compensation policies and practices. The Compensation Committee regularly reviews the Company's compensation policies and practices to ascertain any potential material risks that may be created by the Company's compensation programs. FW Cook provided the Compensation Committee an assessment of the effectiveness of all major components of the Company's compensation programs, including the mix between annual and long-term compensation; short and long-term incentive program design; incentive plan performance criteria and corresponding objectives; the Company's severance and change-in-control policies; its clawback policy; and its stock ownership guidelines. The Compensation Committee's review includes the compensation practices for our entire employee base to ensure that our pay practices, compensation programs and business strategies do not motivate imprudent risk-taking by any employee.

The Compensation Committee considered these items in determining the appropriate compensation programs for the Company. The Company utilizes many design features that mitigate the likelihood of encouraging excessive risk-taking behavior. Among these design features are the use of:

- Equity compensation with long-term vesting (three to five years);
- Holding periods or cliff-vesting for certain long-term equity awards;
- Compensation recoupment policies;
- Stock ownership and retention guidelines that meet market standards;
- The Compensation Committee's ability to exercise downward discretion in determining payouts, including after consideration of regulatory, compliance and legal issues; and
- Training on our Code of Conduct and other policies that educate our employees on appropriate behaviors and the consequences of taking inappropriate actions.

Based on the foregoing, the Compensation Committee and management agree that our compensation policies and practices do not encourage excessive risk-taking or create risks that are reasonably likely to have a material adverse effect on the Company. We believe that our compensation programs do not provide incentives that encourage risk-taking beyond the Company's ability to effectively identify and manage significant risks and is compatible with the internal controls and the risk management practices of the Company.

How we determine pay levels

Peer group

The Compensation Committee assesses the Company's financial performance and executive compensation competitiveness against a group of peer companies that it selects based on input from FW Cook. A key objective of our executive compensation program is to ensure that the total compensation package and structure that we provide to our NEOs is competitive with the companies with whom we compete for executive talent. The 2021 peer group consisted of companies that are similar to the Company in terms of competitive positioning, financial size, operating characteristics, market sector or industry classification. FW Cook engages with the Compensation Committee to review the peer group annually and periodically make changes.

In 2021, FW Cook completed an annual review of the composition of our peer group. Factors considered in determining the peer group ("Peer Group") included:

- financial size – market cap and revenues, generally +/- 2.5 times the Company's most recent annual revenues and +/- 5 times the Company's most recent market capitalization;
- whether companies compete with us for clients, executives or other employee talent;
- market sector, asset class or product offering;
- peers of peers, as well as peers designated by shareholder advisory firms in their annual reviews; and
- reviewing the broader market for additional firms in financial services, IT services and software industries, based on relative revenue, market capitalization and operating income similarity.

For the 2021, our Peer Group was comprised of the following firms:

2021 Peer Group		
ACI Worldwide, Inc.	Envestnet, Inc.	Nasdaq Inc.
Aspen Technologies, Inc.	Factset Research Systems, Inc.	SEI Investments Company
BGC Partners, Inc.	Fair Isaac Corporation	Tradeweb Markets Inc.
Black Knight, Inc.	Guidewire Software, Inc.	TransUnion
Cboe Global Markets, Inc.	Morningstar, Inc.	Verisk Analytics, Inc.
Cohen & Steers, Inc.	MSCI Inc.	Virtu Financial, Inc.

In 2021, we added TransUnion to, and removed Alliance Bernstein Holding L.P. from, our Peer Group. We made these changes because they result in a Peer Group that is more representative of the Company's performance, size and business operations and improves the Company's market capitalization positioning.

Benchmarking — importance and process

In addition to the peer group, FW Cook also used leading industry compensation surveys for the financial services and financial technology sectors for benchmarking purposes. The surveys provide a broader view of compensation levels and trends, which is useful in combination with the Peer Group data. The Compensation Committee considered this data, in conjunction with the Company's performance and each NEO's individual performance, contribution and expertise in determining how each NEO is paid vis-à-vis the recommended market data. The Compensation Committee is presented summary statistics and does not review the list of individual companies that participate in the surveys.

2021 compensation detail

Elements of executive compensation

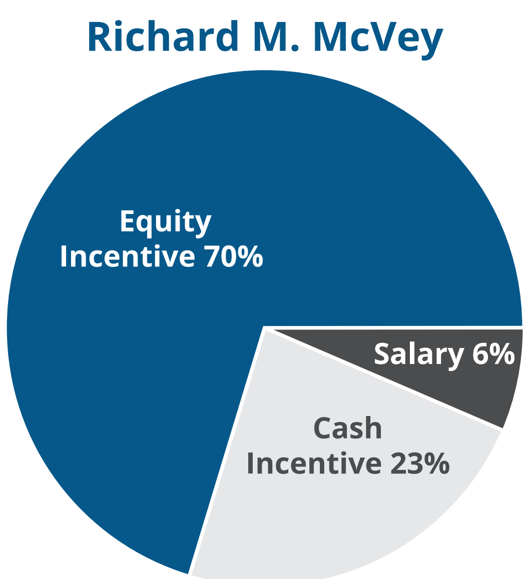
The compensation structure for our NEOs is comprised of base salaries, annual cash incentive compensation and various forms of equity granted under our 2020 Equity Incentive Plan. The combination of these elements enables us to offer a competitive, cost-effective compensation program that balances variable, or at-risk, compensation with prudent risk-taking and stockholder interests. Equity awards may be granted on an annual basis or as one-time awards, including multi-year awards, that are attributed over multiple years of compensation. We believe that equity awards serve as an important part of an NEO's compensation in that they further ensure alignment of the NEO's interests with those of our stockholders.

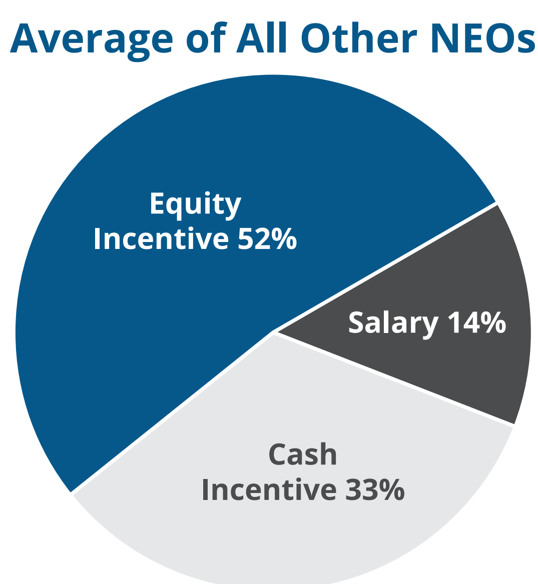
Annual variable cash and equity compensation gives the Compensation Committee the flexibility to tie NEO compensation to individual and corporate performance, which is an important element of our pay philosophy and each NEO's compensation.

The NEOs also receive standard employee benefits including healthcare, life insurance, disability and retirement savings plans. The NEOs do not receive any perquisites.

Pay mix

We believe that lower base salaries and higher levels of variable incentive awards motivate our NEOs, facilitate the achievement of our growth objectives and promote decision-making that is aligned with our stockholders' interests. A lower base of fixed costs (including base salary) also allows us to better manage expenses, which helps improve profitability. We also believe that the balance among pay components in our compensation program design mitigates against a focus on short-term results and decreases the potential for excessive or inappropriate risk-taking (see "Executive compensation practices and governance — Compensation risk assessment" above). An overview of the elements of pay provided to Mr. McVey and, on average, to the other NEOs for fiscal year 2021 is as follows:





Base salary

Base salary is the only fixed component of our NEOs' total cash consideration and is intended to provide a minimum consistent level of compensation throughout the year at a cost-effective level for the Company. We avoid automatic base salary increases and target our NEO's base salaries below applicable median base pay levels to manage our fixed compensation costs and reinforce our pay-for-performance philosophy.

While most of the NEOs' base salaries were at or below the 25th percentile of base salaries reported by our Peer Group, we did not adjust base salaries in 2021. Instead, we provided our NEOs with increased compensation opportunities through variable and long-term incentive awards, as described below. Mr. McVey's base salary has remained unchanged since 2011.

Annual cash incentives

The NEO's annual cash incentives are designed to reward short-term performance in a framework that discourages excessive risk-taking.

The chart below summarizes each NEO's target annual cash incentive, along with the funding as a percentage of target for both the adjusted operating income and individual performance portions and the actual payout amounts for the year ended December 31, 2021.

2021 Cash Incentive Summary *(000's)*

	Target Cash Incentive	Funding as a Percentage of Target			2021 Cash Incentive
		Adjusted Operating Income [1]	Individual	Total [2]	
Richard M. McVey	$2,250	80%	80%	80%	$1,800
Christopher R. Concannon	$1,500	80%	80%	80%	$1,200
Christopher N. Gerosa [3]	$400	80%	105%	93%	$370
Kevin McPherson	$1,200	80%	87%	83%	$1,000
Antonio L. DeLise [3]	$725	80%	113%	97%	$700
Nicholas Themelis	$1,200	80%	87%	83%	$1,000

(1) Adjusted operating income excludes unplanned inorganic activity and the impact of cash incentives. See "Appendix A – Reconciliation OF Non-GAAP Amounts" for a reconciliation of adjusted operating income to operating income.

(2) Funding as a percentage of target is equally weighted between adjusted operating income (50%) and the NEO's individual performance and contributions to strategic corporate objectives (50%).

(3) Messrs. DeLise's and Gerosa's target cash incentives represent blended targets based on the August 2021 transition of the CFO role.

In 2021, 50% of the annual cash incentive for our NEOs was directly linked to the Company's adjusted operating income results. This performance metric is different than the performance metrics used for the Company's annual long-term equity incentive awards. The other 50% of the annual cash incentive for our NEOs was based on the executive's individual performance and contributions to the Company's growth strategy. For 2021, the NEOs' cash incentives were paid out of the 2009 Employee Performance Incentive Plan (the "Employee Cash Incentive Plan").

2021 adjusted operating income performance

As our adjusted operating income was approximately $379.6 million, 20% lower than the target of $474.7 million, the portion of each executive officer's cash award payable based on adjusted operating income was paid out at 80% in accordance with the table below.

Adjusted Operating Income Performance Grid *(millions)*		
Performance	**Adjusted Operating Income [1]**	**Payout**
125% of Target or Higher	≥ $593.4	125%
110% of Target	$522.2	110%
100% of Target	$474.7	100%
90% of Target	$427.2	90%
2021 Actual	$379.6	80%
75% of Target	$356.0	75%
Less Than 75% of Target	< $356.0	0%

(1) Adjusted operating income excludes unplanned inorganic activity and the impact of cash incentives. See "Appendix A – Reconciliation OF Non-GAAP Amounts" for a reconciliation of adjusted operating income to operating income.

2021 individual performance

The Compensation Committee assesses the individual performance and contributions to the Company's growth strategy of the NEOs in connection with the determination of each NEO's annual cash incentive award. The Compensation Committee believes that including this component provides an opportunity to evaluate the quality of individual results on an annual basis.

The Compensation Committee assessed the individual performance and contributions to the Company's growth strategy of our NEOs based on our strategic corporate objectives:

Strategic Corporate Objectives [1]	
Growth through Market Share Gains in Core Products	Best in Post Trade and Regulatory Reporting
Growth through Product Expansion and Innovation	Growth through Corporate Development and M&A
Growth through Global Client/Dealer Relationships	Build a Scalable and Resilient Business
Growth through International Expansion	Best Place to Work

(1) For 2022, the Compensation Committee will introduce pre-defined diversity and human capital goals that will be among the factors considered when determining our global management team's, including the NEOs, individual performance. See "--Change to individual performance for 2022" below.

These goals are intended to ensure the long-term stability of the Company and alignment between NEO's compensation and the Company's long-term strategic goals. Specifically, the NEOs were credited with the following contributions to our key imperatives:

2021 Individual Performance Considerations	
Richard M. McVey	• Delivered record firm-wide revenues • Executed our long-term growth strategy, including product and geographic expansion efforts • Delivered record volumes in emerging markets, Eurobonds, and trading automation • Expanded our client network by growing our client base • Maintained a leadership position in US Credit Market Share • Oversaw transformative talent acquisition and organizational development initiatives
Christopher R. Concannon	• Shaped significant portions of our long-term growth strategy • Led transformative talent acquisition and organizational development initiatives • Orchestrated and completed the acquisition of MuniBrokers • Initiated a new business unit for ETF and index products • Maintains key client relationships and expanded client base • Drove strategy and execution for DE&I, ESG and return to office initiatives
Christopher N. Gerosa	• Maintained a strong track record of regulatory compliance and financial controls • Supported the development of our self-clearing enhancements and the conversion of our clearing business in the UK • Managed our capital and operational controls to support growth of Open Trading globally • Successfully transitioned to CFO
Kevin McPherson	• Grew Municipal Bonds and Emerging Markets businesses • Launched RFQ for Treasuries • Grew Portfolio Trading • Delivered record growth in trading automation • Expanded our client network by growing our institutional client base • Grew Emerging Markets business
Antonio L. DeLise	• Maintained strong track record of financial controls • Completed acquisition of MuniBrokers • Delivered on expense synergies across M&A acquisitions, Reg Reporting Hub and MuniBrokers • Supported the development of our self-clearing enhancements and the conversion of our clearing business in the UK • Managed our capital and operational controls to support growth of Open Trading globally • Executed succession plan for several key positions, including the new CFO and Chief Audit Officer

Nicholas Themelis	• Launched connectivity to China Bond Connect • Launched RFQ for Treasuries • Delivered Portfolio Trading enhancements • Delivered record growth in trading automation • Expanded Post Trade technology enhancements that resulted in an increase in Post Trade revenue • Completed the integration of MuniBrokers

Change to weighting of annual cash incentives for 2022

The Compensation Committee believes that tying annual cash incentives to financial performance is an important aspect of our executive compensation program. For that reason, the Compensation Committee increased the weighting of adjusted operating income to 60% of Messrs. McVey's and Concannon's annual cash incentive for 2022. The remaining 40% will continue to be based on Messrs. McVey's and Concannon's individual performance and contributions to the Company's growth strategy. No change was made to the weighting of the other executive officers' annual cash incentive components for whom the weighting will continue to be 50% adjusted operating income and 50% individual performance and contributions to the Company's growth strategy.

Change to individual performance for 2022

Recognizing the increasing importance of ESG, and diversity and human capital management specifically, to the Company's business, the Compensation Committee will introduce pre-defined diversity and human capital goals that will be among the factors considered when determining our global management team's, including the NEOs, individual performance payouts for their 2022 annual cash incentives. The Compensation Committee believes that having our diversity and human capital goals impact NEO compensation reinforces the achievement of such goals.

Non-qualified deferred cash plan

The Company offers a voluntary non-qualified deferred cash plan that allows U.S.-based NEOs and other select participants to defer all or part of their cash bonus. For the cash bonus paid in 2022 for 2021 performance, (a) Mr. DeLise deferred 50% of his $700,000 cash incentive or $350,000 and (b) Mr. Gerosa deferred 15% of his $370,000 cash incentive or $55,500. Please see "*Executive compensation — Nonqualified Deferred Compensation.*"

Annual long-term equity incentives

We grant equity awards to our NEO's annually as part of our on-going compensation program. In 2021, in connection with Mr. Gerosa's appointment as CFO, our Board also approved an equity award valued at $1 million, comprised of 50% performance stock units, 25% restricted stock units and 25% stock options. See "—M*ulti-year awards*" below.

SEC rules require that we report all equity granted during the applicable reporting year in our executive compensation tables (see "*Executive compensation*" below). As such, in this CD&A, we provide an overview of all equity awards granted in January 2021 for 2020 performance. However, in calculating TDC for performance year 2021, we used the value of equity granted in January 2022 in recognition of performance during 2021. Accordingly, we have also included an overview of equity awards granted in 2022.

Our annual long-term equity incentives are share-based awards that establish direct alignment with our stock price performance and stockholder interests. The amount awarded to each of the NEOs is based upon the NEO's individual performance and contributions to our growth strategy and may be further informed by our stock ownership guidelines and benchmark data. For information on how the Compensation Committee determines the NEO's individual performance and contributions to our growth strategy, please refer to the factors described under "*2021 compensation detail – Annual Cash Incentives – 2021 Individual Performance.*" The number of shares awarded is based on the average closing price of our Common Stock for the ten consecutive trading days leading up to and including the date of grant, helping to ensure that the timing of any award will not be subject to manipulation and reducing the impact of any significant short-term swings in stock price. The awards vest over a minimum of three years, and the first vesting date is at least one year from the date of grant.

The composition of our NEO's annual equity awards granted in January 2021 and 2022 were as follows:

Component	Performance Link		Description
	Granted in 2021 for 2020	Granted in 2022 for 2021	
50% Performance stock units (PSUs)	Market share (50%)	US credit market share (33.3%)	• Financial performance targets are pre-determined by the Compensation Committee and reflect our financial and strategic long-term goals • Three-year performance periods with one-year calculation periods • Targets for years two and three are tied to prior year's results • Cliff-vest after three years
		Revenue growth excluding US credit (33.3%)	
	Operating margin (50%)	Operating margin (33.3%)	
50% Time vested equity (RSUs and stock options)	Stock price performance		• Share-based award establishes direct alignment with our stock price performance and stockholder interests • Messrs. McVey and Concannon receive the portion of their annual long-term equity award that is time-based half in RSUs and half in stock options • Under our "Flex Share" program, the other NEOs may choose to receive this portion of their award in all RSUs or a combination of RSUs and stock options, allowing the Company to deliver more individualized awards without incurring additional expense • Vest ratably over three years

The chart below shows the annual equity award value granted to our NEOs in January 2021 to reward their performance in 2020 and the value of any multi-year awards included in their TDC for 2020.

2020 Equity Incentive Summary *(000's)*						
	Multi-Year Attribution [1]	Granted January 2021 for 2020				2020 Equity Incentive
		PSUs	RSUs	Options	Total	
Richard M. McVey	$2,200	$1,775	$888	$888	$3,550	$5,750
Christopher R. Concannon	$1,000	$1,250	$625	$625	$2,500	$3,500
Christopher N. Gerosa	-	-	$313	-	$313	$313
Kevin McPherson	-	$700	$700	-	$1,400	$1,400
Antonio L. DeLise	-	$600	$600	-	$1,200	$1,200
Nicholas Themelis	-	$850	$850	-	$1,700	$1,700

(1) See "—Multi-year awards" below.

The chart below shows the annual equity award value granted to our NEOs in January 2022 to reward their performance in 2021 and the value of any multi-year awards included in their TDC for 2021.

2021 Equity Incentive Summary *(000's)*						
	Multi-Year Attribution [1]	Granted January 2022 for 2021				2021 Equity Incentive
		PSUs	RSUs	Options	Total	
Richard M. McVey	$2,200	$1,625	$813	$813	$3,250	$5,450
Christopher R. Concannon	$1,000	$1,275	$638	$638	$2,550	$3,550
Christopher N. Gerosa	$333	$110	$55	$55	$220	$553
Kevin McPherson	-	$675	$675	-	$1,350	$1,350
Antonio L. DeLise	-	$450	$450	-	$900	$900
Nicholas Themelis	-	$650	$650	-	$1,300	$1,300

(1) See "—Multi-year awards" below.

Performance stock units

PSUs are intended to align our employees' interests, including the NEOs, with those of our stockholders, with a focus on long-term financial results. PSUs are granted to the NEOs and other employees pursuant to the 2020 Equity Incentive Plan.

The Compensation Committee approved the following awards of PSUs in 2022 and 2021:

2020 and 2021 Performance Share Unit Summary						
	Granted January 2021 for 2020			Granted January 2022 for 2021		
	Grant Date	Units Granted at Target	Grant Date Fair Value [1]	Grant Date	Units Granted at Target	Grant Date Fair Value [1]
Richard M. McVey	1/15/2021	3,283	$1,717,009	1/31/2022	4,601	$1,584,952
Christopher R. Concannon	1/15/2021	2,312	$1,209,176	1/31/2022	3,610	$1,243,573
Christopher N. Gerosa	-	-	-	1/31/2022	311	$107,133
Kevin McPherson	1/15/2021	1,295	$677,285	1/31/2022	1,911	$658,301
Antonio L. DeLise	1/15/2021	1,110	$580,530	1/31/2022	1,274	$438,868
Nicholas Themelis	1/15/2021	1,572	$822,156	1/31/2022	1,840	$633,843

(1) The grant date fair value listed above is calculated in accordance with FASB ASC Topic 718. The Company determines the number of performance stock units to grant by dividing the target grant value by the 10-trading day average up to and including the date of grant.

The PSUs granted to the NEOs cliff-vest after three years and have three-year performance periods with one-year calculation periods. Targets for years two and three are based on prior year's results.

For the awards granted in January 2021 for 2020 performance, the Compensation Committee established market share (50%) and operating income (50%) as the two financial metrics applicable to the awards. Market share is a relative metric that measures the composite market share of our revenues based on our performance in US high grade bonds, US high yield bonds, Eurobonds and emerging market bonds.

For the awards granted in January 2022 for 2021 performance, the Compensation Committee established US credit market share (33.3%), revenue growth excluding US credit (33.3%), and operating margin (33.3%) as the three financial metrics applicable to the awards. US credit market share is a relative metric that captures our market share performance in US high grade and US high yield bonds. Our performance with respect to Eurobonds and emerging markets bonds were shifted to revenue growth excluding US credit, along with other products, including US treasuries, municipal bonds, data and post-trade services, among our other revenue streams. The Compensation Committee believes that this change in metrics for awards granted in 2022 captures our full revenue stream opportunity in our financial performance metrics and further emphasizes long-term value creation through growth in new product areas and markets.

The performance metrics used in 2021 and 2022 are different than the performance metric used for the Company's annual cash incentive plan. Goals were set at the beginning of the fiscal year based on prior actual results and the Company's budget, which is subject to review by the Board. The Compensation Committee seeks to make target goals ambitious, requiring meaningful growth over the performance period, while threshold goals are expected to be achievable. The Company intends to disclose the performance metric payout results as a percentage of target, as well as the resulting payout for the PSUs as a percentage, following the Compensation Committee's certification of the Company's results against such targets at the end of each applicable three-year performance period.

The performance stock unit payout opportunity ranges from 0 to 150% or from 0 to 200% of target, based on performance and subject to continued service and employment agreement, severance protection agreements and award agreement terms, each as applicable. The chart below summarizes the performance metrics for the PSUs held by our NEOs that are currently outstanding:

Performance Metrics for Outstanding PSUs

Grant Date	Metrics	Metric Weightings	Performance Range
1/15/2020	Market Share Operating Margin	1/2 1/2	0% - 150%
1/15/2021	Market Share Operating Margin	1/2 1/2	0% - 200%
1/31/2022	US Credit Market Share Revenue Growth Excluding US Credit Operating Margin	1/3 1/3 1/3	0% - 200%

Restricted stock units and stock options

RSUs and stock options are intended to align our employees' interests, including the NEOs, with those of our stockholders, and promote retention. RSUs and stock options are granted to the NEOs and other employees pursuant to the 2020 Equity Incentive Plan.

Messrs. McVey and Concannon receive the portion of the annual long-term equity award that is time-based half in RSUs and half in stock options. Under our "Flex Share" program, the other NEOs may choose to receive this portion of their award in all RSUs or a combination of RSUs and stock options, allowing the Company to deliver more individualized awards without incurring additional expense to the Company. The ratio of stock options to RSUs granted was 3.47 and 3.77 for the awards granted in January 2022 and 2021, respectively, in each case, based on the relative accounting cost of each award component on the award date.

In addition, settlement of RSU grants may be deferred at the NEO's election, which provides an added benefit of allowing the NEO to maintain additional upside leverage in our shares of Common Stock through delayed taxation. Generally, deferring RSUs has no impact on an RSU's vesting schedule, except that the initial vesting date for an RSU deferred in the year of grant must occur at least 13 months after the grant date in accordance with Section 409A of the Internal Revenue Code of 1986, as amended (the "Code").

The Compensation Committee approved the following awards of RSUs and stock options in 2021 and 2022 for 2020 and 2021 performance, respectively:

2020 and 2021 Restricted Stock Unit Summary

	Granted January 2021 for 2020			Granted January 2022 for 2021		
	Grant Date	Units Granted	Grant Date Fair Value [1]	Grant Date	Units Granted	Grant Date Fair Value [1]
Richard M. McVey	1/15/2021	1,641	$858,243	1/31/2022	2,300	$792,304
Christopher R. Concannon	1/15/2021	1,156	$604,588	1/31/2022	1,805	$621,786
Christopher N. Gerosa	-	-	-	1/31/2022	156	$53,739
Kevin McPherson	1/15/2021	1,295	$677,285	1/31/2022	1,911	$658,301
Antonio L. DeLise	1/15/2021	1,110	$580,530	1/31/2022	1,274	$438,868
Nicholas Themelis	1/15/2021	1,572	$822,156	1/31/2022	1,840	$633,843

(1) The grant date fair value listed above is calculated in accordance with FASB ASC Topic 718. The Company determines the number of restricted stock units to grant by dividing the target grant value by the 10-trading day average up to and including the date of grant.

2020 and 2021 Stock Option Summary

	Granted January 2021 for 2020				Granted January 2022 for 2021			
	Grant Date	Units Granted	Strike Price	Grant Date Fair Value [1]	Grant Date	Units Granted	Strike Price	Grant Date Fair Value [1]
Richard M. McVey	1/15/2021	6,187	$523.00	$856,932	1/31/2022	7,982	$344.48	$791,577
Christopher R. Concannon	1/15/2021	4,358	$523.00	$603,606	1/31/2022	6,263	$344.48	$621,103
Christopher N. Gerosa	-	-	-	-	1/31/2022	540	$344.48	$53,552

(1) The grant date fair value listed above is calculated in accordance with FASB ASC Topic 718. The Company determines the number of stock options to grant by dividing the target grant value by the 10-trading day average up to and including the date of grant and multiplying by the 3.47 and 3.77 ratio for stock options granted in 2022 and 2021, respectively.

The RSUs and stock options granted to the NEOs vest ratably over three years.

The exercise price of the stock options granted to the NEOs is the closing market price of our Common Stock on the date of grant.

Multi-year awards

One-time awards are not a regular part of the Company's annual compensation program for existing NEOs. In alignment with the feedback we received from our stockholders, we expect that the use of multi-year and other one-time equity awards will be limited to circumstances such as the hiring of new executives or the retention of key executives. In all past cases, multi-year awards granted by the Company have been attributed to three or more years of future compensation and reduce the annual compensation awarded to the NEOs for those years of attribution. Importantly, these awards act as dollar for dollar offset against future equity awards.

The multi-year awards that are currently outstanding were awarded: (a) in 2018 to Mr. McVey in relation to the extension of his employment agreement for an additional five-year term in order to secure his employment (the "CEO Multi-year Award"), (b) in 2019 to Mr. Concannon in relation to his appointment as President & Chief Operating Officer and to offset unvested, forfeited equity compensation from his previous employer and in lieu of a 2018 cash bonus payment from his previous employer (the "COO Multi-year Award") and (c) in 2021 to Mr. Gerosa in relation to his appointment as CFO (the "CFO Multi-year Award").

The CEO Multi-year Award had a grant date fair value of $11 million. The Compensation Committee designed the CEO Multi-year Award such that the aggregate $11 million is spread over five years of annual compensation and reduces the amount of the annual equity award that Mr. McVey receives for each of those performance years by $2.2 million on a dollar-for-dollar basis (the first and last years are partial year attributions). The CEO Multi-year Award consists of stock options and performance shares that cliff vest in November 2023 that are contingent upon the Company meeting certain stock price thresholds and tenure requirements for Mr. McVey. The stock price performance criteria for the CEO Multi-year Award were met in 2019. Mr. McVey must remain either employed by the Company or a director of the Company throughout the vesting period, except in the event of certain involuntary termination scenarios. Mr. McVey may not dispose of the stock options or performance shares prior to their vesting to capitalize on any increase in stock price, short-term or otherwise.

The COO Multi-year Award had a grant date fair value of $5 million. It was a portion of an overall $11.75 million award. The Compensation Committee designed the COO Multi-year Award such that $5 million is spread over five years of annual compensation and reduces the amount of the annual equity award that Mr. Concannon receives for each of those performance years by $1 million on a dollar-for-dollar basis. The COO Multi-year Award consists of stock options and performance shares that cliff vest in January 2024 and are contingent upon the Company meeting certain stock price thresholds and tenure requirements for Mr. Concannon. The stock price performance criteria for the COO Multi-year Award were met in 2019.

The CFO Multi-year Award had a grant date fair value of $1 million. The Compensation Committee designed the CFO Multi-year Award such that $1 million is spread over three years of annual compensation and reduces the amount of the annual equity award that Mr. Gerosa receives for each of those performance years by $333,333 on a dollar-for-dollar basis. The CFO Multi-year Award consists of performance stock units that will cliff vest in August 2024 and restricted stock units and stock options that will vest ratably over three years. The performance criteria for the performance stock units are the same as those granted as part of the NEOs' annual awards granted in 2021 (market share and operating margin).

Other benefits

We provide our NEOs with the same benefits offered to all other employees. The cost of these benefits constitutes a small percentage of each NEO's total compensation. In the U.S. and the U.K., key benefits include paid vacation time, premiums paid for group life insurance and disability policies, employer contributions to the NEO's retirement account, and the payment of all or some of the NEO's healthcare premiums in fiscal year 2021. We review these other benefits on an annual basis and make adjustments as warranted based on competitive practices and our performance. Comparable benefits are offered to employees in other geographic locations in which we operate.

The NEOs do not receive any perquisites.

Total direct compensation

Our compensation decisions for year-end 2021 were a balance between the Company's financial results for the year and its performance in light of its peers, individual performance, benchmarking data, and the impact and value of any long-term retention incentives previously awarded to each NEO. A summary of each NEO's 2021 TDC and year-over year change in TDC can be found below:

2021 Total Compensation Summary *(000's)*							
	2021 Base	2021 Incentive			Total Compensation [2]		
	Salary	Cash	Equity [1]	Total	2021	vs. 2020 ($)	vs. 2020 (%)
Richard M. McVey	$500	$1,800	$5,450	$7,250	$7,750	-$750	-9%
Christopher R. Concannon	$500	$1,200	$3,550	$4,750	$5,250	-$250	-5%
Christopher N. Gerosa [3]	$277	$370	$553	$923	$1,200	-	-
Kevin McPherson	$300	$1,000	$1,350	$2,350	$2,650	-$250	-9%
Antonio L. DeLise	$300	$700	$900	$1,600	$1,900	-$500	-21%
Nicholas Themelis	$300	$1,000	$1,300	$2,300	$2,600	-$600	-19%

(1) Represents equity awards attributable to 2021 performance. Messrs. McVey's, Concannon's and Gerosa's equity incentive column include $2,200,000, $1,000,000 and $333,333 in attributed multi-year compensation from previously granted multi-year equity awards. See "—Multi-Year Awards" above.

(2) "2021 Total Compensation" differs from the figures shown in the total column of the table under "*Executive compensation —Summary compensation table.*" The Summary Compensation Table reflects the full grant date value of any multi-year performance equity award received by the NEOs in the year actually granted, in accordance with FASB ASC Topic 718. In addition, the 2021 figures in the Summary Compensation Table include equity awards granted in January 2021 for 2020 performance.

(3) Mr. Gerosa's base salary column reflects a salary change from $260,000 per year to $300,000 per year effective as of August 1, 2021, in connection to his promotion to CFO.

Additional compensation information

Common Stock ownership guidelines

We believe that equity-based awards are an important factor in aligning the long-term financial interest of our NEOs and our stockholders. As such, we maintain stock ownership guidelines for our NEOs. Generally, under the guidelines, Mr. McVey is required to own not less than a number of shares of Common Stock equal in value to ten times his base salary using a price of $423.21 per share, which was the average of the daily closing price of our Common Stock for the twelve-month period ending March 31, 2022 (the "Calculation Price"). At his current base salary of $500,000, Mr. McVey's required ownership level is not less than 11,815 shares. Additionally, effective April 2016, for the remainder of the time Mr. McVey holds the title of CEO and for the twelve months thereafter, he will be required to maintain beneficial ownership of at least 50% of the shares that he received as equity compensation as of the date of the guideline or thereafter. All of his vested and unvested restricted shares, vested and unvested restricted stock units, settled performance shares, and shares deferred under a non-qualified deferred compensation arrangement will be counted for the post-termination holding requirement; vested and unvested stock options are excluded from the requirement.

Mr. Concannon is required to own not less than five times his base salary using the Calculation Price. The Company's other NEOs are required to own not less than three times their base salary using the Calculation Price. At their current base salaries, Mr. Concannon's required ownership is not less than 5,907 shares and the other NEOs required ownership is not less than 2,127 shares. New NEOs will be subject to the same guidelines and will be required to be in compliance within five years of becoming an NEO. Under our ownership guidelines, shares purchased and held beneficially, vested and unvested RSUs and restricted shares and settled performance shares count toward the minimum ownership requirement. Vested and unvested options and unsettled performance shares are not counted toward the ownership requirement. Compliance with the Common Stock ownership guidelines is reviewed by our Board's Nominating and Corporate Governance Committee every year or more often at the discretion of the Board or Nominating and Corporate Governance Committee. All of our NEOs are currently in compliance with the guidelines.

NEO Stock Ownership Requirements *(Multiple of Base Salary)*		
	Requirement	Current Holdings
Richard M. McVey	10.0x	598.6x
Christopher R. Concannon	5.0x	32.0x
Christopher N. Gerosa	3.0x	2.7x
Kevin McPherson	3.0x	101.9x

Incentive compensation clawback

The Board is dedicated to maintaining and enhancing a culture focused on integrity and accountability which discourages conduct detrimental to the Company's sustainable growth. Each of our incentive plans therefore contain a clawback provision that allows the Company to recoup all or part of the year-end incentive compensation paid to NEOs in the event of a misstatement of financial results (whether through mistake or wrongdoing) discovered within 12 months of December 31st of the respective performance year. The clawback provisions apply to all cash and equity incentive awards for our NEOs. In addition, Messrs. McVey's and Concannon's employment agreements provide the Company with the right to recapture all compensation paid, whether in the form of cash, Common Stock or any other form of property, to the extent required by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and the related rules of the SEC (the "Dodd-Frank Act") and the Remuneration Code published by the U.K. Financial Conduct Authority.

Prohibition of employee and Director hedging and pledging

The Company's insider trading policy prohibits directors, employees (including officers), consultants, representatives or independent contractors or other persons in a special relationship with the Company from engaging in any hedging transaction with respect to Company securities or transactions of a speculative nature at any time. Hedging includes the purchase of financial instruments (including prepaid variable forward contracts, equity swaps, collars, and exchange funds) and other transactions designed to hedge or offset, or that have the effect of hedging or offsetting, any decrease in the market value of Company securities or limit the ability to profit from an increase in the value of Company securities. All such persons are prohibited from short-selling Company securities or engaging in transactions involving Company-based derivative securities (which include options, warrants, stock appreciation rights or similar rights whose value is derived from the value of Company securities). This prohibition includes, but is not limited to, trading in Company-based put and call option contracts, transacting in straddles, and similar transactions. These individuals are also prohibited from holding Company securities in a margin account or otherwise pledging Company securities as collateral for a loan.

Severance and change in control arrangements

In hiring and retaining executive level talent, the Compensation Committee believes that providing the executive with a level of security in the event of an involuntary termination of employment or in the event of a change in control is an important and competitive part of the executive's compensation package. We entered into employment agreements with Messrs. McVey and Concannon that provide for severance payments and benefits in the event of the termination of their employment under certain circumstances. The other NEOs are entitled to severance payments and benefits in the event of termination of their employment under certain circumstances pursuant to the terms of severance protection agreements. The severance protection agreements also provide for the accelerated vesting of some or all outstanding equity awards in the event of termination of their employment under certain circumstances or upon a change in control of the Company.

While the agreements with our NEOs are designed to protect them in the event of a change in control, they do not provide for "single-trigger" protection, nor does the Company provide any 280G protection or "gross-up" for excise taxes that may be imposed under Code Section 4999. The agreements do provide that if any payments or benefits paid or provided to the executive would be subject to, or result in, the imposition of the excise tax imposed by Code Section 4999, then the amount of such payments will be automatically reduced to one dollar less than the amount that subjects such payment to the excise tax, unless they would, on a net after-tax basis, receive less compensation than if the payment were not so reduced.

See "*Executive Compensation — Potential termination or change in control payments and benefits*" for additional information regarding these arrangements, payments and benefits.

Impact of tax and accounting

As a general matter, the Compensation Committee reviews and considers the tax and accounting implications of using the various forms of compensation employed by the Company.

When determining the size of grants to our NEOs and other employees under the Company's 2020 Equity Incentive Plan, the Compensation Committee examines the accounting cost associated with the grants. Under FASB ASC Topic 718, grants of stock options, restricted stock, RSUs, performance shares and other share-based payments result in an accounting charge for the Company. The accounting charge is equal to the fair value of the instruments being issued. For restricted stock, RSUs and performance shares, the cost is equal to the fair value of the Common Stock on the date of grant times the number of shares or units granted, with adjustments made proportionally for the number of performance shares and performance stock units expected to vest at the end of each accounting period until final certification of the award. For stock options, the cost is equal to the fair value determined using an option pricing model. This expense is recognized over the requisite service or performance period.

Code Section 162(m) of the Internal Revenue Code of 1986, as amended ("Section 162(m)") generally prohibited any publicly-held corporation from taking a Federal income tax deduction for compensation paid in excess of $1 million in any taxable year to certain executive officers and certain other individuals. Exceptions to this rule had historically included qualified performance-based compensation. However, this performance-based exception from the deduction limit has been repealed, effective for taxable years beginning after December 31, 2017, such that compensation paid to our U.S. NEOs in excess of $1 million is not deductible unless it qualifies for the limited transition relief applicable to certain arrangements in place as of November 2, 2017. While the Compensation Committee considers tax deductibility as one factor in determining executive compensation, the Compensation Committee also looks at other factors in making its decisions, as noted above, and retains the flexibility to award compensation that it determines to be consistent with the goals of our executive compensation program even if the awards are not deductible by us for tax purposes. There can be no assurance that any compensation will in fact be deductible.

REPORT OF THE COMPENSATION AND TALENT COMMITTEE OF THE BOARD OF DIRECTORS

The Compensation and Talent Committee (the “Compensation Committee”) has reviewed and discussed with management the Compensation Discussion and Analysis to be included in this Proxy Statement. Based on the reviews and discussions referred to above, the Compensation Committee recommended to the Board that the Compensation Discussion and Analysis be included in this Proxy Statement.

Submitted by the Compensation and Talent Committee of the Board of Directors:

Richard L. Prager — Chair
Nancy Altobello
Kourtney Gibson

Summary compensation table

The following table sets forth all compensation received during fiscal years 2019, 2020 and 2021 by (i) Richard M. McVey, our CEO, (ii) Christopher M. Concannon, our President & COO, (iii) Christopher N. Gerosa, our CFO, (iv) Kevin McPherson, our Global Head of Sales, (v) Antonio L. DeLise, our former Global Head of Corporate Development and former Chief Financial Officer, and (vi) Nicholas Themelis, our former Chief Information Officer. These executives are referred to as our "named executive officers" or "NEOs" elsewhere in this Proxy Statement.

2021 Summary Compensation Table

Name and Principal Position	Year	Salary [1] ($)	Bonus [2] ($)	Stock Awards [3,4] ($)	Option Awards [3,4] ($)	Non- Equity Incentive Plan Compensation [5] ($)	All Other Compensation [6] ($)	Total ($)
Richard M. McVey	2021	500,000	—	2,575,252	856,932	1,800,000	10,000	5,742,184
Chief Executive Officer	2020	500,000	—	2,532,567	854,119	2,250,000	7,000	6,143,686
	2019	500,000	—	2,715,708	—	—	7,000	3,222,708
Christopher R. Concannon	2021	500,000	—	1,813,764	603,606	1,200,000	10,000	4,127,370
President & COO	2020	500,000	—	2,209,599	—	1,500,000	7,000	4,216,599
	2019	473,717	1,500,000	8,986,309	2,875,003	—	7,000	13,842,029
Christopher N. Gerosa	2021	276,667	—	1,066,021	250,098	370,000	10,000	1,972,786
CFO								
Kevin McPherson	2021	300,000	—	1,354,570		1,000,000	10,000	2,664,570
Global Head of Sales	2020	300,000	—	589,032	—	1,200,000	7,000	2,096,032
	2019	300,000	1,100,000	346,942	—	—	7,000	1,753,942
Antonio L. DeLise	2021	300,000	—	1,161,060		700,000	10,000	2,171,060
Former Head of Corporate Development and Former Chief Financial Officer	2020	300,000	—	540,189	—	900,000	7,000	1,747,189
	2019	300,000	875,000	386,473	—	—	7,000	1,568,473
Nicholas Themelis	2021	300,000	—	1,644,312		1,000,000	10,000	2,954,312
Former Chief Information Officer	2020	300,000	—	687,447	—	1,200,000	7,000	2,194,447
	2019	300,000	1,200,000	411,128	—	—	7,000	1,918,128

(1) Mr. Gerosa's 2021 salary reflects an August 1, 2021 base salary increase related to his promotion to CFO. Mr. Concannon's 2019 salary represented a partial year of service.

(2) As determined by the Compensation Committee, Mr. McVey received additional equity in lieu of a cash incentive for performance year 2019, which is reflected in the Stock Awards column.

(3) The amounts represent the aggregate grant date fair value of stock and option awards granted by the Company in 2019, 2020 and 2021, computed in accordance with FASB ASC Topic 718. For further information on how we account for stock-based compensation and certain assumptions made, see Note 11 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on February 23, 2022. These amounts reflect the Company's accounting expense for these awards and do not correspond to the actual amounts, if any, that will be realized by the NEOs. The amounts reported for stock awards in 2019, 2020 and 2021 include performance shares or performance stock units.

For 2021, the grant date fair value of the performance stock units is $1,717,009, $1,209,176, $677,285, $580,530 and $822,156 for Messrs. McVey, Concannon, McPherson, DeLise and Themelis, respectively. The grant date fair value of the performance shares is reported based on achievement of 100% of the target performance goals, which represents the probable outcome of the performance goals as of the grant date. If the Company achieves the maximum performance goals, as measured at the end of the three-year performance period ending December 2023, then the fair value of the performance stock units granted in 2021 would be $3,434,018, $2,418,352, $1,354,570, $1,161,060 and $1,644,312 for Messrs. McVey, Concannon, McPherson, DeLise and Themelis, respectively. See "2021 compensation detail – Annual long-term equity incentives – Performance stock units" in the CD&A for additional detail.

(4) In August 2021, Mr. Gerosa was awarded a one-time equity grant that consisted of performance stock units, restricted stock units and stock options, with an aggregate grant date value of $1,000,000. The grant date fair value of the performance shares of $508,432 is reported based on achievement of 100% of the target performance goals, which represents the probable outcome of the performance goals as of the grant date. If the Company achieves the maximum performance goals, as measured at the end of the two-year performance period ending December 2023, then the fair value of the performance stock units granted in 2021 would be $1,016,864. The performance stock units will cliff vest on the third-year anniversary of the date of grant and the stock options and restricted stock

units will vest in three equal annual installments beginning on the first anniversary of the date of grant. See “2021 compensation detail – Annual long-term equity incentives – Performance stock units” in the CD&A for additional detail. In January 2019, Mr. Concannon was awarded a hire-on equity grant that consists of performance shares and performance-based stock options with an aggregate grant date fair value of $5,750,000. The performance criteria for this award was met, in full, in 2019. The award remains subject to time-based vesting conditions and will fully vest in January 2024 if such conditions are met.

(5) These amounts represent annual cash incentive compensation earned under the Employee Cash Incentive Plan. See “2021 compensation detail – Annual cash incentive” in the CD&A for additional detail.

(6) These amounts represent employer matching contributions to the Company’s 401(k) defined contribution plan for each NEO for each year reported.

Grants of plan-based awards

The following table summarizes the grants of performance stock units, restricted stock units and stock options we made to the NEOs in 2021, as well as potential payouts pursuant to certain performance-based compensation arrangements. There can be no assurance that the grant date fair value of stock awards will ever be realized.

2021 Grants of Plan-Based Awards Table

Name/Award Type	Grant Date	Approval Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards			Estimated Future Payouts Under Equity Incentive Plan Awards			All Other Stock Awards: Number of Shares of Stock or Units	All Other Option Awards: Number of Securities Underlying Options	Exercise or Base Price of Option Awards	Grant Date Fair Value of Stock and Option Awards[1]
			Threshold	Target	Maximum	Threshold	Target	Maximum				
			($)	($)	($)	(#)	(#)	(#)	(#)	(#)	($ / Sh)	($)
Richard M. McVey												
Annual Cash Incentive[2]			—	2,250,000	—							
Restricted Stock Units[3]	1/15/2021	12/11/2020							1,641			858,243
Performance Stock Units[4]	1/15/2021	12/11/2020				1,642	3,283	6,566				1,717,009
Stock Options[6]	1/15/2021	12/11/2020								6,187	523.00	856,932
Christopher R. Concannon												
Annual Cash Incentive[2]			—	1,500,000	—							
Restricted Stock Units[3]	1/15/2021	12/11/2020							1,156			604,588
Performance Stock Units[4]	1/15/2021	12/11/2020				1,156	2,312	4,624				1,209,176
Stock Options[6]	1/15/2021	12/11/2020								4,358	523.00	603,606
Christopher N. Gerosa												
Annual Cash Incentive[2]			—	400,000	—							
Restricted Stock Units[3]	1/15/2021	1/8/2021							579			302,817
Restricted Stock Units[3]	8/1/2021	7/13/2021							535			254,216
Performance Stock Units[5]	8/1/2021	7/13/2021				535	1,070	2,140				508,432
Stock Options[6]	8/1/2021	7/13/2021								1,915	475.17	250,098
Kevin McPherson												
Annual Cash Incentive[2]			—	1,200,000	—							
Restricted Stock Units[3]	1/15/2021	12/11/2020							1,295			677,285
Performance Stock Units[4]	1/15/2021	12/11/2020				648	1,295	2,590				677,285
Antonio L. DeLise												
Annual Cash Incentive[2]			—	725,000	—							
Restricted Stock Units[3]	1/15/2021	12/11/2020							1,110			580,530
Performance Stock Units	1/15/2021	12/11/2020				555	1,110	2,220				580,530
Nicholas Themelis												
Annual Cash Incentive[2]			—	1,200,000	—							
Restricted Stock Units[3]	1/15/2021	12/11/2020							1,572			822,156
Performance Stock Units[4]	1/15/2021	12/11/2020				786	1,572	3,144				822,156

(1) The value of a restricted stock unit and stock option is based on the fair value of such award, computed in accordance with FASB ASC Topic 718. The value of a performance stock unit is based on the grant date fair value of such award assuming 100% of target, computed

in accordance with FASB ASC Topic 718. For further information on how we account for stock-based compensation, see Note 11 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021.

(2) Amounts reflect the threshold, target, and maximum annual cash incentive compensation amounts that could have been earned during 2021 our Employee Cash Incentive Plan. Messrs. DeLise's and Gerosa's target cash incentives represent blended targets based on the August 2021 transition of the CFO role. The amounts of annual cash incentive compensation earned in 2021 by our NEOs were determined and paid in January 2022. The amounts paid are included in the "Non-Equity Incentive Plan Compensation" column of the Summary Compensation Table. See "Compensation discussion & analysis — 2021 compensation detail — Annual cash incentives."

(3) Amounts reflect the number of restricted stock units awarded in 2021 to the NEOs. These grants of restricted stock units, which were made under the 2020 Equity Incentive Plan, vest in three equal installments beginning on the first anniversary of the date of grant, subject to the NEO's continued service. See "Compensation discussion & analysis — 2021 compensation detail — Annual long term equity incentives — Restricted stock units and stock options."

(4) Reflects the threshold, target and maximum number of performance stock units, that were awarded under the 2020 Equity Incentive Plan, that would vest based on the level of achievement by the Company of operating margin and market share targets for the three-year performance period beginning on January 1, 2021 and ending on December 31, 2023. Each performance stock unit that is earned will cliff vest on January 31, 2024, subject to the NEO's continued service. See "Compensation discussion & analysis — 2021 compensation detail — Annual long term equity incentives — Performance stock units."

(5) Reflects the threshold, target and maximum number of performance stock units, that were awarded under the 2020 Equity Incentive Plan to Mr. Gerosa under a one-time award, that would vest based on the level of achievement by the Company of operating margin and market share targets for the two-year performance period beginning on January 1, 2022 and ending on December 31, 2023. Each performance stock unit that is earned will cliff vest on August 1, 2024, subject to his continued service. See "Compensation discussion & analysis — 2021 compensation detail — Annual long term equity incentives — Performance stock units."

(6) Amounts reflect the number of shares underlying stock options awarded to the NEOs in 2021. The grant of stock options, which was made under the 2020 Equity Incentive Plan, will vest in three equal installments beginning on the first anniversary of the date of grant, subject to the participant's continued service. See "Compensation discussion & analysis — 2021 compensation detail — Annual long term equity incentives — Restricted stock units and stock options."

Outstanding equity awards at fiscal year-end

The following table summarizes unexercised stock options, shares of restricted stock and restricted stock units that had not vested, and related information for each of our NEOs, as of December 31, 2021. The market value of restricted stock awards and restricted stock units is based on the closing price of the Company's Common Stock on December 31, 2021 of $411.27.

Outstanding Equity Awards - Year End 2021									
	Option Awards					Stock Awards			
Name	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable[1] (#)	Option Exercise Price ($)	Option Expiration Date		Number of Shares or Units of Stock That Have Not Vested[2] (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($)
Richard M. McVey	24,515		156.85	1/15/2023					
	16,037		203.72	1/15/2024					
	3,176		368.10	1/15/2026					
		69,113	257.78	5/8/2024					
		79,411	278.40	5/8/2024					
		6,166	368.10	1/15/2026					
		6,187	523.00	1/15/2027					
					(5)	37,742	15,522,152		
					(3)	3,572	1,469,056		
					(3)	2,560	1,052,851		
					(4)	1,534	630,888		
					(6)	1,641	674,894		
					(7)			4,647	1,911,172
					(8)			3,283	1,350,199
Christopher R. Concannon		35,679	272.88	7/22/2024					
		41,189	294.71	7/22/2024					
		4,358	523.00	1/15/2027					
					(9)	18,914	7,778,761		
					(10)	12,365	5,085,354		
					(4)	2,001	822,951		
					(6)	1,156	475,428		
					(7)			3,031	1,246,559
					(8)			2,312	950,856
Christopher N. Gerosa		1,915	475.17	8/1/2027					
					(3)	109	44,828		
					(4)	160	65,803		
					(6)	579	238,125		
					(11)	1	411		
					(12)	535	220,029		
					(13)			1,070	440,059
Kevin McPherson					(3)	382	157,105		
					(3)	343	141,066		
					(4)	534	219,618		
					(6)	1,295	532,595		
					(7)			808	332,306
					(8)			1,295	532,595
Antonio L. DeLise					(3)	425	174,790		
					(3)	381	156,694		
					(4)	490	201,522		
					(6)	1,110	456,510		
					(7)			741	304,751
					(8)			1,110	456,510
Nicholas Themelis					(3)	463	190,418		
					(3)	416	171,088		
					(4)	623	256,221		
					(6)	1,572	646,516		
					(7)			943	387,828
					(8)			1,572	646,516

(1) Of the 6,166 stock options granted to Mr. McVey, 3,083 vested on January 31, 2022 and the remainder will vest on January 31, 2023, subject to time-based performance conditions. Of the 6,187 stock options granted to Mr. McVey, 2,103 vested on January 31, 2022 and the remainder will vest 50% on each of January 31, 2023 and January 31, 2024, subject to time-based performance conditions. 69,113 and 79,411 stock options granted to Mr. McVey will fully vest on November 8, 2023, subject to time-based performance conditions. 35,679 and 41,189 stock options granted to Mr. Concannon will fully vest on January 22, 2024, subject to time-based performance conditions. Of the 4,358 stock options granted to Mr. Concannon, 1,481 vested on January 31, 2022 and the remainder will vest 50% on each of January 31, 2023 and January 31, 2024, subject to time-based performance conditions. The 1,915 stock options granted to Mr. Gerosa will vest one-third on each of the first three anniversaries of the August 1, 2021 grant date, subject to time-based performance conditions. The stock options will also vest and become exercisable in the event of certain terminations of employment. See "— *Potential termination or change in control payments and benefits*" for additional information.

(2) Each share of restricted stock and each restricted stock unit represents one share of the Company's Common Stock that is subject to forfeiture if the applicable vesting requirements are not met. Generally, vesting is subject to the NEOs continued service through the vesting date, except that shares of restricted stock and restricted stock units will vest in the event of certain terminations of employment and, in certain circumstances, may vest upon a change in control. See "— *Potential termination or change in control payments and benefits*" for additional information.

(3) These restricted shares and restricted stock units fully vested on January 31, 2022.

(4) 50% of these restricted shares and restricted stock units vested on January 31, 2022 and the remainder will vest on January 31, 2023.

(5) 37,742 shares for Mr. McVey outstanding as of December 31, 2021 represent 100% of the target unearned performance shares awarded on November 8, 2018. The shares were settled as the applicable performance goals were met. The shares will fully vest on November 8, 2023.

(6) For Mr. McVey, 558 RSUs vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024. For Mr. Concannon, 394 vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024. For Mr. DeLise, 378 RSUs vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024. For Mr. Gerosa, 197 RSUs vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024. For Mr. McPherson, 441 RSUs vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024. For Mr. Themelis, 535 RSUs vested on January 31, 2022 and 50% of the remainder will vest on each of January 31, 2023 and 2024.

(7) The 4,647 shares for Mr. McVey, 3,031 shares for Mr. Concannon, 741 shares for Mr. DeLise, 808 shares for Mr. McPherson and 943 shares for Mr. Themelis outstanding as of December 31, 2021 represent 100% of the target performance shares awarded on January 15, 2020. The shares will not settle until January 2023 and will vest on January 31, 2023.

(8) The 3,283 shares for Mr. McVey, 2,312 shares for Mr. Concannon, 1,110 shares for Mr. DeLise, 1,295 shares for Mr. McPherson and 1,572 shares for Mr. Themelis outstanding as of December 31, 2021 represent 100% of the target performance shares awarded on January 15, 2021. The shares will not settle until January 2024 and will vest on January 31, 2024.

(9) 18,914 shares for Mr. Concannon outstanding as of December 31, 2021 represent 100% of the target unearned performance shares awarded on January 22, 2019. The shares were settled as the applicable performance goals were met. The shares will fully vest on January 22, 2024.

(10) These shares vested on January 22, 2022.

(11) This share vested on February 28, 2022.

(12) 535 RSUs granted to Mr. Gerosa will vest one-third on each anniversary of the August 1, 2021 grant date.

(13) The 1,071 shares for Mr. Gerosa outstanding as of December 31, 2021 represent 100% of the target performance shares awarded on August 1, 2021. The shares will not settle until January 2024 and will vest on August 1, 2024.

Option exercises and stock vested

The following table summarizes each exercise of stock options, each vesting of restricted stock and related information for each of our NEOs on an aggregated basis during 2021.

2021 Option Exercises and Stock Vesting

Name	Option Awards		Stock Awards	
	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise [1] ($)	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting [2] ($)
Richard M. McVey	27,020	9,252,729	30,303	16,667,099
Christopher R. Concannon	—	—	8,729	4,481,163
Christopher N. Gerosa	—	—	776	419,580
Kevin McPherson	22,388	8,045,591	10,403	5,625,526
Antonio L. DeLise	9,607	3,438,697	9,907	5,357,309
Nicholas Themelis	13,433	4,729,391	12,609	6,818,443

(1) Value realized represents the market value on the date of exercise in excess of the exercise price.

(2) Value realized represents the market value on the date of vesting.

Non-qualified deferred compensation

All U.S.-based NEOs were eligible to elect to defer the settlement of the RSUs awarded in whole or in part. The following table sets forth information with respect to vested RSUs held by Messrs. McVey and DeLise as of December 31, 2021, for which they have elected to defer the delivery of the underlying shares until the earlier of (i) separation of service (within the meaning of Code Section 409A), subject to the six-month delay required under Code Section 409A, (ii) a change of control of the Company and (iii) the calendar year in which the applicable anniversary following vesting occurs:

Deferral Elections

Name	Award / Deferral Date	Amount Deferred (#)	Re-deferral Date	Deferral Period (Years)
Richard M. McVey	1/14/2011	67,961	12/1/2015 [1]	10
	1/19/2011	119,565	12/1/2015 [1]	10
	1/15/2013	29,623	N/A [2]	7
	1/15/2014	26,087	11/18/2019	separation of service
	1/15/2015	16,556	N/A [2]	5
	1/15/2016	9,033	N/A [2]	5
	1/15/2017	6,222		separation of service
	1/15/2018	4,418	N/A [2]	3
	1/15/2019	5,197		separation of service
	1/15/2020	790		separation of service
Antonio L. DeLise	1/13/2012	16,260	10/18/2016 [3]	10
	1/15/2014	3,028	N/A [4]	5
	1/15/2015	2,763	N/A [4]	4

(1) Mr. McVey took receipt of 23,106 and 14,945 shares from his January 14, 2011 and January 19, 2011 awards, respectively, in February 2022.

(2) Mr. McVey did not elect to re-defer his January 2013 and January 2015 RSU awards, and he began taking receipt of the underlying shares in February 2021. He did not elect to re-defer his January 2016 and January 2018 RSU awards, and he began taking receipt of the underlying shares in February 2022.

(3) Mr. DeLise's shares will be delivered in August 2022, 6 months past his February 2022 separation of service (within the meaning of Code Section 409A).

(4) Mr. DeLise did not elect to re-defer his January 15, 2014 and 2015 RSU awards. He began taking receipt of the shares underlying the RSUs in February 2020 and the last tranches were delivered in January 2022.

The table below shows (i) the contributions made by each NEO during the fiscal year ended December 31, 2021, (ii) aggregate earnings on each NEO's account balance during the fiscal year ended December 31, 2021, (iii) the aggregate amount of withdrawals or distributions made for each NEO and (iv) the aggregate balance of each of our NEOs as of December 31, 2021:

2021 Non-qualified Deferred Compensation Table

Name	Executive Contributions in Last Fiscal Year [1,2] ($)	Registrant Contributions in Last Fiscal Year ($)	Aggregate Earnings in Last Fiscal Year [3,4] ($)	Aggregate Withdrawals/ Distributions ($)	Aggregate Balance at Last Fiscal Year-End [5] ($)
Richard M. McVey	2,631,474	—	(47,351,342)	13,397,650	123,109,196
Christopher R. Concannon	—	—	62,729	—	362,729
Christopher N. Gerosa	55,500	—	3,767	—	145,971
Kevin McPherson	—	—	—	—	—
Antonio L. DeLise	350,000	—	(3,679,389)	1,051,766	13,703,474
Nicholas Themelis	—	—	—	—	—

(1) For Mr. McVey, reflects the market value of the Common Stock underlying 4,018 RSUs that vested on January 31, 2021 and 790 RSUs that vested on February 15, 2021 based on the closing price of our Common Stock on such dates of $540.76 and $552.55, respectively. In addition, it includes the value of amounts accrued and unpaid under dividend equivalent rights in 2018 through 2020 as of such vesting dates. The dividend equivalents are equal in amount to the ordinary cash dividends paid to the holders of our Common Stock in 2018 through 2020 and will be paid when Mr. McVey takes receipt of the underlying shares of the applicable RSUs.

(2) Executive contributions for Mr. Gerosa and Mr. DeLise include $55,500 and $350,000, respectively, that were voluntarily deferred from their 2021 cash bonuses under the non-qualified deferred cash plan. Their full cash bonus amounts are reported in the Summary Compensation Table for 2021.

(3) Aggregate Earnings with respect to vested and undelivered RSUs include changes in the market value of the shares of Common Stock underlying the RSUs based on the difference of the closing price of our Common Stock on December 31, 2021 of $411.27 and the closing price of our Common Stock on the date of vesting, as well as the value of amounts accrued under a dividend equivalent right in 2021 that were unpaid as of December 31, 2021. Additionally, Aggregate Earnings include the difference in value of shares of Common Stock underlying the RSUs deferred by Mr. DeLise in 2012, 2014 and 2015 and by Mr. McVey in 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019 and 2020 at Fiscal Year End 2021 versus Fiscal Year End 2020, as well as the value of accrued but unpaid dividend equivalents. These amounts are not included in the Summary Compensation table because plan earnings were not preferential or above market.

(4) Mr. Concannon's aggregate earnings of $62,729 and Mr. Gerosa's aggregate earnings of $3,767 represent returns incurred through the non-qualified deferred cash plan. Earnings of $553,191 were added to Mr. DeLise's Aggregate Earnings for 2021 representing the returns he incurred through the non-qualified deferred cash plan.

(5) The value of the Aggregate Balance at Last Fiscal Year End for the RSUs was determined by adding all Executive Contributions for Fiscal Year-End 2021 to any Aggregate Earnings for Fiscal Year 2021 and the Aggregate Balance at Last Fiscal Year-End as previously reported for year-end 2020, which was $181,226,715 for Mr. McVey, $300,000 for Mr. Concannon and $18,084,629 for Mr. DeLise. Mr. Gerosa had a balance of $86,704 under the non-qualified deferred cash plan prior to his becoming an NEO.

Employment agreements and severance arrangements with our Named Executive Officers

Richard M. McVey employment agreement

Effective November 6, 2018, Mr. McVey and the Company entered into an amendment to his employment agreement (the "*CEO Employment Agreement*") providing for an initial term ending on January 15, 2025 with successive one-year automatic renewals unless either party elects not to extend the term at least 90 days prior to the last day of the term.

The CEO Employment Agreement provides that Mr. McVey will be employed by us as CEO and Chairman, and his employment may be terminated by him or by the Company at any time. Mr. McVey's annual base salary under the CEO Employment Agreement is a minimum of $500,000 per year.

Under the CEO Employment Agreement, Mr. McVey is eligible to receive an annual bonus in accordance with the Company's annual performance incentive plan as is in effect from time to time and is entitled to participate in all benefit plans and programs available to our other senior executives, at a level commensurate with other senior management of the Company.

The CEO Employment Agreement provides for severance payments and benefits (subject to Mr. McVey's execution of a waiver and general release) if Mr. McVey's employment is terminated under various conditions. See below under *"— Potential termination or change in control payments and benefits"* for a description of such payments and benefits.

The Company does not provide tax reimbursements to executives in the event of a Change of Control. The CEO Employment Agreement provides that if any payments or benefits paid or provided to him would be subject to, or result in, the imposition of the excise tax imposed by Section 4999 of the Code, then the amount of such payments will be automatically reduced to one dollar less than the amount that subjects such payment to the excise tax, unless he would, on a net after-tax basis, receive less compensation than if the payment were not so reduced. The CEO Employment Agreement further provides that any award gains and annual incentive awards received by Mr. McVey are subject to potential clawback under policies adopted by the Company to comply with applicable law, rules or other regulatory requirements.

For purposes of the CEO Employment Agreement, "Cause Event" generally means Mr. McVey's:

- willful misconduct or gross negligence in the performance of his duties;
- conviction of, or plea of guilty or *nolo contendere* to, a crime relating to us or any of our affiliates, or any felony; or
- material breach of his employment agreement or any other material written agreement with us.

For purposes of the CEO Employment Agreement, "Good Reason" generally means:

- Mr. McVey's no longer holding the title of Chief Executive Officer, or the failure of the Board to nominate him as a director or, once elected to the Board, the failure of the Board to elect him as Chairman;
- a material diminution in his duties, authorities or responsibilities or the assignment of duties or responsibilities materially adversely inconsistent with his then-current position (other than as a result of his ceasing to be a director);
- our material breach of his employment agreement;
- a relocation of his principal place of business of more than 50 miles; or
- our failure to obtain a reasonably satisfactory written agreement from any successor to all or substantially all of our assets to assume and agree to perform our obligations under his employment agreement.

For purposes of the CEO Employment Agreement, “Change in Control” generally means:

- an acquisition representing 50% or more of the combined voting power of our then outstanding securities;
- a change in the majority of the members of our Board during any two-year period, unless such members are approved by two-thirds of the Board members who were members at the beginning of such period or members whose nominations were so approved;
- our merger or consolidation, other than (a) a transaction resulting in our voting securities outstanding immediately prior thereto continuing to represent more than 50% of the combined voting power of the voting securities of such surviving entity immediately after such transaction or (b) a transaction effected to implement a recapitalization (or similar transaction) in which no person acquires more than 50% of the combined voting power of our then outstanding securities; or
- our stockholders’ approval of a plan of complete liquidation or the consummation of the sale or disposition of all or substantially all of our assets other than (a) the sale or disposition of all or substantially all of our assets to a beneficial owner of 50% or more of the combined voting power of our outstanding voting securities at the time of the sale or (b) pursuant to a spinoff type transaction of such assets to our stockholders.

Christopher Concannon employment agreement

On January 7, 2019, the Company entered into an employment letter agreement (the “*President Employment Agreement”)*, effective as of January 22, 2019, with Christopher Concannon, pursuant to which Mr. Concannon became the Company’s President and Chief Operating Officer.

The President Employment Agreement provides that Mr. Concannon will be employed by the Company as the COO for an initial five-year term with successive one-year automatic renewals unless either party elects not to extend the term at least 90 days prior to the last day of the term. Under the President Employment Agreement, Mr. Concannon’s minimum annual base salary is $500,000 per year and he is eligible to receive an annual bonus in accordance with the Company’s annual performance incentive plan as in effect from time to time and annual equity grants on terms and conditions determined by the Compensation Committee in its sole discretion.

The President Employment Agreement provides that Mr. Concannon’s employment may be terminated by him or by the Company at any time. The President Employment Agreement provides for severance payments and benefits (subject to Mr. Concannon’s execution of a waiver and general release) if Mr. Concannon’s employment is terminated under various conditions. See below under *“— Potential termination or change in control payments and benefits”* for a description of such payments and benefits.

For purposes of the President Employment Agreement, the terms “Cause Event”, “Change in Control”, and “Good Reason” generally have the same meaning as defined in the CEO Employment Agreement, except that (i) “Cause Event” also means intentional failure or refusal to follow a lawful and proper direction of the Board, the Company or the CEO or any other conduct that is reasonably likely to have a material adverse effect on the business, assets or reputation of the Company, and (ii) “Good Reason refers to Mr. Concannon no longer holding the title of President.

The President Employment Agreement provides that if any payments or benefits paid or provided to Mr. Concannon would be subject to, or result in, the imposition of the excise tax imposed by Code Section 4999, then the amount of such payments will be automatically reduced to one dollar less than the amount that subjects such payment to the excise tax, unless Mr. Concannon would, on a net after-tax basis, receive less compensation than if the payment were not so reduced. The President Employment Agreement further provides that any award gains and annual incentive awards received by Mr. Concannon will be subject to potential clawback under policies adopted by the Company to comply with applicable law, rules or other regulatory requirements.

In connection with entering into the President Employment Agreement, Mr. Concannon also executed a Proprietary Information and Non-Competition Agreement and the Company's standard form of Indemnification Agreement.

Severance protection agreements

Messrs. DeLise, Gerosa, McPherson and Themelis do not have employment agreements with us but are entitled to severance payments and benefits under their respective severance protection agreements (the "Severance Protection Agreements" or the "SPAs"), which provide for severance payments and benefits (subject to such executive's execution of a waiver and general release) if such executive's employment is terminated under various conditions. See below under *"— Potential termination or change in control payments and benefits"* for a description of such payments and benefits.

For purposes of the Severance Protection Agreements, "Cause" generally means such executive's:

- willful misconduct, gross misconduct, or gross negligence in the performance of such executive's duties;
- conviction of, or plea of guilty or *nolo contendere* to, a crime relating to us or any of our affiliates, or any felony;
- material breach of any material written agreement (including such executive's proprietary information and non-competition agreement) with us or on of our written policies signed by such executive;
- intentional failure or refusal to follow a lawful and proper direction of the Board or the CEO; or
- any other conduct by the executive, whether or not in the course of performing the executive's responsibilities to the Company, that has or is reasonably likely to have a material adverse effect on the business, assets or reputation of the Company.

For purposes of the Severance Protection Agreements, "Good Reason" generally means the occurrence of any of the following:

- an adverse change in such executive's title
- a material diminution in such executive's duties, authorities or responsibilities or the assignment of duties or responsibilities materially adversely inconsistent with such executive's then-current position;
- a reduction in such executive's base salary or annual target incentive bonus (as a percentage of base salary)
- a relocation of such executive's principal place of business of more than 50 miles;
- we provide written notice of our intent not to renew the applicable Severance Protection Agreement;
- our failure to obtain a reasonably satisfactory written agreement from any successor to all or substantially all of our assets to assume and agree to perform our obligations under the Severance Protection Agreement.

For purposes of the Severance Protection Agreements, the term "Change in Control" generally has the same meaning as defined in the CEO Employment Agreement.

Proprietary information and non-competition agreements

Each of our U.S.-based NEOs has entered into, and is subject to the terms of, a Proprietary Information and Non-Competition Agreement with us that contains, among other things, (i) certain provisions prohibiting disclosure of our confidential information without our prior written consent, (ii) certain non-competition provisions that restrict their engaging in certain activities that are competitive with us during their employment and for one year thereafter for Messrs. McVey, Concannon, McPherson and Themelis and six months thereafter for Messrs. DeLise and Gerosa, (iii) certain non-solicitation provisions that restrict their recruiting, soliciting or hiring our non-clerical employees or consultants during their employment and for two years thereafter and (iv) certain non-solicitation provisions that restrict their soliciting any person or entity to terminate, cease, reduce or diminish their relationship with us, during their employment and for two years thereafter for Messrs. McVey and Concannon and one year thereafter for Messrs. DeLise, Gerosa, McPherson and Themelis.

DeLise Consulting Services Agreement and Side Letter Agreement

In connection with the transition of the Chief Financial Officer role and in order to promote continuity and efficiency, the Company entered into a Consulting Services Agreement in February 2022 with Mr. DeLise that will continue until January 2023, unless earlier terminated: (i) at any time upon the mutual written consent of the Company and Mr. DeLise; (ii) upon written notice to either the Company or Mr. DeLise of a material breach of the agreement; or (iii) with five days' written notice by either party for any reason. The term of the agreement may be extended by mutual agreement of the Company and Mr. DeLise. Mr. DeLise also agreed to serve as a director of one of our subsidiaries for no compensation.

Pursuant to its terms, Mr. DeLise receives a fee of $500 per hour of service.

Mr. DeLise's consulting services include assistance with the Company's ongoing income tax examinations described in Note 9 to the Company's Consolidated Financial Statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021, exit and decommissioning of two of the Company's former offices, and other duties as assigned.

Mr. DeLise and the Company also entered into a side letter agreement in February 2022 that provides that if, prior to January 2024, Mr. DeLise is both removed from the board of one of the Company's subsidiaries and the Company terminates the Consulting Services Agreement other than for Cause, then he will receive a cash payment of $137,250.

Mr. DeLise's outstanding unvested equity will continue to vest, in accordance with the existing award agreements without modification.

Themelis Consulting Services Agreement and Separation Agreement

In connection with the transition of the Chief Information Officer role and in order to promote continuity and efficiency, the Company entered into a Consulting Services Agreement in April 2022 with Mr. Themelis that will continue until February 2023, unless earlier terminated: (i) at any time upon the mutual written consent of the Company and Mr. Themelis; or (ii) upon the Company terminating Mr. Themelis for Cause. The term of the agreement may be extended by mutual agreement of the Company and Mr. Themelis.

Pursuant to its terms, Mr. Themelis will receive a monthly consulting fee of $29,500. If the Agreement is terminated early, including by the Company for Cause, no additional payments will be due and payable.

Mr. Themelis' consulting services include assistance transitioning the Chief Information Officer role to his successor, advising on the ongoing software development lifecycle process and other duties as assigned.

Pursuant to the terms of a Separation Agreement between Mr. Themelis and the Company and in consideration of Mr. Themelis' 2022 service as an employee, he is eligible to earn a performance-based cash incentive with a target of $250,000, which is tied to pre-established performance conditions that include the successful and timely completion of critical platform enhancements as well as assisting with the transition of his successor.

Mr. Themelis' outstanding unvested equity will continue to vest, in accordance with the existing award agreements without modification.

Potential termination or change in control payments and benefits

Each of the NEOs is entitled to certain payments and benefits pursuant to their employment agreements and/or other agreements, as applicable, entered into between us and such executive upon a termination of such executive's employment in certain circumstances or in the event of a change in control of the Company. For Messrs. McVey and Concannon, their rights upon certain termination or change in control events: (a) to base salary continuation, bonus and healthcare benefits are governed by the CEO Employment Agreement and President Employment Agreement, respectively; and (b) to vesting of unvested equity awards are governed by their equity award agreements. For Messrs. Gerosa and McPherson, their rights upon certain termination or change in control events are governed by their applicable Severance Protection Agreement or where more favorable, their applicable equity award agreements. For Messrs. DeLise and Themelis, their rights upon certain termination or change in control events were governed by their applicable Severance Protection Agreement or where more favorable, their applicable equity award agreements. The benefits described herein are subject to the applicable NEO's, his estate's or his legal guardian's, as applicable, execution of a general release of claims and covenant not to sue.

The following tables estimate the payments we would be obligated to make to each of our NEOs as a result of such NEO's termination or resignation under the circumstances shown or because of a change in control, in each case assuming such event had occurred on December 31, 2021. We have calculated these estimated payments to meet SEC disclosure requirements. The estimated payments are not necessarily indicative of the actual amounts any of our NEOs would receive in such circumstances. The table excludes (i) compensation amounts accrued through December 31, 2021 that would be paid in the normal course of continued service, such as accrued but unpaid salary, and (ii) vested account balances under our 401(k) Plan that are generally available to all of our salaried employees. Where applicable, the information in the table uses a price per share for our Common Stock of $411.27, the closing price on December 31, 2021.

Messrs. DeLise and Themelis transitioned to consulting roles in 2022. Please refer to "—Employment agreements and severance arrangements with our Named Executive Officers" for more information.

Payments and Benefits for Mr. McVey								
	Termination for Cause or Without Good Reason	Prior to CIC Termination[1]	Following CIC Termination[1]	CIC Trigger[1] (No Termination)	Enhanced Non-CCPP Termination[1]	Death or Disability CCPP Termination[1]	Death or Disability Non-CCPP Termination[1]	Non-Extension Non-CCPP Termination[1]
Base Salary [2]	—	$1,000,000	$1,000,000	—	$1,000,000	$1,000,000	$500,000	$500,000
Bonus [3]	—	$2,760,000	$2,760,000	—	$2,760,000	$2,760,000	$1,380,000	$1,380,000
Health Benefits [4]	—	$63,570	$63,570	—	$47,677	$63,570	$31,785	$31,785
Unvested Restricted Stock [5]	—	$15,522,152	$16,991,209	$16,991,209	$7,761,076	$16,256,681	$16,256,681	—
Unvested Performance Shares [6]	—	—	$1,911,172	$1,911,172	—	$955,586	$955,586	—
Unvested Performance Stock Units [7]	—	—	$1,350,199	$1,350,199	—	$1,350,199	$1,350,199	—
Unvested Restricted Stock Units [8]	—	—	$674,894	$2,358,633	—	$1,516,764	$1,516,764	—
Unvested Stock Options [9]	—	$21,159,494	$21,425,680	$266,186	$21,159,494	$10,712,840	$10,712,840	—
Total	—	$40,505,216	$46,176,724	$22,877,400	$32,728,248	$34,615,640	$32,703,855	$1,911,785

(1) A "Prior to CIC Termination" occurs if Mr. McVey resigns for Good Reason or his employment is terminated for any reason other than his resignation without Good Reason (including due to his providing a notice of non-extension of the term of the CEO Employment Agreement at least 90 days prior to the end of the term (a "*Non-Extension Notice*")), or by us for Cause, in any case, within three months prior to a "change in control event" within the meaning of Section 409A of the Code (such period, a "Prior Change in Control Protection Period" or a "Prior CCPP"). A "Following CIC Termination" occurs if Mr. McVey resigns for Good Reason or his employment is terminated for any reason other than his resignation without Good Reason (including due to his providing a Non-Extension Notice), or by us for Cause, in any case, within (a) 18 months (for base salary, bonus and healthcare) and (b) 24 months (for equity awards), in each case, after a Change in Control as defined in the CEO Employment Agreement (such period, combined with a Prior CCPP, a "*CCPP*"). A "CIC Trigger" occurs if, immediately prior to a Change in Control, the Compensation Committee determines that the applicable equity award will not be continued, assumed or have new rights substituted therefor in accordance with the applicable incentive plans. An "Enhanced Non-CCPP Termination" occurs if Mr. McVey's employment is terminated outside of a CCPP for any reason other than: (a) his death, (b) his voluntary resignation without Good Reason (including due to his providing a Non-Extension Notice), (c) due to our providing a Non-Extension Notice, (d) by us as a result of his having a disability or (e) for Cause. A "Death or Disability CCPP Termination" occurs if Mr. McVey's employment is terminated during a CCPP due to his death or by us as a result of his having a disability. A "Death or Disability Non-CCPP Termination" occurs if Mr. McVey's employment is terminated outside of a CCPP due to his death or by us as a result of his having a disability. A "Non-Extension Non-CCPP Termination" occurs if Mr. McVey's employment is terminated outside a CCPP due to our providing a Non-Extension Notice. An "Average Bonus" for Mr. McVey means the average of his annual bonus amounts received for the Company's three fiscal years immediately preceding the termination.

(2) Represents the continued payment of base salary: (a) upon a Prior to CIC Termination, a Following CIC Termination, an Enhanced Non-CCPP Termination or a Death or Disability CCPP Termination for 24 months; and (b) upon a Death or Disability Non-CCPP Termination or a Non-Extension Non-CCPP Termination, for 12 months.

(3) Represents a bonus: (a) upon a Prior to CIC Termination, a Following CIC Termination, an Enhanced Non-CCPP Termination or a Death or Disability CCPP Termination, in the amount of two times Mr. McVey's Average Bonus, payable in 24 monthly installments; and (b) upon a Death or Disability Non-CCPP Termination or a Non-Extension Non-CCPP Termination, in the amount of one times Mr. McVey's Average Bonus, payable in 12 monthly installments.

(4) Represents healthcare coverage: (a) upon a Prior to CIC Termination, a Following CIC Termination or a Death or Disability CCPP Termination, for 24 months; (b) for an Enhanced Non-CCPP Termination, for 18 months; and (c) upon a Death or Disability Non-CCPP Termination or a Non-Extension Non-CCPP Termination, for 12 months.

(5) Represents the value of the unvested restricted stock issued to Mr. McVey upon the settlement of performance shares granted to him in January 2018, as part of his multi-year award (the "McVey 2018 Multi-Year"), and in January 2019 (the "McVey 2019 Annual") and January 2020 (the "McVey 2020 Annual"), each as part of his annual award, which will vest as follows: (a) for the McVey 2018 Multi-Year, (i) upon a Prior to CIC Termination, a Following CIC Termination, a CIC Trigger, a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, his unvested restricted stock shall fully vest; and (ii) upon an Enhanced Non-CCPP Termination, half of his restricted stock shall vest; and (b) for the McVey 2019 Annual and McVey 2020 Annual, (i) upon a Following CIC Termination or a CIC Trigger, his unvested restricted stock shall fully vest; and (ii) upon a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, half of his restricted stock shall vest.

(6) Represents the target value of the unvested performance shares granted to Mr. McVey in January 2020 as part of his annual award (the "McVey 2020 Annual"), which will vest as follows (a) upon a Following CIC Termination or a CIC Trigger, his unvested performance shares shall fully vest; provided that, with respect to a Following CIC Termination, the performance stock would only vest if Mr. McVey is terminated without Cause in the period following a Change in Control and (b) upon a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, half of his unvested performance shares shall vest.

(7) Represents the target value of the unvested performance stock units granted to Mr. McVey in January 2021 as part of his annual award (the "McVey 2021 Annual" and together with the McVey 2019 Annual and McVey 2020 Annual, the "McVey Annual Awards"), which will fully vest upon a Following CIC Termination, a CIC Trigger, a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination; provided that, with respect to a Following CIC Termination, the performance stock units would only vest if Mr. McVey is terminated without Cause in the period following a Change in Control.

(8) Represents the value of the unvested restricted stock units granted to Mr. McVey as part of the McVey Annual Awards, which will vest as follows: (a) for the McVey 2019 Annual and McVey 2020 Annual, (i) upon a Following CIC Termination or a CIC Trigger, his unvested restricted stock units shall fully vest; and (ii) upon a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, half of his unvested restricted stock units shall vest; and (b) for the McVey 2021 Annual, upon a Following CIC Termination, a CIC Trigger, a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, his unvested restricted stock units shall fully vest; provided that, with respect to a Following CIC Termination, the performance stock units would only vest if Mr. McVey is terminated without Cause in the period following a Change in Control.

(9) Represents the value of the unvested stock options granted to Mr. McVey as part of the McVey 2018 Multi-Year, the McVey 2020 Annual and the McVey 2021 Annual, which will vest as follows: (a) for the McVey 2018 Multi-Year, (i) upon a Prior to CIC Termination, a Following CIC Termination, or an Enhanced Non-CIC Termination, his unvested stock options shall fully vest; and (ii) upon a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, half of his unvested stock options shall vest; (b) for the McVey 2020 Annual, (i) upon a Following CIC Termination or a CIC Trigger, his unvested stock options shall fully vest; and (ii) upon a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, half of his unvested stock options shall vest; and (c) for the McVey 2021 Annual, upon a CIC Trigger, a Death or Disability CCPP Termination or a Death or Disability Non-CCPP Termination, his unvested stock options shall fully vest, but have no impact on the value presented in the table above because it is presented as of December 31, 2021 and the stock options had an exercise price greater than the closing market price of a share of our Common Stock on such date.

Payments and Benefits for Mr. Concannon							
	Termination for Cause or Without Good Reason	Death or Disability CCPP Termination[1]	Death or Disability Non-CCPP Termination[1]	CCPP Without Cause or for Good Reason Termination[1]	Non-CCPP Without Cause or for Good Reason[1]	CIC Trigger[1] (No Termination)	Non-Extension Termination[1]
Base Salary[2]	—	$1,000,000	$500,000	$1,000,000	$1,000,000	—	$500,000
Bonus[3]	—	$3,000,000	$1,500,000	$3,000,000	$3,000,000	—	$1,500,000
Health Benefits[4]	—	$47,677	$31,785	$47,677	$47,677	—	$31,785
Unvested Restricted Stock[5]	—	$7,778,761	$7,778,761	$7,778,761	$3,889,380	$7,778,761	—
Unvested Performance Shares[6]	—	$623,280	$623,280	$1,246,559	—	$1,246,559	—
Unvested Performance Stock Units[7]	—	$950,856	$950,856	$950,856	—	$950,856	—
Unvested Restricted Stock Units[8]	—	$5,972,257	$5,972,257	$6,383,733	$5,085,354	$6,383,733	—
Unvested Stock Options[9]	—	$4,869,303	$4,869,303	$9,738,607	$9,738,607	—	—
Total	—	$24,242,135	$22,226,242	$30,146,193	$22,761,018	$16,359,909	$2,031,785

(1) A “Death or Disability CIC Termination” occurs upon Mr. Concannon’s death or disability during a CCPP (as defined in footnote (1) to the “Payments and Benefits for Mr. McVey” table). A “Death or Disability Non-CCPP Termination” occurs upon Mr. Concannon’s death or disability outside of a CCPP. A “CCPP Without Cause or for Good Reason Termination” occurs upon: (i) a termination by Mr. Concannon for Good Reason during a Prior CCPP (as defined in footnote (1) to the “Payments and Benefits for Mr. McVey” table); or (ii) the Company terminates Mr. Concannon without Cause or a termination by Mr. Concannon for Good Reason during the portion of a CCPP that is not a Prior CCPP. A “Non-CCPP Without Cause or for Good Reason Termination” means a termination by the Company without Cause or by Mr. Concannon for Good Reason that is not a CCPP Without Cause or for Good Reason Termination. A “CIC Trigger” occurs if, immediately prior to a Change in Control, the Compensation Committee determines that the applicable equity award will not be continued, assumed or have new rights substituted therefor in accordance with the applicable incentive plans. A “Non-Extension Termination” occurs if Mr. Concannon’s employment is terminated due to our providing a Non-Extension Notice (as defined in footnote (1) to the “Payments and Benefits for Mr. McVey” table, except with respect to the President Employment Agreement). An “Average Bonus” for Mr. Concannon means the average of his annual bonus amounts received in 2019 and 2020.

(2) Represents the continued payment of base salary: (a) upon a Death or Disability CIC Termination, a CCPP Without Cause or for Good Reason Termination or a Non-CCPP Without Cause or for Good Reason Termination, for 24 months; and (b) upon a Death or Disability Non-CCPP Termination or a Non-Extension Termination, for 12 months.

(3) Represents a bonus: (a) upon a Death or Disability CIC Termination, a CCPP Without Cause or for Good Reason Termination or a Non-CCPP Without Cause or for Good Reason Termination, in the amount of two times Mr. Concannon’s Average Bonus, payable in 24 monthly installments; and (b) upon a Death or Disability Non-CCPP Termination or a Non-Extension Termination, in the amount of one times Mr. Concannon’s Average Bonus, payable in 12 monthly installments.

(4) Represents healthcare coverage: (a) upon a Death or Disability CIC Termination, a CCPP Without Cause or for Good Reason Termination or a Non-CCPP Without Cause or for Good Reason Termination, for 18 months; and (b) upon a Death or Disability Non-CCPP Termination or a Non-Extension Termination, for 12 months.

(5) Represents the value of the unvested restricted stock issued to Mr. Concannon upon the settlement of performance shares granted to him in January 2019, as part of his sign on award (the “Concannon Sign On”), which will vest as follows: (a) upon a Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination, a CCPP Without Cause or For Good Reason Termination or a CIC Trigger, his unvested restricted stock shall fully vest; and (b) upon a Non-CCPP Without Cause or For Good Reason Termination, half of his restricted stock shall vest.

(6) Represents the target value of the unvested performance shares granted to Mr. Concannon in January 2020 as part of his annual award (the “Concannon 2020 Annual”), which will vest as follows: (a) upon a CCPP Without Cause or for Good Reason Termination or a CIC Trigger, his unvested performance shares shall fully vest; provided that the unvested performance shares would not vest if his employment was terminated by him for Good Reason; and (b) upon a Death or Disability CIC Termination or a Death or Disability Non-CCPP Termination, half of his unvested performance shares shall vest.

(7) Represents the target value of the unvested performance stock units granted to Mr. Concannon in January 2021 as part of his annual award (the “Concannon 2021 Annual,” together with the Concannon 2020 Annual, the “Concannon Annual Awards”), which will fully vest upon a CCPP Without Cause or For Good Reason Termination, a Death or Disability CIC Termination, a Death or Disability Non-CCPP

Termination or a CIC Trigger; provided that, with respect to a CCPP Without Cause or for Good Reason Termination, the unvested performance stock units would not vest if his employment was terminated by him for Good Reason.

(8) Represents the value of the unvested restricted stock units granted to Mr. Concannon as part of the Concannon Sign On and the Concannon Annual Awards, which will vest as follows: (a) for the Concannon Sign On, upon a Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination, a CCPP Without Cause or For Good Reason Termination, a Non-CCPP Without Cause or For Good Reason Termination or a CIC Trigger, his unvested restricted stock units shall fully vest; (b) for the Concannon 2020 Annual, (i) upon a CCPP Without Cause or For Good Reason Termination or a CIC Trigger, his unvested restricted stock units shall fully vest; provided that, with respect to a CCPP Without Cause or for Good Reason Termination, the unvested restricted stock units would not vest if his employment was terminated by him for Good Reason; and (ii) upon a Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination, half of his unvested restricted stock units shall vest; and (c) for the Concannon 2021 Annual, upon a CCPP Without Cause or For Good Reason Termination, Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination or a CIC Trigger, his unvested restricted stock units shall fully vest; provided that, with respect to a CCPP Without Cause or for Good Reason Termination, the unvested restricted stock units would not vest if his employment was terminated by him for Good Reason.

(9) Represents the value of the unvested stock options granted to Mr. Concannon as part of the Concannon Sign On and Concannon 2021 Annual, which will vest as follows: (a) for the Concannon Sign On, (i) upon a CCPP Without Cause or For Good Reason Termination or a Non-CCPP Without Cause or For Good Reason Termination, his unvested stock options shall fully vest; and (ii) upon a Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination, half of his unvested stock options shall vest; and (b) for the Concannon 2021 Annual, upon a CCPP Without Cause or For Good Reason Termination, a Death or Disability CIC Termination, a Death or Disability Non-CCPP Termination or a CIC Trigger, his unvested stock options shall fully vest, but have no impact on the value presented in the table above because it is presented as of December 31, 2021 and the stock options had an exercise price greater than the closing market price of a share of our Common Stock on such date; provided that, with respect to a CCPP Without Cause or for Good Reason Termination, the unvested stock options would not vest if his employment was terminated by him for Good Reason.

Payments and Benefits for Mr. Gerosa					
	Termination for Cause or Without Good Reason	CIC Termination[1]	CIC Trigger[1] (No Termination)	Non-CIC Termination[1]	Death or Disability
Severance [2]	—	$892,500	—	$595,000	$297,500
Pro Rata Bonus [3]	—	$295,000	—	$295,000	$147,500
Health Benefits [4]	—	$48,122	—	$32,081	$32,081
Unvested Restricted Stock [5]	—	$110,632	$110,632	$77,730	$110,632
Unvested Performance Stock Units [6]	—	$440,059	$440,059	—	$440,059
Unvested Restricted Stock Units [7]	—	$458,566	$458,566	$155,049	$458,566
Unvested Stock Options [8]	—	—	—	—	—
Total	—	$2,244,878	$1,009,257	$1,154,860	$1,486,338

(1) A "CIC Termination", occurs upon termination by the Company without Cause or a termination by the applicable NEO for Good Reason during the period beginning on the effective date of a Change in Control and ending on the second anniversary following such effective date (such period, a "Protection Period"). A "CIC Trigger" occurs if, immediately prior to a Change in Control, the Compensation Committee determines that the applicable equity award will not be continued, assumed or have new rights substituted therefor in accordance with the applicable incentive plans. An "Non-CIC Termination" occurs either upon (a) a termination by the Company without Cause prior to a Change in Control, or (b) a termination by the Company without Cause or a termination by the applicable NEO for Good Reason following the expiration of a Protection Period. The applicable NEO's "Average Annual Bonus" means the average of his annual bonus amounts earned and payable for the Company's three fiscal years immediately preceding the termination.

(2) Represents severance: (a) upon a CIC Termination, equal to one and a half times the sum of Mr. Gerosa's base salary and his Average Annual Bonus, payable in a lump sum; (b) upon a Non-CIC Termination, equal to one times the sum of Mr. Gerosa's base salary and his Average Annual Bonus, payable in regular installments over twelve months; and (c) upon death or disability, equal to half of the sum of Mr. Gerosa's base salary and his Average Annual Bonus, payable in a lump sum.

(3) Represents a pro rata bonus: (a) upon a CIC Termination or a Non-CIC Termination, equal to Mr. Gerosa's Average Annual Bonus, payable in a lump sum; and (b) upon death or disability, equal to half of his Average Annual Bonus, payable in a lump sum.

(4) Represents healthcare coverage: (a) upon a CIC Termination, for eighteen months; and (b) upon a Non-CIC Termination or upon death or disability, for twelve months.

(5) Represents the value of the unvested restricted stock granted to Mr. Gerosa in January 2019 and January 2020, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or upon death or disability, his restricted stock shall fully vest; and (b) upon a Non-CIC Termination, his restricted stock shall continue to vest for a year from such termination.

(6) Represents the target value of the unvested performance stock units granted to Mr. Gerosa in January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance stock units shall fully vest; and (b) upon a Non-CIC Termination, his performance stock units shall continue to vest for a year from such termination (but as such shares cliff vest in January 2024, no performance stock units shall vest)

(7) Represents the value of the unvested restricted stock units granted to Mr. Gerosa in January 2021, February 2021 and August 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested restricted stock units shall fully vest; and (ii) upon a Non-CIC Termination, his unvested restricted stock units shall continue to vest for a year from such termination.

(8) Represents the value of the unvested stock options granted to Mr. Gerosa in August 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested stock options shall fully vest, but have no impact on the value presented in the table above because it is presented as of December 31, 2021 and the stock options had an exercise price greater than the closing market price of a share of our Common Stock on such date; and (b) upon a Non-CIC Termination, his unvested stock options shall continue to vest for a year from such termination, but have no impact on the value presented in the table above because it is presented as of December 31, 2021 and the stock options had an exercise price greater than the closing market price of a share of our Common Stock on such date

Payments and Benefits for Mr. McPherson					
	Termination for Cause or Without Good Reason	CIC Termination[1]	CIC Trigger[1] (No Termination)	Non-CIC Termination[1]	Death or Disability
Severance[2]	—	$2,150,000	—	$1,433,333	$716,667
Pro Rata Bonus[3]	—	$1,133,333	—	$1,133,333	$566,667
Health Benefits[4]	—	$48,122	—	$32,081	$32,081
Unvested Restricted Stock[5]	—	$141,066	$141,066	$141,066	$141,066
Unvested Performance Shares[6]	—	$332,306	$332,306	—	$332,306
Unvested Performance Stock Units[7]	—	$532,595	$532,595	—	$532,595
Unvested Restricted Stock Units[8]	—	$909,318	$909,318	$448,284	$909,318
Total	—	$5,246,739	$1,915,284	$3,188,098	$3,230,699

(1) Refer to footnote (1) under the "*Payments and Benefits Payable to Mr. Gerosa*" table for applicable definitions.

(2) Represents severance: (a) upon a CIC Termination, equal to one and a half times the sum of Mr. McPherson's base salary and his Average Annual Bonus, payable in a lump sum; (b) upon a Non-CIC Termination, equal to one times the sum of Mr. McPherson's base salary and his Average Annual Bonus, payable in regular installments over twelve months; and (c) upon death or disability, equal to half of the sum of Mr. McPherson's base salary and his Average Annual Bonus, payable in a lump sum.

(3) Represents a pro rata bonus: (a) upon a CIC Termination or a Non-CIC Termination, equal to Mr. McPherson's Average Annual Bonus, payable in a lump sum; and (b) upon death or disability, equal to half of his Average Annual Bonus, payable in a lump sum.

(4) Represents healthcare coverage: (a) upon a CIC Termination, for eighteen months; and (b) upon a Non-CIC Termination or upon death or disability, for twelve months.

(5) Represents the value of the unvested restricted stock issued to Mr. McPherson upon the settlement of performance shares granted to him in January 2019, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or upon death or disability, his restricted stock shall fully vest; and (b) upon a Non-CIC Termination, his restricted stock shall continue to vest for a year from such termination.

(6) Represents the target value of the unvested performance shares granted to Mr. McPherson in January 2020, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance shares shall fully vest; and (b) upon a Non-CIC Termination, his performance shares shall continue to vest for a year from such termination (but as such shares cliff vest in January 2023, no shares shall vest).

(7) Represents the target value of the unvested performance stock units granted to Mr. McPherson in January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance stock units shall fully vest; and (b) upon a Non-CIC Termination, his performance stock units shall continue to vest for a year from such termination (but as such shares cliff vest in January 2024, no performance stock units shall vest).

(8) Represents the value of the unvested restricted stock units granted to Mr. McPherson in January 2019, January 2020 and January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested restricted stock units shall fully vest; and (b) upon a Non-CIC Termination, his unvested restricted stock units shall continue to vest for a year from such termination.

Payments and Benefits for Mr. DeLise					
	Termination for Cause or Without Good Reason	**CIC Termination[1]**	**CIC Trigger[1] (No Termination)**	**Non-CIC Termination[1]**	**Death or Disability**
Severance [2]	—	$1,762,500	—	$1,175,000	$587,500
Pro Rata Bonus [3]	—	$875,000	—	$875,000	$437,500
Health Benefits [4]	—	$32,906	—	$21,937	$21,937
Unvested Restricted Stock [5]	—	$156,694	$156,694	$156,694	$156,694
Unvested Performance Shares [6]	—	$304,751	$304,751	—	$304,751
Unvested Performance Stock Units [7]	—	$456,510	$456,510	—	$456,510
Unvested Restricted Stock Units [8]	—	$832,822	$832,822	$431,011	$832,822
Total	—	$4,421,182	$1,750,776	$2,659,642	$2,797,713

(1) Refer to footnote (1) under the "*Payments and Benefits Payable to Mr. Gerosa*" table for applicable definitions.

(2) Represents severance: (a) upon a CIC Termination, equal to one and a half times the sum of Mr. DeLise's base salary and his Average Annual Bonus, payable in a lump sum; (b) upon a Non-CIC Termination, equal to one times the sum of Mr. DeLise's base salary and his Average Annual Bonus, payable in regular installments over twelve months; and (c) upon death or disability, equal to half of the sum of Mr. DeLise's base salary and his Average Annual Bonus, payable in a lump sum.

(3) Represents a pro rata bonus: (a) upon a CIC Termination or a Non-CIC Termination, equal to Mr. DeLise's Average Annual Bonus, payable in a lump sum; and (b) upon death or disability, equal to half of his Average Annual Bonus, payable in a lump sum.

(4) Represents healthcare coverage: (a) upon a CIC Termination, for eighteen months; and (b) upon a Non-CIC Termination or upon Death or Disability, for twelve months.

(5) Represents the value of the unvested restricted stock issued to Mr. DeLise upon the settlement of performance shares granted to him in January 2019, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or upon death or disability, his restricted stock shall fully vest; and (b) upon a Non-CIC Termination, his restricted stock shall continue to vest for a year from such termination.

(6) Represents the target value of the unvested performance shares granted to Mr. DeLise in January 2020, which will vest as follows: (a) upon a CIC Termination, CIC Trigger or death or disability, his unvested performance shares shall fully vest; and (b) upon a Non-CIC Termination, his performance shares shall continue to vest for a year from such termination (but as such shares cliff vest in January 2023, no shares shall vest).

(7) Represents the target value of the unvested performance stock units granted to Mr. DeLise in January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance stock units shall fully vest; and (b) upon a Non-CIC Termination, his performance stock units shall continue to vest for a year from such termination (but as such shares cliff vest in January 2024, no performance stock units shall vest).

(8) Represents the value of the unvested restricted stock units granted to Mr. DeLise in January 2019, January 2020 and January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested restricted stock units shall fully vest; and (b) upon a Non-CIC Termination, his unvested restricted stock units shall continue to vest for a year from such termination.

Payments and Benefits for Mr. Themelis					
	Termination for Cause or Without Good Reason	CIC Termination[1]	CIC Trigger[1] (No Termination)	Non-CIC Termination[1]	Death or Disability
Severance [2]	—	$2,237,500	—	$1,491,667	$745,833
Pro Rata Bonus [3]	—	$1,191,667	—	$1,191,667	$595,833
Health Benefits [4]	—	$48,122	—	$32,081	$32,081
Unvested Restricted Stock [5]	—	$171,088	$171,088	$171,088	$171,088
Unvested Performance Shares [6]	—	$387,828	$387,828	—	$387,828
Unvested Performance Stock Units [7]	—	$646,516	$646,516	—	$646,516
Unvested Restricted Stock Units [8]	—	$1,093,156	$1,093,156	$538,352	$1,093,156
Total	—	$5,775,876	$2,298,588	$3,424,855	$3,672,336

(1) Refer to footnote (1) under the "*Payments and Benefits Payable to Mr. Gerosa*" table for applicable definitions.

(2) Represents severance: (a) upon a CIC Termination, equal to one and a half times the sum of Mr. Themelis' base salary and his Average Annual Bonus, payable in a lump sum; (b) upon a Non-CIC Termination, equal to one times the sum of Mr. Themelis' base salary and his Average Annual Bonus, payable in regular installments over twelve months; and (c) upon death or disability, equal to half of the sum of Mr. Themelis' base salary and his Average Annual Bonus, payable in a lump sum.

(3) Represents a pro rata bonus: (a) upon a CIC Termination or a Non-CIC Termination, equal to Mr. Themelis' Average Annual Bonus, payable in a lump sum; and (b) upon death or disability, equal to half of his Average Annual Bonus, payable in a lump sum.

(4) Represents healthcare coverage: (a) upon a CIC Termination, for eighteen months; and (b) upon a Non-CIC Termination or upon death or disability, for twelve months.

(5) Represents the value of the unvested restricted stock issued to Mr. Themelis upon the settlement of performance shares granted to him in January 2019, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or upon death or disability, his restricted stock shall fully vest; and (b) upon a Non-CIC Termination, his restricted stock shall continue to vest for a year from such termination.

(6) Represents the target value of the unvested performance shares granted to Mr. Themelis in January 2020, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance shares shall fully vest; and (b) upon a Non-CIC Termination, his performance shares shall continue to vest for a year from such termination (but as such shares cliff vest in January 2023, no shares shall vest).

(7) Represents the target value of the unvested performance stock units granted to Mr. Themelis in January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested performance stock units shall fully vest; and (b) upon a Non-CIC Termination, his performance stock units shall continue to vest for a year from such termination (but as such shares cliff vest in January 2024, no performance stock units shall vest).

(8) Represents the value of the unvested restricted stock units granted to Mr. Themelis in January 2019, January 2020 and January 2021, which will vest as follows: (a) upon a CIC Termination, a CIC Trigger or death or disability, his unvested restricted stock units shall fully vest; and (ii) upon a Non-CIC Termination, his unvested restricted stock units shall continue to vest for a year from such termination.

Compensation Committee interlocks and insider participation

The Compensation Committee is composed of three independent directors. No member of the Compensation Committee is, or was during 2021, a current or former officer or employee of the Company or any of its subsidiaries. Additionally, during 2021, none of our executive officers served on the board of directors or compensation committee of any entity that had one or more of its executive officers serving on the Board or the Compensation Committee of the Company.

PROPOSAL 3 — ADVISORY VOTE ON EXECUTIVE COMPENSATION

In accordance with the requirements of Section 14A of the Exchange Act (which was added by the Dodd-Frank Act), the Company is providing its stockholders the opportunity to cast an advisory vote to approve the compensation of the Company's NEOs. This proposal, commonly known as a "Say-on-Pay" proposal, gives the Company's stockholders the opportunity to express their views on the NEOs' compensation. We will include an advisory vote on executive compensation on an annual basis at least until the next stockholder advisory vote on the frequency of such votes.

As described in detail in the *Compensation Discussion and Analysis* above, the Company's NEO compensation program is designed to attract, reward and retain the caliber of officers needed to ensure the Company's continued growth and profitability.

The Company seeks to accomplish these goals in a manner that is aligned with the long-term interests of the Company's stockholders. The Company believes that its NEO compensation program achieves this goal with its emphasis on long-term equity awards and performance-based compensation, in addition to short-term (annual) incentive awards, which has enabled the Company to successfully motivate and reward its NEOs. The Company believes that its ability to retain its current high-performing team of seasoned executive officers is critical to its continuing financial success and that its focus on the long-term interests of its NEOs aligns with the interests of its stockholders.

We urge stockholders to read the letter from the Compensation Committee found on page 33 and the *Compensation, Discussion and Analysis* beginning on page 34, which describe in more detail how our executive compensation policies and procedures operate and are designed to achieve our compensation objectives, as well as the *Summary Compensation Table* and other related compensation tables and narratives beginning on page 61, which provide detailed information on the compensation of our NEOs. For these reasons, the Board recommends a vote in favor of the following resolution:

"RESOLVED, that the compensation paid to the Company's NEOs, as disclosed in the Company's proxy statement for the 2022 Annual Meeting, pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Compensation Discussion and Analysis, compensation tables and narrative discussion, is hereby APPROVED."

Your vote

As an advisory vote, this proposal is not binding upon the Company, our Board or our Compensation Committee. Notwithstanding the advisory nature of this vote, our Board and the Compensation Committee, which is responsible for designing and administering the Company's NEO compensation program, value the opinions expressed by stockholders in their vote on this proposal, and will consider the outcome of the vote when making future compensation decisions for NEOs. Unless proxy cards are otherwise marked, the persons named as proxies will vote **FOR** the approval, on an advisory basis, of the compensation of the Company's NEOs as disclosed in this Proxy Statement. The affirmative vote of the holders of a majority of the shares of Common Stock having voting power present in person or represented by proxy is required to approve this Proposal 3. Abstentions will have the same effect as a vote AGAINST this proposal and broker non-votes will have no effect on the outcome of the vote.

VOTE **FOR**
PROPOSAL 3

BOARD RECOMMENDATION

The board unanimously recommends that you vote "FOR" the approval, on an advisory basis, of the compensation of the Company's named executive officers as disclosed in this Proxy Statement.

PROPOSAL 4 — APPROVAL OF THE COMPANY'S 2022 ESPP

We are asking our stockholders to approve the adoption of the MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan (the "2022 ESPP"). The 2022 ESPP was adopted by our Board of Directors on April 13, 2022. In connection with the anticipated adoption of the 2022 ESPP, the Compensation Committee terminated the 2015 MarketAxess Holdings Inc. Employee Stock Purchase Plan (the "Previous ESPP"), effective as of February 28, 2022.

The 2022 ESPP enables eligible employees of the Company and certain of its subsidiaries to use payroll deductions to purchase Common Stock, thereby acquiring or increasing their ownership interest in the Company. The 2022 ESPP is intended to qualify as an "employee stock purchase plan" meeting the requirements of Section 423 of the Code.

The maximum aggregate number of shares of Common Stock that may be purchased under the 2022 ESPP will be 121,111 shares, which is the number of shares that were remaining under the Previous ESPP as of the effectiveness of its termination. This represents 0.32% of the total number of shares of our Common Stock outstanding as of March 31, 2022. In establishing the number of shares of Common Stock that may be purchased under the 2022 ESPP, our Board of Directors considered the amount of shares remaining under the Previous ESPP, the potential dilutive impact to stockholders, the projected participation rate over the term of the 2022 ESPP and equity plan guidelines established by certain proxy advisory firms.

The following summary of the material features of the 2022 ESPP is not intended to be complete and is qualified in its entirety by reference to the full text of the 2022 ESPP which is set forth in Appendix B.

Summary of the 2022 ESPP

Administration

The 2022 ESPP is administered by the Compensation Committee or such other committee of the Board of Directors or the Board of Directors as a whole, in each case as determined by the Board of Directors (the "Committee"). Currently, the Board of Directors has designated the Compensation Committee to act as the Committee under the 2022 ESPP. The Committee has the authority to construe and interpret the 2022 ESPP; to prescribe, amend and rescind rules relating to the 2022 ESPP's administration; and to take any other actions necessary or desirable for the administration of the 2022 ESPP including, without limitation, adopting sub-plans applicable to particular subsidiaries or locations, which sub-plans may be designed to be outside the scope of Section 423 of the Internal Revenue Code. See "— *International Participation*" below. The Committee may correct any defect or supply any omission or reconcile any inconsistency or ambiguity in 2022 ESPP. The decisions of the Committee are final and binding.

Shares subject to the 2022 ESPP

The maximum aggregate number of shares of Common Stock that may be issued under 2022 ESPP is 121,111 shares, which is the number of shares that were remaining under the Previous ESPP as of the effectiveness of its termination.

In the event of any change in our outstanding Common Stock by reason of any recapitalization, reclassification, stock dividend, extraordinary dividend, stock split, reverse stock split or other distribution with respect to the shares of Common Stock or any merger, reorganization, consolidation, combination, spin-off or other similar corporate change or any other change affecting the Common Stock (other than regular cash dividends to stockholders of the Company), in order to prevent dilution or enlargement of the benefits or potential benefits intended to be made available under the 2022 ESPP, the Committee will adjust the number and kind of shares of stock that may be delivered under the 2022 ESPP, the purchase price per share and the number of shares of common stock covered by each outstanding option under the 2022 ESPP in a manner that complies with Section 423 of the Internal Revenue Code.

Eligibility

Participation in the 2022 ESPP is limited to employees of the Company and any of its participating subsidiaries (a) who customarily work twenty hours or more per week, (b) whose customary employment is for more than five months per calendar year and (c) who has been employed for sixty days or more prior to the beginning of an offering period. The Committee has the discretion to exclude employees who have been employed for less than two years or highly compensated employees (within the meaning of Section 414(q) of the Internal Revenue Code) from participation in the 2022 ESPP. Under the 2022 ESPP, participating subsidiaries include any subsidiary (within the meaning of Section 424(f) of the Internal Revenue Code) of the Company that has been designated by the Committee as eligible to participate in the 2022 ESPP.

As of March 31, 2022, approximately 661 employees of the Company and any of its participating subsidiaries would be eligible to participate in the 2022 ESPP, including certain of our executive officers.

Offering periods

The 2022 ESPP allows eligible employees to purchase Common Stock for separate approximately six-month offering periods, commencing on the first trading day on or after February 16 and August 16 of each year and ending on the first trading day on or after August 15 and February 15 of each year. The first offering period under the 2022 ESPP commences on August 16, 2022 and will end on February 15, 2023. The Committee may change the commencement date, ending date, frequency and duration of the offering periods (subject to a maximum offering period of 27 months). If the 2022 ESPP is not approved by stockholders at the Annual Meeting, the 2022 ESPP will be terminated on or before the end of the first offering period, any accumulated payroll deductions will be returned to the applicable participants, and no shares will be sold under the 2022 ESPP.

Method of participation

Shares of Common Stock will be purchased under the 2022 ESPP on the last trading day of each offering period (a "purchase date") using accumulated payroll deductions, unless the Committee provides otherwise with respect to the employees of a participating subsidiary in a manner consistent with Section 423 of the Internal Revenue Code. In order to participate in the 2022 ESPP, an eligible employee must complete and submit to the Company or the designated broker an enrollment form, including a payroll deduction authorization in accordance with procedures prescribed by the Committee. Participation in the 2022 ESPP is entirely voluntary.

Payroll deductions shall commence on the first payroll date following the Offering Date and end on the last payroll date on or before the purchase date. Participants may elect payroll deductions in an amount equal to at least $200 but not more than $2,000 of the participant's total eligible compensation per month (or such other maximum percentage as the Committee may establish from time to time) within an offering period subject to the limitations described in the third paragraph under "—Grant and exercise of option to purchase" below. If the Eligible Employee contributes an amount that exceeds the limitations set forth in such paragraph, the excess amount shall be returned to the Eligible Employee in the next administratively feasible payroll following the applicable Offering Period. Eligible compensation includes base salary, wages, annual bonuses and overtime pay. During an offering period, a participant may not change the rate of his or her payroll deductions applicable to such offering period. A participant may decrease (including cancelling) or increase his or her rate of payroll deductions for future offering periods by submitting a new enrollment form authorizing the new rate of payroll deductions at least fifteen days before the start of the next offering period. However, a participant may withdraw from an offering period as outlined below under "— *Withdrawal*."

Grant and Exercise of Option to Purchase

On the first trading day of each offering period, each participant in that offering period will be granted an option to purchase, on the purchase date, a number of shares of Common Stock determined by dividing the participant's accumulated payroll deductions by the applicable purchase price; provided, however, that in no event shall any participant purchase more than 150 shares of Common Stock per offering period. The Committee may increase or decrease, in its absolute discretion, the maximum number of shares that a participant may purchase per offering period.

The number of shares of Common Stock which a participant may purchase may be reduced if the offering is over-subscribed or if the total number of shares of Common Stock purchased by all participants in such offering would exceed the total number of shares of Common Stock remaining available under the 2022 ESPP. If the Committee determines that, on a particular purchase date, the number of shares of Common Stock with respect to which options are to be exercised exceeds the number of shares of Common Stock then available under the 2022 ESPP, the Company shall make a pro rata allocation of the shares of Common Stock remaining available for purchase in as uniform a manner as practicable and as the Committee determines to be equitable.

In addition, no eligible employee will be granted an option under the 2022 ESPP if (a) immediately after the grant of the option, such eligible employee (or any other person whose stock would be attributed to such employee pursuant to Section 424(d) of the Internal Revenue Code) would own capital stock of the Company and/or hold outstanding options to purchase stock, in the aggregate, possessing 5% or more of the total combined voting power or value of all classes of stock of the Company or any subsidiary or (b) such option would permit his or her rights to purchase stock under all employee stock purchase plans (as described in Section 423 of the Internal Revenue Code) of the Company and its subsidiaries to accrue at a rate that exceeds $25,000 of the fair market value of such stock (determined at the time the option is granted) for each calendar year in which such option is outstanding at any time.

Purchase Price

The purchase price per share of our Common Stock applicable to purchases during each offering period under the 2022 ESPP will be the lesser of: (a) 85% (or such greater percentage as designated by the Committee) of the fair market value per share on the first day of each offering period; and (b) 85% (or such greater percentage as the Committee may designate) of the fair market value per share on the purchase date but in no event less than par value.

On March 31, 2022, the closing price per share of Common Stock was $352.45 per share, 85% of which is $299.58.

Withdrawal

A participant may withdraw from any offering by submitting to the Company a revised enrollment form indicating his or her election to withdraw at least thirty days before the end of the offering period. Accumulated payroll deductions held on behalf of the withdrawing participant that have not been used to purchase shares of Common Stock shall be paid without interest to the participant in the next administratively feasible payroll following receipt of the enrollment form indicating such participant's election to withdraw and the participant's option shall be automatically terminated. If a participant withdraws from an offering period, no payroll deductions will be made during any succeeding offering period, unless the participant re-enrolls.

Termination of eligibility

Upon the termination of a participant's employment with the Company or a subsidiary, or in the event the participant otherwise ceases to qualify as an eligible employee, the participant will be deemed to have withdrawn from the 2022 ESPP and any accumulated payroll deductions that have not been used to purchase shares of Common Stock shall be returned to the participant and the participant's option shall be automatically terminated.

If at any time within one (1) year after the Purchase Date and after termination of a participant's employment for any reason, the Committee determines in its discretion either that, (a) during the participant's period of employment, the participant engaged in an act or omission which would have warranted termination for cause or (b) after a participant's termination of employment, the participant engaged in conduct that violated any continuing obligation or duty of the participant in respect of the Company or a participating Subsidiary, then, at the sole discretion of the Committee, the difference between the fair market value of our Common Stock on the purchase date and the purchase price shall be repaid by the participant to the Company upon notice from the Company, subject to applicable law.

Stockholder rights

No participant will have any voting, dividend or other stockholder rights with respect to the Common Stock covered by such participant's option until the shares purchased on the participant's behalf are actually transferred to the participant's account.

Transferability

Payroll deductions credited to a participant, rights with respect to the exercise of an option, or any rights to receive Common Stock under the 2022 ESPP may not be assigned, transferred, pledged or otherwise disposed of in any way by the participant, other than by will, the laws of descent and distribution and in accordance with a designation of a beneficiary provided by the participant prior to the participant's death.

Amendment and termination of the 2022 ESPP

The Committee may, in its sole discretion, amend, suspend or terminate the 2022 ESPP at any time and for any reason. If the 2022 ESPP is terminated, the Committee may elect to terminate all outstanding offering periods either immediately or once shares of Common Stock have been purchased on the next purchase date (which may, in the discretion of the Committee, be accelerated) or permit offering periods to expire in accordance with their terms (and subject to any adjustment in accordance with the 2022 ESPP). If any offering period is terminated before its scheduled expiration, all amounts that have not been used to purchase shares of Common Stock will be returned to participants.

Effective Date and Term

The 2022 ESPP became effective upon adoption by the Board of Directors on April 13, 2022, subject to stockholder approval at our first annual meeting following adoption by the Board. The 2022 ESPP shall remain in full force and effect until terminated pursuant to the terms of the 2022 ESPP. See "— *Amendment and termination of the 2022 ESPP"* above.

Change in Control

In the event of a "change in control" as defined in 2022 ESPP, the Committee shall have the power and discretion to: (a) continue the offering period in effect on the date of such change in control, (b) shorten the offering period then in progress by setting a new purchase date, which shall be before the date of the proposed change in control, (c) substitute shares of common stock available under the 2022 ESPP with shares of common stock of the surviving company or its parent, or (d) terminate the 2022 ESPP and return any payroll deductions that have not been used to purchase shares of common stock to the participant.

New Plan Benefits

Benefits and purchases of our Common Stock under the 2022 ESPP depend on elections made by employees and the fair market value of our Common Stock on dates in the future. As a result, it is not possible to determine the benefits that will be received by eligible executive officers and other employees in the future under the 2022 ESPP. As described above, no employee may purchase shares under the 2022 ESPP in excess of $25,000 in fair market value in any calendar year.

International Participation

To provide us with greater flexibility in structuring our equity compensation programs for our non-U.S. employees, the 2022 ESPP also permits us to grant employees of our non-U.S. subsidiary entities rights to purchase shares of common stock pursuant to other offering rules or sub-plans adopted by the Committee in order to achieve tax, securities law or other compliance objectives. While the 2022 ESPP is intended to be a qualified "employee stock purchase plan" within the meaning of Code Section 423, any such international sub-plans or offerings are not required to satisfy those U.S. tax code requirements and therefore may have terms that differ from the 2022 ESPP terms applicable in the U.S. However, the international sub-plans or offerings are subject to the 2022 ESPP terms limiting the overall shares available for issuance.

U.S. federal income tax consequences relating to the 2022 ESPP

The following is a summary of certain material U.S. federal income tax consequences associated with the grant and exercise of purchase rights under the 2022 ESPP under current federal tax laws and certain other tax considerations associated with purchase rights under the 2022 ESPP.

423 Component

Rights granted under the 423 Component of the ESPP are intended to qualify for favorable U.S. federal income tax treatment associated with rights granted under an employee stock purchase plan which qualifies under the provisions of Section 423 of the Code.

A participant will be taxed on amounts withheld for the purchase of shares of common stock as if such amounts were actually received. Otherwise, no income will be taxable to a participant as a result of the granting or exercise of a purchase right until a sale or other disposition of the acquired shares. The taxation upon such sale or other disposition will depend upon the holding period of the acquired shares.

If the shares are sold or otherwise disposed of more than two years after the beginning of the offering period and more than one year after the shares are transferred to the participant, then the lesser of the following will be treated as ordinary income: (a) the excess of the fair market value of the shares at the time of such sale or other disposition over the purchase price; or (b) the excess of the fair market value of the shares as of the beginning of the offering period over the purchase price (determined as of the beginning of the offering period). Any further gain or any loss will be taxed as a long-term capital gain or loss.

If the shares are sold or otherwise disposed of before the expiration of either of the holding periods described above, then the excess of the fair market value of the shares on the purchase date over the purchase price will be treated as ordinary income at the time of such sale or other disposition.

The balance of any gain will be treated as capital gain. Even if the shares are later sold or otherwise disposed of for less than their fair market value on the purchase date, the same amount of ordinary income is attributed to the participant, and a capital loss is recognized equal to the difference between the sales price and the fair market value of the shares on such purchase date. Any capital gain or loss will be short-term or long-term, depending on how long the shares have been held.

Non-423 Component

A participant will be taxed on amounts withheld for the purchase of shares of common stock as if such amounts were actually received. Under the Non-423 Component, a participant will recognize ordinary income equal to the excess, if any, of the fair market value of the underlying stock on the date of exercise of the purchase right over the purchase price. If the participant is employed by the Company or one of its affiliates, that income will be subject to withholding taxes. The participant's tax basis in those shares will be equal to the fair market value of the shares on the date of exercise of the purchase right, and the participant's capital gain holding period for those shares will begin on the day after the shares are transferred to the participant.

THE FOREGOING IS ONLY A SUMMARY OF THE EFFECT OF CURRENT U.S. FEDERAL INCOME TAXATION UPON PARTICIPANTS AND THE COMPANY WITH RESPECT TO AWARDS UNDER THE ESPP. IT DOES NOT PURPORT TO BE COMPLETE AND DOES NOT DISCUSS THE IMPACT OF EMPLOYMENT OR OTHER TAX REQUIREMENTS, THE TAX

CONSEQUENCES OF A PARTICIPANT'S DEATH, OR THE PROVISIONS OF THE INCOME TAX LAWS OF ANY MUNICIPALITY, STATE, OR FOREIGN COUNTRY IN WHICH THE PARTICIPANT MAY RESIDE. THE 2022 ESPP IS NOT QUALIFIED UNDER THE PROVISIONS OF SECTION 401(A) OF THE CODE AND IS NOT SUBJECT TO ANY OF THE PROVISIONS OF THE EMPLOYEE RETIREMENT INCOME SECURITY ACT OF 1974, AS AMENDED.

Non-U.S. federal income tax consequences relating to the 2022 ESPP

The income taxation consequences to participants and the Company (or its foreign subsidiaries) with respect to participation in the 2022 ESPP vary by country. Generally, outside of the U.S., participants are subject to taxation at the time of purchase. The employing foreign subsidiary may be entitled to a deduction in the tax year in which a participant recognizes taxable income, provided the subsidiary reimburses the Company for the cost of the benefit conferred under the 2022 ESPP.

Securities authorized for issuance under equity compensation plans

The following table shows information relating to the number of shares of Common Stock authorized for issuance under our equity compensation plans as of December 31, 2021:

Plan category	Securities to be issued upon exercise of outstanding options, warrants and rights	Weighted average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans
Equity compensation plans approved by stockholders	312,753	$274.35	2,518,888

Your vote

Unless proxy cards are otherwise marked, the persons named as proxies will vote **FOR** the approval of the 2022 ESPP. Approval of this proposal requires the affirmative vote of the holders of a majority of the shares of Common Stock having voting power present in person or represented by proxy. Abstentions will have the same effect as a vote AGAINST this proposal and broker-nonvotes will have no effect on the outcome of the vote.

VOTE FOR PROPOSAL 4

BOARD RECOMMENDATION

The board unanimously recommends that you vote "FOR" the approval of the 2022 ESPP.

CEO PAY RATIO

As required by Section 953(b) of the Dodd-Frank Act and Item 402(u) of Regulation S-K, our Company is required to calculate and disclose the total compensation paid to its median employee, as well as the ratio of the total compensation paid to such median employee as compared to the total compensation paid to the Company's CEO. The Company believes that the ratio of pay included in this information is a reasonable estimate calculated in a manner consistent with Item 402(u) of Regulation S-K.

Measurement date

We identified the median employee using our employee population on December 31, 2021. We previously used October 1 to identify the median employee and changed this year to December 31 to align with our fiscal year end.

Consistently Applied Compensation Measure (CACM)

We identified our median employee using a consistently applied compensation measure, consisting of the following:

- Actual base salary paid;
- Cash bonus paid in 2022 for 2021 performance;
- Other cash payments including, but not limited to, overtime, allowances and one-time awards;
- Value of equity awards granted in 2021, computed in accordance with FASB ASC Topic 718; and
- Company contributions to a pension or retirement plan, including, but not limited to, a 401(k) defined contribution plan in the U.S.

De minimis exception

As of December 31, 2021, we had 676 employees globally, including 424 U.S. employees and 252 non-U.S. employees. In determining the median employee, we did not include employees from the following countries as they represented, in aggregate, less than 5% of our employee population:

- Brazil – 3 employees
- France – 3 employees
- Singapore – 11 employees
- The Netherlands – 10 employees

After excluding the CEO and employees located in the countries described above, we determined our median employee from a population of 648 employees, including 423 U.S. employees and 225 non-U.S. employees.

CEO pay ratio

The annual total compensation for the CEO and the median employee, as calculated using the Summary Compensation Table requirements, was $5,742,184 and $162,120, respectively, resulting in a ratio of 35:1.

This pay ratio information is being provided solely for compliance purposes. Neither the Compensation Committee nor management of the Company used the pay ratio measure in making compensation decisions.

OTHER INFORMATION

General information

This Proxy Statement is furnished in connection with a solicitation of proxies by the Board of Directors of the Company, to be used at our Annual Meeting scheduled for Wednesday, June 8, 2022, at 10:00 a.m., Eastern Daylight Time, via live audio webcast at www.virtualshareholdermeeting.com/MKTX2022.

Holders of record of our Common Stock at the close of business on the Record Date are entitled to notice of, and to vote at, the Annual Meeting. On that date, there were 37,451,233 shares entitled to be voted.

Due to the continuing public health impact of the Pandemic and to support the health and well-being of our stockholders and other participants at the Annual Meeting, the Annual Meeting will be held in virtual format only. You will not be able to attend the Annual Meeting physically, however you may vote and submit questions while attending the Annual Meeting online via the live audio webcast.

To participate in the Annual Meeting, you must have your 16-digit control number that is shown on your Notice of Internet Availability of Proxy Materials or on your proxy card. You will be able to submit questions during the meeting by typing in your question in the "ask a question" box on the meeting page. Should you require technical assistance, support will be available by dialing 800-586-1548 (U.S.) or 303-562-9288 (International) during the meeting. We are committed to ensuring that our stockholders will be afforded the same rights and opportunities to participate as they would at an in-person meeting.

We encourage you to vote your shares, either by voting online during the Annual Meeting or by granting a proxy (i.e., authorizing someone to vote your shares). If you vote via the Internet or telephone or execute the attached paper proxy card, the individuals designated will vote your shares according to your instructions. If any matter other than the Proposals listed in the Notice of Annual Meeting of Stockholders is presented at the Annual Meeting, the designated individuals will, to the extent permissible, vote all proxies in the manner that the Board may recommend or, in the absence of such recommendation, in the manner they perceive to be in the best interests of the Company.

If you indicate when voting via the Internet that you wish to vote as recommended by the Board or if you execute the enclosed paper proxy card but do not give instructions, your proxy will be voted as follows: (1) FOR the election of each of the nominees for director named herein, (2) FOR ratification of the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the year ending December 31, 2022, (3) FOR the approval, on an advisory basis, of the compensation of the Company's named executive officers as disclosed in this Proxy Statement, (4) FOR the approval of the Company's 2022 ESPP and (5) in accordance with the best judgment of the persons appointed as proxies with respect to any other matters that properly come before the Annual Meeting. If your shares are held in a stock brokerage account or by a bank or other nominee, see "*— Voting — Broker authority to vote.*"

Information on how you may vote at the Annual Meeting (such as granting a proxy that directs how your shares should be voted, or attending the Annual Meeting), as well as how you can revoke a proxy, is contained in this Proxy Statement under the headings "*— Solicitation of Proxies*" and "*— Voting*."

We are furnishing proxy materials to our stockholders primarily via the Internet. On April 27, 2022, we expect to mail beneficial owners of our Common Stock a Notice containing instructions on how to access our proxy materials, including this Proxy Statement and our Annual Report. The Notice also instructs you on how to vote via the Internet. Other stockholders, in accordance with their prior requests, received e-mail notification of how to access our proxy materials and vote via the Internet, or have been mailed paper copies of our proxy materials and a proxy card or voting form. The proxy card includes instructions on how to vote via the telephone. All beneficial owners will have the ability to access the proxy materials, including this Proxy Statement and our Annual Report, on the website referred to in the Notice.

Internet distribution of our proxy materials is designed to provide our stockholders with the information they need, while lowering costs of delivery and reducing the environmental impact of our Annual Meeting. However, if you would prefer to receive paper copies of proxy materials, please follow the instructions included in the Notice. If you have previously elected to receive our proxy materials electronically, you will continue to receive these materials via e-mail unless you elect otherwise.

Our Proxy Statement and 2021 Annual Report to Stockholders are available at https://materials.proxyvote.com/57060D

Solicitation of proxies

General

The attached proxy card allows you to instruct the designated individuals how to vote your shares. You may vote in favor of, against, or abstain from voting on any proposal.

Solicitation

We will bear the entire cost of solicitation, including the preparation, assembly, printing and mailing of a Notice, this Proxy Statement, the proxy card and any additional soliciting materials furnished to stockholders. Copies of solicitation materials will be furnished to brokerage houses, fiduciaries and custodians holding shares in their names that are beneficially owned by others so that they may forward the solicitation materials to such beneficial owners. In addition, we may reimburse such persons for their costs of forwarding the solicitation materials to such beneficial owners. The original solicitation of proxies by mail may be supplemented by solicitation by telephone or other means by our directors, officers, employees or agents. No additional compensation will be paid to these individuals for any such services. Except as described above, we do not presently intend to solicit proxies other than by mail.

Voting

Stockholders entitled to vote and shares outstanding

Each stockholder is entitled to one vote for each share of Common Stock held on each matter submitted to a vote at the Annual Meeting. As of the Record Date, 37,451,233 shares of Common Stock were outstanding and entitled to be voted at the Annual Meeting.

How to vote

Submitting a proxy via mail, the Internet or telephone

You may vote by calling the toll-free telephone number listed on the proxy card or visiting the website address listed on the Notice or the proxy card. If you choose to submit your proxy with voting instructions by telephone or through the Internet, you will be required to provide your assigned control number noted on the Notice before your proxy will be accepted. In addition to the instructions that appear on the Notice, step-by-step instructions will be provided by recorded telephone message or at the designated website on the Internet. Votes submitted by telephone or via the Internet must be received by 11:59 p.m., EDT, on June 7, 2022 in order for them to be counted at the Annual Meeting.

If you are a stockholder of record, or otherwise received a printed copy of the proxy materials, in addition to the methods described above, you may also submit your proxy with voting instructions by mail by following the instructions set forth on the proxy card included with the proxy materials. Specifically, if you are a stockholder of record on the Record Date, you may vote by mailing your proxy card, with voting instructions, to the address listed on your proxy card.

Voting your shares online at the Annual Meeting

For Shares Directly Registered in the Name of the Stockholder: You may vote online at the Annual Meeting at www.virtualshareholdermeeting.com/MKTX2022; however, we encourage you to vote by proxy card or the Internet even if you plan to attend the online meeting. If you plan to attend the online Annual Meeting, you will need the 16-digit control number included on your Notice or your proxy card (if you received a printed copy of the proxy materials) in order to be able to enter the meeting.

For Shares Registered in the Name of a Brokerage Firm or Bank: If your shares of Common Stock are held in street name, you will receive instructions from your broker, bank or other nominee that you must follow in order to have your shares of Common Stock voted prior to or during the online meeting, or contact your broker, bank or other nominee for such information.

Revoking a proxy

A proxy that was submitted via the Internet or by telephone may be revoked at any time before it is exercised by (1) executing a later-dated proxy card via the Internet or by telephone or (2) attending the Annual Meeting and voting online.

A proxy that was submitted by mail may be revoked at any time before it is exercised by (1) giving written notice revoking the proxy to our General Counsel and Corporate Secretary at MarketAxess Holdings Inc., 55 Hudson Yards, 15th Floor, New York, NY 10001, (2) subsequently sending another proxy bearing a later date or (3) attending the Annual Meeting and voting online.

If your shares are registered in the name of a brokerage firm or bank, you must contact your brokerage firm or bank to change your vote or obtain a proxy to vote your shares if you wish to cast your vote online at the meeting.

Your attendance at the Annual Meeting in and of itself will not automatically revoke a proxy that was submitted via the Internet, by telephone or by mail.

Broker authority to vote

If your shares are held in a stock brokerage account or by a bank or other nominee, you are considered to be the beneficial owner of shares held in street name. These proxy materials are being forwarded to you by your broker or nominee, who is considered to be the holder of record with respect to your shares. As the beneficial owner, you have the right to direct your broker or nominee how to vote by filling out the voting instruction form provided by your broker or nominee. Telephone and Internet voting options may also be available to beneficial owners. As a beneficial owner, you are also invited to attend the Annual Meeting, but you will need the 16-digit control number included on your Notice or your proxy card (if you received a printed copy of the proxy materials) in order to be able to enter the meeting.

If your shares are held in street name, your broker or nominee will ask you how you want your shares to be voted. If you provide voting instructions, your shares must be voted as you direct. If you do not furnish voting instructions, one of two things can happen, depending upon whether a proposal is “routine.” Under the rules that govern brokers that have record ownership of shares beneficially owned by their clients, brokers have discretion to cast votes only on routine matters, such as the ratification of the appointment of independent registered public accounting firms, without voting instructions from their clients. Brokers are not permitted, however, to cast votes on “non-routine” matters without such voting instructions, such as the election of directors. A “broker non-vote” occurs when a beneficial owner has not provided voting instructions and the broker holding shares for the beneficial owner does not vote on a particular proposal because the broker does not have discretionary voting power for that proposal.

Quorum

A quorum is required for the conduct of business at the meeting. The presence at the meeting, in person or by proxy, of the holders of a majority of the stock issued and outstanding and entitled to vote at the meeting on the Record Date will constitute a quorum, permitting us to conduct the business of the meeting. Proxies received but marked as abstentions, if any, and broker non-votes (as described above) will be included in the calculation of the number of shares considered to be present at the meeting for quorum purposes. If we do not have a quorum, we will be forced to reconvene the Annual Meeting at a later date.

Votes necessary to approve each proposal

Election of Directors. Our Bylaws include a majority voting standard for the election of directors in uncontested elections, which are generally defined as elections in which the number of nominees does not exceed the number of directors to be elected at the meeting. In the election of directors (Proposal 1), you may either vote “FOR,” “AGAINST” or “ABSTAIN” as to each nominee. Cumulative voting is not permitted. Under the majority voting standard, in uncontested elections of directors, such as this election, each director must be elected by the affirmative vote of a majority of the votes cast with respect to that nominee’s election at any meeting for the election of directors at which a quorum is present. A majority of the votes cast means that the number of votes cast “FOR” a candidate for director exceeds the number of votes cast “AGAINST” that candidate for director. Abstentions will have no effect in determining whether a director nominee has received a majority of the votes cast because an abstention does not count as a vote cast. In addition, brokers do not have discretionary authority to vote for directors, therefore, broker non-votes will not count as a vote cast “FOR” or “AGAINST” a nominee’s election and thus will have no effect in determining whether a director nominee has received a majority of the votes cast.

Other Items. For each of the other proposals listed in the Notice of Annual Meeting of Stockholders (Proposals 2, 3 and 4), if a quorum is present, the proposals will be decided by the affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy. Abstentions will be counted as shares present having voting power on these proposals and will have the same effect as votes ”AGAINST.”

Brokers have discretionary authority to vote on Proposal 2, the ratification of the appointment of PwC. Therefore, there will be no broker non-votes on Proposal 2. Brokers do not have discretionary authority to vote on Proposals 3 (Say-on-Pay) and 4 (Approval of the Company’s 2022 ESPP), and any resulting broker non-votes will have the same effect as votes “AGAINST” Proposals 3 and 4.

Availability of certain documents

Householding of Annual Meeting materials

The Company and some banks, brokers and other nominee record holders may participate in the practice of “householding” proxy statements and their accompanying documents. This means that only one copy of our Proxy Statement is sent to multiple stockholders in your household. This “householding” procedure reduces our printing costs and postage fees as well as the environmental impact of the annual meeting. Stockholders who participate in householding will continue to receive separate proxy cards. We will promptly deliver a separate copy of these documents to you upon written or oral request to our Investor Relations Department at MarketAxess Holdings Inc., 55 Hudson Yards, 15th Floor, New York, NY 10001 or 212-813-6000. If you want to receive separate copies of our proxy statements in the future, or if you are receiving multiple copies and would like to receive only one copy per household, you should contact your bank, broker or other nominee record holder, or you may contact us at the above address and phone number.

Additional information

We are required to file annual, quarterly and current reports, proxy statements and other reports with the SEC. Copies of these filings are available through our Internet website at *www.marketaxess.com* or the SEC’s website at *www.sec.gov*. We will furnish copies of our SEC filings (without exhibits), including our Annual Report on Form 10-K for the year ended December 31, 2021, without charge to any stockholder upon written or oral request to our Investor Relations Department at MarketAxess Holdings Inc., 55 Hudson Yards, 15th Floor, New York, NY 10001 or 212-813-6000.

Other matters

As of the date of this Proxy Statement, the Company knows of no other matters that will be presented for consideration at the Annual Meeting. If any other matters properly come before the Annual Meeting, it is the intention of the persons named in the enclosed proxy card to vote the shares they represent as such persons deem advisable. Discretionary authority with respect to such other matters is granted by the execution of the enclosed proxy card.

Stockholder proposals for 2023 Annual Meeting

In order to be considered for inclusion in the Company’s proxy statement and proxy card relating to the 2023 Annual Meeting of Stockholders, any proposal by a stockholder submitted pursuant to Rule 14a-8 of the Exchange Act must be received by the Company at its principal executive offices in New York, New York, on or before December 28, 2022. In addition, under the Company’s bylaws, any proposal for consideration at the 2023 Annual Meeting of Stockholders submitted by a stockholder other than pursuant to Rule 14a-8 will be considered timely if it is received by the Secretary of the Company at its principal executive offices between the close of business on November 28, 2022 and the close of business on December 28, 2022 and is otherwise in compliance with the requirements set forth in the Company’s bylaws.

In addition to satisfying the foregoing requirements, to comply with the universal proxy rules (once they become effective), stockholders who intend to solicit proxies in support of director nominees other than the Company's nominees must provide notice that sets forth the information required by Rule 14a-19 under the Exchange Act no later than April 9, 2023.

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX A — RECONCILIATION OF NON-GAAP AMOUNTS

The Company believes that presenting adjusted operating income, a non-GAAP measure, is meaningful, as it reflects metrics considered by the Compensation Committee in making its compensation determinations. The Company defines adjusted operating income as operating income before: (1) unplanned inorganic activity and (2) the impact of cash incentives. The Company believes adjusted operating income is an appropriate measure for evaluating the operating performance of the Company on a consolidated basis. Adjusted operating income and similar measures with similar titles are common performance measures used by investors and analysts to analyze the Company's performance. Adjusted operating income should be viewed as a supplement to and not a substitute for operating income, net income, cash flows from operating activities, and other measures of performance and/or liquidity presented in accordance with U.S. generally accepted accounting principles ("GAAP"). Since adjusted operating income is not a measure of performance calculated in accordance with GAAP, this measure may not be comparable to similar measures with similar titles used by other companies. All dollar amounts included in this Appendix A are presented in thousands, except as otherwise noted.

The following is a reconciliation of operating income (GAAP) to Adjusted Operating Income (non-GAAP):

	Twelve Months Ended December 31,2021
Operating income	$ 337,235
Cash incentives	$ 41,733
Unplanned inorganic activity	$ 582
Adjusted operating income	$ 379,550

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX B — 2022 ESPP

MARKETAXESS HOLDINGS INC.
2022 EMPLOYEE STOCK PURCHASE PLAN
FOR US EMPLOYEES

1. Purpose. This MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan (the "*Plan*") is intended to provide employees of the Company and its Participating Subsidiaries with an opportunity to acquire a proprietary interest in the Company through the purchase of shares of Common Stock. The Company intends that the Plan qualify as an "employee stock purchase plan" under Section 423 of the Code and the Plan shall be interpreted in a manner that is consistent with that intent.

2. Definitions.

"*Beneficial Owner*" shall have the meaning ascribed to such term in Rule 13d-3 under the Exchange Act.

"*Board*" means the Board of Directors of the Company.

"*Cause*" has the meaning set forth in the MarketAxess Holdings Inc. 2020 Equity Incentive Plan, or any equity incentive plan that replaces the MarketAxess Holdings Inc. 2020 Equity Incentive Plan.

"*Code*" means the U.S. Internal Revenue Code of 1986, as it may be amended from time to time. Any reference to a section of the Code shall be deemed to include a reference to any regulations promulgated thereunder.

"*Committee*" means (i) the Compensation and Talent Committee of the Board, (ii) such other committee of the Board appointed by the Board to administer the Plan or (iii) the Board, as determined by the Board.

"*Common Stock*" means the common stock of the Company, par value $0.003 per share.

"*Company*" means MarketAxess Holdings Inc.

"*Compensation*" means base salary, wages, annual bonuses and overtime paid to an Eligible Employee by the Company or a Participating Subsidiary as compensation for services to the Company or Participating Subsidiary, before deduction for any salary deferral contributions made by the Eligible Employee to any tax-qualified or nonqualified deferred compensation plan.

"*Change in Control*" shall have to meaning set forth in the MarketAxess Holdings Inc. 2020 Equity Incentive Plan.

"*Clawback Discount Value*" shall mean the difference between the Fair Market Value and the Purchase Price on the applicable Purchase Date.

"*Designated Broker*" means the financial services firm or other agent designated by the Company to maintain ESPP Share Accounts on behalf of Participants who have purchased shares of Common Stock under the Plan.

"*Effective Date*" means the date as of which this Plan is adopted by the Board, subject to the Plan obtaining stockholder approval in accordance with Section 18.10 hereof.

"*Employee*" means any person who renders services to the Company or a Participating Subsidiary as an employee pursuant to an employment relationship with such employer in accordance with Section 421 of the Code and the Treasury Regulations thereunder.

"*Eligible Employee*" means an Employee other than (i) an Employee whose customary employment is for less than twenty (20) hours per week, (ii) an Employee whose customary employment is for not more than five (5) months in any calendar year and (iii) an Employee who has been employed for less than sixty (60) days prior to the beginning of an Offering Period. Notwithstanding the foregoing, the Committee may exclude from participation in the Plan or any Offering, Employees who have been employed for less than two years or Employees who are "highly compensated employees" of the Company or a Participating Subsidiary (within the meaning of Section 414(q) of the Code) or a sub-set of such highly compensated employees.

"*Enrollment Form*" means an agreement pursuant to which an Eligible Employee may elect to enroll in the Plan, to authorize a new level of payroll deductions, or to stop payroll deductions and withdraw from an Offering Period; for the avoidance of doubt, the Enrollment Form may be an online form Eligible Employees complete with the Designated Broker.

"*ESPP Share Account*" means an account into which Common Stock purchased with accumulated payroll deductions at the end of an Offering Period are held on behalf of a Participant.

"*Exchange Act*" means the U.S. Securities Exchange Act of 1934, as amended.

"*Fair Market Value*" means the closing price as reported on the NASDAQ Global Select Market or other principal exchange on which the Common Stock is then listed on such date, or if the Common Stock was not traded on such date, then on the next preceding trading day that the Common Stock was traded on such exchange, as reported by such responsible reporting service as the Committee may select.

"*Offering Date*" means the first trading day of each Offering Period as designated by the Committee.

"*Offering or Offering Period*" means the periods established in accordance with Section 5 during which options to purchase shares of Common Stock may be granted pursuant to the Plan and may be purchased on the Purchase Date.

"*Participant*" means an Eligible Employee who is actively participating in the Plan.

"*Participating Subsidiaries*" means the Subsidiaries that have been designated as eligible to participate in the Plan by the Committee from time to time in its sole discretion.

"*Person*" shall have the meaning ascribed to such term in Section 3(a)(9) of the Exchange Act and used in Sections 13(d) and 14(d) thereof, including a "group" as defined in Section 13(d) thereof.

"*Plan*" means this MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan, as set forth herein, and as amended from time to time.

"*Purchase Date*" means the last trading day of each Offering Period.

"*Purchase Price*" means an amount equal to the lesser of (i) eighty-five percent (85%) (or such greater percentage as designated by the Committee) of the Fair Market Value of a share of Common Stock on the Offering Date or (ii) eighty-five percent (85%) (or such greater percentage as designated by the Committee) of the Fair Market Value of a share of Common Stock on the Purchase Date; provided, that, the Purchase Price per share of Common Stock will in no event be less than the par value of the Common Stock.

"*Securities Act*" means the Securities Act of 1933, as amended.

"*Subsidiary*" means an entity (whether or not a corporation) that is wholly or majority owned or controlled, directly or indirectly, by the Company or any other affiliate of the Company that is so designated, from time to time, by the Committee, during the period of such affiliated status. In all cases, the determination of whether an entity is a Subsidiary shall be made in accordance with Section 424(f) of the Code.

"*Trading Day*" means a day on which the national stock exchange upon which the Common Stock is listed is open for trading.

3. Administration.

3.1 The Plan shall be administered by the Committee which shall have the authority to construe and interpret the Plan, prescribe, amend and rescind rules relating to the Plan's administration. The Committee may correct any defect or supply any omission or reconcile any inconsistency or ambiguity in the Plan. The decisions of the Committee shall be final and binding on all persons. All expenses of administering the Plan shall be borne by the Company.

3.2 The Committee may establish sub-plans (which need not qualify under section 423 of the Code) and initiate separate Offerings through such sub-plans for the purpose of (i) facilitating participation in the Plan by non-U.S. employees in compliance with foreign laws and regulations without affecting the qualification of the remainder of the Plan under section 423 of the Code or (ii) qualifying the Plan for preferred tax treatment under foreign tax laws (which sub-plans, at the Committee's discretion, may provide for allocations of the authorized shares reserved for issue under the Plan as set forth in Section 14(a)). The rules, guidelines and forms of such sub-plans (or the Offerings thereunder) may take precedence over other provisions of the Plan, with the exception of Section 12.1, but unless otherwise superseded by the terms of such sub-plan, the provisions of the Plan shall govern the operation of such sub-plan. Alternatively and in order to comply with the laws of a foreign jurisdiction, the Committee shall have the power, in its discretion, to grant options in an Offering to citizens or residents of a non-U.S. jurisdiction (without regard to whether they are also citizens of the United States or resident aliens) that provide terms which are less favorable than the terms of options granted under the same Offering to employees resident in the United States, subject to compliance with section 423 of the Code.

4. Eligibility. Unless otherwise determined by the Committee in a manner that is consistent with Section 423 of the Code, any individual who is an Eligible Employee as of the first day of the enrollment period designated by the Committee for a particular Offering Period shall be eligible to participate in such Offering Period, subject to the requirements of Section 423 of the Code.

Notwithstanding any provision of the Plan to the contrary, no Eligible Employee shall be granted an option under the Plan if (i) immediately after the grant of the option, such Eligible Employee (or any other person whose stock would be attributed to such Eligible Employee pursuant to Section 424(d) of the Code) would own capital stock of the Company and/or hold outstanding options to purchase stock, in the aggregate, possessing 5% or more of the total combined voting power or value of all classes of stock of the Company or any Subsidiary or (ii) such option would permit his or her rights to purchase stock under all employee stock purchase plans (described in Section 423 of the Code) of the Company and its Subsidiaries to accrue at a rate that exceeds $25,000 of the Fair Market Value of such stock (determined at the time the option is granted) for each calendar year in which such option is outstanding at any time.

5. Offering Periods. The Plan shall be implemented by a series of Offering Periods. Unless otherwise provided by the Committee, Offering Periods shall be periods of approximately six (6) months during which an option granted pursuant to the Plan may be exercised, commencing on the first Trading Day on or after February 16 and August 16 of each year and terminating on the first Trading Day on or after August 15 and February 15, approximately six (6) months later. The Committee shall have the authority to change the duration, frequency, start and end dates of future Offering Periods (up to a maximum Offering Period of 27 months).

6. Participation.

6.1 Enrollment; Payroll Deductions. An Eligible Employee may elect to participate in the Plan by properly completing an Enrollment Form, which may be electronic, and submitting it to the Company in accordance with the enrollment procedures established by the Committee. Participation in the Plan is entirely voluntary. By submitting an Enrollment Form, the Eligible Employee authorizes payroll deductions from his or her paycheck in an amount equal to at least $200 per month, but not more than $2,000 per month, during an Offering Period (or such other maximum percentage as the Committee may establish from time to time before an Offering Period begins), subject to the limitations set forth in Section 4. If the Eligible Employee contributes an amount that exceeds the limitations set forth in Section 4, the excess amount shall be returned to the Eligible Employee in the next administratively feasible payroll following the applicable Offering Period. Payroll deductions shall commence on the first payroll date following the Offering Date and end on the last payroll date on or before the Purchase Date. The Company shall maintain records of all payroll deductions but shall have no obligation to pay interest on payroll deductions or to hold such amounts in a trust or in any segregated account. Unless expressly permitted by the Committee in writing, a Participant may not make any separate contributions or payments to the Plan.

6.2 Election Changes. During an Offering Period, a Participant may not change the rate of his or her payroll deductions applicable to such Offering Period. A Participant may decrease or increase his or her rate of payroll deductions for future Offering Periods by submitting a new Enrollment Form authorizing the new rate of payroll deductions at least fifteen days before the start of the next Offering Period. However, a Participant may withdraw from the Plan in accordance with Section 9.

6.3 Automatic Re-enrollment. The deduction rate selected in the Enrollment Form shall remain in effect for subsequent Offering Periods unless the Participant (a) submits a new Enrollment Form authorizing a new level of payroll deductions in accordance with Section 6.2, (b) withdraws from the Plan in accordance with Section 9, or (c) terminates employment or otherwise becomes ineligible to participate in the Plan.

6.4 Grant of Option. On each Offering Date, each Participant in the applicable Offering Period shall be granted an option to purchase, on the Purchase Date, a number of shares of Common Stock determined by dividing the Participant's accumulated payroll deductions by the applicable Purchase Price; provided, however, that in no event shall any Participant purchase more than 150 shares of Common Stock per Offering Period. The Committee may, for future Offering Periods, increase or decrease, in its absolute discretion, the maximum number of shares of Common Stock that an Eligible Employee may purchase during Offering Period.

7. Exercise of Option/Purchase of Shares. A Participant's option to purchase shares of Common Stock will be exercised automatically on the Purchase Date of each Offering Period. The Participant's accumulated payroll deductions will be used to purchase the maximum number of whole shares that can be purchased with the amounts in the Participant's notional account. If and to the extent provided by the Committee, for so long as such shares of Common Stock are maintained in ESPP Share Accounts, all dividends paid with respect to such shares of Common Stock shall be paid in cash. No fractional shares may be purchased. Any amount remaining in the Participant’s notional account as of the Purchase Date in excess of the amount that may be applied to purchase shares shall be carried over to the next Offering Period, subject to earlier withdrawal by the Participant in accordance with Section 9 or termination of employment in accordance with Section 10.

8. Transfer of Shares. As soon as reasonably practicable after each Purchase Date, the Company will arrange for the delivery to each Participant of the shares of Common Stock purchased upon exercise of his or her option. The Committee may permit or require that the shares be deposited directly into an ESPP Share Account established in the name of the Participant with a Designated Broker. Participants will not have any voting, dividend or other rights of a stockholder with respect to the shares of Common Stock subject to any option granted hereunder until such shares have been delivered pursuant to this Section 8.

9. Withdrawal.

9.1 Withdrawal Procedure. A Participant may withdraw from an Offering by submitting to the Company a revised Enrollment Form indicating his or her election to withdraw at least thirty days before the end of the Offering Period. The accumulated payroll deductions held on behalf of a Participant in his or her notional account (that have not been used to purchase shares of Common Stock) shall be paid without interest to the Participant in the next administratively feasible payroll following receipt of the Participant's Enrollment Form indicating his or her election to withdraw and the Participant's option shall be automatically terminated. If a Participant withdraws from an Offering Period, no payroll deductions will be made during any succeeding Offering Period, unless the Participant re-enrolls in accordance with Section 6.1 of the Plan.

9.2 Effect on Succeeding Offering Periods. A Participant's election to withdraw from an Offering Period will not have any effect upon his or her eligibility to participate in succeeding Offering Periods that commence following the completion of the Offering Period from which the Participant withdraws; provided however, the Committee may impose restrictions upon a Participant’s ability to withdraw from an Offering Period and re-enroll in succeeding Offering Periods.

10. Termination of Employment; Change in Employment Status. Upon termination of a Participant's employment for any reason, including death, disability or retirement, or a change in the Participant's employment status following which the Participant is no longer an Eligible Employee, which in either case occurs before the

Purchase Date, the Participant will be deemed to have withdrawn from the Plan and the payroll deductions in the Participant's notional account (that have not been used to purchase shares of Common Stock) shall be returned to the Participant, or in the case of the Participant's death, to the person(s) entitled to such amounts under Section 16, and the Participant's option shall be automatically terminated. If at any time within one (1) year after the Purchase Date and after termination of a Participant's employment for any reason, the Committee determines in its discretion either that, (1) during the Participant's period of employment, the Participant engaged in an act or omission which would have warranted termination for Cause or (2) after a Participant's termination of employment, the Participant engaged in conduct that violated any continuing obligation or duty of the Participant in respect of the Company or a Participating Subsidiary, then, at the sole discretion of the Committee, the Clawback Discount Value shall be repaid by the Participant to the Company upon notice from the Company, subject to applicable law.

11. Interest. No interest shall accrue on or be payable with respect to the payroll deductions of a Participant in the Plan.

12. Shares Reserved for Plan.

12.1 Number of Shares. Subject to adjustments as described below, a total of 121,221 shares of Common Stock have been reserved for issuance under the Plan..

12.2 Over-subscribed Offerings. The number of shares of Common Stock which a Participant may purchase in an Offering under the Plan may be reduced if the Offering is over-subscribed. No option granted under the Plan shall permit a Participant to purchase shares of Common Stock which, if added together with the total number of shares of Common Stock purchased by all other Participants in such Offering would exceed the total number of shares of Common Stock remaining available under the Plan. If the Committee determines that, on a particular Purchase Date, the number of shares of Common Stock with respect to which options are to be exercised exceeds the number of shares of Common Stock then available under the Plan, the Company shall make a pro rata allocation of the shares of Common Stock remaining available for purchase in as uniform a manner as practicable and as the Committee determines to be equitable.

13. Transferability. No payroll deductions credited to a Participant, nor any rights with respect to the exercise of an option or any rights to receive Common Stock hereunder may be assigned, transferred, pledged or otherwise disposed of in any way (other than by will, the laws of descent and distribution, or as provided in Section 16 hereof) by the Participant. Any attempt to assign, transfer, pledge or otherwise dispose of such rights or amounts shall be without effect.

14. Application of Funds. All payroll deductions received or held by the Company under the Plan may be used by the Company for any corporate purpose to the extent permitted by applicable law, and the Company shall not be required to segregate such payroll deductions or contributions.

15. Statements. Participants will be provided with and/or have access to statements at least annually which shall set forth the contributions made by the Participant to the Plan, the Purchase Price of any shares of Common Stock purchased with accumulated funds, the number of shares of Common Stock purchased, and any payroll deduction amounts remaining in the Participant's notional account.

16. Designation of Beneficiary. A Participant may file, on forms supplied by the Designated Broker, a written designation of beneficiary who is to receive any shares of Common Stock, from the Participant's ESPP Share Account under the Plan in the event of such Participant's death. In addition, a Participant may file a written designation of beneficiary who is to receive any cash withheld through payroll deductions and credited to the Participant's notional account in the event of the Participant's death prior to the Purchase Date of an Offering Period. In the event that no such form or designation is filed, the shares of Common Stock or cash shall be distributed to the Participant's estate.

17. Adjustments.

17.1 Adjustments. If there shall occur any change with respect to the outstanding shares of Common Stock by reason of any recapitalization, reclassification, stock dividend, extraordinary dividend, stock split, reverse stock split or other distribution with respect to the shares of Common Stock or any merger, reorganization, consolidation, combination, spin-off or other similar corporate change or any other change affecting the Common Stock (other than regular cash dividends to stockholders of the Company), then in order to prevent dilution or enlargement of the benefits or potential benefits intended to be made available under the Plan, the Committee will, in such manner as it deems equitable and subject to stockholder approval if required to comply with Section 423 of the Code, adjust the number and kind of shares of stock that may be delivered under the Plan, the Purchase Price per share and the number of shares of Common Stock covered by each outstanding option under the Plan, and the numerical limits of Section 6.4 and Section 12.

17.2 Change in Control. In the event of a Change in Control, the Committee shall have the power and discretion to (i) continue the Offering Period in effect on the date of such Change in Control, (ii) shorten the Offering Period then in progress by setting a "New Purchase Date" which shall be before the date of the Company's proposed Change in Control, (iii) substitute shares of Common Stock available under the Plan with shares of common stock of the surviving company or its parent, or (iv) terminate the Plan and return any payroll deductions in the Participant's notional account (that have not been used to purchase shares of Common Stock) to the Participant. In the event of prong (ii), the Committee shall notify each Participant in writing, at least ten (10) trading days prior to the New Purchase Date, that the Purchase Date for the Participant's purchase right has been changed to the New Purchase Date and that shares of Common Stock shall be purchased automatically on the New Purchase Date, unless prior to such date the Participant has withdrawn from the Offering Period as describe in Section 9 above.

18. General Provisions.

18.1 Equal Rights and Privileges. Notwithstanding any provision of the Plan to the contrary and in accordance with Section 423 of the Code, all Eligible Employees who are granted options under the Plan shall have the same rights and privileges.

18.2 No Right to Continued Service. Neither the Plan nor any compensation paid hereunder will confer on any Participant the right to continue as an Employee or in any other capacity.

18.3 Rights As Stockholder. A Participant will become a stockholder with respect to the shares of Common Stock that are purchased pursuant to options granted under the Plan when the shares are transferred to the Participant or the Participant's ESPP Share Account. A Participant will have no rights as a stockholder with respect to shares of Common Stock for which an election to participate in an Offering Period has been made until such Participant becomes a stockholder as provided above.

18.4 Successors and Assigns. The Plan shall be binding on the Company and its successors and assigns.

18.5 Entire Plan. This Plan constitutes the entire plan with respect to the subject matter hereof and supersedes all prior plans with respect to the subject matter hereof.

18.6 Compliance With Law. The obligations of the Company with respect to payments under the Plan are subject to compliance with all applicable laws and regulations. Common Stock shall not be issued with respect to an option granted under the Plan unless the exercise of such option and the issuance and delivery of the shares of Common Stock pursuant thereto shall comply with all applicable provisions of law, including, without limitation, the Securities Act, the Exchange Act, and the requirements of any stock exchange upon which the shares may then be listed.

18.7 Term of Plan. The Plan shall become effective on the Effective Date and shall remain in full force and effect until terminated pursuant to Section 18.8.

18.8 Amendment or Termination. The Committee may, in its sole discretion, amend, suspend or terminate the Plan at any time and for any reason. If the Plan is terminated, the Committee may elect to terminate all outstanding Offering Periods either immediately or once shares of Common Stock have been purchased on the next Purchase Date (which may, in the discretion of the Committee, be accelerated) or permit Offering Periods to expire in accordance with their terms (and subject to any adjustment in accordance with Section 17). If any Offering Period is terminated before its scheduled expiration, all amounts that have not been used to purchase shares of Common Stock will be returned to Participants (without interest, except as otherwise required by law) as soon as administratively practicable.

18.9 Applicable Law. The Plan and all rights hereunder shall be subject to and interpreted in accordance with the laws of the State of Delaware, without reference to the principles of conflicts of laws, and to applicable Federal or other securities laws.

18.10 Stockholder Approval. The Plan shall be subject to approval by the stockholders of the Company within twelve (12) months before or after the date the Plan is adopted by the Board.

18.11 Section 423. The Plan is intended to qualify as an "employee stock purchase plan" under Section 423 of the Code. Any provision of the Plan that is inconsistent with Section 423 of the Code shall be reformed to comply with Section 423 of the Code.

18.12 Withholding. To the extent required by applicable Federal, state or local law, a Participant must make arrangements satisfactory to the Company for the payment of any withholding or similar tax obligations that arise in connection with the Plan.

18.13 Severability. If any provision of the Plan shall be determined to be illegal or unenforceable by any court of law in any jurisdiction, the remaining provisions hereof and thereof shall be severable and enforceable in accordance with their terms, and all provisions shall remain enforceable in any other jurisdiction.

18.14 Headings. The headings of sections herein are included solely for convenience and shall not affect the meaning of any of the provisions of the Plan.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

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

For the fiscal year ended December 31, 2021

☐ **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 001-34091

MARKETAXESS HOLDINGS INC.

(Exact name of registrant as specified in its charter)

Delaware	**52-2230784**
(State of incorporation)	**(IRS Employer Identification No.)**
55 Hudson Yards, New York, New York	**10001**
(Address of principal executive offices)	**(Zip Code)**

(212) 813-6000
(Registrant's telephone number, including area code)

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, $0.003 par value	MKTX	NASDAQ Global Select Market

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 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 (or for such shorter period that the registrant was required to file such reports), 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, smaller reporting company, or an emerging growth company. See definition 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 Exchange Act). Yes ☐ No ☑

The aggregate market value of the shares of common stock held by non-affiliates of the registrant as of June 30, 2021 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately $15.3 billion computed by reference to the last reported sale price on the NASDAQ Global Select Market on that date. For purposes of this calculation, affiliates are considered to be officers, directors and holders of 10% or more of the outstanding common stock of the registrant on that date. The registrant had 38,008,484 shares of common stock, 4,979,698 of which were held by affiliates, outstanding on that date.

As of February 17, 2022, the aggregate number of shares of the registrant's common stock outstanding was 37,835,416.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the 2022 Annual Meeting of Stockholders are incorporated by reference into Items 10, 11, 12, 13 and 14 of Part III of this Form 10-K.

MARKETAXESS HOLDINGS INC.
2021 FORM 10-K ANNUAL REPORT
TABLE OF CONTENTS

PART I

Cautionary Note Regarding Forward-Looking Statements

This report contains certain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as "expects," "intends," "anticipates," "plans," "believes," "seeks," "estimates," "will," or words of similar meaning and include, but are not limited to, statements regarding the outlook for our future business and financial performance and our strategy. Forward-looking statements are based on management's current expectations and assumptions, which are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. It is routine for our internal projections and expectations to change as the year or each quarter in the year progresses, and therefore it should be clearly understood that the internal projections and beliefs upon which we base our expectations may change prior to the end of each quarter or the year. Although these expectations may change, we are under no obligation to revise or update any forward-looking statements contained in this report. Actual future events or results may differ, perhaps materially, from those contained in the projections or forward-looking statements. Factors that could cause or contribute to such differences include those discussed below and elsewhere in this report, particularly in Item 1A. "Risk Factors."

Item 1. *Business.*

Overview

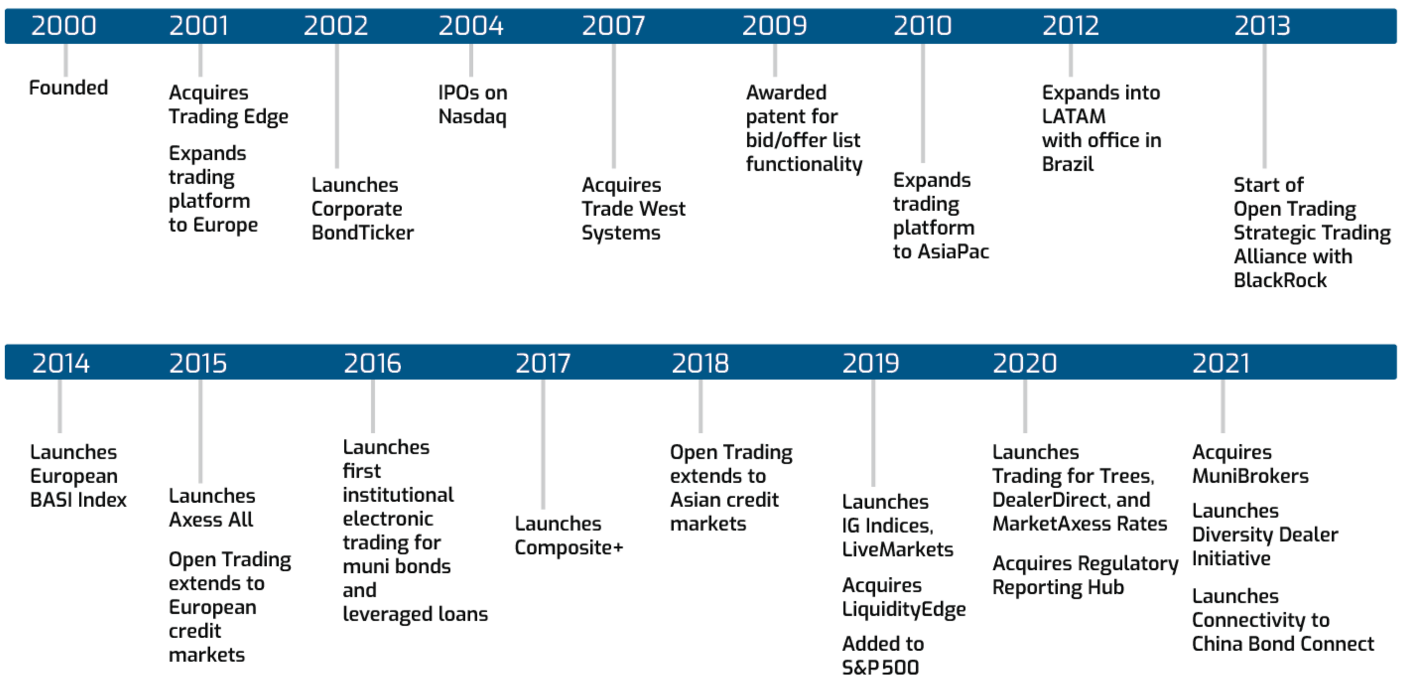
MarketAxess Holdings Inc. (the "Company" or "MarketAxess") operates leading electronic trading platforms delivering greater trading efficiency, a diversified pool of liquidity and significant cost savings to our clients across the global fixed-income markets. Almost 1,900 institutional investor and broker-dealer firms use our patented trading technology to efficiently trade U.S. high-grade bonds, U.S. high-yield bonds, emerging market debt, Eurobonds, municipal bonds, U.S. government bonds and other fixed-income securities. Our award-winning Open Trading® marketplace is widely regarded as the preferred all-to-all trading solution in the global credit markets, creating a unique liquidity pool for a broad range of credit market participants. Drawing on a diverse set of trading protocols, including request-for-quote, live order books, sessions-based trading and portfolio trading solutions, as well as our deep data and analytical resources, we believe that we connect the most robust network of participants through an advanced full trading lifecycle solution that also includes automated trading solutions, intelligent data products and a range of post-trade services.

We operate in a large and rapidly growing market that provides us with a significant opportunity for future growth. Many of our largest current product areas, and areas of future growth, have relatively low levels of trading electronification, which further increases the size of our addressable market. Our platforms' innovative technology solutions are designed to capitalize on this addressable market by increasing the number of potential trading counterparties and providing our clients with a menu of solutions to address the full lifecycle of fixed-income trading. We offer all-to-all trading ("Open Trading") for most of our products and trading protocols, allowing our entire global network to interact in one large pool of trading liquidity. We believe that Open Trading drives meaningful transaction cost savings to our clients and reduces risk in fixed-income markets by creating a global, diversified pool of liquidity. Institutional investors can also send trading inquiries directly to their traditional broker-dealer counterparties on a disclosed basis ("disclosed RFQ"), while simultaneously accessing additional counterparties through our anonymous Open Trading solution. We also provide a number of integrated and actionable data offerings, including Composite+™ and Axess All® real time pricing to assist clients with trading decisions and transaction cost analysis. We have a range of post-trade services, including straight-through processing, trade matching, trade publication, regulatory transaction reporting and market and reference data across fixed-income and other products.

In 2021, 88.8% of our revenues were derived from commissions for transactions executed on our platforms. We also derive revenues from information services, post-trade services and other income. Our expenses consist of employee compensation and benefits, depreciation and amortization, technology and communication expenses, professional and consulting fees, occupancy, marketing and advertising, clearing costs and general and administrative expenses.

Our History

Founded in 2000, MarketAxess has a twenty-one year history of innovation and leadership in electronic trading for the global credit markets. Throughout our history, our primary commercial goals have remained the same: improving trading efficiency and reducing costs for our clients. Prior to our founding, our institutional investor clients were able to trade bonds by telephone with a limited set of broker-dealers with which they had institutional relationships. By 2007, our platforms allowed institutional investors to trade electronically with over thirty broker-dealers. During the financial crisis, we significantly expanded the number of non-primary and regional dealers providing liquidity on our platforms, as many dealers were forced to reduce their balance sheets for market making. Today, we are an S&P 500 company that, through our Open Trading protocols, provides an expanded liquidity pool for global market participants to trade a wide variety of fixed-income securities with the over 1,600 other institutional investor and broker-dealer clients that participated in Open Trading in 2021.



Our Competitive Strengths

We believe that we are well positioned to strengthen our market position in electronic trading in our existing products and to extend our presence into new products and services by capitalizing on our competitive strengths, including:

Significant Trading Volumes with Participation by Leading Broker-Dealers and Institutional Investors

Our electronic trading platforms provide access to the liquidity generated by the participation of our institutional investor and broker-dealer clients, including substantially all of the leading broker-dealers in global fixed-income trading. We believe these broker-dealers represent the principal source of secondary market liquidity for credit and rates products and the other markets in which we operate. Our broker-dealer clients are motivated to continue to utilize our platforms due to the ability to efficiently transact with valuable client order flow and the ability to use our Open Trading protocols to help manage their risk, source liquidity, and facilitate transactions on behalf of their clients.

Our total credit trading volume increased from approximately $1.4 trillion in 2017 to $2.6 trillion in 2021 and our estimated share of U.S. high-grade and high-yield corporate bond volume has increased from 16.9% and 6.8%, respectively, in 2017 to 21.0% and 15.2%, respectively in 2021.

Approximately 92% of credit volume on the platform during 2021 was executed by institutional clients.

Open Trading is a Differentiator that Expands the Liquidity Pool and Further Increases Cost-Savings for Clients

In the post-financial crisis years, liquidity has remained a persistent concern for market participants as regulators raised banks' capital requirements and adopted other measures that prompted many dealers to reduce market-making activities even as the buy side's bond holdings have grown rapidly. In this environment, Open Trading, our fully electronic, all-to-all trading ecosystem, has emerged as one solution to the post-crisis liquidity problem. As a result, Open Trading participants have broader and more diverse liquidity options, compared to the traditional model of bilateral trading with a limited set of dealer counterparties. The expanded pool of liquidity providers includes investment managers, global dealers, regional dealers and specialist market-making and proprietary trading firms. During 2021, over 1,660 firms participated in Open Trading, which improved the ability of both dealers and institutional investors to find natural and opportunistic matches, move orders more efficiently, and achieve significant increases in execution quality and price improvement.

We believe our Open Trading protocols enhance our institutional investor clients' ability to obtain a competitive price by allowing all of our Open Trading participants to interact with each other, thereby increasing the potential sources of liquidity available for each participant, as well as the likelihood of receiving a competitive price response. We estimate that liquidity takers saved an estimated \$322.3 million in transaction costs through Open Trading during 2021, while liquidity providers saved an estimated \$250.4 million during the year. These Open Trading cost savings are in addition to the potential cost savings institutional investors can achieve by simultaneously requesting bids or offers from our broker-dealer clients via our traditional disclosed RFQ protocol. Estimated liquidity taker cost savings is defined as the difference between the winning price and the best disclosed dealer cover price. Estimated liquidity provider cost savings is defined as the difference between the winning price and the then current Composite+ bid or offer level (offer if the provider is buying, bid if the provider is selling) at the time of the inquiry. In addition, dealers use Open Trading as a source of liquidity to efficiently transfer risk and achieve enhanced bond inventory turnover, which may limit their credit exposure.

Growing, Comprehensive International Offering and Client Base

Our platforms provide global fixed-income market participants with trading functionality across Eurobond and emerging markets rates and credit markets, connecting clients in over 80 countries to local and global dealers. MarketAxess has over 950 active client firms located outside the U.S. that access our platforms through our regulated venues in Europe, Asia and Latin America. Our Open Trading functionality allows international clients to more efficiently access cross-border liquidity with few regulatory hurdles.

The MarketAxess emerging markets trading platform also offers the most comprehensive offering for local currency bond trading across the Latin America, Central & Eastern Europe, Middle East and Africa, and Asia-Pacific ("APAC") regions. Our platforms provide clients with the ability to trade emerging market local currency debt denominated in 28 local currencies with over 150 broker-dealers.

In 2021, we extended our global fixed-income trading network to China's bond market. Global investor clients are now able to access the China Interbank Bond Market ("CIBM") via the connection between China Foreign Exchange Trade System ("CFETS") and MarketAxess under the Bond Connect and CIBM Direct schemes. This arrangement allows clients to trade directly with onshore market makers in China, thus broadening access to liquidity in global emerging markets debt.

Robust, Scalable Technology Throughout the Full Trading Cycle

We have developed proprietary technology that we believe is highly secure, fault-tolerant and scalable for substantial growth. Our systems are designed to accommodate additional volume, products and clients with relatively little modification and low incremental costs. We have consistently used our proprietary technology to find new ways for our clients to trade more effectively and efficiently. Our core software solutions span multiple components of the trading lifecycle and include pre-trade data and analytics, trade execution, post-trade data and trade matching, regulatory reporting and trade publishing, and straight-through processing. Our systems are built to be scalable, flexible and resilient. We have also created new trading protocols and developed additional solutions for our clients that are translated and built by our highly experienced technology and business personnel. Going forward, we expect that our agile software development processes will help us continue to be a market leader in developing the technology solutions for our clients' trading needs.

In addition to services directly related to the execution of trades, we offer our clients several other services throughout the trading cycle. In the pre-trade period, our platforms assist our participants by providing them with value-added services, such as real-time and historical trade price information, liquidity and turnover analytics, bond reference data and trade order matching alerts. Following the execution of a trade, our platforms support all of the essential tools and functionalities to enable our participants to realize the full benefits of electronic trading and demonstrate best execution, including real-time trade details, straight-through processing ("STP"), account allocations, automated audit trails, regulatory trade reporting, trade detail matching, and transaction cost analysis.

Next Generation Data and Analytical Tools Supporting the Increasing Automation of Trading Workflows

Our data and analytical tools enhance the value proposition of our trading platforms and improve the trading experience of our clients. We support our clients' trading functions by offering value-added analytics that rely on machine-learning, automation and algorithms that are designed to improve the trading decisions and workflows of our clients. Our data and analytical tools are designed to help clients make better trading decisions, benefitting our current clients and attracting new market participants to our network. For example, our Composite+ pricing algorithm powers many of our automated trading solutions, which allows traders to automatically execute trades according to pre-determined parameters and automatically send completed or rejected order details to internal order management systems. By allowing traders to automate and execute their smaller, low-touch trades more efficiently, our auto-execution solutions allow traders to focus their attention on higher value-added trades, with a goal of reducing trading inefficiencies and human errors.

Our Strategy

Our objective is to be the leading global electronic trading platforms for fixed-income securities, connecting broker-dealers and institutional investors more easily and efficiently, while offering a broad array of information, trading and technology services to market participants across the trading cycle. The key elements of our strategy are:

Increase Penetration in Credit Markets

We believe that we have a large opportunity remaining in the credit product markets in which we have already established a leadership position. For example, the estimated average daily trading volume in U.S. high-grade bonds for the year ended December 31, 2021 on our platforms was approximately $5.0 billion, representing just 21.0% of the estimated addressable market of approximately $23.6 billion. The estimated average daily trading volume in U.S. high-yield bonds for the year ended December 31, 2021 on our platforms was approximately $1.5 billion, representing just 15.2% of the estimated addressable market of approximately $9.8 billion. Our principal competitor in the credit markets in which we have established a leadership position continues to be the traditional methods of bilateral trading, including the telephone, e-mail or instant messaging. We plan to continue to focus on capturing additional market share across our core credit markets.

Continue Expansion into New Product Areas

Capitalizing on our experience of building market share in markets like U.S high-grade and U.S. high-yield bonds, we are increasing our product footprint in newer product areas, including emerging market local currency bonds, municipal bonds, U.S. government bonds, European government bonds and Chinese government bonds. Each of these markets has unique trading protocols, market structures and settlement solutions that requires a lengthy ramp-up period, but which will provide diverse revenue sources once significant market share has been achieved. For example, in 2021, we acquired MuniBrokers LLC ("MuniBrokers"), a central electronic trading venue serving municipal bond inter-dealer brokers and dealers, in order to expand our existing municipal bond trading solution. The acquisition connects our leading trading technology with the liquidity of one of the industry's largest electronic inter-dealer marketplaces, creating a compelling and diverse liquidity solution that we believe will ultimately deliver an improved execution experience.

Expand Trading Protocols and Leverage the Open Trading Network

We believe that we are the only fixed-income electronic trading platform that embraces all-to-all trading in each of our product areas. Open Trading exponentially increases the potential trading counterparties by allowing both our broker-dealer clients and institutional investor clients to interact in an all-to-all trading environment of the over 1,600 firms that participated in Open Trading in 2021. This unique liquidity solution provided over $572.7 million of cost savings to our participants in 2021. Our clients executed approximately 2.1 million credit trades using our Open Trading solutions during 2021, representing 32.1% of the total credit trading volume on our platforms. We believe that the combination of Open Trading and our vast client network provides the basis for MarketAxess to deliver meaningful cross-border liquidity or enter into new markets where liquidity is scarcer, such as municipal bonds.

Continue to Invest in and Grow our Business through Geographic Diversification

We are continuing to expand and diversify our business internationally. Our revenues from international clients have grown from 15.6% of total revenue in 2017 to 19.2% of total revenues for the year ended December 31, 2021. As of December 31, 2021, our institutional investor and broker-dealer clients are based in 80 countries. We offer liquidity in Eurobonds, hard-currency emerging markets products, as well as the ability to trade emerging markets debt in 28 global local currencies. By offering liquidity in both hard-currency and local currency emerging market debt on a single trading platform, we have created an efficient emerging market trading ecosystem for our institutional investor and broker-dealer clients. In the last five years, we have seen significant growth in the Europe, the Middle East and Africa ("EMEA"), Latin America and APAC regions. The average daily trading volume in the EMEA, Latin America and APAC regions on the MarketAxess platforms has grown from $1.5 billion in 2017 to $3.3 billion in 2021. We believe we can increase our penetration in international markets by continuing to invest in creating client relationships abroad, thereby creating more revenue opportunities for the Company.

Pursue Select Acquisitions and Strategic Alliances

We continually evaluate opportunities to supplement our internal growth by entering into strategic alliances, or acquiring businesses or technologies, that we believe will enable us to enter new markets, provide new client segments, new products or services, or otherwise expand our market share in the fixed-income markets that we operate in today. We believe that one of the key drivers of our success to date has been the ability to grow our current product offering. For example, the acquisition of LiquidityEdge® in 2019 provided us with the ability to broaden our rates product offering by entering the U.S. government bond markets with a dealer-to-dealer solution, creating a runway for us to expand into other protocols and other rates products like European government bonds. In 2020, we acquired the regulatory reporting business of Deutsche Börse ("Regulatory Reporting Hub") in order to expand the footprint of our post-trade and market data services in Europe by adding approximately 500 clients across Europe. In 2021, we acquired MuniBrokers, a central electronic venue serving municipal bond inter-dealer brokers and dealers, in order to expand our existing municipal bond trading solution. Together, we expect these transactions to accelerate the growth in our rates, post-trade and municipal bonds businesses.

The Fixed-Income Products Available on our Platform

We operate in a large and rapidly growing market, which consists of credit and rates fixed-income products. According to the Securities Industry and Financial Markets Association ("SIFMA"), as of September 30, 2021, the most recent date available, there were approximately $10.0 trillion principal amount of fixed-income securities outstanding in the U.S. corporate market, an increase of 3.0% from September 30, 2020. During the first nine months of 2021, global long-term new bond issuance aggregated to approximately $2.4 trillion, a decrease of 14.1% as compared to the same period of 2020.

Our proprietary technology allows institutional investor and broker-dealer clients to access this market by trading the credit and rates products on our platforms.

Our credit products consist of the following areas:

- U.S. high-grade bonds, which refers to U.S. corporate debt rated BBB- or better by Standard & Poor's ("S&P") or Baa3 or better by Moody's Investor Service ("Moody's");
- U.S. high-yield bonds, which refers to U.S. corporate debt rated lower than BBB- by S&P or Baa3 by Moody's;
- Emerging market debt, which we define as U.S. dollar, Euro or local currency denominated bonds issued by sovereign entities or corporations domiciled in a developing country, typically located in Latin America, Asia, or Central and Eastern Europe;
- Eurobonds, which we define generally to consist of bonds intended to be distributed to European investors, primarily bonds issued by European corporations, excluding bonds that are issued by corporations domiciled in an emerging markets country and excluding most government bonds that trade in Europe;
- Municipal bonds, which are debt securities issued by states, cities, counties and other governmental entities in the U.S. to fund day-to-day obligations and to finance a wide variety of public projects, such as highways or water systems and typically offer interest payments that are exempt from federal income taxation and may be exempt from state income and other taxes; and
- Other credit products, including leveraged loans, which are senior secured commercial facilities provided by a syndicate of lenders for below investment-grade companies (credit rating below BBB- or Baa3).

Our rates products consist of the following areas:

- U.S. government bonds, which are government instruments issued by the U.S. Department of the Treasury;
- Agency bonds, which are securities issued by a federal government department or by a government-sponsored enterprise, including the Federal National Mortgage Association and Federal Home Loan Mortgage Corporation; and
- Other government bonds, including European government bonds, which are bonds issued by governments of countries in the European Union ("E.U.") and non-E.U. European countries, as well as bonds issued by other supranational organizations, agencies and sovereigns, including the European Commission.

The six largest product areas available on our platform by revenue for the year ended December 31, 2021 were U.S. high-grade ($301.1 million), U.S. high-yield ($140.5 million), emerging market debt ($104.1 million), Eurobonds ($39.4 million), municipal bonds ($15.0 million) and U.S. government bonds ($13.4 million). In the chart below, we show the average daily trading volume and the amount of new issuance of such product areas for the years ended December 31, 2021 and 2020, except where indicated:

	Average Daily Trading Volume			Amount of New Issuance		
	2021	2020	% Change	2021	2020	% Change
	(In billions)					
U.S. high-grade[1]	$ 23.6	$ 25.3	(6.5)%	$ 1,379.9	$ 1,755.9	(21.4) %
U.S. high-yield[1]	9.8	10.5	(7.0)	476.9	444.9	7.2
Emerging market debt[2]	21.1	20.8	1.5	437.1	394.9	10.7
Eurobonds[3]	11.0	11.6	(5.5)	511.7	569.2	(10.1)
Municipal bonds[4]	4.4	5.7	(21.6)	480.4	484.7	(0.9)
U.S. government bonds[5]	624.1	603.2	3.5	19,511.8	20,951.5	(6.9)

(1) For U.S. high-grade and high-yield, average daily trading volume ("ADTV") is as measured by the Financial Industry Regulatory Authority ("FINRA") Trade Reporting and Compliance Engine ("TRACE") and amount of new issuance is according to J.P. Morgan Markets.
(2) For emerging markets debt, ADTV is as measured by the Emerging Markets Trade Association and amount of new issuance is according to J.P. Morgan Markets. The amount of new issuance excludes debt issued by emerging market sovereigns, which are included in our definition of emerging markets debt. ADTV and amount of new issuance are for the nine months ended September 30, 2021 and 2020, the most recent dates available.
(3) For Eurobonds, ADTV is according to our internal estimates and amount of new issuance is according to the International Capital Markets Association.
(4) For municipal bonds, ADTV is as measured by the Municipal Securities Rulemaking Board and amount of new issuance is according to SIFMA.
(5) For U.S. government bonds, ADTV is as measured by SIFMA and amount of new issuance is according to SIFMA.

We believe that the current level of electronic trading in our six largest product areas is generally low, creating a long runway for future growth. For example, we estimate that the level of electronic trading as a percentage of all means of trading (referred to as "electronic market share") for U.S. high-grade bonds, U.S. high-yield bonds, municipal bonds, emerging market debt and Eurobonds are approximately 35%, 20%, 10%, 10% and 45%, respectively. U.S. Treasuries are further down the path of electronic trading with an estimated electronic market share at approximately 65%. As a comparison, based on third party estimates, the level of electronic market share for U.S. equity options, U.S. Exchange traded cash equities and foreign exchange spots are each over 90%.

Our Full Trading Lifecycle Solutions

A key principle of our strategy is connecting the most robust network of participants through an advanced full trading lifecycle solution that includes diverse trading protocols, intelligent data products and a range of pre- and post-trade services. In 2021, 88.8% of our revenues were derived from commissions for transactions executed on our platforms through our diverse trading protocols, 5.5% of our revenues were derived from our integrated and actionable data offerings and 5.6% of our revenues were derived from our post-trade services.

Diverse Trading Protocols

Disclosed Request for Quote

Our traditional disclosed RFQ protocol allows our institutional investor clients to simultaneously request competing, executable bids or offers from our dealer clients and execute trades with the dealer of their choice from among those that choose to respond. We are not a party to any of the disclosed RFQ trades that occur on our platforms between institutional investor clients and dealer clients; rather, we serve as a technology intermediary between dealers and institutional investors, enabling them to meet, agree on a price and then transact directly with each other. The disclosed RFQ protocol is available for transactions in all of our product areas and can be used for:

- multiple-dealer inquiries to up to approximately 120 dealers;
- list trading, which is the ability to request bids and offers on up to 200 bonds at the same time;
- portfolio trading, which allows our market participants to transact bond basket trades of up to 1,500 securities in an all-or-none trading protocol with one aggregate price for the portfolio transaction; and
- swap trading, which is the ability to request an offer to purchase one bond and a bid to sell another bond.

In 2021, 67.9% of all credit volume on the MarketAxess platform was executed via a form of our RFQ protocol.

Open Trading

Our Open Trading protocols complement our disclosed RFQ protocol by increasing the number of potential counterparties and improving liquidity by allowing all participants to interact anonymously in an all-to-all trading environment of over 1,800 potential counterparties. Open Trading participants are able to maintain their anonymity from trade initiation all the way through to settlement. Unlike our disclosed RFQ protocol, in connection with our Open Trading protocols, we execute bond transactions between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in matching back-to-back trades.

We currently offer Open Trading protocols in U.S. high-grade bonds, U.S. high-yield bonds, Eurobonds, certain emerging market debt, municipal bonds, U.S. Treasuries, agency bonds and other government bonds. Following the introduction of Open Trading on our platforms in 2013, we have continued to build upon the technology to develop more features and services. For example, in 2021, we launched the Diversity Dealer Initiative (the “DDI”), which leverages the Open Trading marketplace by allowing institutional investor clients to select minority-, women- and veteran-owned broker-dealers to intermediate an Open Trading transaction, while still achieving best execution. In addition to the DDI, we offer several other Open Trading protocols, including:

- Market List RFQ, which provides our Open Trading participants with the ability to display requests for bids and offers anonymously to the entire MarketAxess trading community, thereby creating broad visibility of their inquiry among market participants and increasing the likelihood that the request will result in a completed trade. The Market List protocol is typically used simultaneously with a disclosed RFQ, allowing the requestor to achieve best execution by seeking pricing from a participant’s known trading relationships and the Open Trading marketplace at the same time;
- Dealer RFQ, which allows dealers to initiate RFQs to all other dealers or to the entire Open Trading network, is used by our dealer clients to manage risk, source liquidity, and facilitate transactions on behalf of their clients. Dealer RFQ is increasingly being used by our dealer clients, representing 10.4% of our credit volume for the year ended December 31, 2021, up from 8.5% for the year ended December 31, 2020;
- Mid-X sessions, a sessions-based mid-point matching tool that allows firms to trade against the mid-point price established by Composite+ at a given time instead of bilaterally negotiating a price, which we believe removes some of the pricing challenges inherent in other trading protocols;
- Live Markets, an order book functionality that creates a single view of two-way, actionable prices for the most active corporate bonds and U.S. Treasuries, including newly issued debt, benchmark issues and news-driven securities; and
- Public Axes™, which is an order book-style price discovery process that gives clients the ability to view anonymous or disclosed indications of interest from the inventory posted on our platforms.

In 2021, 32.1% of all credit volume on the MarketAxess platform was executed via Open Trading protocols.

Automated Trading Protocols

We believe that our automated trading protocols, which allow clients to set eligibility criteria for their orders that our platforms will use to determine whether or not to execute a trade in accordance with the pre-defined parameters, reduces trading inefficiencies and human errors while allowing traders to focus on higher-value trades. Some of our automation tools include:

- Auto-X RFQ, which allows clients to automatically transact using simple variables such as trade size, price and number of respondents; and
- Auto-Responder, which allows clients to automatically respond to requests using either a specified response level or a mid-point price generated by our pricing tool.

In 2021, 6.3% of all credit volume on the MarketAxess platform was executed via automated trading protocols.

In addition, we offer U.S. Treasury Hedging, which automatically provides a U.S. Treasury hedge for trades in credit products available on our platforms.

Integrated and Actionable Data

Data feeds the full trading lifecycle of fixed-income transactions. Timely and accurate data is particularly important in the fixed-income markets where real-time data has traditionally been scarce and transparency has been limited. Traders are increasingly using data and machine-learning for pre-trade analytics, automated execution, transaction cost analysis and post-trade solutions. Our data strategy is centered on using our data offerings to support trading activity through our diverse trading protocols and growing our revenues from our commercial data offerings. We believe that our electronic trading platforms allow institutional investors to compile, sort and use information to discover investment opportunities that might have been difficult or impossible to identify using a manual information-gathering process or other electronic services. Our data products are based on the trading activity and transactions that occur on our platforms.

Pricing Products

Our Composite+ pricing algorithm generates near real-time prices for approximately 33,000 corporate and sovereign bonds based on a variety of data inputs, including feeds from our trading platforms, our post-trade services and TRACE. Composite+ is used by clients as a pre-trade reference price to enhance trading outcomes and transaction cost analysis. Composite+ can be combined with our auto-execution service, providing clients with an alert if a response is "off market".

Axess All, the first intra-day trade tape for the European fixed-income market, is sourced from approximately 42,000 bond transactions processed daily by our post-trade services business and includes aggregated volume and pricing for the most actively traded European fixed-income instruments. We also provide market participants with access to pricing, liquidity and volume data on approximately 54,000 unique fixed-income securities and securities reference data for approximately 70,000 fixed-income securities.

Liquidity Products

We provide order and execution workflow solutions designed to meet the specific needs of the customer. LiquidityBridge® is the execution management system that we offer to dealers that allows users to manage and facilitate the complex liquidity flows across multiple trading platforms, including the MarketAxess system. LiquidityBridge brings together real-time comparison and execution of bond prices across multiple sectors, allowing users to rapidly react to trading opportunities.

Axess IQ™ is our order and execution workflow solution designed to meet the needs of the wealth management and private banking community by improving liquidity discovery, execution efficiency and alpha generation for firms with large numbers of individual client orders.

Relative Liquidity Score is a product that provides a defined measurement of the current liquidity for individual bonds and highlights the relative potential ease that a trader can expect to transact in such instruments.

Analytics Products

BondTicker® provides real-time TRACE data and enhances it with MarketAxess trade data and analytical tools in order to provide professional market participants with a comprehensive set of corporate bond price information with associated analytical tools that are not otherwise available. The data includes trade time and sales information, including execution prices, as well as MarketAxess-estimated spread-to-Treasuries, for trades disseminated by the TRACE system. The data also includes actual execution prices and spread-to-Treasury levels for U.S. high-grade corporate bond trades executed on the MarketAxess platform. BondTicker is currently the source of corporate bond trading information for *The Wall Street Journal* in the U.S.

BondTicker allows institutional investors to search for and sort bonds based upon specific criteria, such as volume, time/date of transaction, spread change, issuer or security. This search function allows institutional investors to compile information relating to potential securities trades in a fraction of the time that it takes to manually compile this information from disparate sources or other electronic databases. BondTicker is integrated directly into the MarketAxess electronic trading platform and can be seamlessly accessed, either when viewing securities inventory or when launching an inquiry.

Post-Trade Services

We provide trade matching and regulatory reporting services for European investment firms and market and reference data across a range of fixed-income products. In response to the pre-and post-trade transparency mandates from the recast Markets in Financial Instruments Directive ("MiFID II") in Europe, we have been authorized by each of the United Kingdom ("U.K.") Financial Conduct Authority ("FCA") and the Netherlands Authority for the Financial Markets ("AFM") as an Approved Publication Arrangement ("APA") and an Approved Reporting Mechanism ("ARM"). In addition to our APA and ARM reporting services, we have developed a comprehensive suite of value-add solutions for MiFID II, including pre-trade transparency services, systematic internaliser ("SI") determination and monitoring, best execution reporting, commodity position reporting, data quality analysis and peer benchmarking.

In the E.U. and U.K., all firms regulated as "investment firms" under MiFID II are required to submit complete and accurate details of qualifying transactions to their national regulator no later than the close of the working day following the date of the transaction. This process is known as transaction reporting. Firms may either report directly to the regulator or use an entity that is licensed as an ARM, such as our subsidiaries in the U.K. and the Netherlands, to validate and submit such reports. Our multi-asset class ARM reporting solution allows our clients to report to 20 different European regulators. We have also collaborated with Equilend on a full front-to-back Securities Financing Transactions Regulation ("SFTR") solution to support mutual clients with their SFTR reporting requirements.

Under the Markets in Financial Instruments Regulation ("MiFIR"), all regulated investment firms in the U.K. and the E.U. are required to comply with pre- and post-trade transparency requirements pursuant to which quotes and trades must be made public subject to a system of waivers and deferrals. Firms are required to utilize an APA, such as our APAs in the U.K. and the Netherlands, to comply with the post-trade transparency requirement and, although optional, many firms also utilize a third-party provider to satisfy the pre-trade transparency requirement. The MarketAxess transparency and APA trade reporting solutions are available through our Insight™ platform, offering our clients a pre- and post-trade transparency solution, including APA trade reporting, quote publication, SI determination and instrument liquidity classification. We also offer a commodity position reporting service to assist firms in compliance with the commodity derivative position limit reporting requirements of MiFID II.

Trade matching enables counterparties to agree on the terms of a trade shortly after execution, reducing the risk of trade errors and fails during settlement. We provide a near real-time post-trade matching and exception management tool which covers a broad range of securities, including fixed-income and equities. By confirming all economic details within minutes of trade execution, we help our clients to mitigate their operational risk, improve STP and efficiency and address the complexities of MiFID II and the Central Securities Depositories Regulation.

MarketAxess has approximately 960 post-trade reporting and transparency clients, including broker-dealers, hedge funds and investment banks. In 2020, we acquired Regulatory Reporting Hub, which has helped us expand and improve our services across a broader European client base, predominantly in Germany, France and the Nordics regions.

Our Clients

Almost 1,900 institutional investor and broker-dealer firms are active users of our platforms. Although institutional investors, specialist market-making firms, proprietary trading firms and other non-traditional liquidity providers have increasingly provided liquidity on our platforms through Open Trading, we believe these broker-dealers still represent the principal source of secondary market liquidity in the markets in which we operate. Secondary market liquidity refers to the ability of market participants to buy or sell a security quickly and in large volume following the original issuance of the security, without substantially affecting the price of the security.

Our Technology

The design and quality of our technology products are critical to our growth and our ability to execute our business strategy.

Easy-to-use, secure architecture

Our electronic trading platforms have been designed with secure, scalable client-server architecture that makes broad use of distributed computing to achieve speed, reliability and fault tolerance. The platforms are built on industry-standard technologies and have been designed to handle many multiples of our current trading volume. We increasingly utilize cloud technology to capitalize on innovative tooling, cost savings, and improvements to development velocity.

All critical server-side components, including our networks, application servers and databases, have backup equipment running in the event that the main equipment fails. This offers redundant system capacity designed to maximize uptime and minimize the potential for loss of transaction data in the event of an internal failure. We also seek to minimize the impact of external failures by automatically recovering connections in the event of a communications failure. The majority of our broker-dealer clients and a significant number of our institutional investor clients have redundant dedicated high-speed communication paths to our network in order to provide fast data transfer. Our security measures include industry-standard communications encryption.

We have designed our primary application with an easy-to-use, Windows-based interface. Our clients are able to access our electronic trading platforms through a secure, single sign-on. Clients are also able to execute transactions over our platforms directly from their order management systems. We provide users an automatic software update feature that does not require manual intervention.

We prioritize security throughout our platforms, operations and software development. We use architectural, design and implementation features to structurally address security risks, such as logical and physical access controls, perimeter firewall protection and embedded security processes in our systems development lifecycle. Our cybersecurity program is based on the National Institute of Standards and Technology Cyber Security Framework (the "Framework"). The Framework consists of standards, guidelines and best practices to manage cybersecurity-related risks and promote the protection and resilience of critical infrastructure. Our Global Chief Information Security Officer leads a cybersecurity team in assessing, managing and reducing the relevant risks with a goal of assuring continuous delivery of service. We constantly monitor connectivity and suspect events are escalated to our global risk and management teams.

Empowering our Clients through End-to-End Connectivity

STP refers to the integration of systems and processes to automate the trade process from end-to-end — trade execution, confirmation and settlement — without the need for manual intervention. We provide our broker-dealer and institutional investor clients with a range of tools that facilitate straight-through processing, including order upload, easy-to-use online allocation tools and pre- and post-trade messaging features that enable our clients to communicate electronically between their front- and back-office systems. Our straight-through processing tools can be customized to meet specific needs of our clients and allow them to integrate their order, portfolio management and accounting systems in real time. We maintained over 1,900 STP connections as of December 31, 2021. In addition, many of our clients use our Application Programming Interface ("API") services for pre-trade, trade negotiation and post-trade services to improve efficiency and reduce errors in processing.

In addition to STP and APIs, our electronic trading platforms also include verification mechanisms at various stages of the execution process which result in greater accuracy in the processing, confirming and clearing of trades between institutional investor and broker-dealer clients, including real-time trade details, account allocations, automated audit trails and trade detail matching. These verification mechanisms are designed to ensure that our institutional investor and broker-dealer clients are sending accurate trade messages by providing multiple opportunities to verify they are trading the correct bond, at the agreed-upon price and size. Our platforms are designed to assist our institutional investor clients in automating the transmittal of order tickets from the portfolio manager to the trader, and from the trader to back-office personnel. This automation provides more timely execution and a reduction in the likelihood of errors that can result from manual entry of information into different systems.

Agile Software Development

We utilize an Agile software development methodology, which relies on small, autonomous working groups that build products based on a continuous feedback loop. This shift provides greater transparency and predictability to our clients, increases our flexibility to make changes that reflect market changes or changes in business priorities and allows greater prioritization. In addition, this methodology has allowed us to deliver enhancements on our platforms at an increased speed. During the year ended December 31, 2021, we delivered approximately 650 unique new business and technical features to our clients.

See Part I, Item 1A. – "Risk Factors — Technology, IT Systems and Cybersecurity Risks."

Environmental, Social and Governance (“ESG”)

We are focused on growing our business by delivering sustainable long-term value for our customers, employees, stockholders, and the communities where we live and work. At MarketAxess, our ESG strategy encompasses both corporate and commercial objectives.

Corporate ESG Objectives

As part of our vision to maximize stakeholder value, we strive to incorporate ESG principles into our business strategies and organizational culture. In response to interest from our stockholders and other constituents, in our 2020 ESG Report, we began reporting against the Sustainability Accounting Standards Board’s (“SASB”) metrics applicable to Security and Commodity Exchanges, Professional and Commercial Services and Software and IT Services, which can be found on our corporate website (available at https://www.marketaxess.com/sustainability). In addition, in response to the increasing importance of climate change to the overall global economy and its effect on global credit markets, we have begun to measure our carbon footprint. We currently plan to report on our progress when the data becomes available and put measurable environmental goals in place. Please also refer to “Human Capital Resources” for additional information on our human capital management strategies.

Our prior ESG Reports and the fiscal year 2021 ESG Report, when issued, are not, and shall not be deemed to be, a part of this Form 10-K or incorporated into any of our other filings made with the U.S. Securities and Exchange Commission (the “SEC”).

Commercial ESG Objectives

In order to help our institutional investor and broker-dealer clients meet their ESG goals and strategies, we have begun to develop ESG-integrated product offerings. For example, in 2019, we launched our “Trading for Trees” program, under which five trees are planted by One Tree Planted, our partner charitable organization, for every $1 million of green bond trades executed on our platforms. In 2021, $51.1 billion in corporate and municipal green bond trading volume was executed globally on the MarketAxess platforms, an increase of 89.3% from 2020. In the U.S., where public data is available, MarketAxess ranks as the largest electronic corporate and municipal green bond marketplace with an estimated market share of 20.9% in TRACE-reported corporate and municipal green bond volume.

In addition, in 2021, we launched the DDI to enable buy side firms to trade more easily with certain minority-, women- and veteran-owned broker-dealers, while still achieving best execution. The DDI leverages our anonymous all-to-all Open Trading marketplace and provides enhanced trading connections by giving institutional investor clients the option to select a diversity dealer to intermediate an Open Trading transaction.

Sales and Marketing

We promote our products and services using a variety of direct and indirect sales and marketing strategies. Our sales force, which works closely with our product management and technology teams, is responsible for client acquisition activity and the management of ongoing client relationships. Our sales team is also responsible for training and supporting new and existing clients on their use of our platforms and post-trade solutions, including how to optimize their trading performance and efficiency through our various trading protocols. We employ various strategies, including advertising, direct marketing, digital and social media, promotional mailings, and participation in industry conferences and media engagement, to increase awareness of our brand, our trading platforms and our other solutions. For example, we work with *The Wall Street Journal* to leverage BondTicker data as the source of information for its weekly distressed debt tables.

Seasonality

Our revenue can be impacted by seasonal effects caused by increased levels of new bond issuance, which often occurs in the first quarter of a year, or slow-downs in trading activity, particularly during the customary holiday periods in August and December.

Competition

The global fixed-income securities industry generally, and the electronic financial services markets in which we engage in particular, are highly competitive, and we expect competition to intensify in the future. We compete with a broad range of market participants globally. Some of these market participants compete with us in a particular market, while select others compete against the entire spectrum of our platforms and solutions. We believe our competitive position is enhanced by the familiarity and integration of our clients with our electronic trading platforms and other systems.

We primarily compete on the basis of our client network, the liquidity provided by our broker-dealer, and to a growing extent, our institutional investor clients, the total transaction costs associated with our services, the breadth of products, protocols and services offered, as well as the quality, reliability, security and ease of use of our platforms. We face five main areas of competition:

- *Bilateral Trading* — We compete with bond trading business conducted over the telephone, e-mail or instant messaging directly between broker-dealers and their institutional investor clients. Institutional investors have historically purchased fixed-income securities by telephoning or otherwise communicating via e-mail or instant messaging with bond sales professionals at one or more broker-dealers and inquiring about the price and availability of individual bonds. This remains the manner in which the majority of corporate bond volumes are still traded between institutional investors and broker-dealers.
- *Other multi-party electronic trading platforms* — There are numerous other electronic trading platforms currently in existence, including several that have only commenced operations in the last few years. We compete with Tradeweb, Bloomberg, Intercontinental Exchange, Trumid and others in the credit and municipal markets; and Tradeweb, Bloomberg, CME Group (NEX Group), BGC Partners (Fenics UST) and others in the rates markets. In addition, some broker-dealers and institutional investors operate, or have invested in, proprietary electronic trading systems or information networks that enable institutional investors to trade directly with a broker-dealer, and/or with other institutional investors over an electronic medium. As we expand our business into new products, we will likely come into more direct competition with other electronic trading platforms or firms offering traditional services.
- *Securities and Futures Exchanges* — In recent years, exchanges have pursued acquisitions that have put them in competition with us. For example, the London Stock Exchange Group acquired a significant stake in Tradeweb and Intercontinental Exchange acquired BondPoint and TMC Bonds, retail-focused platforms, and IDC, a provider of fixed-income data, in an effort to expand its portfolio of fixed-income products and services. CME Group also operates platforms that compete with us. Exchanges also have data and analytics businesses, which increasingly put their offerings in direct competition with us.
- *Market data and information vendors* — Several large market data and information providers, such as Bloomberg, Refinitiv, Intercontinental Exchange, and IHS Markit currently have a data and analytics relationship with virtually every institutional firm. Some of these entities currently offer varying forms of electronic trading of fixed-income securities. Some of these entities have announced their intention to expand their electronic trading platforms or to develop new platforms. These entities are currently direct competitors to our information services business and already are or may in the future become direct competitors to our electronic trading platforms.
- *Other approved regulatory reporting businesses* — We compete with other approved regulatory mechanisms in Europe that have ARM and APA designations, such as the London Stock Exchange's UnaVista and Tradeweb, to provide post-trade matching and regulatory transaction reporting and transparency services to European clients.

We face intense competition, and we expect competition to continue to intensify in the future. See Part I, Item 1A. – "Risk Factors — Risks Related to Operating in the Electronic Fixed-Income Trading Markets — We face substantial competition that could reduce our market share and harm our financial performance."

Intellectual Property

We rely upon a combination of copyright, patent, trade secret and trademark laws, written agreements and common law to protect our proprietary technology, processes and other intellectual property. Our software code, elements of our electronic trading platforms, website and other proprietary materials are protected by copyright laws. We have been issued 13 patents covering significant trading protocols and other aspects of our trading system technology.

The written agreements upon which we rely to protect our proprietary technology, processes and intellectual property include agreements designed to protect our trade secrets. Examples of these written agreements include third party nondisclosure agreements, employee nondisclosure and inventions assignment agreements, and agreements with customers, contractors and strategic partners. Other written agreements upon which we rely to protect our proprietary technology, processes and intellectual property take many forms and contain provisions related to patent, copyright, trademark and trade secret rights.

We have registered the MarketAxess® name and logo for trademark in the U.S., Europe and in other parts of the world. We also have a number of other registered or pending trademarks and service marks globally, including Open Trading®, BondTicker®, and Now You're In The Market® among others. In addition, we own, or have filed applications for, the rights to trade names, copyrights, domain names and service marks that we use in the marketing of products and services to clients.

In addition to our efforts to register our intellectual property, we believe that factors such as the technological and creative skills of our personnel, new product and service developments, frequent enhancements and reliability with respect to our services are essential to establishing and maintaining a technology and market leadership position.

Government Regulation

The securities industry and financial markets in the U.S. and elsewhere are subject to extensive regulation. In these jurisdictions, government regulators and self-regulatory organizations oversee the conduct of our business, and have broad powers to promulgate and interpret laws, rules and regulations that may serve to restrict or limit our business. As a matter of public policy, these regulators are charged with safeguarding the integrity of the securities and other financial markets and with protecting the interests of investors participating in those markets. Our active broker-dealer and regulated venue subsidiaries fall within the scope of their regulations. Rulemaking by regulators, including resulting market structure changes, has had an impact on our business by directly affecting our method of operation and, at times, our profitability.

As registered broker-dealers, trading venues and other types of regulated entities as described below, certain of our subsidiaries are subject to laws, rules and regulations (including the rules of self-regulatory organizations) that cover all aspects of their business, including manner of operation, system integrity, anti-money laundering and financial crimes, handling of material non-public information, safeguarding data, capital requirements, reporting, record retention, market access, licensing of employees and the conduct of officers, employees and other associated persons.

Regulation can impose, and has imposed, obligations on our regulated subsidiaries, including our broker-dealer subsidiary. These increased obligations require the implementation and maintenance of internal practices, procedures and controls, which have increased our costs. Many of our regulators, as well as other governmental authorities, are empowered to bring enforcement actions and to conduct administrative proceedings, examinations, inspections and investigations, which may result in increased compliance costs, penalties, fines, enhanced oversight, increased financial and capital requirements, additional restrictions or limitations, censure, suspension or disqualification of the entity and/or its officers, employees or other associated persons, or other sanctions, such as disgorgement, restitution or the revocation or limitation of regulatory approvals. Whether or not resulting in adverse findings, regulatory proceedings, examinations, inspections and investigations can require substantial expenditures of time and money and can have an adverse impact on a firm's reputation, client relationships and profitability. From time to time, we and our associated persons have been and are subject to routine reviews, none of which to date have had a material adverse effect on our businesses, financial condition, results of operations or prospects. As a result of such reviews, and any future actions or reviews, we may be required to, among other things, amend certain internal structures and frameworks such as our operating procedures, systems and controls.

The regulatory environment in which we operate is subject to constant change. We are unable to predict how certain new laws and proposed rules and regulations will be implemented or in what form, or whether any changes to existing laws, rules and regulations, including the interpretation, implementation or enforcement thereof or a relaxation or amendment thereof, will occur in the future. We believe that uncertainty and potential delays around the final form of certain new rules and regulations may negatively impact our clients and trading volumes in certain markets in which we transact, although a relaxation of or the amendment of existing rules and requirements could potentially have a positive impact in certain markets. While we generally believe the net impact of the laws, rules and regulations may be positive for our business, it is possible that unintended consequences may materially adversely affect us in ways yet to be determined. See Part I, Item 1A. – "Risk Factors – Regulatory and Legal Risks - Our business and the trading businesses of many of our clients are subject to increasingly extensive government and other regulation, which may affect our trading volumes and increase our cost of doing business."

U.S. Regulation

In the U.S., the SEC is the federal governmental agency primarily responsible for the administration of the federal securities laws, including adopting and enforcing rules and regulations applicable to broker-dealers. Our broker-dealer subsidiary operates an alternative trading system ("ATS") subject to the SEC's Regulation ATS, which includes certain specific requirements and compliance responsibilities in addition to those faced by broker-dealers generally, and an exempt ATS for U.S. Treasuries. Broker-dealers are also subject to regulation by state securities administrators in those states in which they conduct business or have registered to do business. We are also subject to the various anti-fraud provisions of the Securities Act of 1933, as amended (the "Securities Act"), the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the Commodity Exchange Act, certain state securities laws and the rules and regulations promulgated thereunder. We also may be subject to vicarious and controlling person liability for the activities of our subsidiaries and our officers, employees and affiliated persons.

The CFTC is the federal agency primarily responsible for the administration of federal laws governing activities relating to futures, swaps and other derivatives, including the rules applicable to our SEF. In 2021, we decided to stop offering credit indices trading and, accordingly, we suspended our SEF's operations. Despite the cessation of operations, our SEF continues to be subject to regulations that relate to trading and product requirements, governance and disciplinary requirements, operational capabilities, surveillance obligations and financial information and resource requirements, including the requirement that they maintain sufficient financial resources to cover operating costs for at least one year. Our SEF continues to be subject to both scheduled and unscheduled examinations by the CFTC.

Much of the regulation of broker-dealers' operations in the United States has been delegated to self-regulatory organizations. These self-regulatory organizations adopt rules (which are generally subject to approval by the SEC) that govern the operations of broker-dealers and conduct periodic inspections and examinations of their operations. In the case of our U.S. broker-dealer subsidiary, the principal self-regulatory organization is FINRA. Our U.S. broker-dealer subsidiary is subject to both scheduled and unscheduled examinations by the SEC and FINRA. In addition, our broker-dealer's municipal securities-related activities are subject to the rules of the MSRB.

The SEC recently conducted a review of the regulatory framework for fixed-income electronic trading platforms for the purpose of evaluating the potential regulatory gaps that may exist among such platforms, including ours, with respect to access to markets, system integrity, surveillance, and transparency, among other things. In January 2022, as a result of this review, the SEC proposed rules that will expand Regulation ATS and Regulation SCI to alternative trading systems (ATS) that trade government securities and amend the SEC rule regarding the definition of an "exchange" to include Communication Protocol Systems, such as our RFQ protocols. In connection with these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS. It is unknown at this time to what extent new legislation will be passed into law or whether pending or new regulatory proposals will be adopted or modified, or what effect such passage, adoption or modification will have, whether positive or negative, on our industry, our clients or us.

Non-U.S. Regulation

Outside of the United States, we are currently directly regulated by: the Financial Conduct Authority ("FCA") in the U.K., De Nederlandsche Bank ("DNB") and the Authority for the Financial Markets ("AFM") in the Netherlands, the Monetary Authority of Singapore (the "MAS"), the Investment Industry Regulatory Organization of Canada (the "IIROC") and provincial regulators in Canada, and the Securities and Exchange Commission and Central Bank in Brazil. We also hold cross-border licenses or permissions to operate in other jurisdictions with other regulatory bodies, including the Swiss Financial Market Supervisory Authority ("FINMA"), the Securities & Futures Commission of Hong Kong, the Australian Securities and Investment Commission in Australia ("ASIC"), the Danish Financial Supervisory Authority, the German Federal Financial Supervisory Authority ("BaFin"), the Commission de Surveillance du Secteur Financier of Luxembourg, the Italian Commissione Nazionale per le Società e la Borsa ("Consob"), the Norwegian Financial Supervisory Authority and the Finnish Financial Supervisory Authority.

The FCA's strategic objective is to ensure that the relevant markets function properly and its operational objectives are to protect consumers, to protect and enhance the integrity of the U.K. financial system and to promote effective competition in the interests of consumers. It has investigative and enforcement powers derived from the Financial Services and Markets Act 2000 ("FSMA") and subsequent legislation and regulations. Subject to the FSMA, individuals or companies that seek to acquire or increase their control in a firm that the FCA regulates is required to obtain prior approval from the FCA.

The securities industry and financial markets in the 27 member states of the E.U. is regulated by agencies in each member state. E.U. regulations provide for a cross-border "passporting regime", which allows us to provide our regulated services throughout the E.U. in reliance upon our authorization from any E.U. member state. As a result of the U.K.'s departure from the E.U. in 2020 (commonly referred to as "Brexit"), we obtained AFM authorizations for our subsidiaries in the Netherlands and we now provide regulated services to our clients within the E.U. in reliance on the cross-border services passport held by our Dutch subsidiaries.

The legal framework in the Netherlands for financial undertakings is predominantly included in the Dutch Financial Supervision Act ("FSA"). The AFM, like DNB, is an autonomous administrative authority with independent responsibility for fulfilling its supervisory function. Pursuant to the FSA, the AFM authorizes investment firms. The AFM is legally responsible for business supervision. DNB is responsible for prudential supervision. The purpose of prudential supervision is to ensure the solidity of financial undertakings and to contribute to the stability of the financial sector. Holders of a qualifying holding (in short, shareholdings or voting rights of 10% or more) must apply to the DNB for a declaration of no objection and satisfy the applicable requirements of the FSA.

In January 2018, the E.U. implemented enhanced rules and regulations targeted at the financial services industry, including MiFID II and MiFIR. MiFID II and MiFIR introduced significant changes to the E.U. financial markets that were designed to facilitate more efficient markets and greater transparency for participants by: (i) enhancing pre- and post-trade transparency for fixed-income instruments, (ii) increasing and enhancing post-trade reporting obligations with a requirement to submit post-trade data to ARMs, (iii) improving technology synchronization and best execution and (iv) establishing a consolidated tape for trade data. Although MiFID II and MiFIR were intended to help improve the functioning of the E.U. single market by achieving a greater consistency of regulatory standards, MiFID II and MiFIR have caused us to expend significantly more compliance, business and technology resources, to incur additional operational costs and has created additional regulatory exposure for our trading and post-trade businesses. While we generally believe the net impact of the rules and regulations has been positive for our businesses, unintended consequences of the rules and regulations (or future amendments thereto) may adversely affect us in ways yet to be determined. In particular, the divergence of the U.K. from the E.U. following Brexit in relation to the future development of MIFID II and MiFIR and other rules and regulations within the financial markets (such as the Central Securities Depository Regulation) may further increase the complexity, operational costs and compliance requirements of our business in the U.K. and E.U. See Part I, Item 1A. — "Risk Factors — Regulatory and Legal Risks - The U.K. exit from the European Union could materially adversely impact our business, clients, financial condition, results of operations and prospects."

Capital Requirements

Certain of our subsidiaries are subject to jurisdictional specific regulatory capital requirements, designed to maintain the general financial integrity and liquidity of a regulated entity. In general, they require that at least a minimum amount of a regulated entity's assets be kept in relatively liquid form. Failure to maintain required minimum capital may subject a regulated subsidiary to a fine, requirement to cease conducting business, suspension, revocation of registration or expulsion by the applicable regulatory authorities, and ultimately could require the relevant entity's liquidation.

In addition, as a result of our self-clearing activities, MarketAxess Corporation is required to finance certain transactions, maintain deposits with various clearing organizations and clearing broker-dealers and maintain a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Exchange Act. These requirements can fluctuate based on trading activity, market volatility or other factors which may impact our liquidity or require us to use our capital resources.

Regulatory Status of MarketAxess Entities

Our operations span jurisdictions across the Americas, Europe and Asia, and we operate through various regulated entities. The current regulatory status of many of our business entities is described below. We also provide our platforms in other countries pursuant to exemptions from registration under the laws of such countries.

Americas

MarketAxess Corporation is a SEC registered broker-dealer, a member of FINRA, the MSRB, and the Securities Investor Protection Corporation ("SIPC"). MarketAxess Corporation is registered as a clearing broker with FINRA.

MarketAxess SEF Corporation is a CFTC registered SEF, although it suspended its operations in 2021.

MarketAxess Canada Company is registered as an Alternative Trading System with the Ontario Securities Commission ("OSC"), the Autorité des Marchés Financiers ("AMF"), the British Columbia Securities Commission ("BCSC") and the Alberta Securities Commission ("ASC") and is a member of IIROC.

MarketAxess Plataforma de Negociacao Ltda. is authorized through its parent (MarketAxess Holdings Inc.) by Comissão de Valores Mobiliários ("CVM") and BACEN (Central Bank of Brazil) to provide a system in Brazil for the trading of fixed-income securities by sophisticated institutional investors.

MarketAxess Colombia Corporation is registered with the Superintendence of Finance of Colombia ("SOFC") as an Information System.

U.K. and Europe

MarketAxess Capital Limited is authorized and regulated by the FCA as a MiFID investment firm and acts as a matched principal counterparty for Open Trading transactions.

MarketAxess Europe Limited is authorized and regulated by the FCA to operate a multilateral trading facility ("MTF"), licensed by ASIC to have an Australian Markets License, recognized by FINMA as a foreign trading venue, licensed by BaFin under the German Securities Trading Act, licensed by the Securities & Futures Commission of Hong Kong as an Automated Trading Service and licensed by the Monetary Authority of Singapore as a Recognized Market Operator. In addition, following Brexit, MarketAxess Europe Limited is recognized or licensed on a cross-border basis to provide its services in Italy and Finland and on a temporary cross-border basis in each of Luxembourg, Denmark and Norway.

MarketAxess NL B.V. is authorized and regulated by the AFM in the Netherlands as an MTF. MarketAxess NL B.V. may provide services throughout the E.U. 27 and EEA countries under the MiFID passport and is approved by FINMA to provide cross-border services into Switzerland as a foreign trading venue.

MarketAxess Post-Trade NL B.V. is licensed in the Netherlands by the AFM as a Data Reporting Services Provider ("DRSP"), specifically to act as an ARM and APA. MarketAxess Post-Trade NL B.V. may provide services throughout the E.U. 27 and EEA countries under the MiFID passport.

MarketAxess Post Trade Limited is authorized and regulated by the FCA as a DRSP for ARM and APA services and as a service company.

Asia and Pacific

MarketAxess Singapore Pte. Limited is approved by the Monetary Authority of Singapore as a Recognized Market Operator. Additionally, MarketAxess Singapore Pte. Limited is approved by FINMA in Switzerland as a foreign trading venue, by Hong Kong as an ATS, by Germany as a foreign market operator, and holds an Australian Markets License from ASIC.

Human Capital Resources

As of December 31, 2021, we had 676 employees, 424 of whom were based in the U.S. and 252 of whom were based outside of the U.S., principally in the U.K. During fiscal year 2021, we increased our number of employees by 70, or 11.6%, compared to an increase of 79, or 15.0%, in 2020. None of our employees are represented by a labor union. We consider our relationships with our employees to be good and have not experienced any interruptions of operations due to labor disagreements.

Diversity, Equity and Inclusion

The diverse backgrounds, experiences and perspectives of our employees are one of our biggest strengths. We strive to make our workforce more diverse, inclusive and supportive of all. We embrace a culture and vision that supports and enhances our ability to recruit, develop and retain diverse talent at every level. Our employees participate in ongoing educational and developmental programs designed to educate our employees about the Company's diversity and inclusion initiatives and their importance to our success. As of December 31, 2021, our global workforce was approximately 72.0% men and 28.0% women, and of our U.S. employees, our workforce was approximately 28.8% Asian, 4.2% Black or African American, 7.1% Hispanic or Latinx, 57.5% White and 2.4% identified with another race or ethnicity.

To broaden our candidate pools, we use diverse hiring sources, including employee referrals, recruitment vendors, postings on diversity job boards and with diversity interest groups, and we attend various recruiting events. We have been able to further diversify our workforce through our summer intern and graduate hire programs, which represent a spectrum of schools, fields of study, interests and socio-economic backgrounds. In 2021, we continued with our partnerships with universities with larger racially diverse student bodies in both New York and London, and we specifically targeted affinity groups on campus in order to diversify our applicant pool.

Human Capital Development

Our talent management strategy is focused on attracting, developing and retaining top talent within the Company. The market for qualified personnel, especially software developers, has become increasingly competitive in our talent markets. Many companies, including both our competitors and firms outside of our industry, are interested in hiring our experienced personnel. Additionally, highly innovative technology firms both in and outside our traditional geographic markets may offer attractive employment opportunities to our technology personnel through remote work opportunities.

In 2021, we conducted a global talent review to identify high-potential talent among our experienced employees, as well as a position analysis review to identify critical roles throughout the organization. These reviews are helping us build short- and long-term succession plans for our executive leadership team and other critical roles within the Company.

The Company also uses the talent review process and position analysis to inform our increasing levels of investment in learning and development for our employees. Currently, we offer a customized management training program for new managers and an accelerated leadership program for our more seasoned leaders who we believe may assume broader or more complex roles within the Company in the future. We also offer a range of technical, markets-related, product management and soft-skills training courses on an ongoing basis to enable our employees to develop a broad spectrum of skills. We conduct regular engagement surveys of our employee base to better understand what is working well for our employees and identify areas that we can improve.

Employee Health & Wellbeing

In fiscal year 2021, the COVID-19 pandemic (the "Pandemic"), continued to have a significant impact on how we manage human capital. We re-opened our primary offices in the fourth quarter of 2021 with an emphasis on safety and employee wellbeing. While our offices remained open through the Omicron variant surge in New York, London and elsewhere, we encouraged our employees to work from home when possible. We remain confident that we can continue to maintain business continuity by serving our clients in a virtual or hybrid environment, as necessary, to promote employee and public safety. Our experienced teams of employees adapted to the changes in our work environment and have managed our business successfully during this challenging time.

Company Information

MarketAxess was incorporated in Delaware in April 2000. Our internet website address is www.marketaxess.com. Through our internet website, we will make available, free of charge, the following reports as soon as reasonably practicable after electronically filing them with, or furnishing them to, the SEC: our annual report on Form 10-K; our quarterly reports on Form 10-Q; our current reports on Form 8-K; and amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934, as amended. Our Proxy Statements for our Annual Meetings are also available through our internet website. Our internet website and the information contained therein or connected thereto are not intended to be incorporated into this Annual Report on Form 10-K. You may also obtain copies of our reports without charge by writing to:

MarketAxess Holdings Inc.
55 Hudson Yards
New York, NY 10001
Attn: Investor Relations

Our Board of Directors (the "Board") has standing Audit, Compensation and Talent, Nominating and Corporate Governance, Risk and Finance Committees. Each of these committees has a written charter approved by our Board of Directors and our Board of Directors has also adopted a set of Corporate Governance Guidelines. Copies of the committee charters and the Corporate Governance Guidelines are also posted on our website.

The SEC maintains an internet website that contains annual, quarterly and current reports, proxy and information statements and other information that issuers (including the Company) file electronically with the SEC. The SEC's internet website is www.sec.gov.

Item 1A. *Risk Factors.*

Risks Related to Global Economic and Market Conditions

Global economic, political and market factors beyond our control could reduce demand for our services, and our profitability and business could suffer.

The global financial services business is, by its nature, risky and volatile and is directly affected by many national and international factors that are beyond our control. Any one of these factors may cause a substantial decline in the U.S. and/or global financial services markets, resulting in reduced trading volume. These events could have a material adverse effect on our business, financial condition and results of operations. These factors include:

- economic and political conditions in the United States, Europe and elsewhere;
- adverse market conditions, including unforeseen market closures or other disruptions in trading;
- broad trends in business and finance;
- consolidation or contraction in the number of market participants;
- the current or anticipated impact of climate change, extreme weather events or natural disasters;
- the emergence of widespread health emergencies or pandemics;
- actual or threatened acts of war or terrorism or other armed hostilities;
- actual or threatened trade war, including between the United States and China, or other governmental action related to tariffs, international trade agreements or trade policies;
- concerns over inflation and weakening consumer confidence levels;
- the availability of cash for investment by mutual funds, exchange traded funds and other wholesale and retail investors;
- the level and volatility of interest rates, the difference between the yields on corporate securities being traded and those on related benchmark securities and foreign currency exchange rates;
- the effect of monetary policy adopted by the Federal Reserve Board or foreign banking authorities, increased capital requirements for banks and other financial institutions, and other regulatory requirements and political impasses;
- credit availability and other liquidity concerns;
- concerns over credit default or bankruptcy of one or more sovereign nations or corporate entities; and
- legislative and regulatory changes, including changes to financial industry regulations and tax laws.

There have been significant declines in trading volumes in the financial markets generally in the past and there may be similar declines in trading volumes generally or across our platforms in particular in the future. Any one or more of the above factors may contribute to reduced trading volumes. Our revenues and profitability are likely to decline significantly during periods of stagnant economic conditions, low volatility or low trading volume in the U.S. and global financial markets.

While we are expanding our businesses to new geographic areas, our business operations have historically been substantially located in the U.S. and the U.K. Due to the concentration of our operations in the U.S. and U.K. we are subject to greater regional risks than those of some of our competitors.

Our business has been, and our results of operations and financial condition may be, impacted by the outbreak of, and global response to, the Pandemic and such impact could be materially adverse.

The global spread of the novel coronavirus disease 2019 (COVID-19) has created significant volatility in the markets we serve and has increased uncertainty and economic disruption. The extent to which the Pandemic impacts our business, operations, and financial results is uncertain and will depend on numerous evolving factors that we may not be able to accurately predict, including:

- the duration and scope of the Pandemic and the effects of new variants;
- governmental and business actions taken in response to the Pandemic, and in response to economic disruption, and the impact of those actions on global economic activity;
- the impact of the economic and business disruptions on the trading needs of our clients and the resulting impact on their demand for our electronic trading platforms and solutions;
- adverse market conditions, including unforeseen market closures, disruptions in trading, significant declines in market and trading volumes, credit availability and other liquidity concerns; and
- our ability to provide our electronic trading platforms and other solutions, including as a result of our employees' health or our employees or our clients’ employees working remotely and/or closures of offices and facilities.

As a result of the Pandemic, the global economy has been experiencing a period of significant turmoil and we have experienced significant changes in our daily operations. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Critical Factors Affecting our Industry and our Company—Economic, Political and Market Factors.” Due to the uncertainty of the duration, scope and severity of the Pandemic, the uncertainty as to what additional governmental measures may yet be taken in response to the Pandemic and the unpredictable effect on our business, our employees and our clients, we are not able to reasonably estimate the extent of any potential future impact of the Pandemic on our financial condition or results of operations, but the impact could be material. Even after the Pandemic has subsided, our business may continue to be impacted as a result of the Pandemic’s global economic impact. Further, our operating and financial results may be affected in a manner that is not presently known to us or in a manner that we currently do not consider to present significant risks to our operations given the unprecedented and continuously evolving nature of the Pandemic.

Our operations, businesses and clients could be materially adversely affected by climate change and we are subject to other ESG risks that could adversely affect our reputation.

There is increasing concern over the risks of climate change and related environmental sustainability matters. The physical risks of climate change include rising average global temperatures, rising sea levels and an increase in the frequency and severity of extreme weather events and natural disasters, including floods, wildfires, hurricanes and tornados. Any of our primary locations or those of third parties on which we rely may be vulnerable to such adverse physical effects of climate change, which could result in risk of loss incurred as a result of physical damage, power outages, or business interruption caused by such events.

In addition, governments, investors, employees, customers, and the general public are increasingly focused on ESG practices and disclosures. For example, certain investors are beginning to incorporate the business risks of climate change and the adequacy of companies’ responses to climate change and other ESG matters as part of their investment theses and policies. Our reputation could be adversely impacted by our sustainability practices and ESG disclosures or investor perceptions thereof, including if we fail to establish measurable environmental goals or subsequently fail to meet any such goals. Any negative publicity we receive regarding ESG, low ESG scores or ratings, or shifts in investing priorities may adversely affect the trading price of our common stock or our business, operations and earnings if investors, employees, customers, or other stakeholders determine that we have not adequately considered or addressed ESG matters. In addition, if the Company does not adapt to or comply with new regulations or fails to meet the ESG goals under its strategy or evolving investor, industry or stakeholder expectations and standards, or if the Company is perceived to have not responded appropriately to the growing concern for ESG issues, these or other climate changes could lead to increased operating costs or capital expenses.

Risks Related to Operating in the Electronic Fixed-Income Trading Markets

Decreases in trading volumes in the fixed-income markets generally or on our platforms would harm our business and profitability.

We have experienced significant decreases in overall market volumes in the past and may experience similar decreases in market volumes in the future. Declines in the overall volume of fixed-income securities trading and in market liquidity generally, as well as declines in interest rate volatility, could result in lower revenues from commissions for trades executed on our electronic trading platforms and fees generated from related activities.

Likewise, decreases in our share of the segments of the fixed-income trading markets in which we operate, or shifts in trading volume to segments of clients which we have not penetrated, could result in lower trading volume on our platforms and, consequently, lower commissions and revenue. During periods of increased volatility in credit markets, the use of electronic trading platforms by market participants may decrease dramatically as institutional investors may seek to obtain additional information during the trade process through conversations with broker-dealers. In addition, during rapidly moving markets, broker-dealers are less likely to post prices electronically. Our market share of the fixed-income trading markets is also impacted by a variety of other factors, including the amount of new issuances of corporate debt, the level of bond fund inflows or outflows, the percentage of volumes comprised of Rule 144A transactions, the percentage of volumes comprised of larger trades known as “block trades”, the level of credit spreads and credit volatility and whether the prevalent market environment is an “offer wanted” or “bid wanted” environment.

A decline in overall market volumes, trading volumes on our platforms or our platforms’ market share for any reason would negatively affect our commission revenue and may have a material adverse effect on our business, financial condition and results of operations.

The industry in which we operate is rapidly evolving. If we are unable to adapt our business effectively to keep pace with industry changes, we may not be able to compete effectively, which could have a material adverse effect on our business, financial condition and results of operations.

The electronic financial services industry is characterized by rapidly changing and increasingly complex technologies and systems, changing and increasingly sophisticated client demands (including access to new technologies, functionalities and markets), frequent technology and service introductions, evolving industry standards, changing regulatory requirements and new business models. If we are not able to keep pace with changing market conditions or client demands and if our competitors release new functionality or technology before we do, our existing platforms, solutions and technologies may become obsolete or our competitive position may be materially harmed, each of which could have a material adverse effect on our business, financial condition and results of operations. Operating in a rapidly evolving industry involves a high degree of risk and our future success depends in part on our ability to:

- attract and retain market participants on our platforms on a cost-effective basis;
- expand and enhance reliable and cost-effective product and service offerings for our clients;
- develop and introduce new features to, and new versions of, our electronic trading platforms;
- respond effectively to competitive pressures;
- respond effectively to the loss of any of our significant broker-dealer or institutional investor clients, including due to merger, consolidation, bankruptcy, liquidation or other cause (including, among other things, the collection of any amounts due from such clients);
- operate, support, expand and develop our operations, technology, website, software, communications and other systems;
- defend our trading platforms and other systems from cybersecurity threats; and
- respond to regulatory changes or demands.

If we are unsuccessful in addressing these risks or in executing our business strategy, our business, financial condition and results of operations may suffer.

We face substantial competition that could reduce our market share and harm our financial performance.

The fixed-income securities industry generally, and the electronic financial services markets in which we operate in particular, are highly competitive, and we expect competition to intensify in the future. Within our markets, we compete based on our ability to provide our clients with deep liquidity, a broad network of market participants, a wide range of products and protocols, and comprehensive pre-trade, trade and post-trade functionality, as well as the reliability, security and ease of use of our electronic platforms and solutions, among other factors. We primarily compete with other electronic trading platforms and trading businesses conducted directly between broker-dealers and their institutional investor clients over the telephone, email or instant messaging. Our current and prospective competitors are numerous and include: (1) other multi-party electronic trading platforms; (2) securities and futures exchanges; (3) market data and information vendors; (4) technology, software, and information services or other companies that have existing commercial relationships with broker-dealers or institutional investors; and (5) other approved regulatory reporting businesses.

Many of our current and potential competitors are more established and substantially larger than we are and have substantially greater market presence, as well as greater financial, technical, marketing and other resources. These competitors may aggressively reduce their pricing to enter into, or otherwise compete in, market segments in which we provide services, potentially subsidizing any losses with profits from trading in other fixed-income or equity securities or other business operations. In addition, many of our competitors offer a wider range of services, have broader name recognition and have larger customer bases than we do. Some of them may be able to respond more quickly to new or evolving opportunities, technologies and client requirements than we can and may be able to undertake more extensive promotional activities.

Competition in the markets in which we operate has intensified due to consolidation, which has resulted in increasingly large and sophisticated competitors. In recent years, our competitors have made acquisitions and/or entered into joint ventures and consortia to improve the competitiveness of their electronic trading offerings. If, as a result of industry consolidation, our competitors are able to offer lower cost and/or a wider range of trading venues and solutions, obtain more favorable terms from third-party providers or otherwise take actions that could increase their market share, our competitive position and therefore our business, financial condition and results of operations may be materially adversely affected.

Our operations also include the sale of pre- and post-trade services, analytics and market data. There is a high degree of competition among market data and information vendors in solutions for pre- and post-trade data, analytics and reporting, and such businesses may become more competitive in the future as new competitors emerge. Some of these companies are already in or may enter the electronic trading business. Accordingly, some of our competitors may be able to combine use of their electronic trading platforms with complementary access to market data and analytical tools and/or leverage relationships with existing clients to obtain additional business from such clients, which could preempt use of our platforms or solutions. For example, Bloomberg, Refinitiv and Intercontinental Exchange own trading platforms that compete with ours and also have a data and analytics relationships with the vast majority of institutional, wholesale and retail market participants. If we are not able to compete successfully in this area in the future, our revenues could be adversely impacted and, as a result, our business, financial condition and results of operations would be materially adversely affected.

We are exposed to potential reputational and credibility concerns related to our data products and index business.

We have announced our intention to enter into the index business. To the extent that any of our data or index business, or the Company as a whole, suffers a reputational or other loss in credibility, it could have a material adverse impact on our business. Real or perceived factors that may affect credibility, include: the appearance of a conflict of interest; the independence of our index composition; the influence of third parties on our decisions; the performance of companies relative to their index inclusion; the timing and nature of changes to our indexes; disagreement with our methodologies or models, including for calculating indexes as well as our data, information and analysis; and the accuracy and completeness of our data, information and analytics. Damage to our reputation, brand or credibility could have a material adverse impact on our business, operating results and financial condition.

Risks Related to our Future Levels of Business, Profitability and Growth

Neither the sustainability of our current level of business nor any future growth can be assured. Even if we do experience growth, we cannot assure you that we will grow profitably.

The success of our business strategy depends, in part, on our ability to maintain and expand the network of market participants that use our electronic trading platforms. Our business strategy also depends on increasing the use of our platforms by these participants for a wide range of fixed-income products and trade sizes. Individuals at broker-dealers or institutional investors may have conflicting interests, which may discourage their use of our platforms. We cannot assure you that the growth rates for the use of our electronic trading services that we have experienced in recent years will continue.

Our growth may also be dependent on our ability to diversify our revenue base. We currently derive approximately 43.1% of our revenues from secondary trading in U.S. high-grade corporate bonds. Our long-term business strategy includes expanding our service offerings and increasing our revenues from other fixed-income products and other sources. We cannot assure you that our efforts will be successful or result in increased revenues or continued profitability. In recent years, we have experienced significant growth in trading volumes, revenues and profitability. We cannot assure you that our business will continue to grow at a similar rate, if at all.

We may enter into new fee plans, the impact of which may be difficult to evaluate; past trends in commissions are not necessarily indicative of future commissions.

From time to time, we may introduce new fee plans for the market segments in which we operate. Any new fee plan may include different fee structures or provide volume incentives. We cannot assure you that any new fee plans will result in an increase in the volume of transactions executed over our platforms or that our revenues will increase as a result of the implementation of any such fee plans. It is possible that our broker-dealer or institutional investor clients could respond to a new fee plan by either reducing the amount of their business conducted on our platforms or terminating their contractual relationship with us, which could have an adverse impact on our fees and otherwise have a material adverse effect on our business, financial condition and results of operations.

In addition, under certain of our fee plans, our fees are designated in basis points in yield (and, as a result, are subject to fluctuation depending on the duration of the bond traded) or our fees vary based on trade size or maturity. We anticipate that our average fees per million may vary in the future due to changes in yield, years-to-maturity and nominal size of bonds traded on our platforms. Consequently, past trends in commissions are not necessarily indicative of future commissions.

As we enter new markets, we may not be able to successfully attract clients and adapt our technology and marketing strategy for use in those markets.

Our strategy includes leveraging our electronic trading platforms to enter new markets, including new asset classes, products and geographies, including markets where we have little or no operating experience. We may have difficulties identifying and entering into new markets due to established competitors, lack of recognition of our brand and lack of acceptance of our platforms and solutions, as has occurred with certain of our initiatives in the past.

Expansion, particularly in new geographic markets, may require substantial expenditures and take considerable time. In particular, we may need to make additional investments in management and new personnel, infrastructure and compliance systems. Furthermore, our expansion efforts may divert management's attention or inefficiently utilize our resources. If we are not able to manage our expansion effectively, our expansion costs could increase at a faster rate than our revenues from these new markets. If we cannot successfully implement the necessary processes to support and manage our expansion, our business, financial condition and results of operations may suffer.

We cannot assure you that we will be able to successfully adapt our proprietary software and technology for use in any new markets. Even if we do adapt our products, services and technologies, we cannot assure you that we will be able to attract clients to our platforms and compete successfully in any such new markets. We cannot assure you that our marketing efforts or our pursuit of any of these opportunities will be successful. If these efforts are not successful, we may realize less than expected earnings, which in turn could result in a decrease in the market value of our common stock.

We may face increasing challenges in our growing international operations that we may not be able to meet in the future.

We operate electronic trading platforms in Europe, Latin America and Asia and we may further expand our operations throughout these and other regions. We have invested significant resources in our foreign operations and the increasing globalization of our platforms and services. However, there are certain risks inherent in doing business in international markets. These risks include:

- difficulty in obtaining the necessary regulatory approvals for planned expansion, if at all, and the possibility that any approvals that are obtained may impose restrictions on the operation of our business;
- the inability to manage and coordinate the various regulatory requirements of multiple jurisdictions that are constantly evolving and subject to unexpected change;
- difficulties in staffing and managing foreign operations, including as a result of Brexit, our access to, and our ability to compete for and hire, skilled employees in both the U.K. and the E.U.;
- less developed technological infrastructures and generally higher costs, which could result in lower client acceptance of our services or clients having difficulty accessing our trading platforms;
- fluctuations in exchange rates;
- reduced or no protection for intellectual property rights;
- seasonal reductions in business activity; and
- potentially adverse tax consequences.

Further, we may face unexpected challenges in our international operations due to global competitors, established local markets, and economic and political instability. Our inability to manage these risks effectively could adversely affect our business and limit our ability to expand our international operations, which could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to our Customer Concentration

We are dependent on our broker-dealer clients, who are not restricted from using their own proprietary or third-party platforms to transact with our institutional investor clients.

We rely on our broker-dealer clients to provide liquidity on our electronic trading platforms by posting prices for bonds in their inventory and responding to institutional investor client inquiries. The contractual obligations of our broker-dealer clients to us are minimal, non-exclusive and terminable by such clients. Our broker-dealer clients buy and sell fixed-income securities through traditional methods, including by telephone and e-mail messaging, and through other electronic trading platforms. Some of our broker-dealer clients have developed electronic trading networks that compete with us or have announced their intention to explore the development of such electronic trading networks, and many of our broker-dealer and institutional investor clients are involved in other ventures, including other electronic trading platforms or other distribution channels, as trading participants and/or as investors. These competing trading platforms may offer some features that we do not currently offer. Accordingly, there can be no assurance that such broker-dealers' primary commitments will not be to one of our competitors.

If bank-affiliated entities reduce their trading activity and that activity is not replaced by other market participants, the level of liquidity and pricing available on our trading platforms would be negatively impacted, which could adversely affect our operating results. Over the past several years, there has been significant consolidation among firms in the banking and financial services industries and several of our large broker-dealer clients have reduced their sales and trading businesses in fixed-income products. Further consolidation, instability, and layoffs in the financial services industry could result in a smaller client base and heightened competition, which may lower volumes.

Any reduction in the use of our electronic trading platforms by our broker-dealer clients could reduce the volume of trading on our platforms, which could, in turn, reduce the use of our platforms by our institutional investor clients. The occurrence of any of the foregoing may have a material adverse effect on our business, financial condition and results of operations.

We could lose significant sources of revenue and trading volume if we lose any of our significant institutional investor clients.

We rely on our institutional investor clients to launch inquiries over our trading platforms and, increasingly, to provide liquidity through our Open Trading protocols. A limited number of such clients can account for a significant portion of our trading volume. The obligations of our institutional investor clients to us under our standard contractual agreements are minimal, non-exclusive and terminable by such clients. Our institutional investor clients also buy and sell fixed-income securities through traditional methods, including by telephone, e-mail and instant messaging, and through other electronic trading platforms.

There can be no assurance that we will be able to retain our major institutional investor clients or that such clients will continue to use our trading platform. The loss of a major institutional investor client or any reduction in the use of our electronic trading platforms by such clients could have a material adverse effect on our business, financial condition and results of operations.

Credit and Operational Risks

We are exposed to risks in connection with certain transactions in which we act as a matched principal intermediary.

In connection with our anonymous trading protocols, we execute certain bond transactions between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades which are then settled by us or through a third-party clearing broker. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded.

We are exposed to credit and performance risks in our role as matched principal trading counterparty to the clients on our platforms, including the risk that counterparties that owe us money or securities will not perform their obligations. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. Adverse movements in the prices of securities that are the subject of these transactions can increase our risk. In connection with Open Trading or other anonymous protocols, we expect that the number of transactions in which we act as a matched principal will increase.

In the process of executing matched principal transactions, miscommunications and other errors by our clients or us can arise that involve substantial risks of liability. These risks include, among others, potential liability from disputes over the terms of a trade, the settlement of the trade, or claims that we resolved an error trade dispute incorrectly or that a system malfunction or delay caused monetary loss to a client. In addition, because of the ease and speed with which trades can be executed on our electronic platforms, clients can lose substantial amounts by inadvertently entering trade instructions or by entering trade orders inaccurately. A significant error trade or a large number of error trades could result in participant dissatisfaction and a decline in participant willingness to trade on our platforms. Although we maintain error trade policies designed to protect our anonymous trading participants and enable us to manage the risks attendant in acting as a matched principal counterparty, depending on the cause, number and value of the trades that are the subject of an alleged error or dispute, such trades have the potential to have a material adverse effect on our financial condition and results of operations. In addition, if we are required to hold a securities position as a result of an error, there may also be financing costs or regulatory capital charges required to be taken by us.

We have policies, procedures and automated controls in place to identify and manage our credit risk, though there can be no assurance that they will effectively mitigate our credit risk exposure. Some of our risk management procedures are reliant upon the evaluation of information regarding the fixed-income markets, our clients or other relevant matters that are publicly available or otherwise acquired from third party sources. Such information may not be accurate, complete, up-to-date or properly assessed and interpreted by us. If our risk management procedures fail, our business, financial condition and results of operations may be adversely affected. Furthermore, our insurance policies are unlikely to provide coverage for such risks.

Self-clearing exposes us to significant operational, liquidity, financing and regulatory risks.

We self-clear substantially all of our bond transactions for our U.S. operations and we may expand self-clearing to certain of our foreign operations in the future. Self-clearing requires us to finance transactions and maintain margin deposits at clearing organizations. Self-clearing exposes our business to operational risks, including business and technology disruption; operational inefficiencies; liquidity, financing and regulatory risks; and potentially increased expenses. In connection with our conversion to self-clearing for our U.S. operations in 2020, we experienced operational inefficiencies and technology issues which, in combination with the capital and liquidity requirements that are imposed on all new self-clearing members, resulted in increased fail rates in the immediate period following the conversion. Although the initial conversion issues for our U.S. clearing operations have been resolved, in the future, we may encounter difficulties with self-clearing that lead to operating inefficiencies, technology issues, dissatisfaction amongst our client base, disruption in the infrastructure that supports the business, inadequate liquidity, increased margin requirements with clearing organizations and third-party settlement agents who provide financing with respect to transactions, reductions in available borrowing capacity and financial loss. Any such delay, disruption, expense or failure could adversely affect our ability to effect transactions and manage our exposure to risk. Moreover, any of these events could have a material adverse effect on our business, financial condition and operating results.

Technology, IT Systems and Cybersecurity Risks

Rapid market or technological changes may render our technology obsolete or decrease the attractiveness of our products and services to our broker-dealer and institutional investor clients.

We must continue to enhance and improve our electronic trading platforms. The electronic financial services industry is characterized by significant structural changes, increasingly complex systems and infrastructures, changes in clients' needs and preferences, constant competition and new business models. If new industry standards and practices emerge and our competitors release new technology before us, our existing technology, systems and electronic trading platforms may become obsolete or our existing business may be harmed. Our future success will depend on our ability to: (1) enhance our existing products and services; (2) develop and/or license new products and technologies that address the increasingly sophisticated and varied needs of our broker-dealer and institutional investor clients and prospective clients; (3) continue to attract highly-skilled technology personnel; and (4) respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis.

Developing our electronic trading platforms and other technology entails significant technical and business risks. We may use new technologies ineffectively or we may fail to adapt our electronic trading platforms, information databases and network infrastructure to broker-dealer or institutional investor client requirements or emerging industry or regulatory standards. If we face material delays in introducing new services, products and enhancements, our clients may forego the use of our platforms and use those of our competitors.

Further, the adoption of new internet, networking, cloud, telecommunications or blockchain technologies may require us to devote substantial resources to modify and adapt our services. We cannot assure you that we will be able to successfully implement new technologies or adapt our proprietary technology and transaction-processing systems to client requirements or emerging industry or regulatory standards. We cannot assure you that we will be able to respond in a timely manner to changing market conditions or client requirements.

We depend on third-party suppliers for key products and services.

We rely on a number of third parties to supply elements of our trading, information and other systems, as well as computers and other equipment, and related support and maintenance. We cannot assure you that any of these providers will be willing and able to continue to provide these services in an efficient, cost-effective manner, if at all, or that they will be able to adequately expand their services to meet our needs. If we are unable to make alternative arrangements for the supply of critical products or services in the event of a malfunction of a product or an interruption in or the cessation of service by an existing service provider, our business, financial condition and results of operations could be materially adversely affected.

In particular, we depend on third-party vendors for our bond reference databases, the clearing and settlement of our Open Trading transactions and to provide the technology underpinning key portions of our MarketAxess Rates platform. We obtain essential reference data and information services from external sources, including data received from certain competitors, clients, self-regulatory organizations and other third-party data providers. Our reference data sources and information providers could increase the price for or withdraw their data or information services for a variety of reasons. Further, as has occurred in the past, our competitors could revise the current terms on which they provide us with data or information services or could cease providing us with data or information services altogether for a variety of reasons, including competition. Disruptions in the services provided by those third-parties to us, including as a result of their inability or unwillingness to continue to license products or provide technology services that are critical to the success of our business, could have a material adverse effect on our business, financial condition and results of operations.

We also rely, and expect in the future to continue to rely, on third parties for various computer and communications systems, such as telephone companies, online service providers, data processors, cloud computing and software and hardware vendors. Other third parties provide, for instance, our data center, telecommunications access lines and significant computer systems and software licensing, support and maintenance services. Any interruption in these or other third-party services or deterioration in their performance could impair the quality of our service. We cannot be certain of the financial viability of all of the third parties on which we rely.

We license software from third parties, much of which is integral to our electronic trading platform and our business. We also hire contractors to assist in the development, quality assurance testing and maintenance of our electronic trading platform and other systems. Continued access to these licensors and contractors on favorable contract terms or access to alternative software and information technology contractors is important to our operations. Adverse changes in any of these relationships could have a material adverse effect on our business, financial condition and results of operations.

We attempt to negotiate favorable pricing, service, confidentiality and intellectual property ownership or licensing and other terms in our contracts with our third-party service providers. These contracts usually have multi-year terms. However, there is no guarantee that these contracts will not terminate and that we will be able to negotiate successor agreements or agreements with alternate service providers on competitive terms. Further, the existing agreements may bind us for a period of time to terms and technology that become obsolete as our industry and our competitors advance their own operations and use of technology.

Our success depends on maintaining the integrity and capacity of our electronic trading platforms, systems and infrastructure.

In order to be successful, we must provide reliable, secure, real-time access to our electronic trading platforms for our clients. If our trading platforms cannot cope, or expand to cope, with demand, or otherwise fail to perform, we could experience disruptions in service, slow delivery times and insufficient capacity. These consequences could result in our clients deciding to stop using or reduce their use of our platforms, which would have a material adverse effect on our business, financial condition and results of operations.

As our operations grow in both size and scope, we will need to continually improve and upgrade our electronic trading platforms and infrastructure to accommodate potential increases in order message volume and trading volume, the trading practices of new and existing clients, regulatory changes and the development of new and enhanced trading platform features, functionalities and ancillary products and services. The expansion of our electronic trading platforms and infrastructure has required, and will continue to require, substantial financial, operational and technical resources. These resources will typically need to be committed well in advance of any actual increase in trading volumes and order messages. We cannot assure you that our estimates of future trading volumes and order messages will be accurate or that our systems will always be able to accommodate actual trading volumes and order messages without failure or degradation of performance. Furthermore, we use new technologies to upgrade our established systems, and the development of these new technologies also entails technical, financial and business risks. We cannot assure you that we will successfully implement new technologies or adapt our existing electronic trading platforms, technology and systems to the requirements of our broker-dealer and institutional investor clients or to emerging industry standards. The inability of our electronic trading platforms to accommodate increasing trading volume and order messages would also constrain our ability to expand our business.

Systems failures, interruptions, delays in service, catastrophic events and resulting interruptions in the availability of our trading platforms could materially harm our business and reputation.

Our business depends on the efficient and uninterrupted operation of our trading platforms, systems, networks and infrastructure. We cannot assure you that we, or our third-party providers, will not experience systems failures or business interruptions, as has occurred in the past. Our systems, networks, infrastructure and other operations, in particular our trading platforms, are vulnerable to impact or interruption from a wide variety of causes, including: irregular or heavy use of our trading platforms during peak trading times or at times of increased market volatility; power, internet or telecommunications failures; hardware failures or software errors; human error, acts of vandalism or sabotage; catastrophic events, including those that are occurring with increasing frequency due to climate change such as natural disasters and extreme weather events; acts of war or terrorism; malicious cyberattacks or cyber incidents, such as unauthorized access, ransomware, loss or destruction of data, computer viruses or other malicious code; and the loss or failure of systems over which we have no control, such as loss of support services from critical third-party providers. In addition, we may also face significant increases in our use of power and data storage and may experience a shortage of capacity and/or increased costs associated with such usage.

Failures of, or significant interruptions, delays or disruptions to, or security breaches affecting, our systems, networks or infrastructure have in the past, and could in the future, result in: disruption to our operations, including disruptions in service to our clients; slower response times; distribution of untimely or inaccurate market data to clients who rely on this data for their trades; delays in trade execution; incomplete or inaccurate accounting, recording or processing of trades; significant expense to repair, replace or remediate systems, networks or infrastructure; financial losses and liabilities to clients; loss of clients; legal or regulatory claims, proceedings, penalties or fines. Any system failure or significant interruption, delay or disruption in our operations, or decreases in the responsiveness of our platforms, could materially harm our reputation and business and lead our clients to decrease or cease their use of our platforms. We internally support and maintain many of our systems and networks, including those underlying our trading platforms; however, we may not have sufficient personnel to properly respond to all systems, networks or infrastructure problems. Our failure to monitor or maintain our systems, networks and infrastructure, including those maintained or supported by our third-party providers, or to find a replacement for defective or obsolete components within our systems, networks and infrastructure in a timely and cost-effective manner when necessary, would have a material adverse effect on our business, financial condition and results of operations. While we generally have disaster recovery and business continuity plans that utilize industry standards and best practices for much of our business, including redundant systems, networks, computer software and hardware and data centers to address interruption to our normal course of business, our systems, networks and infrastructure may not always be fully redundant and our disaster recovery and business continuity plans may not always be sufficient or effective. Similarly, although some contracts with our third-party providers, such as our hosting facility providers, require adequate disaster recovery or business continuity capabilities, we cannot be certain that these will be adequate or implemented properly. Our disaster recovery and business continuity plans are heavily reliant on the availability of the internet and mobile phone technology, so any disruption of those systems would likely affect our ability to recover promptly from a crisis situation. If we are unable to execute our disaster recovery and business continuity plans, or if our plans prove insufficient for a particular situation or take longer than expected to implement in a crisis situation, it could have a material adverse effect on our business, financial condition and results of operations, and our business interruption insurance may not adequately compensate us for losses that may occur.

If we experience design defects, errors, failures or delays with our platforms, products or services, including our auto-execution technology and pricing algorithms, our business could suffer serious harm.

Our platforms, products and services, including our auto-execution technology and pricing algorithms, may and have from time to time contained design defects and errors when first introduced or when new updates or enhancements are released. In our development of new protocols, platform features and updates and enhancements to our existing platforms, products and services, including our auto-execution technology and pricing algorithms, we may make a design error that causes the platform, protocol or feature to operate incorrectly or less effectively. Many of our protocols also rely on data and services provided by third-party providers over which we have limited or no control and may be provided to us with defects, errors or failures. Our clients may also use our platforms, products or services together with their own software, data or products from other companies. As a result, when problems occur, it might be difficult to identify the source of the problem.

If design defects, errors or failures are discovered in our current or future platforms or protocols, we may not be able to correct or work around them in a cost-effective or timely manner or at all. The existence of design defects, errors, failures or delays that are significant, or are perceived to be significant, could also result in rejection or delay in market acceptance of our platforms or protocols, damage to our reputation, loss of clients and related revenues, diversion of resources, product liability claims, regulatory actions or increases in costs, any of which could materially adversely affect our business, financial condition or results of operations.

Malicious cyber-attacks and other adverse events affecting our operational systems or infrastructure, or those of third parties, could disrupt our businesses, result in the disclosure of confidential information, damage our reputation and cause losses or regulatory penalties.

The operation of our electronic trading platforms relies on the secure processing, storage and transmission of a large amount of transactional data and other confidential sensitive data (including confidential client and personal information). Our computer systems, software and networks may be vulnerable to unauthorized access, loss or destruction of data (including confidential and personal customer information), ransomware, unavailability or disruption of service, computer viruses, acts of vandalism, or other malicious code, cyber-attack and other adverse events that could have an adverse security impact. Despite the defensive measures we have taken, we are, and will continue to be, subject to attacks, which may come from external factors such as governments, organized crime, hackers, and other third parties such as infrastructure-support providers and application developers, or may originate internally from an employee or service provider to whom we have granted access to our computer systems. If our security measures are breached as a result of third-party action, employee error, malfeasance or otherwise, and, as a result, someone obtains unauthorized access to trading or other confidential or personal information, our reputation could be damaged, our business would suffer and we could incur material liability. Any such breach could compromise our networks and the information stored there could be accessed, publicly disclosed, lost or stolen. Because techniques used to obtain unauthorized access or to sabotage computer systems change frequently and generally are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventive measures.

Our business also depends on the efficient and uninterrupted operation of our platforms, systems, networks and infrastructure. Any failure of, or significant interruption, delay or disruption to, our systems, networks or infrastructure due to a ransomware attack or other cyber-attack could result in: disruption to our operations, including disruptions in service to our clients; slower response times; distribution of untimely or inaccurate market data to clients who rely on this data for their trades; delays in trade execution; incomplete or inaccurate accounting, recording or processing of trades; significant expense to repair, replace or remediate systems, networks or infrastructure; financial losses and liabilities to clients; loss of clients; legal or regulatory claims, proceedings, penalties or fines. We also face the risk of operational disruption, failure or capacity constraints of any of the third-party service providers that facilitate our business activities, including clients, clearing agents and trading system software, network or data providers. Such parties could also be the source of a cyber-attack on or breach of our operational systems, data or infrastructure. In addition, despite the re-opening of our offices, the increased flexibility for our employees to continue to work remotely has amplified certain risks related to, among other things, the increased demand on our information technology resources and systems, the increased risk of phishing and other cybersecurity attacks, and the increased number of points of possible attack, such as laptops and mobile devices (both of which are now being used in increased numbers), to be secured. Any system failure or significant interruption, delay or disruption in our operations, or decreases in the responsiveness of our platforms, could materially harm our reputation and business and lead our clients to decrease or cease their use of our trading platform.

There have been an increasing number of cyber-attacks in recent years in various industries, including ours, and cybersecurity risk management has been the subject of increasing focus by our regulators. Our regulators in recent years have increased their examination and enforcement focus on matters relating to cybersecurity threats, including the assessment of firms' vulnerability to cyber-attacks. In particular, regulatory concerns have been raised about firms establishing effective cybersecurity governance and risk management policies, practices and procedures; protecting firm networks and information; identifying and addressing risks associated with clients, vendors, and other third parties; preventing and detecting unauthorized activities; adopting effective mitigation and business continuity plans to address the impact of cybersecurity breaches; and establishing protocols for reporting cybersecurity incidents. Any insurance that we may have that covers a specific cybersecurity incident would not protect us from the effects of adverse regulatory actions that may result from the incident or a finding that we had inadequate cybersecurity controls, including the reputational harm that could result from such regulatory actions.

Our remediation costs and lost revenues could be significant if we fall victim to a cyber-attack. If an actual, threatened or perceived breach of our security occurs, the market perception of the effectiveness of our security measures could be harmed and could cause our clients to reduce or stop their use of our electronic trading platforms. We may be required to expend significant resources to repair system damage, pay a ransom, protect against the threat of future security breaches or to alleviate problems, including reputational harm, loss of clients and revenues and litigation, caused by any breaches. We may be found liable to our clients for any misappropriated confidential or personal information. Although we intend to continue to implement industry-standard security measures, we cannot assure you that those measures will be sufficient.

Our actual or perceived failure to comply with privacy, data protection and information security laws, regulations, and obligations could harm our business.

Data privacy is subject to frequently changing rules and regulations in countries where we do business. For example, the E.U. adopted the General Data Protection Regulations ("GDPR"), which requires entities both in the European Economic Area and outside to comply with new regulations regarding the handling of personal data. Brexit has created additional uncertainty with regard to the regulation of data protection as the U.K. now has its own data protection laws which are separate from the E.U. GDPR. We are also subject to certain U.S. federal, state and foreign laws governing the protection of personal privacy and data in those jurisdictions. These laws and regulations are increasing in complexity and number. In addition to the increased cost of compliance, our failure to successfully implement or comply with appropriate processes to adhere to the GDPR and other laws and regulations relating to personal data could result in substantial financial penalties for non-compliance, expose us to litigation risk and could result in significant liability, increased costs or cause our clients to lose trust in us, which could have an adverse effect on our reputation and business.

Intellectual Property Risks

We may not be able to protect our intellectual property rights or technology effectively, which would allow competitors to duplicate or replicate our electronic trading platforms or any of our other current or future functionalities, products or services. This could adversely affect our ability to compete.

Intellectual property is critical to our success and ability to compete, and if we fail to protect our intellectual property rights adequately, our competitors might gain access to our technology. We rely primarily on a combination of patent, copyright, trademark and trade secret laws in the United States and other jurisdictions, as well as license agreements, third-party non-disclosure and other agreements and other contractual provisions and technical measures to protect our intellectual property rights. We attempt to negotiate beneficial intellectual property ownership provisions in our contracts and also require employees, consultants, advisors and collaborators to enter into confidentiality agreements in order to protect the confidentiality of our proprietary information. We have been issued 13 patents covering aspects of our technology and/or business, but can give no assurances that any such patents will protect our business and processes from competition or that any patents applied for in the future will be issued. Additionally, laws and our contractual terms may not be sufficient to protect our technology from use or theft by third parties. Furthermore, we cannot assure you that these protections will be adequate to prevent our competitors from independently developing technologies that are substantially equivalent or superior to our technology.

We may have legal or contractual rights that we could assert against illegal use of our intellectual property rights, but lawsuits claiming infringement or misappropriation are complex and expensive, and the outcome would not be certain. In addition, the laws of some countries in which we now or in the future provide our services may not protect software and intellectual property rights to the same extent as the laws of the United States. If our efforts to secure, protect and enforce our intellectual property rights are inadequate, or if any third party misappropriates, dilutes or infringes on our intellectual property, the value of our brand may be harmed, which could have a material adverse effect on our business.

Defending against intellectual property infringement or other claims could be expensive and disruptive to our business. If we are found to infringe the proprietary rights of others, we could be required to redesign our technology, pay royalties or enter into license agreements with third parties.

In the technology industry, there is frequent litigation based on allegations of infringement or other violations of intellectual property rights. As the number of participants in our market increases and the number of patents and other intellectual property registrations increases, the possibility of an intellectual property claim against us grows. Although we have never been the subject of a material intellectual property dispute, we cannot assure you that a third party will not assert in the future that our technology or the manner in which we operate our business violates its intellectual property rights. From time to time, in the ordinary course of our business, we may become subject to legal proceedings and claims relating to the intellectual property rights of others, and we expect that third parties may assert intellectual property claims against us, particularly as we expand the complexity and scope of our business, the number of electronic trading platforms increases and the functionality of these platforms further overlaps. Any claims, whether with or without merit, could be expensive and time-consuming to defend, make it more difficult to operate or prevent us from operating our business, or portions of our business, and result in significant monetary liability.

We cannot assure you that third parties will not assert infringement claims against us, as they have done in the past, with respect to our electronic trading platforms or any of our other current or future products or services or that any such assertion will not require us to cease providing such services or products, try to redesign our products or services, enter into royalty arrangements, if available, or engage in litigation that could be costly to us. Any of these events could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Possible Transactions or Investments

If we acquire or invest in other businesses, products or technologies, and are unable to integrate them with our business, our financial performance may be impaired or we may not realize the anticipated financial and strategic goals for any such transactions or any strategic alliances, partnerships or joint ventures, which we may enter into.

From time to time, we may pursue acquisitions, which may not be completed or, if completed, may not be as beneficial to us as expected. We have made acquisitions in the past, including the purchases of LiquidityEdge in 2019, the regulatory reporting business of Deutsche Börse in 2020 and MuniBrokers in 2021. We also may consider potential divestitures of businesses from time to time. We routinely evaluate potential acquisition and divestiture candidates and engage in discussions and negotiations regarding potential acquisitions and divestitures on an ongoing basis; however, even if we execute a definitive agreement, there can be no assurance that we will consummate the transaction within the anticipated closing timeframe, or at all. Moreover, there is significant competition for acquisition and expansion opportunities in the electronic financial services industry.

If we do succeed in acquiring or investing in a business, product or technology, such acquisitions and investments may involve a number of risks, including:

- we may find that the acquired company or assets do not further our business strategy, or that we overpaid for the company or assets, or the economic conditions underlying our acquisition decision may change;
- we may have difficulty integrating the acquired technologies or products with our existing electronic trading platforms products and services;
- we may have difficulty integrating the operations and personnel of the acquired business, or retaining the key personnel of the acquired business;
- there may be client confusion if our services overlap with those of the acquired company and we may have difficulty retaining key customers, vendors and other business partners of the acquired business;
- our ongoing business and management's attention may be disrupted or diverted by transition or integration issues and the complexity of managing geographically or culturally diverse enterprises;
- we may enter into markets in which we have limited experience and where competitors hold stronger market positions;
- potential failure of the due diligence processes to identify significant problems, liabilities or other challenges of an acquired company or product; and
- exposure to litigation or other claims in connection with, or inheritance of claims or litigation risk as a result of, an acquisition, including but not limited to, claims from terminated employees, customers, former stockholders or other third parties.

These factors could have a material adverse effect on our business, financial condition, results of operations and cash flows, particularly in the case of a larger acquisition or multiple acquisitions in a short period of time. From time to time, we may enter into negotiations for acquisitions or investments that are not ultimately consummated. Such negotiations could result in significant diversion of management time, as well as out-of-pocket costs.

The consideration paid in connection with an investment or acquisition also affects our financial results. If we were to proceed with one or more significant acquisitions in which the consideration included cash, we could be required to use a substantial portion of our available cash to consummate any acquisition. To the extent we issue shares of capital stock or other rights to purchase capital stock, including options or other rights, existing stockholders may be diluted and earnings per share may decrease. In addition, acquisitions may result in the incurrence of debt, large one-time write-offs, such as of acquired in-process research and development costs, and restructuring charges.

We may also enter into strategic alliances, partnerships or joint ventures as a means to accelerate our entry into new markets, provide new solutions or enhance our existing capabilities. Entering into strategic alliances, partnerships and joint ventures entails risks, including: (i) difficulties in developing or expanding the business of newly formed alliances, partnerships and joint ventures; (ii) exercising influence over the activities of joint ventures in which we do not have a controlling interest; (iii) potential conflicts with or among our partners; (iv) the possibility that our partners could take action without our approval or prevent us from taking action; and (v) the possibility that our partners become bankrupt or otherwise lack the financial resources to meet their obligations.

Risks Related to Key Personnel and Employees

We are dependent on our management team, and the loss of any key member of this team may prevent us from implementing our business plan in a timely manner.

Our success depends largely upon the continued services of our executive officers and other key personnel, particularly Richard M. McVey, Chief Executive Officer and Chairman of our Board of Directors. The terms of Mr. McVey's employment agreement with us do not require him to continue to work for us and allow him to terminate his employment at any time, subject to certain notice requirements and forfeiture of non-vested equity compensation awards. We do not maintain "key person" life insurance on any of our executive officers and other key personnel. Although we have invested in succession plans and we have short-term contingency plans in place, any loss or interruption of Mr. McVey's services or that of one or more of our other executive officers or key personnel for any reason, as well as any negative market or industry perception arising from such loss or interruption, could result in our inability to manage our operations effectively and/or pursue our business strategy.

Because competition for our employees is intense, we may not be able to attract and retain the highly skilled employees we need to support our business.

We strive to provide high-quality services that will allow us to establish and maintain long-term relationships with our clients. Our ability to provide these services and maintain these relationships, as well as our ability to execute our business plan generally, depends in large part upon our employees. We must attract and retain highly qualified personnel. Competition for these personnel is intense, especially for software engineers with extensive experience in designing and developing software and internet-related services, product managers and senior sales executives.

The market for qualified personnel, especially software developers, has become increasingly competitive in our talent markets. Many companies, including both our competitors and firms outside of our industry, are interested in hiring our experienced personnel. Additionally, highly innovative technology firms both in and outside our traditional geographic markets may offer attractive employment opportunities to our technology personnel through remote work opportunities. Many of these firms have greater resources than we have and are able to offer more lucrative compensation packages. We cannot assure you that we will be successful in our efforts to recruit and retain the required personnel. The failure to attract new personnel or to retain and motivate our current personnel may have a material adverse effect on our business, financial condition and results of operations.

Regulatory and Legal Risks

We operate in a highly regulated industry and we may face restrictions with respect to the way we conduct certain of our operations.

Our business is subject to increasingly extensive governmental and other regulations. These regulations are designed to protect public interests generally rather than the interests of our stockholders. The SEC, FINRA, the CFTC and other agencies extensively regulate the United States financial services industry, including most of our operations in the United States. Much of our international operations are subject to similar regulations in their respective jurisdictions, including regulations overseen by the FCA in the U.K., the AFM in the Netherlands, the Monetary Authority of Singapore, the Investment Industry Regulatory Organization of Canada and provincial regulators in Canada, and the Securities and Exchange Commission and Central Bank in Brazil. In addition, our regulatory reporting business is registered as an ARM and APA with the FCA and the AFM. We also hold several cross-border licenses and permissions with various other regulatory bodies. See Part I, Item 1 "Business – Government Regulation – Non-U.S. Regulation."

As a matter of public policy, these regulatory bodies are responsible for safeguarding the integrity of the securities and other financial markets and protecting the interests of investors in those markets. These regulatory bodies have broad powers to promulgate and interpret, investigate and sanction non-compliance with their laws, rules and regulations. Most aspects of our broker-dealer and other licensed subsidiaries are highly regulated, including the way we deal with our clients; our capital requirements; our financial and regulatory reporting practices; required record-keeping and record retention procedures; the licensing of our employees; and the conduct of our directors, officers, employees and affiliates.

We cannot assure you that we and/or our directors, officers and employees will be able to fully comply with these laws, rules and regulations. If we fail to comply with any of these laws, rules or regulations, we may be subject to censure, fines, cease-and-desist orders, suspension of our business, suspensions of personnel or other sanctions, including revocation of our membership in FINRA and registration as a broker-dealer.

Certain of our regulated subsidiaries, including our registered broker-dealer and MTF, are subject to U.S. or foreign regulations which prohibit repayment of borrowings from us or our affiliates, paying cash dividends, making loans to us or our affiliates or otherwise entering into transactions that result in a significant reduction in regulatory net capital or financial resources, without prior notification to or approval from such subsidiary's principal regulator. MarketAxess SEF Corporation, despite our decision to suspend its operations, continues to be registered with the CFTC as a SEF and is required, among other things, to maintain sufficient financial resources to cover operating costs for at least one year.

Our ability to operate our platforms in a jurisdiction may be dependent on continued registration or authorization in that jurisdiction or the maintenance of a proper exemption from such registration or authorization. Our ability to comply with all applicable laws and rules is largely dependent on our compliance, credit approval, audit and reporting systems and procedures, as well as our ability to attract and retain qualified compliance, credit approval, audit and risk management personnel. Our systems and procedures may not be sufficiently effective to prevent a violation of all applicable rules and regulations. In addition, the growth and expansion of our business may create additional strain on our compliance systems, procedures and personnel and has resulted, and we expect will continue to result, in increased costs to maintain and improve these systems.

In addition, because our industry is heavily regulated, regulatory approval may be required in order to continue or expand our business activities and we may not be able to obtain the necessary regulatory approvals on a timely or cost-effective basis, or at all. Even if approvals are obtained, they may impose restrictions on our business or we may not be able to continue to comply with the terms of the approvals or applicable regulations. The implementation of unfavorable regulations or unfavorable interpretations of existing regulations by courts or regulatory bodies could require us to incur significant compliance costs or cause the development or continuation of business activities in affected markets to be curtailed or become impractical. For a further description of the regulations which may limit our activities, see Part 1, Item 1. "Business—Government Regulation."

Some of our subsidiaries are subject to regulations regarding changes in control of their ownership. These regulations generally provide that regulatory approval must be obtained in connection with any transaction resulting in a change in control of the subsidiary, which may include changes in control of MarketAxess. As a result of these regulations, our future efforts to sell shares or raise additional capital may be delayed or prohibited in circumstances in which such a transaction would give rise to a change in control as defined by the applicable regulatory body.

Our business and the trading businesses of many of our clients are subject to increasingly extensive government and other regulation, which may affect our trading volumes and increase our cost of doing business.

Our business, and the business of many of our clients, is subject to extensive regulation. Governmental and regulatory authorities periodically review legislative and regulatory initiatives, and may promulgate new or revised, or adopt changes in the interpretation and enforcement of existing, rules and regulations at any time. In addition, we must comply with the laws, regulations and registration rules of foreign governments and regulatory bodies for each country in which we conduct business. Any such changes in laws, rules or regulations or in governmental policies could create additional regulatory exposure for our business, cause us to incur significant additional costs, require us to change or cease aspects of our business or restrict or limit our ability to grow our business, any of which could have a material adverse effect on our business, financial condition or results of operations. There have been in the past, and could be in the future, significant technological, operational and compliance costs associated with the obligations that derive from compliance with evolving laws, rules and regulations.

We cannot predict whether additional changes to the laws, rules and regulations that govern our business and operations, including changes to their interpretation, implementation or enforcement, will occur in the future or the extent to which any such changes will impact our business and operations, but they may cause us to expend significantly more compliance, business and technology resources, incur additional operational costs and create additional regulatory exposure. For example, the SEC recently proposed rules that will expand Regulation ATS and Regulation SCI to alternative trading systems (ATS) that trade government securities and amend the SEC rule regarding the definition of an "exchange" to include Communication Protocol Systems, such as our RFQ protocols. In connection with these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS. The fixed income industry has also been grappling with how to comply with Rule 15c2-11 ("Publication or submission of quotations without specified information") of the Securities Exchange Act, which had not previously been applied to debt securities. We cannot predict how current proposals that have not yet been finalized and/or that remain subject to ongoing debate will be implemented or in what form. Further, we and/or our clients could become subject to future legislation and regulatory requirements beyond those currently proposed, adopted or contemplated in the U.S. or abroad. Additionally, unintended consequences of such new laws, rules and regulations may adversely affect our industry, our clients and us in ways yet to be determined. Any such legal and regulatory changes could affect us in substantial and unpredictable ways, and could have a material adverse effect on our business, financial condition and results of operations.

The U.K. exit from the European Union could materially adversely impact our business, clients, financial condition, results of operations and prospects.

The exit of the U.K. has increased the complexity and cost of conducting business in both the E.U. and the U.K., and introduces significant new barriers to cross-border trading, including uncertainties with respect to the legal and regulatory requirements to which we and our clients are subject. We historically conducted business in Europe primarily through the "passporting rights" of our U.K. subsidiaries, which were eliminated as a result of Brexit. Following Brexit, we have new regulatory and operational costs and challenges associated with the operation of our regulated subsidiaries in the Netherlands, which we use to provide our trading platforms and certain post-trade services to our clients in the E.U. In addition, as a result of Brexit, the E.U. regulatory authorities may enact regulatory changes that may affect our business by creating further market fragmentation.

Brexit has led to a growing divergence between the U.K. and E.U. financial regulations, which may impact our ability to comply with the extensive government regulation to which we are subject. In addition, the cost and complexity of operating across increasingly divergent regulatory regimes has required us to make changes to the technology underlying our trading platforms and regulatory reporting systems in the U.K. and E.U., which has resulted in new regulatory and operational costs and challenges.

Although it is not possible at this point in time to predict fully the effects of the exit of the U.K. from the E.U., any of the foregoing factors could have a material adverse effect on our business, financial condition and results of operations.

The extensive regulation of our business means we have ongoing exposure to potentially significant costs and penalties.

Our businesses are subject to regulation by governmental and self-regulatory organizations in the jurisdictions in which we operate around the world. Many of these regulators, including U.S. and non-U.S. government agencies and self-regulatory organizations, as well as state securities commissions in the U.S., are empowered to bring enforcement actions and to conduct administrative proceedings and examinations, inspections, and investigations, which may result in costs, penalties, fines, enhanced oversight, additional requirements, restrictions, or limitations, and censure, suspension, or expulsion. Self-regulatory organizations such as FINRA and the National Futures Association ("NFA"), along with statutory bodies such as the SEC, the CFTC, and the FCA, and other international regulators, require strict compliance with their rules and regulations.

Firms in the financial services industry have experienced increased scrutiny in recent years, and penalties, fines and other sanctions sought by regulatory authorities, including the SEC, the CFTC, FINRA, the NFA, state securities commissions and state attorney generals in the U.S., and the FCA in the U.K. and other international regulators, have increased accordingly. Accordingly, we face the risk of regulatory intervention, investigations and proceedings, any of which could involve extensive scrutiny of our activities and result in significant fines and liability. Any of these developments would require significant time and financial resources and could adversely affect our reputation, financial condition and operating results.

We are subject to the risks of litigation and securities laws liability.

Many aspects of our business, and the businesses of our clients, involve substantial risks of liability. Dissatisfied clients have in the past, and may in the future, make claims against us regarding quality of trade execution, improperly settled trades, resolution of trade error claims, system failures, failure to protect their confidential or personal information, mismanagement or even fraud. In connection with our entry into the index business, we may face with claims related to errors in our methodology or models used to calculate the indices. We may become subject to these claims as the result of delays, failures or malfunctions of our electronic trading platform and the services provided by us. We could incur significant legal expenses defending claims, even those without merit. An adverse resolution of any lawsuits or claims against us could have a material adverse effect on our business, financial condition and results of operations.

Liquidity and Funding Risks

We cannot predict our future capital needs or our ability to obtain additional financing if we need it.

Our business is dependent upon the availability of adequate funding and regulatory capital under applicable regulatory requirements. The growth of our Open Trading protocols, in particular, is dependent on the willingness of our customers and counterparties to engage in transactions with us and any perceived issues with our capital levels or access to funding could have a material adverse effect on business. As a result of our self-clearing activities, we are also required to finance certain transactions, maintain deposits with various clearing organizations and clearing broker-dealers and maintain a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Exchange Act. Although we believe that our available cash resources and borrowing capacity under our credit agreement are sufficient to meet our presently anticipated liquidity needs and capital expenditure requirements for at least the next 12 months, we may in the future need to raise additional funds to, among other things: (1) support more rapid growth of our business; (2) finance transactions and maintain margin deposits at clearing organizations; (3) acquire complementary companies or technologies; (4) increase the regulatory net capital necessary to support our operations; or (5) respond to unanticipated or changing capital requirements.

In addition, our liquidity could be impaired due to circumstances that we may be unable to control, such as a general market disruption or an operational problem that affects our trading customers or counterparties, other third parties or us.

All or part of any debt financing could be pursuant to the terms of our credit agreements with third party lenders, which include restrictive covenants with respect to dividends, issuances of additional capital and other financial and operational matters related to our business.

In the future, we may not be able to obtain additional financing, if needed, in amounts or on terms acceptable to us, if at all. If sufficient funds are not available or are not available on terms acceptable to us, our ability to fund our expansion, finance transactions and maintain margin deposits at clearing organizations, take advantage of acquisition opportunities, develop or enhance our services or products, or otherwise respond to competitive pressures would be significantly limited. These limitations could have a material adverse effect on our business, financial condition and results of operations.

Our credit agreement contains restrictive and financial covenants that could limit our operating flexibility, and we may incur additional debt in the future that may include similar or additional restrictions.

We are party to a credit agreement that provides for revolving loans and letters of credit up to an aggregate of $500.0 million. Subject to the satisfaction of certain specified conditions, we are permitted to upsize the borrowing capacity of the credit agreement by an additional $250.0 million. Our credit agreement contains certain covenants that, among other things, may restrict our ability to take certain actions, even if we believe them to be in our best interests. These covenants may restrict or prohibit, among other things, our ability to:

- incur or guarantee additional debt;
- create or incur liens;
- change our line of business;
- sell or transfer assets;
- make certain investments or acquisitions;
- pay dividends or distributions, redeem or repurchase our equity or make certain other restricted payments;
- consummate a merger or consolidation;
- enter into certain swap, derivative or similar transactions;
- enter into certain transactions with affiliates; and
- incur restrictions on our ability to grant liens or, in the case of subsidiaries, pay dividends or other distributions.

We are also required by our credit agreement to maintain a maximum consolidated total net leverage ratio, a minimum regulatory net capital balance for certain subsidiaries and a minimum consolidated adjusted earnings before interest, taxes, depreciation, and amortization ("EBITDA") level. We cannot assure you that we will be able to meet these requirements or satisfy these covenants in the future. A breach of any of these covenants or the inability to comply with the required financial covenants could result in an event of default under the credit agreement. If any such event of default occurs, the lenders under the credit agreement could elect to declare all amounts outstanding and accrued and unpaid interest under the credit agreement to be immediately due and payable, and could foreclose on the assets securing the credit agreement. The lenders would also have the right in these circumstances to terminate any commitments they have to provide further credit extensions. We may incur other indebtedness in the future that may contain financial or other covenants more restrictive than those applicable to the credit agreement.

Item 1B. *Unresolved Staff Comments.*

None.

Item 2. *Properties.*

Our corporate headquarters and principal U.S. office is located at 55 Hudson Yards in New York, New York, where we lease approximately 83,000 square feet under a lease expiring in August 2034. We also collectively lease approximately 39,224 square feet for our other office locations in the U.S., United Kingdom, Brazil, the Netherlands, Hong Kong and Singapore under various leases expiring between January 2022 and January 2027.

Item 3. *Legal Proceedings.*

In the normal course of business, we and our subsidiaries included in the consolidated financial statements may be involved in various lawsuits, proceedings and regulatory examinations. We assess liabilities and contingencies in connection with outstanding legal proceedings, if any, utilizing the latest information available. Based on currently available information, the outcome of our outstanding matters is not expected to have a material adverse impact on our financial position. It is not presently possible to determine our ultimate exposure to these matters and there is no assurance that the resolution of the outstanding matters will not significantly exceed any reserves accrued by us. See Note 15 to the Consolidated Financial Statements for a discussion of our commitments and contingencies.

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.***

Our common stock trades on the NASDAQ Global Select Market under the symbol "MKTX".

On February 17, 2022, the last reported closing price of our common stock on the NASDAQ Global Select Market was $374.88.

Holders

There were 12 holders of record of our common stock as of February 17, 2022.

Recent Sales of Unregistered Securities

None.

Securities Authorized for Issuance Under Equity Compensation Plans

Please see the section entitled "Equity Compensation Plan Information" in Item 12.

Issuer Purchases of Equity Securities

During the three months ended December 31, 2021, we repurchased the following shares of common stock:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans and Programs
				(In thousands)
October 1, 2021 - October 31, 2021	858	$ 417.82	—	$ 82,554
November 1, 2021 - November 30, 2021	201	407.78	—	82,554
December 1, 2021 - December 31, 2021	111,694	402.86	111,694	37,557
	112,753	$ 402.98	111,694	

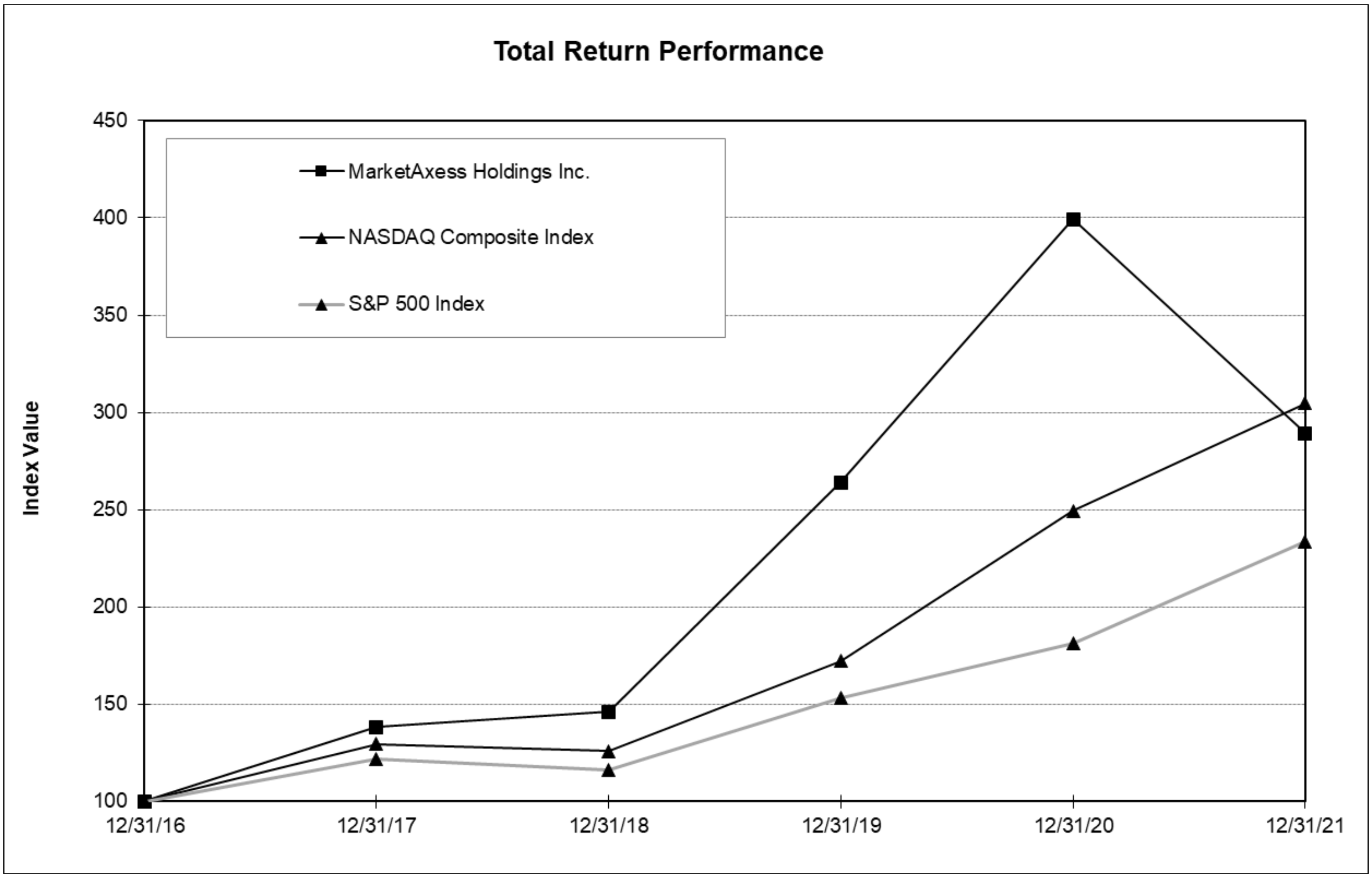
During the three months ended December 31, 2021, we repurchased 112,753 shares of common stock. The repurchases included 111,694 shares repurchased in connection with our share repurchase program and 1,059 shares surrendered by employees to us to satisfy the withholding tax obligations upon the exercise of stock options and vesting of restricted shares or stock units.

In January 2019, our Board of Directors authorized a new two-year share repurchase program for up to $100.0 million of our common stock that commenced in April 2019 and expired in March 2021. In January 2021, our Board of Directors authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021 and was exhausted in January 2022. In January 2022, our Board of Directors authorized a new share repurchase program for up to $150.0 million. We expect repurchases under the new program to commence in the first quarter of 2022. Shares repurchased under each program will be held in treasury for future use.

STOCK PERFORMANCE GRAPH

The following graph shows a comparison of the cumulative total return for (i) our common stock, (ii) the NASDAQ Composite Index and (iii) the S&P 500 Index for the past five years. The performance graph and related information shall not be deemed "soliciting material" or to be "filed" with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that we specifically incorporate it by reference into such filing.

The figures in this graph assume an initial investment of $100 in our common stock and in each index on December 31, 2016, and that all dividends were reinvested. The returns illustrated below are based on historical results during the period indicated and should not be considered indicative of future stockholder returns.



Item 6. [Reserved]

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

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. In addition to historical information, this discussion and analysis contains forward-looking statements relating to future events and the future performance of MarketAxess that are based on our current expectations, assumptions, estimates and projections about us and our industry. These forward-looking statements involve risks and uncertainties. Our actual results and timing of various events could differ materially from those anticipated in such forward-looking statements as a result of a variety of factors, as more fully described in this section, in "Item 1A. Risk Factors", in "Cautionary Note Regarding Forward Looking Statements" and elsewhere in this Annual Report on Form 10-K. Except as may be required by applicable law, we undertake no obligation to update publicly any forward-looking statements for any reason, even if new information becomes available or other events occur in the future.

The following discussion includes a comparison of our Financial Results, Cash Flow Comparisons and Liquidity and Capital Resources for the years ended December 31, 2021 and 2020, respectively. A discussion of changes in our Financial Results and Cash Flow Comparisons from the year ended December 31, 2019 to December 31, 2020 may be found in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of Part II of our Annual Report on Form 10-K for the year ended December 31, 2020.

Executive Overview

MarketAxess operates leading electronic trading platforms delivering greater trading efficiency, a diversified pool of liquidity and significant cost savings to our clients across the global fixed-income markets. Almost 1,900 institutional investor and broker-dealer firms are active users of our patented trading technology to efficiently trade U.S. high-grade bonds, U.S. high-yield bonds, emerging market debt, Eurobonds, municipal bonds, U.S. government bonds and other fixed-income securities. Our award-winning Open Trading marketplace is widely regarded as the preferred all-to-all trading solution in the global credit markets, creating a unique liquidity pool for a broad range of credit market participants. Drawing on a diverse set of trading protocols, including request-for-quote, live order books, sessions-based trading and portfolio trading solutions, as well as our deep data and analytical resources, we believe that we connect the most robust network of participants through an advanced full trading lifecycle solution that also includes automated trading solutions, intelligent data products and a range of post-trade services.

We operate in a large and rapidly growing market that provides us with a significant opportunity for future growth. Many of our largest current product areas, and areas of future growth, have relatively low levels of trading electronification, which further increases the size of our addressable market. Our platforms' innovative technology solutions are designed to capitalize on this addressable market by increasing the number of potential trading counterparties and providing our clients with a menu of solutions to address the full lifecycle of fixed-income trading. We offer Open Trading for most of our products and trading protocols, allowing our entire global network to interact in one large pool of trading liquidity. We believe that Open Trading drives meaningful transaction cost savings to our clients and reduces risk in fixed-income markets by creating a global, diversified pool of liquidity. Institutional investors can also send trading inquiries directly to their traditional broker-dealer counterparties through a disclosed RFQ, while simultaneously accessing additional counterparties through our anonymous Open Trading solution. We also provide a number of integrated and actionable data offerings, including Composite+ and Axess All real time pricing to assist clients with trading decisions and transaction cost analysis. We have a range of post-trade services, including straight through processing, trade matching, trade publication, regulatory transaction reporting and market and reference data across fixed-income and other products.

We derive revenue from commissions for trades executed on our platform, information services, post-trade services and other revenues. Our expenses consist of employee compensation and benefits, depreciation and amortization, technology and communication expenses, professional and consulting fees, occupancy, marketing and advertising, clearing costs and general and administrative expenses.

Our objective is to provide the leading global electronic trading platforms for fixed-income securities, connecting broker-dealers and institutional investors more easily and efficiently, while offering a broad array of trading information and technology services to market participants across the trading cycle. The key elements of our strategy are discussed in Item 1. "Business – Our Strategy."

Critical Factors Affecting Our Industry and Our Company

Economic, Political and Market Factors

The global fixed-income securities industry is risky and volatile and is directly affected by a number of economic, political and market factors that may result in declining trading volume. These factors could have a material adverse effect on our business, financial condition and results of operations. These factors include, among others, credit market conditions, the current interest rate environment, including the volatility of interest rates and investors' forecasts of future interest rates, economic and political conditions in the United States, Europe and elsewhere, and the consolidation or contraction of our broker-dealer and institutional investor clients.

The global economic and credit market environments during the year ended December 31, 2021 were markedly different as compared to 2020. During 2020, the global economy experienced a period of significant turmoil and deteriorating economic conditions due to the outbreak of the COVID-19 pandemic (the "Pandemic"). The steep drop in economic activity in 2020 impacted global credit markets and resulted in sharp credit spread widening and an increase in credit market volumes. During 2021, however, the improving economic conditions resulted in lower volatility, credit spreads tightening to historical lows for a prolonged period of time, a rising interest rate environment and a decline in U.S. credit market volumes. In the year ended December 31, 2021, market volumes in U.S. high-grade and U.S. high-yield corporate bonds as reported by TRACE decreased 6.9% and 7.4%, respectively, compared to the year ended December 31, 2020. Turnover, which is the total amount traded as a percentage of the amount outstanding, in U.S. high-grade bonds remains below the pre-credit crisis levels. We believe that the benign credit market conditions in 2021 negatively impacted trading velocity and the volumes traded on our platforms.

As a result of the Pandemic, we have continued to experience significant changes in our daily operations. In mid-March 2020, we successfully implemented a global work from home mandate for all our employees and we were able to continue to provide our trading platforms and other services to our clients without interruption. In particular, we believe that Open Trading liquidity was essential to the functioning of credit markets during the Pandemic, and MarketAxess played a valuable role keeping our clients connected to the market as traders moved from their centralized trading floors to home offices. We re-opened our primary offices in the fourth quarter of 2021 with an emphasis on safety and employee wellbeing. While our offices remained open through the Omicron variant surge in New York, London and elsewhere, we encouraged our employees to work from home when possible. We remain confident that we can continue to maintain business continuity and serve our clients in a virtual or hybrid environment, as necessary, to promote employee and public safety.

There has been increased demand for green bonds and other ESG-linked securities in the fixed income markets in which we operate. Based on the interest we are receiving from investors, we expected such increased demand to continue.

Because the majority of our assets are short-term in nature, they are not significantly affected by inflation. However, the rate of inflation may affect our expenses, such as employee compensation and communications expenses, which may not be readily recoverable in the prices of our services. To the extent inflation results in rising interest rates and has other adverse effects on the securities markets, it may adversely affect our financial position and results of operations.

We expect that current cash and investment balances, in combination with cash flows that are generated from operations and the ability to borrow under our 2021 Credit Agreement (as defined below), will be sufficient to meet our liquidity needs and planned capital expenditure requirements for at least the next twelve months. We ended the quarter with a strong balance sheet, no borrowings under our 2021 Credit Agreement and with capital significantly in excess of our regulatory requirements.

Competitive Landscape

The global fixed-income securities industry generally, and the electronic financial services markets in which we engage in particular, are highly competitive, and we expect competition to intensify in the future. Sources of competition for us will continue to include, among others, bond trading conducted directly between broker-dealers and their institutional investor clients over the telephone or electronically and other multi-dealer or all-to-all trading platforms. Competitors, including companies in which some of our broker-dealer clients have invested, have developed or acquired electronic trading platforms or have announced their intention to explore the development of electronic platforms or information networks that may compete with us.

We primarily compete on the basis of our client network, the liquidity provided by our dealer, and, to a growing extent, institutional investor clients, the total transaction costs associated with our services, the breadth of products, protocols and services offered, as well as the quality, reliability, security and ease of use of our platforms. We believe that our ability to grow volumes and revenues will largely depend on our performance with respect to these factors.

Our competitive position is also enhanced by the unique liquidity provided by our Open Trading functionalities and the familiarity and integration of our broker-dealer and institutional investor clients with our electronic trading platform and other systems. We have focused on the unique aspects of the credit markets we serve in the development of our platform, working closely with our clients to provide a system that is suited to their needs.

Regulatory Environment

Our business is subject to extensive regulations in the United States and internationally, which may expose us to significant regulatory risk and cause additional legal costs to ensure compliance. The existing legal framework that governs the financial markets is periodically reviewed and amended, resulting in the enactment and enforcement of new laws and regulations that apply to our business. For example, the SEC recently proposed rules that will expand Regulation ATS and Regulation SCI to alternative trading systems (ATS) that trade government securities and amend the SEC rule regarding the definition of an "exchange" to include Communication Protocol Systems, such as our RFQ protocols. In connection with these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS. The fixed-income industry has also been grappling with how to comply with Rule 15c2-11 ("Publication or submission of quotations without specified information") of the Securities Exchange Act, which had not previously been applied to debt securities. The impact of any of these reform efforts on us and our operations remains uncertain.

As a result of Brexit, we obtained authorizations from the AFM for our subsidiaries in the Netherlands in 2019. We now provide regulated services to our clients within the E.U. in reliance on the cross-border services passport held by our Dutch subsidiaries. Brexit has led to an ongoing divergence between the U.K. and E.U. financial regulations, which has made it more difficult and costly to comply with the extensive government regulation to which we are subject. The cost and complexity of operating across increasingly divergent regulatory regimes has increased and is likely to continue to increase in the future.

Compliance with regulations may require us to dedicate additional financial and operational resources, which may adversely affect our profitability. However, we believe new regulations may also increase demand for our platforms and we believe we are well positioned to benefit from those regulatory changes that cause market participants to seek electronic platforms that meet the various regulatory requirements and help them comply with their regulatory obligations.

For further description of the regulations which may limit our activities, see Part 1, Item 1. "Business—Government Regulation."

Technology Environment

We must continue to enhance and improve our electronic trading platforms. The electronic financial services industry is characterized by increasingly complex systems and infrastructures and new business models. Our future success will depend on our ability to enhance our existing products and services, develop and/or license new products and technologies that address the increasingly sophisticated and varied needs of our existing and prospective broker-dealer and institutional investor clients and respond to technological advances and emerging industry and regulatory standards and practices on a cost-effective and timely basis. We plan to continue to focus on technology infrastructure initiatives and continually improve our platforms to further enhance our leading market position. We expect that our agile software development processes will help us continue to be a market leader in developing the technology solutions for our clients' trading needs.

As the overall share of electronic trading grows in global credit products, we are experiencing continued demand for, and growth in, our automated trading solutions. Automated trading volumes rose to $167.2 billion in 2021, up 32.7% from $126.0 billion in 2020. In addition, the use of dealer algorithms is continuing to grow on our platforms, with approximately 18.4 million algorithmic responses in 2021, up 29.1% from the prior year.

We experience cyber-attacks and attempted data security breaches. Cybersecurity incidents could impact revenue and operating income and increase costs. We therefore continue to make investments in our cybersecurity infrastructure and training of employees, which may result in increased costs, to strengthen our cybersecurity measures.

See also Part 1, Item 1A. - "Risk Factors, Technology, IT Systems and Cybersecurity Risks."

Trends in Our Business

The majority of our revenue is derived from commissions for transactions executed on our platforms between and among our institutional investor and broker-dealer clients and monthly distribution fees. We believe that there are five key variables that impact the notional value of such transactions on our platforms and the amount of commissions and distribution fees earned by us:

- the number of participants on our platforms and their willingness to use our platforms instead of competitors' platforms or execution methods;
- the frequency and competitiveness of the price responses by participants on our platforms;
- the number of markets that are available for our clients to trade on our platforms;
- the overall level of activity in these markets; and
- the level of commissions that we collect for trades executed through the platforms.

We believe that overall corporate bond market trading volume is affected by various factors including the absolute levels of interest rates, the direction of interest rate movements, the level of new issues of corporate bonds and the volatility of corporate bond spreads versus U.S. Treasury securities. Because a significant percentage of our revenue is tied directly to the volume of securities traded on our platforms, it is likely that a general decline in trading volumes, regardless of the cause of such decline, would reduce our revenues and have a significant negative impact on profitability.

As further described under "— Critical Factors Affecting our Industry and our Company — Economic, Political and Market Factors" and "— Critical Factors Affecting our Industry and our Company — Competitive Landscape," our trading volume growth rate slowed in 2021.

Commission Revenue

Commissions are recognized on a trade date basis, are generally calculated as a percentage of the notional dollar volume of bonds traded on our platforms and vary based on the type, size, yield and maturity of the bond traded, as well as individual client incentives. Bonds that are more actively traded or that have shorter maturities are generally charged lower commissions, while bonds that are less actively traded or that have longer maturities generally command higher commissions.

For Open Trading trades that we execute between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller, we earn our commission through the difference in price between the two trades. For U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis.

U.S. High-Grade Corporate Bond Commissions. Our U.S. high-grade corporate bond fee plans generally incorporate variable transaction fees and fixed distribution fees billed to our broker-dealer clients on a monthly basis. Certain broker-dealers participate in fee programs that do not contain monthly distribution fees and instead incorporate additional per transaction execution fees and minimum monthly fee commitments. Under these fee plans, we electronically add the transaction fee to the spread quoted by the broker-dealer client. The U.S. high-grade transaction fee is generally designated in basis points in yield and, as a result, is subject to fluctuation depending on the duration of the bond traded. The average U.S. high-grade fees per million may vary in the future due to changes in yield, years-to-maturity and nominal size of bonds traded on our platforms. Distribution fees include any unused monthly fee commitments under our variable fee plans.

Other Credit Commissions. Other credit includes Eurobonds, emerging markets bonds, high-yield bonds, municipal bonds and leveraged loans. Commissions for other credit products generally vary based on the type of the instrument traded using standard fee schedules. Our high-yield fee plan structure is similar to our U.S. high-grade fee plans. Certain dealers participate in a high-yield fee plan that incorporates a variable transaction fee and fixed distribution fee, while other dealers participate in a plan that does not contain monthly distribution fees and instead incorporates additional per transaction execution fees and minimum monthly fee commitments. Other credit distribution fees include subscription revenues associated with the MuniBrokers platform. The average other credit fees per million may vary in the future due to changes in product mix or trading protocols.

Rates Commissions. Rates includes U.S. Treasury, U.S. agency, European government bonds and credit derivatives. Commissions for rates products generally vary based on the type of the instrument traded. U.S. Treasury fee plans are typically volume tiered and can vary based on the trading protocol. The average rates fee per million may vary in the future due to changes in product mix or trading protocols.

We anticipate that average fees per million may change in the future. Consequently, past trends in commissions are not necessarily indicative of future commissions.

Information Services

We generate revenue from data licensed to our broker-dealer clients, institutional investor clients and data-only subscribers; professional and consulting services; technology software licenses; and maintenance and support services. These revenues are either for subscription-based services transferred over time, and may be net of volume-based discounts, or one-time services. Revenues for services transferred over time are recognized ratably over the contract period while revenues for services transferred at a point in time are recognized in the period the services are provided. Customers are generally billed monthly, quarterly, or annually; revenues billed in advance are deferred and recognized ratably over the contract period.

Post-trade Services

We generate revenue from regulatory transaction reporting, trade publication and trade matching services. Customers are generally billed in the current month or monthly in arrears and revenue is recognized in the period that the transactions are processed. Revenues billed in advance are deferred and recognized ratably over the contract period. We also generate one-time implementation fees for onboarding clients which are invoiced and recognized in the period the implementation is complete.

Other Revenue

Other revenue includes revenue generated from telecommunications line charges to broker-dealer clients.

Expenses

In the normal course of business, we incur the following expenses:

Employee Compensation and Benefits. Employee compensation and benefits is our most significant expense and includes employee salaries, stock-based compensation costs, other incentive compensation, employee benefits and payroll taxes.

Depreciation and Amortization. We depreciate our computer hardware and related software, office hardware and furniture and fixtures and amortize our capitalized software development costs on a straight-line basis over three to seven years. We amortize leasehold improvements on a straight-line basis over the lesser of the life of the improvement or the remaining term of the lease. Intangible assets with definite lives, including purchased technologies, customer relationships and other intangible assets, are amortized over their estimated useful lives, which range from one to 15 years, using either a straight-line or accelerated amortization method based on the pattern of economic benefit that we expect to realize from such assets. Intangible assets are assessed for impairment when events or circumstances indicate a possible impairment.

Technology and Communications. Technology and communications expense consists primarily of costs relating to maintenance on software and hardware, our internal network connections, data center hosting costs, data feeds provided by outside vendors and U.S. treasuries technology platform licensing fees. The majority of our broker-dealer clients have dedicated high-speed communication lines to our network in order to provide fast data transfer. We charge our broker-dealer clients a monthly fee for these connections, which is recovered against the relevant expenses we incur.

Professional and Consulting Fees. Professional and consulting fees consist primarily of accounting fees, legal fees and fees paid to information technology and other consultants for services provided for the maintenance of our trading platforms, information and post-trade services products and other services.

Occupancy. Occupancy costs consist primarily of office and equipment rent, utilities and commercial rent tax.

Marketing and Advertising. Marketing and advertising expense consists primarily of print and other advertising expenses we incur to promote our products and services. This expense also includes costs associated with attending or exhibiting at industry-sponsored seminars, conferences and conventions, and travel and entertainment expenses incurred by our sales force to promote our trading platforms, information services and post-trade services.

Clearing Costs. Clearing costs consist of fees that we are charged by third-party clearing brokers and depositories for the clearing and settlement of matched principal trades, regulatory reporting fees and variable transaction fees assessed by the provider of our third-party middle office system.

General and Administrative. General and administrative expense consists primarily of general travel and entertainment, board of directors' expenses, charitable contributions, provision for doubtful accounts and various state franchise and U.K. value-added taxes.

Expenses may grow in the future, notably in employee compensation and benefits as we increase headcount to support investment in new products, operational support and geographic expansion, depreciation and amortization due to increased investment in new products and enhancements to our trading platforms, and technology and communication costs. Expenses may also grow due to acquisitions.

Other Income (Expense)

Investment Income. Investment income consists of interest income earned on our investments.

Interest Expense. Interest expense consists of financing charges incurred on short-term borrowings.

Other, Net. Other, net consists of unrealized gains or losses on trading security investments, realized gains or losses on investments, foreign currency transaction gains or losses, investment advisory fees, credit facility administrative fees and other miscellaneous revenues and expenses.

Critical Accounting Estimates

This Management's Discussion and Analysis of Financial Condition and Results of Operations discusses our Consolidated Financial Statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP"). The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the reported amounts of income and expenses during the reporting periods. We base our estimates and judgments on historical experience and on various other factors that we believe are reasonable under the circumstances. Actual results may differ from these estimates under varying assumptions or conditions. Critical accounting estimates for us include stock-based compensation and contingent consideration payable.

Stock-based compensation

We maintain a stock incentive plan which provides for the grant of stock options, stock appreciation rights, restricted stock, performance shares, performance units, restricted stock units, performance stock units, or other stock-based awards as incentives and rewards to encourage employees, consultants and non-employee directors. We make critical accounting estimates related to performance shares and performance stock units.

In January 2020, annual performance share awards ("PSAs"), and in January 2021, performance stock units (together with the PSAs, "performance equity awards") were granted to the executive officers and certain senior managers. Each performance equity award granted in January 2020 and January 2021 is earned or forfeited based on our level of achievement of certain predetermined metrics, including pre-tax adjusted operating income and market share. The vested share pay-out ranges from zero to 150%, for the awards issued in January 2020, and zero to 200%, for the awards issued in January 2021, of the performance equity award target. The number of performance equity awards that vest, if any, will be determined by the level of achievement of the performance metrics during the three-year performance periods, as certified by the Board following the conclusion of the performance period. In addition, participants must provide continued service through the vesting date (subject, to death, disability and, in the case of the awards issued in January 2021, qualified retirement exceptions). Compensation expense for performance equity awards is measured using the fair value of our stock at the grant date and estimates of future performance and actual share payouts. Each period, we make estimates of the current expected share payout and adjust the life-to-date compensation expense recognized since the grant date. As of December 31, 2021, a 10% change in the expected final share payout would increase or decrease the life-to-date compensation expense by $1.0 million. Refer to Note 11 to the Consolidated Financial Statements for more information related to changes in final share payout expectations.

Contingent consideration payable

In connection with our acquisitions of MuniBrokers and Regulatory Reporting Hub, we recognized contingent consideration payables of up to $49.6 million with payment dates ranging from 18-24 months from the acquisition dates. These contingent consideration payables are classified as Level 3 liabilities in the fair value hierarchy and are valued using unobservable inputs and estimates of various factors, including client retention rates, electronic order flow levels, future license fees we earn and discount rates. Changes in these estimates or the final figures on the payment dates could have a material impact on the contingent consideration payable liabilities we record on our balance sheet. For example, as of December 31, 2021, a 10% change in the projected annual subscription and license fees would increase or decrease the expected contingent consideration payable by approximately $2.0 million. Refer to Note 4 to the Consolidated Financial Statements for more information related to the changes in contingent consideration payable during the year ended December 31, 2021.

Recent Accounting Pronouncements

See Note 2 to the Consolidated Financial Statements for a discussion of recent accounting pronouncements.

Segment Results

We operate electronic platforms for the trading of fixed-income securities and provide related data, analytics, compliance tools and post-trade services. We consider our operations to constitute a single business segment because of the highly integrated nature of these product and services, the financial markets in which we compete and our worldwide business activities. We believe that results by geographic region or client sector are not necessarily meaningful in understanding our business. See Note 16 to the Consolidated Financial Statements for certain geographic information about our business required by U.S. GAAP.

Results of Operations

Year Ended December 31, 2021 Compared to Year Ended December 31, 2020

The comparability of our results of operations is impacted by our acquisitions of Regulatory Reporting Hub in November 2020 and MuniBrokers in April 2021. For additional information regarding these acquisitions, see Note 6 to the Consolidated Financial Statements. The following table summarizes our financial results for the years ended December 31, 2021 and 2020. Results for the year ended December 31, 2021 include Regulatory Reporting Hub and MuniBrokers related revenue of $17.7 million and expenses of $24.0 million, including amortization of acquired intangibles expense of $7.9 million.

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands, except per share amounts)			
Revenues	$ 698,951	$ 689,125	$ 9,826	1.4 %
Expenses	361,716	314,397	47,319	15.1
Operating income	337,235	374,728	(37,493)	(10.0)
Other income (expense)	(3,312)	(369)	(2,943)	797.6
Income before income taxes	333,923	374,359	(40,436)	(10.8)
Provision for income taxes	76,035	74,982	1,053	1.4
Net income	$ 257,888	$ 299,377	$ (41,489)	(13.9) %
Net income per common share - Diluted	$ 6.77	$ 7.85	$ (1.08)	(13.8) %

A 7.0% change in the average foreign currency exchange rate of the British pound sterling compared to the U.S. dollar had the effect of increasing revenues and expenses by $5.4 million and $5.3 million, respectively, for the year ended December 31, 2021.

Revenues

Our revenues for the years ended December 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,					
	2021		2020			
	($ in thousands)					
	$	% of Revenues	$	% of Revenues	$ Change	% Change
Commissions	$ 621,008	88.8 %	$ 634,445	92.1 %	$ (13,437)	(2.1) %
Information services	38,175	5.5	34,341	5.0	3,834	11.2
Post-trade services	38,922	5.6	19,460	2.8	19,462	100.0
Other	846	0.1	879	0.1	(33)	(3.8)
Total revenues	$ 698,951	100.0 %	$ 689,125	100.0 %	$ 9,826	1.4 %

Commissions

Our commission revenues for the years ended December 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Variable transaction fees				
U.S. high-grade	$ 213,790	$ 253,684	$ (39,894)	(15.7) %
Other credit	271,215	256,763	14,452	5.6
Total credit	485,005	510,447	(25,442)	(5.0)
Rates	16,572	15,890	682	4.3
Total variable transaction fees	501,577	526,337	(24,760)	(4.7)
Distribution fees				
U.S. high-grade	87,265	81,893	5,372	6.6
Other credit	31,913	25,834	6,079	23.5
Total credit	119,178	107,727	11,451	10.6
Rates	253	381	(128)	(33.6)
Total distribution fees	119,431	108,108	11,323	10.5
Total commissions	$ 621,008	$ 634,445	$ (13,437)	(2.1) %

U.S. high-grade variable transaction fees decreased $39.9 million due to a 9.1% decrease in trading volume and a 7.2% decrease in the variable transaction fee per million. Other credit variable transaction fees increased $14.5 million due to a 9.5% increase in trading volume offset by a 3.5% decrease in the variable transaction fee per million. Open Trading credit volume decreased by 2.0% and represented 31.8% and 33.2% of credit variable transaction fees for the years ended December 31, 2021 and 2020, respectively.

U.S. high-grade distribution fees increased $5.4 million mainly due to the migration of certain dealers from all-variable fee plans to plans that incorporate a monthly distribution fee and higher unused monthly minimum commitment fees. Other credit distribution fees increased $6.1 million due to subscription revenues associated with the MuniBrokers platform of $3.5 million and the migration of certain dealers from all-variable fee plans to plans that incorporate a monthly distribution fee.

Our trading volume for each of the years ended December 31, 2021 and 2020 was as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in millions)			
Trading Volume Data				
U.S. high-grade - fixed rate	$ 1,197,526	$ 1,311,512	$ (113,986)	(8.7) %
U.S. high-grade - floating rate	45,654	56,786	(11,132)	(19.6)
Total U.S. high-grade	1,243,180	1,368,298	(125,118)	(9.1)
Other credit	1,381,604	1,262,074	119,530	9.5
Total credit	2,624,784	2,630,372	(5,588)	(0.2)
Rates	4,144,964	3,987,424	157,540	4.0
Number of U.S. Trading Days	250	251		
Number of U.K. Trading Days	253	254		

For volume reporting purposes, transactions in foreign currencies are converted to U.S. dollars at average monthly rates. The 9.1% decrease in our U.S. high-grade volume was principally due to a decrease in overall market volume. Estimated U.S. high-grade TRACE volume decreased by 6.9% to $5.9 trillion for the year ended December 31, 2021 from $6.3 trillion for the year ended December 31, 2020. Our estimated market share of total U.S. high-grade corporate bond volume decreased to 21.0% for the year ended December 31, 2021 from 21.6% for the year ended December 31, 2020.

Other credit volumes increased by 9.5% for the year ended December 31, 2021 compared to the year ended December 31, 2020, primarily due to increases of 15.6% in emerging markets bond volume and 11.7% in Eurobond volume due to higher estimated market share which offset decreases in overall estimated market volumes. U.S. high-yield bond volume decreased 3.6% due to lower estimated market volume. Our estimated market share of U.S. high-yield TRACE volume increased to 15.2% for the year ended December 31, 2021 from 14.6% for the year ended December 31, 2020. Rates volume increased 4.0% due to higher estimated market volume.

Our average variable transaction fee per million for the years ended December 31, 2021 and 2020 was as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
Average Variable Transaction fee per million				
U.S. high-grade - fixed rate	$ 176.91	$ 191.34	$ (14.4)	(7.5) %
U.S. high-grade - floating rate	42.36	48.21	(5.9)	(12.1)
Total U.S. high-grade	171.97	185.40	(13.4)	(7.2)
Other credit	196.30	203.45	(7.2)	(3.5)
Total credit	184.78	194.06	(9.3)	(4.8)
Rates	4.00	3.99	0.0	0.3

The decrease in U.S. high-grade average variable transaction fee per million was mainly due to a decrease in the average duration of bonds traded on our platforms and the migration of certain of our broker-dealer clients from an all-variable fee plan to a plan that incorporates a monthly distribution fee. The decrease in other credit average variable transaction fee per million was mainly due to a larger percentage of trading volume in emerging market bonds that command lower fees per million and the migration of certain of our broker-dealer clients from an all-variable fee plan to a plan that incorporates a monthly distribution fee.

Information Services. Information services revenue increased $3.8 million for the year ended December 31, 2021 mainly due to net new data contract revenue of $3.6 million and the positive impact of foreign exchange of $1.3 million, offset by lower non-recurring data sales of $1.1 million.

Post-Trade Services. Post-trade services revenue increased $19.5 million for the year ended December 31, 2021 principally due to additional regulatory transaction reporting revenue of $13.0 million generated by Regulatory Reporting Hub, which was acquired on November 30, 2020, net new post -trade services contract revenue of $5.2 million and the positive impact of foreign exchange of $1.5 million.

Other. Other revenue was $0.8 million and $0.9 million for the years ended December 31, 2021 and 2020, respectively.

Expenses

The following table summarizes our expenses for the years ended December 31, 2021 and 2020. Expenses for the year ended December 31, 2021 include $24.0 million of expenses related to Regulatory Reporting Hub and MuniBrokers, including amortization of acquired intangibles expense of $7.9 million.

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Expenses				
Employee compensation and benefits	$ 170,916	$ 156,885	$ 14,031	8.9 %
Depreciation and amortization	53,447	35,996	17,451	48.5
Technology and communications	42,474	34,092	8,382	24.6
Professional and consulting fees	41,925	32,304	9,621	29.8
Occupancy	13,320	13,425	(105)	(0.8)
Marketing and advertising	9,059	7,940	1,119	14.1
Clearing costs	16,074	21,058	(4,984)	(23.7)
General and administrative	14,501	12,697	1,804	14.2
Total expenses	$ 361,716	$ 314,397	$ 47,319	15.1 %

Employee compensation and benefits increased by $14.0 million primarily due increases in salaries, taxes and benefits on higher employee headcount of $16.4 million and stock-based compensation of $1.4 million, offset by lower employee incentive compensation of $3.8 million, which is impacted by operating performance.

Depreciation and amortization increased by $17.5 million primarily due to higher amortization of acquired intangibles of $9.7 million and higher amortization of software development costs of $6.3 million. For the years ended December 31, 2021 and 2020, $17.5 million and $15.0 million, respectively, of equipment purchases and leasehold improvements and $33.1 million and $30.6 million, respectively, of software development costs were capitalized.

Technology and communications expenses increased by $8.4 million primarily due to higher software subscription costs of $4.2 million, higher market data costs of $1.6 million, higher cloud hosting costs of $1.2 million and higher platform technology licensing costs of $1.1 million.

Professional and consulting fees increased by $9.6 million primarily due to higher acquisition-related integration consulting fees of $4.5 million, higher IT consulting fees of $3.3 million and higher recruiting fees of $1.5 million.

Marketing and advertising expense increased $1.1 million due to the resumption of certain advertising and travel and entertainment costs which had been reduced in 2020 due to the Pandemic.

Clearing costs decreased by $5.0 million primarily due to lower clearing expenses due to the benefits from our conversion to self-clearing. While Open Trading credit volume decreased 2.0% compared to the year ended December 31, 2020, clearing costs decreased by 23.7%. Clearing costs as a percentage of Open Trading matched principal trading revenue from credit products decreased from 9.8% to 7.6%.

General and administrative expenses increased by $1.8 million primarily due to higher corporate charitable contributions and the resumption of certain administrative costs which had been reduced in 2020 due to the Pandemic.

Other Income (Expense)

Our other income (expense) for the years ended December 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Investment income	$ 401	$ 2,446	$ (2,045)	(83.6) %
Interest expense	(842)	(1,142)	300	(26.3)
Other, net	(2,871)	(1,673)	(1,198)	71.6
Total other income (expense)	$ (3,312)	$ (369)	$ (2,943)	797.6 %

Investment income decreased by $2.0 million primarily due to lower investment balances.

Interest expense decreased by $0.3 million due to lower financing activity related to our clearing arrangements.

Other, net decreased by $1.2 million primarily due to an increase in credit facility fees and administration costs.

Provision for Income Taxes.

The provision for income taxes and effective tax rate for the years ended December 31, 2021 and 2020 were as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Provision for income taxes	$ 76,035	$ 74,982	$ 1,053	1.4 %
Effective tax rate	22.8%	20.0%		

The provision for income taxes reflected $11.7 million and $24.1 million of excess tax benefits related to share-based compensation awards that vested or were exercised during the years ended December 31, 2021 and 2020, respectively. During the years ended December 31, 2021 and 2020, we recorded a benefit from unrecognized tax benefits of $1.2 million and provision for unrecognized tax benefits of $9.5 million, respectively. Our consolidated effective tax rate can vary from period to period depending on the geographic mix of our earnings, changes in tax legislation and tax rates and the amount and timing of excess tax benefits related to share-based payments, among other factors.

Liquidity and Capital Resources

During the past two years, we have met our funding requirements through cash on hand, internally generated funds and short-term borrowings. Cash and cash equivalents and investments totaled $542.8 million at December 31, 2021. Our investments are generally invested in U.S. treasury securities. We limit the amounts that can be invested in any single issuer and invest in short- to intermediate-term instruments whose fair values are less sensitive to interest rate changes.

In October 2021, we entered into a new three-year revolving credit facility (the "2021 Credit Agreement") provided by a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, that provides aggregate commitments totaling $500.0 million, consisting of a revolving credit facility and a $5.0 million letter of credit sub-limit for standby letters of credit. The 2021 Credit Agreement replaced our credit agreement entered into in November 2020 (the "2020 Credit Agreement") and will mature on October 15, 2024, with our option to request up to two additional 364-day extensions at the discretion of each lender and subject to customary conditions. The 2020 Credit Agreement also provided aggregate commitments totaling $500.0 million. As of December 31, 2021, we had $1.0 million in letters of credit outstanding and $499.0 million in available borrowing capacity under the 2021 Credit Agreement. The 2021 Credit Agreement requires that we satisfy certain covenants, which include a leverage ratio. We were in compliance with all applicable covenants at December 31, 2021. See Note 13 to the Consolidated Financial Statements for a discussion of the 2020 Credit Agreement and the 2021 Credit Agreement.

In connection with its self-clearing operations, our U.S. broker-dealer subsidiary entered into an agreement (the "Collateralized Agreement") with its settlement bank to provide loans up to an aggregate of $200.0 million on an uncommitted basis. Borrowings under the Collateralized Agreement are collateralized by securities pledged by the broker-dealer subsidiary to the settlement bank, subject to applicable haircuts and concentration limits. As of December 31, 2021, the broker-dealer subsidiary had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement. See Note 13 to the Consolidated Financial Statements for a discussion of the Collateralized Agreement.

Under arrangements with their settlement banks, certain of our U.S. and U.K. operating subsidiaries may receive overnight financing in the form of bank overdrafts. As of December 31, 2021, we had no overdrafts payable outstanding.

As a result of our self-clearing and settlement activities, we are required to finance certain transactions, maintain deposits with various clearing organizations and clearing broker-dealers and maintain a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Exchange Act. As of December 31, 2021, the aggregate amount of the positions financed, deposits and customer reserve balances associated with our self-clearing and settlement activities was $226.0 million. These requirements can fluctuate based on trading activity, market volatility or other factors which may impact our liquidity or require us to use our capital resources.

During the past two years, our cash flows were as follows:

	Year Ended December 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Net cash provided by operating activities	$ 282,091	$ 404,489	$ (122,398)	(30.3) %
Net cash provided by (used in) investing activities	(67,694)	68,867	(136,561)	(198.3)
Net cash (used in) financing activities	(189,775)	(145,112)	(44,663)	30.8
Effect of exchange rate changes on cash and cash equivalents	(7,105)	5,553	(12,658)	(227.9)
Net increase for the period	$ 17,517	$ 333,797	$ (316,280)	(94.8) %

Cash Flows for the Year Ended December 31, 2021 Compared to Year Ended December 31, 2020

The $122.4 million decrease in net cash provided by operating activities was primarily due to decreases in net sales and maturities of trading investments of $73.5 million, net income of $41.5 million, net receivables from broker-dealers, clearing organizations and customers of $11.4 million and deferred taxes of $7.0 million, offset by an increase in depreciation and amortization of $17.5 million and a decrease in accounts payable, accrued expenses and other liabilities of $5.8 million.

The $136.6 million decrease in net cash provided by (used in) investing activities was primarily attributable to a decrease in net proceeds from sales and maturities of securities available-for-sale of $137.8 million and an increase in capital expenditures of $5.0 million, offset by lower cash used for acquisitions of $6.2 million.

The $44.7 million increase in net cash (used in) financing activities was principally due to increases in repurchases of our common stock of $47.1 million and cash dividends paid on common stock of $9.2 million, offset by decreases in exercises of stock options of $3.1 million and withholding tax payments on restricted stock vesting and stock option exercises of $8.5 million.

Past trends of cash flows are not necessarily indicative of future cash flow levels. A decrease in cash flows may have a material adverse effect on our liquidity, business and financial condition.

Other Factors Influencing Liquidity and Capital Resources

We believe that our current resources are adequate to meet our liquidity needs and requirements, including commitments for capital expenditures, in the short-term (during the next 12 months). However, our future liquidity and capital requirements will depend on a number of factors, including liquidity requirements associated with our self-clearing operations and expenses associated with product development and expansion and new business opportunities that are intended to further diversify our revenue stream. We may also acquire or invest in technologies, business ventures or products that are complementary to our business. In the event we require any additional financing, it will take the form of equity or debt financing. Any additional equity offerings may result in dilution to our stockholders. Any debt financings, if available at all, may involve restrictive covenants with respect to dividends, issuances of additional capital and other financial and operational matters related to our business. In addition, in the long-term (beyond 12 months), we believe our liquidity needs and requirements will be affected by the factors enumerated above.

Certain of our U.S. subsidiaries are registered as a broker-dealer or a SEF and therefore are subject to the applicable rules and regulations of the SEC, FINRA and the CFTC. These rules contain minimum net capital requirements, as defined in the applicable regulations, and also may require that a significant part of the registrants' assets be kept in relatively liquid form. Certain of our foreign subsidiaries are regulated by the FCA in the U.K. or other foreign regulators and must maintain financial resources, as defined in the applicable regulations, in excess of the applicable financial resources requirement. As of December 31, 2021, each of our subsidiaries that are subject to these regulations had net capital or financial resources in excess of their minimum requirements. As of December 31, 2021, our subsidiaries maintained aggregate net capital and financial resources that were $561.2 million in excess of the required levels of $22.0 million.

Each of our U.S. and foreign regulated subsidiaries are subject to local regulations which generally prohibit repayment of borrowings from our affiliates, paying cash dividends, making loans to our affiliates or otherwise entering into transactions that result in a significant reduction in regulatory net capital or financial resources without prior notification to or approval from such regulated entity's principal regulator. As of December 31, 2021, the amount of unrestricted cash held by our non-U.S. subsidiaries was $303.6 million.

We execute bond transactions between our institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. Our U.S. broker-dealer subsidiary operates under a self-clearing model for the settlement of such transactions. Our subsidiaries also settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded. Under both the self-clearing and the third-party clearing models, we may be exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is an error in executing a matched principal transaction. Pursuant to the terms of the securities clearing agreements, each third-party clearing broker has the right to charge us for any losses they suffer resulting from a counterparty's failure on any of our trades. We did not record any liabilities or losses with regard to counterparty failures for the years ended December 31, 2021 and 2020. Substantially all our open securities failed-to-deliver and securities failed-to-receive transactions as of December 31, 2021 have subsequently settled at the contractual amounts.

In the normal course of business, we enter into contracts that contain a variety of representations, warranties and indemnification provisions. Our maximum exposure from any claims under these arrangements is unknown, as this would involve claims that have not yet occurred. However, based on past experience, we expect the risk of material loss to be remote.

In January 2019, our Board authorized a two-year share repurchase program for up to $100.0 million that commenced in April 2019 and expired on March 31, 2021. In January 2021, our Board authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021 and was exhausted in January 2022. In January 2022, our Board authorized a new share repurchase program for up to $150.0 million. We expect repurchases under the new program to commence in the first quarter of 2022. Shares repurchased under each program will be held in treasury for future use.

On November 30, 2020, we acquired Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group. The purchase price consists of $22.5 million in cash paid at closing and up to $24.6 million in contingent consideration payable in cash within 18 months of the closing. On April 9, 2021, we acquired MuniBrokers, a central electronic venue serving municipal bond brokers and dealers. The purchase price consists of $17.1 million in cash paid at closing and up to $25.0 million in contingent consideration payable in cash within approximately two years of the closing.

See Item 5 of this Annual Report on Form 10-K for additional discussion of our repurchases of our common stock and our dividend policy.

Non-GAAP Financial Measures

In addition to reporting financial results in accordance with GAAP, we use certain non-GAAP financial measures called earnings before interest, taxes, depreciation and amortization ("EBITDA") and free cash flow. We define free cash flow as cash flow from operating activities excluding the net change in trading investments and net change in securities failed-to-deliver and securities failed-to-receive from broker-dealers, clearing organizations and customers, less expenditures for furniture, equipment and leasehold improvements and capitalized software development costs. We believe these non-GAAP financial measures, when taken into consideration with the corresponding GAAP financial measures, are important in understanding our operating results. EBITDA and free cash flow are not measures of financial performance or liquidity under GAAP and therefore should not be considered an alternative to net income or cash flow from operating activities as an indicator of operating performance or liquidity. We believe that EBITDA and free cash flow provide useful additional information concerning profitability of our operations and business trends and the cash flow available to pay dividends, repurchase stock and meet working capital requirements.

The table set forth below presents a reconciliation of our net income to EBITDA, as defined, for the years ended December 31, 2021 and 2020:

	Year Ended December 31,	
	2021	2020
	(In thousands)	
Net income	$ 257,888	$ 299,377
Add back:		
Interest expense	842	1,142
Provision for income taxes	76,035	74,982
Depreciation and amortization	53,447	35,996
Earnings before interest, taxes, depreciation and amortization	$ 388,212	$ 411,497

The table set forth below presents a reconciliation of our net cash provided by operating activities to free cash flow, as defined, for the years ended December 31, 2021 and 2020:

	Year Ended December 31,	
	2021	2020
	(In thousands)	
Net cash provided by operating activities	$ 282,091	$ 404,489
Exclude: Net change in trading investments	5,574	(67,952)
Exclude: Net change in fail-to-deliver/receive from broker-dealers, clearing organizations and customers	59,651	49,278
Less: Purchases of furniture, equipment and leasehold improvements	(17,493)	(15,010)
Less: Capitalization of software development costs	(33,123)	(30,618)
Free cash flow	$ 296,700	$ 340,187

Contractual Obligations and Commitments

As of December 31, 2021, we had the following contractual obligations and commitments:

	Payments due by period				
	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
			(In thousands)		
Operating leases	$ 123,402	$ 11,163	$ 22,104	$ 22,070	$ 68,065

Item 7A. ***Quantitative and Qualitative Disclosures About Market Risk.***

Market risk is the risk of the loss resulting from adverse changes in market rates and prices, such as interest rates and foreign currency exchange rates.

Market Risk

The global financial services business is, by its nature, risky and volatile and is directly affected by many national and international factors that are beyond our control. Any one of these factors may cause a substantial decline in the U.S. and global financial services markets, resulting in reduced trading volume and revenues. These events could have a material adverse effect on our business, financial condition and results of operations.

As of December 31, 2021, we had $24.9 million of investments in U.S Treasuries that were classified as trading securities. Adverse movements, such as a 10% decrease in the value of these securities or a downturn or disruption in the markets for these securities, could result in a substantial loss. In addition, principal gains and losses resulting from these securities could on occasion have a disproportionate effect, positive or negative, on our financial condition and results of operations for any particular reporting period.

See also Part 1, Item 1A.– "Risk Factors – Risks Related to Global Economic and Market Conditions – Global economic, political and market factors beyond our control could reduce demand for our services, and our profitability and business could suffer."

Interest Rate Risk

Interest rate risk represents our exposure to interest rate changes with respect to our cash, cash equivalents and investments. As of December 31, 2021, our cash and cash equivalents and investments amounted to $542.8 million. A hypothetical 10 basis point change in interest rates would increase or decrease our annual investment income by approximately $0.5 million, assuming no change in the amount or composition of our cash and cash equivalents.

We do not maintain an inventory of bonds that are traded on our platform.

Foreign Currency Exchange Rate Risk

We conduct operations in several different countries outside of the U.S., most notably the U.K., and substantial portions of our revenues, expenses, assets and liabilities are generated and denominated in non-U.S. dollar currencies. Since our consolidated financial statements are presented in U.S. dollars, we must translate revenues, income and expenses, as well as assets and liabilities, into U.S. dollars at exchange rates in effect during or at the end of each reporting period. Accordingly, increases or decreases in the value of the U.S. dollar against the other currencies will affect our net operating revenues, operating income and the value of balance sheet items denominated in foreign currencies.

During the year ended December 31, 2021, approximately 17.0% of our revenue and 31.2% of our expenses were denominated in currencies other than the U.S. dollar, most notably the British Pound Sterling. Based on actual results over the past year, a hypothetical 10% increase or decrease in the U.S. dollar against all other currencies would have increased or decreased revenue by approximately $11.8 million and operating expenses by approximately $11.2 million.

Credit Risk

Through certain of our subsidiaries, we execute bond transactions between our institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. Our U.S. broker-dealer subsidiary operates under a self-clearing model for the settlement of such transactions. Our subsidiaries also settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded.

We are exposed to credit and performance risks in our role as matched principal trading counterparty to our clients executing bond trades on our platform, including the risk that counterparties that owe us money or securities will not perform their obligations. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. Adverse movements in the prices of securities that are the subject of these transactions can increase our risk. In connection with Open Trading or other anonymous protocols, we expect that the number of transactions in which we act as a matched principal will increase.

We have policies, procedures and automated controls in place to identify and manage our credit risk. There can be no assurance that these policies, procedures and automated controls will effectively mitigate our credit risk exposure. Some of our risk management procedures are reliant upon the evaluation of information regarding the fixed-income markets, our clients or other relevant matters that are publicly available or otherwise acquired from third party sources. Such information may not be accurate, complete, up-to-date or properly assessed and interpreted by us. If our risk management procedures fail, our business, financial condition and results of operations may be adversely affected. Furthermore, our insurance policies are unlikely to provide coverage for such risks.

Cash and cash equivalents include cash and money market instruments that are primarily maintained at three major global banks. Given this concentration, we are exposed to certain credit risk in relation to our deposits at these banks.

Item 8. ***Financial Statements and Supplementary Data.***

MARKETAXESS HOLDINGS INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of MarketAxess Holdings Inc. is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934. The Company's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles. The Company's internal control over financial reporting includes those policies and procedures that:

(i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;

(ii) 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

(iii) 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.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2021. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control — Integrated Framework (2013)*.

Based on its assessment and those criteria, management concluded that the Company maintained effective internal control over financial reporting as of December 31, 2021.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2021 has been audited by PricewaterhouseCoopers LLP (PCAOB ID 238), an independent registered public accounting firm, as stated in their report which appears herein.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of MarketAxess Holdings Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated statements of financial condition of MarketAxess Holdings Inc. and its subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of operations, of comprehensive income, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2021, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited 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 (COSO).

In our opinion, the consolidated financial statements referred to above 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 each of the three years in the period ended December 31, 2021 in conformity with accounting principles generally accepted in the United States of America. Also 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 COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, 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 Report on Internal Control Over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

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 (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters 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.

Revenue Recognition - Open Trading Commissions

As described in Note 2 to the consolidated financial statements, the Company executes trades between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller ("Open Trading"). Open Trading variable transaction fees, which represent commissions for matched principal trades, were $155.5 million for the year ended December 31, 2021. Variable transaction fees are generally calculated as a percentage of the notional dollar volume of bonds traded on the platform and vary based on the type, size, yield, maturity of the bond traded, and individual client incentives. For Open Trading trades, the Company earns its commission through the difference in price between the two trades. As disclosed by management, commissions are determined based on the fee schedule associated with the instrument being traded.

The principal considerations for our determination that performing procedures relating to revenue recognition for Open Trading commissions is a critical audit matter are the significant audit effort in performing procedures and evaluating evidence related to this revenue type, which is calculated based on the instrument being traded, volume of the instrument being traded, and individual client incentives.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the completeness and accuracy of Open Trading commission. These procedures also included, among others, testing a sample of Open Trading transactions by (i) agreeing the details of the trade to underlying documentation, (ii) agreeing fees charged to the fee schedule based on the trade details, and as applicable, any individual client incentives, and (iii) recalculating the Open Trading commission variable transaction fee.

/s/ PricewaterhouseCoopers LLP
New York, New York
February 23, 2022
We have served as the Company's auditor since 2000.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF FINANCIAL CONDITION

	As of	
	December 31, 2021	December 31, 2020
	(In thousands, except share and per share amounts)	
ASSETS		
Cash and cash equivalents	$ 506,735	$ 460,858
Cash segregated under federal regulations	50,159	50,059
Investments, at fair value	36,078	28,111
Accounts receivable, net of allowance of $140 and $163 as of December 31, 2021 and 2020, respectively	63,881	79,577
Receivables from broker-dealers, clearing organizations and customers	408,346	279,915
Goodwill	154,789	147,388
Intangible assets, net of accumulated amortization	116,377	95,354
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	96,061	85,204
Operating lease right-of-use assets	70,960	75,924
Prepaid expenses and other assets	27,066	29,039
Total assets	$ 1,530,452	$ 1,331,429
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	$ 59,719	$ 62,326
Payables to broker-dealers, clearing organizations and customers	229,325	133,326
Income and other tax liabilities	40,456	42,750
Accounts payable, accrued expenses and other liabilities	71,218	44,354
Operating lease liabilities	88,425	93,612
Total liabilities	489,143	376,368
Commitments and Contingencies (Note 15)		
Stockholders' equity		
Preferred stock, $0.001 par value, 4,855,000 shares authorized, no shares issued and outstanding as of December 31, 2021 and 2020	—	—
Series A Preferred Stock, $0.001 par value, 110,000 shares authorized, no shares issued and outstanding as of December 31, 2021 and 2020	—	—
Common stock voting, $0.003 par value, 110,000,000 shares authorized, 40,911,506 shares and 40,851,100 shares issued and 37,918,956 shares and 38,005,330 shares outstanding as of December 31, 2021 and 2020, respectively	123	123
Common stock non-voting, $0.003 par value, 10,000,000 shares authorized, no shares issued and outstanding as of December 31, 2021 and 2020	—	—
Additional paid-in capital	330,262	329,742
Treasury stock - Common stock voting, at cost, 2,992,550 shares and 2,845,770 shares as of December 31, 2021 and 2020, respectively	(232,712)	(169,523)
Retained earnings	956,966	799,369
Accumulated other comprehensive loss	(13,330)	(4,650)
Total stockholders' equity	1,041,309	955,061
Total liabilities and stockholders' equity	$ 1,530,452	$ 1,331,429

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2021	2020	2019
	(In thousands, except per share amounts)		
Revenues			
Commissions	$ 621,008	$ 634,445	$ 463,856
Information services	38,175	34,341	30,730
Post-trade services	38,922	19,460	15,763
Other	846	879	1,003
Total revenues	698,951	689,125	511,352
Expenses			
Employee compensation and benefits	170,916	156,885	131,079
Depreciation and amortization	53,447	35,996	26,857
Technology and communications	42,474	34,092	26,792
Professional and consulting fees	41,925	32,304	25,534
Occupancy	13,320	13,425	11,639
Marketing and advertising	9,059	7,940	11,559
Clearing costs	16,074	21,058	11,314
General and administrative	14,501	12,697	15,696
Total expenses	361,716	314,397	260,470
Operating income	337,235	374,728	250,882
Other income (expense)			
Investment income	401	2,446	8,063
Interest expense	(842)	(1,142)	—
Other, net	(2,871)	(1,673)	(1,521)
Total other income (expense)	(3,312)	(369)	6,542
Income before income taxes	333,923	374,359	257,424
Provision for income taxes	76,035	74,982	52,522
Net income	$ 257,888	$ 299,377	$ 204,902
Net income per common share			
Basic	$ 6.88	$ 8.01	$ 5.53
Diluted	$ 6.77	$ 7.85	$ 5.40
Cash dividends declared per common share	$ 2.64	$ 2.40	$ 2.04
Weighted average shares outstanding			
Basic	37,508	37,359	37,083
Diluted	38,097	38,144	37,956

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Net income	$ 257,888	$ 299,377	$ 204,902
Net cumulative translation adjustment and foreign currency exchange hedge, net of tax of $(721), (1,468), and $(1,218), respectively	(8,680)	6,164	1,128
Net unrealized gain (loss) on securities available-for-sale, net of tax of $0, $(172) and $312, respectively	—	(544)	996
Comprehensive income	$ 249,208	$ 304,997	$ 207,026

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock Voting	Additional Paid-In Capital	Treasury Stock - Common Stock Voting	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	(In thousands, except per share amounts)					
Balance at December 31, 2018	$ 122	$ 341,860	$ (184,962)	$ 463,252	$ (12,394)	$ 607,878
Net income	—	—	—	204,902	—	204,902
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	1,128	1,128
Unrealized net (loss) on securities available-for-sale, net of tax	—	—	—	—	996	996
Stock-based compensation	—	25,294	—	—	—	25,294
Exercise of stock options	—	1,207	—	—	—	1,207
Withholding tax payments on restricted stock vesting and stock option exercises	—	(25,820)	—	—	—	(25,820)
Treasury shares used for acquisition	—	—	48,830	—	—	48,830
Repurchases of common stock	—	—	(17,256)	—	—	(17,256)
Cash dividend on common stock ($2.04 per share)	—	—	—	(77,068)	—	(77,068)
Balance at December 31, 2019	122	342,541	(153,388)	591,086	(10,270)	770,091
Net income	—	—	—	299,377	—	299,377
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	6,164	6,164
Unrealized net gain on securities available-for-sale, net of tax	—	—	—	—	(544)	(544)
Stock-based compensation	—	25,613	—	—	—	25,613
Exercise of stock options	1	4,006	—	—	—	4,007
Withholding tax payments on restricted stock vesting and stock option exercises	—	(42,418)	—	—	—	(42,418)
Repurchases of common stock	—	—	(16,135)	—	—	(16,135)
Cash dividend on common stock ($2.40 per share)	—	—	—	(91,094)	—	(91,094)
Balance at December 31, 2020	123	329,742	(169,523)	799,369	(4,650)	955,061
Net income	—	—	—	257,888	—	257,888
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(8,680)	(8,680)
Stock-based compensation	—	27,314	—	—	—	27,314
Exercise of stock options	—	7,096	—	—	—	7,096
Withholding tax payments on restricted stock vesting and stock option exercises	—	(33,890)	—	—	—	(33,890)
Repurchases of common stock	—	—	(63,189)	—	—	(63,189)
Cash dividend on common stock ($2.64 per share)	—	—	—	(100,291)	—	(100,291)
Balance at December 31, 2021	$ 123	$ 330,262	$ (232,712)	$ 956,966	$ (13,330)	$ 1,041,309

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2021	2020	2019
	(In thousands)		
Cash flows from operating activities			
Net income	$ 257,888	$ 299,377	$ 204,902
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	53,447	35,996	26,857
Amortization of operating lease right-of-use assets	6,799	6,842	5,795
Stock-based compensation expense	27,314	25,613	25,294
Deferred taxes	3,118	10,099	2,674
Other	(466)	(550)	(778)
Changes in operating assets and liabilities:			
Decrease (increase) in accounts receivable	15,598	(18,015)	(2,962)
(Increase) in receivables from broker-dealers, clearing organizations and customers	(156,909)	(182,871)	—
Decrease (increase) in prepaid expenses and other assets	2,214	(1,977)	(4,624)
(Increase) decrease in trading investments	(5,574)	67,952	4,045
(Increase) in mutual funds held in rabbi trust	(2,306)	(2,671)	(2,118)
(Decrease) increase in accrued employee compensation	(2,607)	14,961	8,312
Increase in payables to broker-dealers, clearing organizations and customers	95,999	133,326	—
(Decrease) increase in income and other tax liabilities	(5,638)	16,189	187
Increase (decrease) in accounts payable, accrued expenses and other liabilities	215	6,006	(820)
(Decrease) in operating lease liabilities	(7,001)	(5,788)	(829)
Net cash provided by operating activities	282,091	404,489	265,935
Cash flows from investing activities			
Acquisitions, net of cash and cash equivalents acquired	(17,078)	(23,297)	(97,430)
Available-for-sale investments			
Proceeds from maturities and sales	—	170,657	170,936
Purchases	—	(32,865)	(160,827)
Purchases of furniture, equipment and leasehold improvements	(17,493)	(15,010)	(12,292)
Capitalization of software development costs	(33,123)	(30,618)	(22,408)
Other	—	—	(30)
Net cash provided by (used in) investing activities	(67,694)	68,867	(122,051)
Cash flows from financing activities			
Cash dividend on common stock	(99,792)	(90,566)	(76,231)
Exercise of stock options	7,096	4,007	1,207
Withholding tax payments on restricted stock vesting and stock option exercises	(33,890)	(42,418)	(25,820)
Repurchases of common stock	(63,189)	(16,135)	(17,256)
Proceeds from short-term borrowings	70,348	578,356	—
Repayments of short-term borrowings	(70,348)	(578,356)	—
Net cash (used in) financing activities	(189,775)	(145,112)	(118,100)
Effect of exchange rate changes on cash and cash equivalents	(7,105)	5,553	1,011
Cash and cash equivalents including restricted cash			
Net increase for the period	17,517	333,797	26,795
Beginning of period	608,050	274,253	247,458
End of period	$ 625,567	$ 608,050	$ 274,253
Supplemental cash flow information:			
Cash paid for income taxes	$ 70,003	$ 45,046	$ 51,766
Cash paid for interest	830	1,142	—
Non-cash investing and financing activity:			
Exercise of stock options - cashless	$ 2,750	$ 10,866	$ 1,811
Right-of-use assets obtained in exchange for operating lease liabilities	1,972	727	7,464
Contingent consideration payable recognized in connection with acquisitions	27,947	14,665	—
Liabilities assumed in connection with acquisition:			
Fair value of assets acquired	—	—	148,425
Cash paid for acquisition of business, net of cash and cash equivalents acquired	—	—	(97,430)
Treasury stock used for acquisition of business	—	—	(48,830)
Liabilities assumed	$ —	$ —	$ 2,165

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Principal Business Activity

MarketAxess Holdings Inc. (the "Company" or "MarketAxess") was incorporated in the State of Delaware on April 11, 2000. Through its subsidiaries, MarketAxess operates leading electronic trading platforms delivering expanded liquidity opportunities, improved execution quality and significant cost savings across global fixed-income markets. Almost 1,900 institutional investor and broker-dealer firms are active users of the MarketAxess' patented trading technology, accessing global liquidity on its platforms in U.S. investment-grade bonds, U.S. high-yield bonds, emerging market debt, Eurobonds, municipal bonds, U.S. government bonds and other fixed-income securities. Through its Open Trading® protocols, MarketAxess executes bond trades between and among institutional investor and broker-dealer clients in the leading all-to-all anonymous trading environment for corporate bonds. MarketAxess also offers a number of trading-related products and services, including: Composite+™ pricing and other market data products to assist clients with trading decisions; auto-execution and other execution services for clients requiring specialized workflow solutions; connectivity solutions that facilitate straight-through processing; and technology services to optimize trading environments. The Company also provides a range of pre- and post-trade services, including trade matching, trade publication, regulatory transaction reporting and market and reference data across a range of fixed-income and other products.

2. Significant Accounting Policies

Basis of Presentation

The consolidated financial statements include the accounts of the Company and its subsidiaries. All intercompany transactions and balances have been eliminated. Certain reclassifications have been made to the prior periods' consolidated financial statements in order to conform to the current period presentation. Such reclassifications are immaterial, individually and in the aggregate, to both current and all previously issued financial statements taken as a whole and have no effect on previously reported net income.

Accounting Pronouncements, Not Yet Adopted

In March 2020, the Financial Accounting Standards Board issued Accounting Standards Update ("ASU") 2020-04, "Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting" (the "ASU"), which is designed to ease the potential burden in accounting for the transition away from the London Inter-bank Offered Rate ("LIBOR"). The ASU applies to contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate expected to be discontinued and replaced with alternative reference rates as a result of reference rate reform. The ASU provides optional expedients and exceptions for applying U.S. generally accepted accounting principles ("GAAP") to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The ASU can be adopted by all entities through December 31, 2022. The Company does not expect adoption of this ASU to have a material impact on its Consolidated Financial Statements.

Cash and Cash Equivalents

The Company defines cash equivalents as short-term interest-bearing investments with maturities at the time of purchase of three months or less.

Investments

The Company determines the appropriate classification of securities at the time of purchase which are recorded in the Consolidated Statements of Financial Condition on the trade date. Securities are classified as available-for-sale or trading. Available-for-sale investments are carried at fair value with the unrealized gains or losses reported in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition. Trading investments include investment-grade corporate debt securities and U.S. Treasuries and are carried at fair value, with realized and unrealized gains or losses included in other, net in the Consolidated Statements of Operations.

Fair Value Financial Instruments

Fair value is defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." A three-tiered hierarchy for determining fair value has been established that prioritizes inputs to valuation techniques used in fair value calculations. The three levels of inputs are defined as Level 1 (unadjusted quoted prices for identical assets or liabilities in active markets), Level 2 (inputs that are observable in the marketplace other than those inputs classified in Level 1) and Level 3 (inputs that are unobservable in the marketplace). The Company's financial assets and liabilities measured at fair value on a recurring basis consist of its money market funds, trading securities and contingent consideration payables associated with acquisitions. All other financial instruments are short-term in nature and the carrying amount is reported on the Consolidated Statements of Financial Condition at approximate fair value.

Receivables from and Payables to Broker-dealers, Clearing Organizations and Customers

Receivables from broker-dealers, clearing organizations and customers include amounts receivable for securities not delivered by the Company to the purchaser by the settlement date (''securities failed-to-deliver'') and cash deposits held at clearing organizations and clearing brokers to facilitate the settlement and clearance of matched principal transactions. Payables to broker-dealers, clearing organizations and customers include amounts payable for securities not received by the Company from a seller by the settlement date (''securities failed-to-receive''). Securities failed-to-deliver and securities failed-to-receive for transactions executed on a matched principal basis where the Company serves as a counterparty to both the buyer and the seller are recorded on a settlement date basis. The Company presents its securities failed-to-deliver and securities failed-to-receive balances on a net-by-counterparty basis within receivables from and payables to broker-dealers, clearing organizations and customers. The difference between the Company's trade-date receivables and payables for unsettled matched principal transactions reflects commissions earned and is recorded within accounts receivable, net on a trade date basis.

Allowance for Credit Losses

All accounts receivable have contractual maturities of less than one year and are derived from trading-related fees and commissions and revenues from products and services. The Company continually monitors collections and payments from its customers and maintains an allowance for doubtful accounts. The allowance for credit losses is based on an estimate of the amount of potential credit losses in existing accounts receivable, as determined from a review of aging schedules, past due balances, historical collection experience and other specific collection issues that have been identified. Account balances are grouped for evaluation based on various risk characteristics, including billing type, legal entity, and geographic region. Additions to the allowance for credit losses are charged to bad debt expense, which is included in general and administrative expense in the Company's Consolidated Statements of Operations. Balances that are determined to be uncollectable are written off against the allowance for credit losses.

The allowance for credit losses was $0.1 million and $0.2 million as of December 31, 2021 and 2020, respectively. The provision for bad debts was $0.2 million, $0.5 million and $0.3 million for the years ended December 31, 2021, 2020 and 2019, respectively. Write-offs and other charges against the allowance for credit losses were $0.1 million, $0.1 million and $0.1 million for the years ended December 31, 2021, 2020 and 2019, respectively.

Depreciation and Amortization

Fixed assets are carried at cost less accumulated depreciation. The Company uses the straight-line method of depreciation over three to seven years. The Company amortizes leasehold improvements on a straight-line basis over the lesser of the life of the improvement or the remaining term of the lease.

Software Development Costs

The Company capitalizes certain costs associated with the development of internal use software, including among other items, employee compensation and related benefits and third-party consulting costs at the point at which the conceptual formulation, design and testing of possible software project alternatives have been completed. Once the product is ready for its intended use, such costs are amortized on a straight-line basis over three years. The Company reviews the amounts capitalized for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable.

Cloud Computing Costs

The Company capitalizes certain costs associated with cloud computing arrangements, including, among other items, employee compensation and related benefits and third-party consulting costs that are part of the application development stage. These costs are setup as a prepaid asset on the balance sheet and are amortized over the period of the hosting service contract, which range from one to five years. The Company reviews the amounts capitalized for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable.

Foreign Currency Translation and Forward Contracts

Assets and liabilities denominated in foreign currencies are translated using exchange rates at the end of the period; revenues and expenses are translated at average monthly rates. Gains and losses on foreign currency translation are a component of accumulated other comprehensive loss in the Consolidated Statements of Financial Condition. Transaction gains and losses are recorded in other, net in the Consolidated Statements of Operations.

The Company previously entered into foreign currency forward contracts to hedge its net investment in its U.K. subsidiaries. Gains and losses on these transactions are included in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition.

Revenue Recognition

The Company's classification of revenues in the Consolidated Statements of Operations represents revenues from contracts with customers disaggregated by type of revenue. The Company has four revenue streams as described below.

Commission Revenue. The Company charges its broker-dealer clients variable transaction fees for trades executed on its platforms and, under certain plans, distribution fees or monthly minimum fees to use the platforms for a particular product area. Variable transaction fees are recognized on a trade date basis and generally calculated as a percentage of the notional dollar volume of bonds traded on the platforms and vary based on the type, size, yield and maturity of the bond traded and individual client incentives. Bonds that are more actively traded or that have shorter maturities generally generate lower commissions, while bonds that are less actively traded or that have longer maturities generally command higher commissions. Under the Company's disclosed trading transaction fee plans, variable transaction fees, distribution fees and unused monthly fee commitments are invoiced and recorded on a monthly basis.

For Open Trading trades that the Company executes between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller, the Company earns its commission through the difference in price between the two trades. The commission is collected upon settlement of the trade, which typically occurs within one to two trading days after the trade date. For U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis. The following table presents commission revenue by fee type:

	Year Ended December 31,		
	2021	2020	2019
	(In thousands)		
Commission revenue by fee type			
Variable transaction fees			
Disclosed trading	$ 333,712	$ 343,427	$ 266,916
Open Trading - matched principal trading	155,465	170,537	98,080
U.S. Treasuries - matched principal trading	12,400	12,372	2,184
Total variable transaction fees	501,577	526,337	367,180
Distribution fees and unused minimum fees	119,431	108,108	96,676
Total commissions	$ 621,008	$ 634,445	$ 463,856

Information services – Information services includes data licensed to the Company's broker-dealer clients, institutional investor clients and data-only subscribers; professional and consulting services; technology software licenses; and maintenance and support services. The nature and timing of each performance obligation may vary as these contracts are either subscription-based services transferred over time, and may be net of volume-based discounts, or one-time services that are transferred at a point in time. Revenues for services transferred over time are recognized ratably over the contract period as the Company's performance obligation is met whereas revenues for services transferred at a point in time are recognized in the period the services are provided. Customers are generally billed monthly, quarterly, or annually; revenues billed in advance are deferred and recognized ratably over the contract period. The following table presents information services revenue by timing of recognition:

	Year Ended December 31,		
	2021	2020	2019
	(In thousands)		
Information services revenue by timing of recognition			
Services transferred over time	$ 37,341	$ 32,425	$ 29,619
Services transferred at a point in time	834	1,916	1,111
Total information services revenues	$ 38,175	$ 34,341	$ 30,730

Post-trade services – Post-trade services revenue is generated from regulatory transaction reporting, trade publication and trade matching services. Customers are generally billed monthly in arrears and revenue is recognized in the period transactions are processed. Revenues billed in advance are deferred and recognized ratably over the contract period. The Company also generates one-time implementation fees for onboarding clients which are invoiced and recognized in the period the implementation is completed. The following table presents post-trade services revenue by timing of recognition:

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Post-trade services revenue by timing of recognition			
Services transferred over time	$ 38,850	$ 19,158	$ 15,669
Services transferred at a point in time	72	302	94
Total post-trade services revenues	$ 38,922	$ 19,460	$ 15,763

Other revenues – Other revenues primarily includes revenue from telecommunications line charges to broker-dealer clients.

Contract liabilities consist of deferred revenues that the Company records when cash payments are received or due in advance of services to be performed. The revenue recognized from contract liabilities and the remaining balance is shown below:

	December 31, 2020	Payments received in advance of services to be performed	Revenue recognized for services performed during the period	Foreign Currency Translation	December 31, 2021
			(In thousands)		
Information services	$ 3,203	$ 10,657	$ (10,332)	$ —	$ 3,528
Post-trade services	1,045	15,488	(15,801)	(12)	720
Total deferred revenue	$ 4,248	$ 26,145	$ (26,133)	$ (12)	$ 4,248

The majority of the Company's contracts are short-term in nature with durations of less than one-year. For contracts with original durations extending beyond one year, the aggregate amount of the transaction price allocated to remaining performance obligations was $18.0 million as of December 31, 2021. The Company expects to recognize revenue associated with the remaining performance obligations over the next 33 months.

Stock-Based Compensation

The Company measures and recognizes compensation expense for all share-based payment awards based on their estimated fair values measured as of the grant date. These costs are recognized as an expense in the Consolidated Statements of Operations over the requisite service period, which is typically the vesting period, with an offsetting increase to additional paid-in capital. Forfeitures are recognized as they occur.

Income Taxes

Income taxes are accounted for using the asset and liability method. Deferred income taxes reflect the net tax effects of temporary differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when such differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. A valuation allowance is recognized against deferred tax assets if it is more likely than not that such assets will not be realized in future years. Tax benefits for uncertain tax positions are recognized when it is more likely than not that the positions will be sustained upon examination based on their technical merits. The Company recognizes interest and penalties related to unrecognized tax benefits in the provision for income taxes in the Consolidated Statements of Operations. All tax effects related to share-based payments are recorded in the provision for income taxes in the periods during which the awards are exercised or vest.

Business Combinations, Goodwill and Intangible Assets

Business combinations are accounted for under the purchase method of accounting. The total cost of an acquisition is allocated to the underlying net assets based on their respective estimated fair values. The excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. Determining the fair value of certain assets acquired and liabilities assumed is judgmental in nature and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash flows, discount rates, growth rates, customer attrition rates and asset lives.

The Company operates as a single reporting unit. Following an acquisition, goodwill no longer retains its identification with a particular acquisition, but instead becomes identifiable with the entire reporting unit. As a result, all of the fair value of the Company is available to support the value of goodwill. An impairment review of goodwill is performed on an annual basis, at year-end, or more frequently if circumstances change. Intangible assets with definite lives, including purchased technologies, customer relationships and other intangible assets, are amortized over their estimated useful lives which range from one to 15 years using either a straight-line or accelerated amortization method based on the pattern of economic benefit the Company expects to realize from such assets. Intangible assets are assessed for impairment when events or circumstances indicate the existence of a possible impairment.

Earnings Per Share

Basic earnings per share is computed by dividing the net income attributable to common stock by the weighted-average number of shares of common stock outstanding during the period. For purposes of computing diluted earnings per share, the weighted-average shares outstanding of common stock reflects the dilutive effect that could occur if convertible securities or other contracts to issue common stock were converted into or exercised for common stock.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure 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 from those estimates.

3. Regulatory Capital Requirements

Certain U.S. subsidiaries of the Company are registered as a broker-dealer or swap execution facility and therefore are subject to the applicable rules and regulations of the U.S. Securities and Exchange Commission ("SEC") and the Commodity Futures Trading Commission. These rules contain minimum net capital requirements, as defined in the applicable regulations, and also may require a significant part of the registrants' assets be kept in relatively liquid form. Certain of the Company's foreign subsidiaries are regulated by the Financial Conduct Authority in the U.K. or other foreign regulators and must maintain financial resources, as defined in the applicable regulations, in excess of the applicable financial resources requirement. As of December 31, 2021, each of the Company's subsidiaries that are subject to these regulations had net capital or financial resources in excess of their minimum requirements. As of December 31, 2021, the Company's subsidiaries maintained aggregate net capital and financial resources that were $561.2 million in excess of the required levels of $22.0 million.

The Company's U.S. broker-dealer subsidiary is required to segregate funds in a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Securities Exchange Act of 1934, as amended. As of December 31, 2021, the U.S. broker-dealer subsidiary had a balance of $50.2 million in its special reserve bank account. This U.S. broker-dealer subsidiary also maintained net capital that was $356.8 million in excess of the required level of $2.6 million.

Each of the Company's U.S. and foreign regulated subsidiaries are subject to local regulations which generally prohibit repayment of borrowings from the Company or affiliates, paying cash dividends, making loans to the Company or affiliates or otherwise entering into transactions that result in a significant reduction in regulatory net capital or financial resources without prior notification to or approval from such regulated entity's principal regulator.

4. Fair Value Measurements

The following table summarizes the valuation of the Company's assets and liabilities measured at fair value as categorized based on the hierarchy described in Note 2:

	Level 1	Level 2	Level 3	Total
		(In thousands)		
As of December 31, 2021				
Assets				
Money market funds	$ 14,206	$ —	$ —	$ 14,206
Trading securities				
U.S. Treasuries	—	24,883	—	24,883
Mutual funds held in rabbi trust	—	11,195	—	11,195
Total assets	$ 14,206	$ 36,078	$ —	$ 50,284
Liabilities				
Contingent consideration payable	$ —	$ —	$ 41,090	$ 41,090
As of December 31, 2020				
Assets				
Money market funds	$ 20,856	$ —	$ —	$ 20,856
Trading securities				
Corporate debt	—	19,222	—	19,222
Mutual funds held in rabbi trust	—	8,889	—	8,889
Total assets	$ 20,856	$ 28,111	$ —	$ 48,967
Liabilities				
Contingent consideration payable	$ —	$ —	$ 15,026	$ 15,026
Foreign currency forward position	—	805	—	805
Total liabilities	$ —	$ 805	$ 15,026	$ 15,831

Securities classified within Level 2 were valued using a market approach utilizing prices and other relevant information generated by market transactions involving comparable assets. The foreign currency forward contracts are classified within Level 2 as the valuation inputs are based on quoted market prices. The mutual funds held in a rabbi trust represent investments associated with the Company's deferred cash incentive plan.

Liabilities classified within Level 3 reflect contingent consideration payable recognized in connection with acquisitions. Significant unobservable inputs used in the valuation of contingent consideration payable include estimates of client retention, electronic order flow and license fees over periods of 18 to 24 months from the acquisition dates. The following table summarizes the change in the Company's Level 3 liabilities for the year ended December 31, 2021:

	December 31, 2020	Additions - acquisitions	Revaluations	Foreign Currency Translation	December 31, 2021
			(In thousands)		
Contingent consideration payable	$ 15,026	$ 22,450	$ 4,885	$ (1,271)	$ 41,090

The table below presents the range and average significant unobservable inputs used in the valuation of the Company's Level 3 liabilities:

	Valuation Technique	Unobservable Inputs	Range	Average
		($ in thousands)		
As of December 31, 2021				
Liabilities:				
Contingent consideration payable	Discounted cash flows	Present value factor	0.95 - 1	0.98
		Customer retention rate	84.0%	84.0%
		First earn-out period variable fee	$2,703 - $3,086	$2,895
		Percentage of electronic trading volume	86.0% - 96.6%	91.3%
As of December 31, 2020				
Liabilities:				
Contingent consideration payable	Discounted cash flows	Present value factor	0.82	0.82
		Customer retention rate	80.0%	80.0%

The table below presents the carrying value, fair value and fair value hierarchy category of the Company’s financial assets and liabilities that are not measured at fair value on the Consolidated Statement of Financial Condition. The carrying values of the Company’s financial assets and liabilities not measured at fair value categorized in the fair value hierarchy as Level 1 and Level 2 approximate fair value due to the short-term nature of the underlying assets and liabilities.

	Carrying Value	Fair Value	Level 1	Level 2	Level 3	Total
			(In thousands)			
As of December 31, 2021						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 506,735	$ 506,735	$ 506,735	$ —	$ —	$ 506,735
Cash segregated under federal regulations	50,159	50,159	50,159	—	—	50,159
Accounts receivable, net of allowance	63,881	63,881	—	63,881	—	63,881
Receivables from broker-dealers, clearing organizations and customers	408,346	408,346	68,565	339,781	—	408,346
Total	$ 1,029,121	$ 1,029,121	$ 625,459	$ 403,662	$ —	$ 1,029,121
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	$ 229,325	$ 229,325	$ —	$ 229,325	$ —	$ 229,325
As of December 31, 2020						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 460,858	$ 460,858	$ 460,858	$ —	$ —	$ 460,858
Cash segregated under federal regulations	50,059	50,059	50,059	—	—	50,059
Accounts receivable, net of allowance	79,577	79,577	—	79,577	—	79,577
Receivables from broker-dealers, clearing organizations and customers	279,915	279,915	97,043	182,872	—	279,915
Total	$ 870,409	$ 870,409	$ 607,960	$ 262,449	$ —	$ 870,409
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	$ 133,326	$ 133,326	$ —	$ 133,326	$ —	$ 133,326

The following is a summary of the Company's investments:

	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
	(In thousands)			
As of December 31, 2021				
Trading securities				
U.S. Treasuries	$ 24,994	$ —	$ (111)	$ 24,883
Mutual funds held in rabbi trust	9,941	1,254	—	11,195
Total investments	$ 34,935	$ 1,254	$ (111)	$ 36,078
As of December 31, 2020				
Trading securities				
Corporate debt	$ 19,081	$ 141	$ —	$ 19,222
Mutual funds held in rabbi trust	7,680	1,209	—	8,889
Total investments	$ 26,761	$ 1,350	$ —	$ 28,111

The following table summarizes the fair value of the investments based upon the contractual maturities:

	As of December 31,	
	2021	2020
	(In thousands)	
Less than one year	$ 11,195	$ 18,290
Due in 1 - 5 years	24,883	9,821
Total	$ 36,078	$ 28,111

Proceeds from the sales and maturities of investments during the years ended December 31, 2021, 2020 and 2019 were $19.4 million, $261.6 million and $262.1 million, respectively. Net unrealized losses on trading securities were $0.3 million and $0.4 million for the year ended December 31, 2021 and 2020, respectively. Net realized gains were $0.1 million and $1.7 million for the year ended December 31, 2021 and 2020, respectively, and were immaterial for the year ended December 31, 2019.

5. Receivables from and Payables to Broker-dealers, Clearing Organizations and Customers

The Company's receivables from and payables to broker-dealers, clearing organizations and customers consist of the following:

	December 31, 2021	December 31, 2020
	(In thousands)	
Receivables from broker-dealers, clearing organizations and customers:		
Securities failed-to-deliver - broker-dealers	$ 152,766	$ 93,294
Securities failed-to-deliver - customers	182,052	87,685
Deposits with clearing organizations and broker-dealers	68,565	97,043
Other	4,963	1,893
Total	$ 408,346	$ 279,915
Payables to broker-dealers, clearing organizations and customers:		
Securities failed-to-receive - broker-dealers	$ 166,010	$ 70,917
Securities failed-to-receive - customers	59,879	60,784
Other	3,436	1,625
Total	$ 229,325	$ 133,326

6. Acquisitions

On April 9, 2021, the Company acquired MuniBrokers LLC, a central electronic venue serving municipal bond brokers and dealers. The purchase price consists of $17.1 million in cash paid at closing and up to $25.0 million of contingent consideration payable within approximately two years of the acquisition date. The Company is accounting for the transaction as a business combination and utilized an independent third-party to assist in determining the fair value of the acquired intangible assets. The accounting purchase price is $39.6 million, comprised of $17.1 million of cash and $22.5 million of contingent consideration payable, which is included within accounts payable, accrued expenses, and other liabilities on the Consolidated Statement of Financial Condition. The Company recorded $32.0 million of amortizable intangible assets and $7.4 million of goodwill as of the acquisition date. The acquired intangible assets consist of customer relationships and technology and have useful lives ranging from 1 to 15 years. In 2021, the Company recognized a decrease of $0.6 million to the contingent consideration payable due to updated projections of the expected final contingent consideration payments, which was recorded in other, net on the Consolidated Statement of Operations.

On November 30, 2020, the Company acquired Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group. The purchase price consists of $22.5 million in cash paid at closing and up to $24.6 million in contingent consideration payable in cash within 18 months of the closing. The Company is accounting for the transaction as a purchase of assets and recorded $37.4 million in amortizable intangible assets as of the acquisition date. In 2021, the Company recognized increases of $5.5 million to the contingent consideration payable and the cost basis of the acquired intangible assets as a result of updated projections of the expected final contingent consideration payments.

7. Goodwill and Intangible Assets

Goodwill and intangible assets with indefinite lives were $154.8 million and $147.4 million as of December 31, 2021 and 2020, respectively. The $7.4 million increase reflects goodwill recognized as part of the acquisition of MuniBrokers LLC. Intangible assets that are subject to amortization, including the related accumulated amortization, are comprised of the following:

	December 31, 2021			December 31, 2020		
	Cost	Accumulated amortization	Net carrying amount	Cost	Accumulated amortization	Net carrying amount
	(In thousands)					
Customer relationships	$ 132,196	$ (19,813)	$ 112,384	$ 102,696	$ (7,369)	$ 95,327
Technology and other intangibles	11,430	(7,437)	3,993	6,550	(6,523)	27
Total	$ 143,626	$ (27,250)	$ 116,377	$ 109,246	$ (13,892)	$ 95,354

Amortization expense associated with identifiable intangible assets was $13.4 million, $3.9 million and $0.8 million for the years ended December 31, 2021, 2020 and 2019, respectively. Annual estimated total amortization expense is $16.8 million, $17.6 million, $15.2 million, $12.3 million and $10.6 million for 2022 through 2026.

8. Capitalized Software, Furniture, Equipment and Leasehold Improvements

Capitalized software development costs, furniture, equipment and leasehold improvements, net of accumulated depreciation and amortization, are comprised of the following:

	As of December 31,	
	2021	2020
	(In thousands)	
Software development costs	$ 183,998	$ 151,139
Computer hardware and related software	45,986	52,696
Office hardware	8,866	8,782
Furniture and fixtures	7,120	7,078
Leasehold improvements	31,021	29,064
	276,991	248,759
Accumulated depreciation and amortization	(180,930)	(163,555)
Total	$ 96,061	$ 85,204

During the years ended December 31, 2021 and 2020, software development costs totaling $33.1 million and $30.6 million, respectively, were capitalized. Non-capitalized software costs and routine maintenance costs are expensed as incurred and are included in employee compensation and benefits and professional and consulting fees in the Consolidated Statements of Operations.

9. Income Taxes

The provision for income taxes consists of the following:

	Year Ended December 31, 2021	2020	2019
	(In thousands)		
Current:			
Federal	$ 36,661	$ 30,215	$ 28,928
State and local	17,238	19,130	7,686
Foreign	19,018	15,538	13,234
Total current provision	72,917	64,883	49,848
Deferred:			
Federal	2,249	7,474	2,579
State and local	778	1,439	403
Foreign	91	1,186	(308)
Total deferred provision	3,118	10,099	2,674
Provision for income taxes	$ 76,035	$ 74,982	$ 52,522

Pre-tax income from U.S. operations was $234.6 million, $288.3 million and $190.4 million for the years ended December 31, 2021, 2020 and 2019, respectively. Pre-tax income from foreign operations was $99.3 million, $86.1 million and $67.0 million for the years ended December 31, 2021, 2020 and 2019, respectively.

The difference between the Company's reported provision for income taxes and the U.S. federal statutory rate of 21% is as follows:

	Year Ended December 31, 2021	2020	2019
U.S. federal tax at statutory rate	21.0 %	21.0 %	21.0 %
State and local taxes - net of federal benefit	4.4	4.4	2.5
Credits and deductions related to research activities	(0.4)	(0.3)	(0.3)
Foreign rate differential benefit	(0.2)	(0.4)	(0.5)
Excess tax benefit from stock-based compensation	(2.9)	(5.4)	(3.5)
Other, net	0.9	0.7	1.2
Provision for income taxes	22.8 %	20.0 %	20.4 %

The following is a summary of the Company's net deferred tax assets:

	As of December 31,	
	2021	2020
	(In thousands)	
Deferred tax assets:		
Stock compensation expense	$ 2,683	$ 3,682
Operating lease liabilities	18,688	19,339
Other	3,004	1,968
Total deferred tax assets	24,375	24,989
Valuation allowance	—	—
Net deferred tax assets	24,375	24,989
Deferred tax liabilities:		
Depreciation and amortization	(9,847)	(9,729)
Capitalized software development costs	(9,417)	(7,828)
Goodwill and intangible assets	(4,311)	(2,852)
Operating lease right-of-use assets	(14,940)	(15,600)
Deferred tax (liability) asset, net	$ (14,140)	$ (11,020)

The Company or one of its subsidiaries files U.S. federal, state and foreign income tax returns. The Company is currently under a New York State income tax examination for tax years 2010 through 2017 and a New York City income tax examination for the tax years 2016 through 2018. At this time, the Company cannot estimate when the examinations will conclude or the impact such examinations will have on the Company's Consolidated Financial Statements, if any. Generally, other than New York City and State, the Company is no longer subject to tax examinations by tax authorities for years prior to 2018.

A reconciliation of the unrecognized tax benefits is as follows:

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Balance at beginning of year	$ 16,317	$ 6,831	$ 4,718
(Decrease) increase attributable to state and local tax apportionment	(1,228)	9,486	2,113
Balance at end of year	$ 15,089	$ 16,317	$ 6,831

As of December 31, 2021, the Company recorded $15.1 million of unrecognized tax benefits which, if recognized, would affect the Company's effective tax rate. Due to the uncertainty related to the timing and potential outcome of the audits, the Company cannot reasonably estimate the amount of the unrecognized tax benefit that could be adjusted in the next 12 months. During the years ended December 31, 2021, 2020 and 2019, the Company recognized $3.3 million, $3.7 million and $0.6 million, respectively, in penalties and interest. The Company had $8.3 million, $4.9 million and $1.2 million accrued for the payment of interest and penalties at December 31, 2021, 2020 and 2019 respectively.

10. Stockholders' Equity

Common Stock

As of December 31, 2021 and 2020, the Company had 110,000,000 authorized shares of voting common stock and 10,000,000 authorized shares of non-voting common stock. Voting common stock entitles the holder to one vote per share of common stock held.

The following is a summary of the changes in the Company's outstanding shares of voting common stock:

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Outstanding shares of voting common stock at the beginning of year	38,005	37,936	37,640
Exercise of stock options	92	177	147
Issuance of restricted stock, net of cancellations	48	56	161
Shares withheld for withholding tax payments	(75)	(125)	(98)
Treasury shares used for acquisition	—	—	146
Repurchases	(151)	(39)	(60)
Outstanding shares of voting common stock at the end of year	37,919	38,005	37,936

In September 2017, the Board of Directors authorized a fifteen-month share repurchase program for up to $100.0 million that commenced in October 2017. The expiration date of this program was subsequently extended to March 31, 2019. In January 2019, the Board of Directors authorized a new two-year share repurchase program for up to $100.0 million, which commenced in April 2019 and expired in March 2021. In January 2021, the Board of Directors authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021 and was exhausted in January 2022. In January 2022, the Board of Directors authorized a new share repurchase program for up to $150.0 million. Repurchases under the new program are expected to commence in the first quarter of 2022. Shares repurchased under each program will be held in treasury for future use.

Dividends

During 2021, 2020 and 2019, the Company paid quarterly cash dividends of $0.66 per share, $0.60 per share and $0.51 per share, respectively. Any future declaration and payment of dividends will be at the sole discretion of the Company's Board of Directors. The Board of Directors may take into account such matters as general business conditions, the Company's financial results, capital requirements, contractual obligations, legal, and regulatory restrictions on the payment of dividends to the Company's stockholders or by the Company's subsidiaries to their respective parent entities, and any such other factors as the Board of Directors may deem relevant.

11. Stock-Based Compensation Plans

The Company maintains a stock incentive plan which provides for the grant of stock options, stock appreciation rights, restricted stock, restricted stock units, performance shares, performance units, or other stock-based awards as incentives and rewards to encourage employees, consultants and non-employee directors to participate in the long-term success of the Company. As of December 31, 2021, there were 2,518,888 shares available for grant under the stock incentive plan.

Total stock-based compensation expense was as follows:

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Employees:			
Restricted stock and performance shares	$ 23,041	$ 21,310	$ 20,182
Stock options	2,961	3,100	4,032
	26,002	24,410	24,214
Non-employee directors:			
Restricted stock	1,312	1,203	1,080
Total stock-based compensation	$ 27,314	$ 25,613	$ 25,294

The Company records stock-based compensation expense for employees in employee compensation and benefits and for non-employee directors in general and administrative expenses in the Consolidated Statements of Operations.

Stock Options

The exercise price of each option granted is equal to the market price of the Company's common stock on the date of grant. Generally, option grants have provided for vesting over a three or five-year period. Options generally expire in six or ten years from the date of grant. The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model. The determination of fair value of share-based payment awards on the date of grant using an option-pricing model is affected by the Company's stock price as well as assumptions regarding a number of highly complex and subjective variables, including the expected stock price volatility over the term of the awards, the risk-free interest rate, the expected dividend yield rate and the expected term. Expected volatilities are based on historical volatility of the Company's stock. The risk-free interest rate is based on U.S. Treasury securities with a maturity value approximating the expected term of the option. The dividend yield rate is based on the expected annual dividends to be paid divided by the expected stock price. The expected term represents the period of time that options granted are expected to be outstanding based on actual and projected employee stock option exercise behavior.

The weighted-average fair value for options granted during 2021, 2020 and 2019 was $137.66, $91.43 and $58.37, respectively. The following table represents the assumptions used for the Black-Scholes option-pricing model to determine the per share weighted-average fair value for options granted, excluding the two awards discussed below:

	Year Ended December 31,		
	2021	2020	2019
Expected life (years)	5.0	5.0	5.0
Risk-free interest rate	0.4%	1.6%	2.6%
Expected volatility	31.2%	26.8%	25.9%
Expected dividend yield	0.4%	0.6%	0.8%

In addition to the option grants above, 76,868 stock options were granted to the Company's President and Chief Operating Officer in January 2019 with an aggregate grant date fair value of $2.9 million, as determined by an independent third party using a Monte Carlo simulation model. The exercise price is $272.88 for 35,679 of the stock options and $294.71 for the remaining 41,189 stock options, which is equal to 125% and 135%, respectively, of the fair market value of the Company's common stock on the grant date. Subject to the grantee's continued service with the Company, the options will vest and become exercisable on January 22, 2024. The options expire on July 22, 2024. Key assumptions used for the Monte Carlo model included a risk-free interest rate of 2.6%, volatility of 25.8% and a dividend yield of 0.8%.

In November 2018, 148,524 stock options were granted to the Company's Chief Executive Officer with a grant date fair value of $5.5 million, as determined by an independent third party using a Monte Carlo simulation model. The exercise price is $257.78 for 69,113 of the stock options and $278.40 for the remaining 79,411 stock options, which is equal to 125% and 135%, respectively, of the fair market value of the Company's stock on the grant date. Subject to the grantee's continued service with the Company, the options will vest and become exercisable on November 8, 2023. The options expire on May 8, 2024. Key assumptions used for the Monte Carlo model included a risk-free interest rate of 3.1%, volatility of 25.9% and a dividend yield of 0.8%.

The following table reports stock option activity during the three years ended December 31, 2021 and the intrinsic value as of December 31, 2021:

	Number of Shares	Weighted-Average Exercise Price ($)	Remaining Contractual Term	Intrinsic Value ($)
				(In thousands)
Outstanding at December 31, 2018	575,564	132.93		
Granted	82,474	279.57		
Canceled	(548)	198.67		
Exercised	(106,899)	28.24		
Outstanding at December 31, 2019	550,591	175.16		
Granted	13,900	368.10		
Canceled	(218)	307.52		
Exercised	(176,901)	84.07		
Outstanding at December 31, 2020	387,372	223.60		
Granted	17,897	517.88		
Canceled	(616)	394.77		
Exercised	(91,900)	107.05		32,529
Outstanding at December 31, 2021	312,753	274.35	2.5	44,710
Exercisable at December 31, 2021	59,215	190.13	1.7	13,095

The intrinsic value is the amount by which the closing price of the Company's common stock on December 31, 2021 of $411.27 or the price on the day of exercise exceeds the exercise price of the stock options multiplied by the number of shares. As of December 31, 2021, there was $5.4 million of total unrecognized compensation cost related to non-vested stock options. That cost is expected to be recognized over a weighted-average period of 1.6 years.

Service-Based Restricted Stock and Restricted Stock Unit Awards

Our annual compensation program includes share-based compensation awards as a component of certain employees' total compensation. These awards are generally subject to annual vesting requirements over a three-year period beginning at the date of grant, which occurs in the first quarter of each year. Accordingly, the expense is generally amortized over the stated vesting period. In addition, we grant shared-based compensation awards in conjunction with certain new hires and for retention purposes. These awards generally vest over a three-year period and expense is recognized over the requisite service period. We may also issue awards with a five-year period.

Performance Equity Awards

The Company grants performance equity awards to certain executives and senior managers of the firm as a component of their total compensation and in conjunction with new hires and for retention purposes. Currently, performance equity awards generally vest over a three-year period and contain both performance- and service-based elements. The Company may also grant awards with a five-year vesting period with performance- and service-based elements. Awards granted beginning in January 2021 are subject to retirement eligibility. The Company's retirement eligibility criteria stipulate that if an employee has at least ten years of continuous service and is at least 58 years of age, the employee is eligible for retirement. Retirement eligibility allows for continued vesting of awards after employees depart from the Company, provided that they give the minimum advance notice of one year.

Prior to 2020, performance share awards were generally granted with a performance period of one year, whereby each performance share award was earned or forfeited based on the level of achievement by the Company of pre-tax operating income, as defined in the year following the grant. The pay-out ranged from zero to 150% of the performance share target. For each performance share earned, a participant was awarded an equal number of shares of restricted stock. Subject to the grantee's continued service, any restricted stock awarded to a participant vested in two equal installments on each of the second and third anniversaries of the date of grant of the applicable performance share award. Compensation expense for one-year performance shares was measured at the grant date and recognized on a graded basis over the vesting period. The final performance achievement for these awards was certified in January 2020 and the awards are only subject to service requirements thereafter.

In January 2020 and January 2021, annual performance equity awards were granted with three-year performance periods, whereby the final amount that vests will be determined based on the level of achievement by the Company of certain predetermined metrics, including pre-tax adjusted operating income and market share for the following three fiscal years, including the year of grant. The final awarded pay-out will range from zero to 150% for the awards granted in 2020 and from zero to 200% for the awards granted in 2021. Subject to the grantee's continued service, any performance equity awarded to a participant will vest on the three-year anniversary of the grant date. Compensation expense for the three-year performance shares is measured at the grant date and expensed over the requisite service period with performance target achievement assessed at the end of each reporting period.

In August 2021, the new Chief Financial Officer received a performance equity award of 1,070 target shares. The award is substantially similar to the annual bonus performance equity awards granted in January 2021, except that the performance achievement will be determined using 2022 and 2023 fiscal years only. The award will fully vest on August 1, 2024 after certification of the performance criteria, subject to continued employment by the Chief Financial Officer through such date.

The following table reports the Company's performance payout estimates for three-year performance period awards at December 31, 2021 as well as the target and maximum share payouts for each award date granted:

Award Date	2021 Estimate	Target	Maximum
January 15, 2020	11,684	12,298	18,447
January 15, 2021	9,544	12,185	24,370
August 1, 2021	1,070	1,070	2,140

In addition to the grants above, 18,914 performance shares were granted to the Company's President and Chief Operating Officer in January 2019 with an aggregate fair value of $2.9 million as determined by an independent third party using a Monte Carlo simulation model. The performance share award provides that the number of shares earned will be based on the Company's achievement of certain share price levels during the five-year performance period. The performance level is $272.88 for 8,969 of the performance shares and $294.71 for the remaining 9,945 performance shares, which is equal to 125% and 135%, respectively, of the fair market value of the Company's common stock on the grant date. Each of the performance levels have been achieved. Subject to the grantee's continued service with the Company, earned shares will vest on January 22, 2024. Key assumptions used for the Monte Carlo simulation included a risk-free interest rate of 2.6%, volatility of 25.9% and a dividend yield of 0.8%.

In November 2018, 37,742 performance shares were granted to the Company's Chief Executive Officer with a grant date fair value of $5.5 million as determined by an independent third party using a Monte Carlo simulation model. The performance share award provides that the number of shares earned will be based on the Company's achievement of certain share price levels during the five-year performance period. The performance level is $257.78 for 17,942 of the performance shares and $278.40 for the remaining 19,800 performance shares, which is equal to 125% and 135%, respectively, of the fair market value of the Company's stock on the grant date. Each of the performance levels have been achieved. Subject to the grantee's continued service with the Company, earned shares will vest on November 8, 2023. Key assumptions used for the Monte Carlo model included a risk-free interest rate of 3.1%, volatility of 26.1% and a dividend yield of 0.8%.

The following table reports restricted stock and performance share activity during the three years ended December 31, 2021:

	Number of Restricted Shares	Weighted-Average Grant Date Fair Value
Outstanding at December 31, 2018	271,870	$ 112.47
Granted	118,632	
Performance share pay-out	87,163	
Canceled	(2,321)	
Vested	(129,312)	
Outstanding at December 31, 2019	346,032	$ 154.27
Granted	38,907	
Performance share pay-out	19,401	
Canceled	(3,480)	
Vested	(170,213)	
Outstanding at December 31, 2020	230,647	$ 224.63
Granted	47,142	
Performance share pay-out	—	
Canceled	(3,911)	
Vested	(111,268)	
Outstanding at December 31, 2021	162,610	$ 316.56

As of December 31, 2021, there was $31.9 million of total unrecognized compensation expense related to non-vested restricted stock and performance shares. That cost is expected to be recognized over a weighted-average period of 1.5 years.

Employee Stock Purchase Plan

The Company offered a non-qualified employee stock purchase plan for non-executive employees. Under the plan, participants were granted the right to purchase shares of common stock based on the fair market value on the last day of the six-month offering period. On the purchase date, the Company granted to the participants a number of shares of common stock equal to 20% of the aggregate shares purchased by the participant. These matching shares vested over a one-year period. The Company issued 806, 729 and 617 matching shares in connection with the plan for the years ended December 31, 2021, 2020, and 2019, respectively. In January 2022, the Company's Compensation & Talent Committee terminated the employee stock purchase plan with an effective date of February 28, 2022.

12. Earnings Per Share

The following table sets forth basic and diluted weighted average shares outstanding used to compute earnings per share:

	Year Ended December 31,		
	2021	2020	2019
	(In thousands, except per share amounts)		
Basic weighted average shares outstanding	37,508	37,359	37,083
Dilutive effect of stock options and restricted stock	589	785	873
Diluted weighted average shares outstanding	38,097	38,144	37,956
Basic earnings per share	$ 6.88	$ 8.01	$ 5.53
Diluted earnings per share	$ 6.77	$ 7.85	$ 5.40

Stock options and restricted stock totaling 41,240 shares, 21,127 shares and 146,822 shares for the years ended December 31, 2021, 2020 and 2019, respectively, were excluded from the computation of diluted earnings per share because their effect would have been antidilutive. The computation of diluted shares can vary among periods due, in part, to the change in the average price of the Company's common stock.

13. Credit Agreements and Short-term Financing

Prior Revolving Credit Agreements

In October 2015, the Company entered into an amended and restated credit agreement (the "2015 Credit Agreement") that provided for revolving loans and letters of credit up to an aggregate of $100.0 million. The 2015 Credit Agreement matured on November 13, 2020, when the Company entered into a new one-year credit agreement (the "2020 Credit Agreement") with a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, that provided aggregate commitments totaling $500.0 million, consisting of a revolving credit facility and a $5.0 million letter of credit sub-limit for standby letters of credit. The 2020 Credit Agreement replaced the 2015 Credit Agreement.

Borrowings under the 2020 Credit Agreement bore interest at a rate per annum equal to the base rate or adjusted LIBOR plus an applicable margin that varies with the Company's consolidated total leverage ratio. The 2020 Credit Agreement required that the Company satisfy certain covenants, which include leverage ratios and minimum earnings before interest, tax, and depreciation and amortization ("EBITDA") requirements.

2021 Credit Agreement

On October 15, 2021, the Company replaced the 2020 Credit Agreement with a new three-year revolving credit facility (the "2021 Credit Agreement") provided by a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, which provides aggregate commitments totaling $500.0 million, consisting of a revolving credit facility and a $5.0 million letter of credit sub-limit for standby letters of credit. The 2021 Credit Agreement will mature on October 15, 2024, with the Company's option to request up to two additional 364-day extensions at the discretion of each lender and subject to customary conditions. Subject to satisfaction of certain specified conditions, the Company is permitted to upsize the 2021 Credit Agreement by up to $250.0 million in total. As of December 31, 2021, the Company had $1.0 million in letters of credit outstanding and $499.0 million in available borrowing capacity under the 2021 Credit Agreement.

Borrowings under the 2021 Credit Agreement will bear interest at a rate per annum equal to the base rate or adjusted LIBOR plus an applicable margin that varies with the Company's consolidated total leverage ratio. The 2021 Credit Agreement requires that the Company satisfy certain covenants, which include a leverage ratio. The Company incurred no interest expense under the 2021 Credit Agreement for the year ended December 31, 2021.

Collateralized Agreement

In connection with its self-clearing operations, the Company's U.S. broker-dealer subsidiary entered into an agreement (the "Collateralized Agreement") with its settlement bank to provide loans to the subsidiary in amounts up to an aggregate of $200.0 million on an uncommitted basis. Borrowings under the Collateralized Agreement are collateralized by securities pledged by the Company's broker-dealer subsidiary to the settlement bank, subject to applicable haircuts and concentration limits. Borrowings under the Collateralized Agreement will bear interest at a rate per annum equal to base rate equal to the higher of the upper range of the Federal Funds Rate, 0.25% or one-month Secured Overnight Financing Rate ("SOFR"), plus 1.00%. The Company incurred less than $0.1 million of interest expense on borrowings under the Collateralized Agreement during the year ended December 31, 2021. As of December 31, 2021, the Company had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement.

Short-term Financing

Under arrangements with their settlement banks, certain of the Company's U.S. and U.K. operating subsidiaries may receive overnight financing in the form of bank overdrafts. The Company incurred interest expense on such overnight financing of $0.8 million during the year ended December 31, 2021. As of December 31, 2021, the Company had no overdrafts payable outstanding.

14. Leases

The Company has operating leases for corporate offices with initial lease terms ranging from one-year to 15 years. Certain leases contain options to extend the initial term at the Company's discretion. The Company accounts for the option to extend when it is reasonably certain of being exercised. The Company's lease agreements do not contain any material residual value guarantees, restrictions or covenants.

The following table presents the components of occupancy expense for the years ended December 31, 2021, 2020, and 2019:

Lease cost:	Classification	Year Ended December 31, 2021	2020	2019
			(In thousands)	
Operating lease cost	Occupancy	$ 13,202	$ 13,455	$ 10,875
Operating lease cost for subleased/assigned properties	Other, net	2,054	2,404	2,422
Variable lease costs	Occupancy	13	26	169
Sublease income for subleased/assigned properties	Other, net	(2,079)	(2,420)	(2,422)
Net lease cost		$ 13,190	$ 13,465	$ 11,044

The Company determines whether an arrangement is, or includes, a lease at contract inception. Operating lease right-of-use assets and liabilities are recognized at commencement date and are initially measured based on the present value of lease payments over the defined lease term. As the Company's leases do not provide an implicit rate, the Company used its incremental borrowing rate based on the information available at the adoption date in determining the present value of lease payments.

The weighted average remaining lease term and weighted average discount rate are as follows:

Lease Term and Discount Rate	As of December 31, 2021	2020
Weighted average remaining lease term (in years)	11.5	12.3
Weighted average discount rate	5.9%	5.9%

The following table presents the maturity of lease liabilities as of December 31, 2021:

	(In thousands)
2022	$ 11,163
2023	10,823
2024	11,281
2025	11,086
2026	10,984
2027 and thereafter	68,065
Total lease payments	123,402
Less: interest	34,977
Present value of lease liabilities	$ 88,425

The Company has entered into agreements to sublease or assign the Company's lease obligations on two properties to third parties and is contingently liable should the third parties default on future lease obligations through the lease termination dates of February 2022 and May 2022. The aggregate amount of the future lease obligations under these arrangements is $0.3 million as of December 31, 2021.

15. Commitments and Contingencies

Legal

In the normal course of business, the Company and its subsidiaries included in the consolidated financial statements may be involved in various lawsuits, proceedings and regulatory examinations. The Company assesses its liabilities and contingencies in connection with outstanding legal proceedings, if any, utilizing the latest information available. For matters where it is probable that the Company will incur a material loss and the amount can be reasonably estimated, the Company would establish an accrual for the loss. Once established, the accrual would be adjusted to reflect any relevant developments. When a loss contingency is not both probable and estimable, the Company does not establish an accrual.

Based on currently available information, the outcome of the Company's outstanding matters is not expected to have a material adverse impact on the Company's financial position. It is not presently possible to determine the ultimate exposure to these matters and there is no assurance that the resolution of the outstanding matters will not significantly exceed any reserves accrued by the Company.

Other

The Company, through certain of its subsidiaries, executes bond transactions between its institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. The Company's U.S. broker-dealer subsidiary operates under a self-clearing model for the settlement of such transactions. The Company's subsidiaries also settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded. Under both the self-clearing and the third-party clearing models, the Company may be exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is an error in executing a matched principal transaction. Pursuant to the terms of the securities clearing agreements, each third-party clearing broker has the right to charge the Company for any losses they suffer resulting from a counterparty's failure on any of the Company's trades. The Company did not record any liabilities or losses with regard to counterparty failures for the three years ended December 31, 2021.

In the normal course of business, the Company enters into contracts that contain a variety of representations, warranties and general indemnifications. The Company's maximum exposure under these arrangements is unknown, as this would involve future claims that may be made against the Company that have not yet occurred. However, based on experience, the Company expects the risk of loss to be remote.

16. Segment and Geographic Information

The Company operates an electronic multi-party platform for the trading of fixed-income securities and provides related data, analytics, compliance tools and post-trade services. The Company's operations constitute a single business segment because of the highly integrated nature of these products and services, of the financial markets in which the Company competes and of the Company's worldwide business activities. The Company believes that results by geographic region or client sector are not necessarily meaningful in understanding its business.

For the years ended December 31, 2021, 2020 and 2019, the U.K. was the only individual foreign country in which the Company had a subsidiary that accounted for 10% or more of the total revenues or total long-lived assets. Revenues and long-lived assets are attributed to geographic area based on the location of the particular subsidiary. Long-lived assets are defined as furniture, equipment, leasehold improvements and capitalized software. Revenues for the three years ended December 31, 2021, 2020 and 2019 and long-lived assets as of December 31, 2021 and 2020 were as follows:

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Revenues			
Americas	$ 568,918	$ 583,164	$ 427,276
Europe	110,068	89,751	74,511
Asia	19,965	16,210	9,565
Total	$ 698,951	$ 689,125	$ 511,352

	As of December 31,	
	2021	2020
	(In thousands)	
Long-lived assets, as defined		
Americas	$ 75,328	$ 68,707
Europe	20,547	16,491
Asia	186	6
Total	$ 96,061	$ 85,204

17. Retirement and Deferred Compensation Plans

The Company, through its U.S. and U.K. subsidiaries, offers its employees the opportunity to invest in defined contribution plans. For the years ended December 31, 2021, 2020 and 2019, the Company contributed $5.8 million, $4.0 million and $3.3 million, respectively, to the plans.

The Company offers a non-qualified deferred cash incentive plan to certain officers and other employees. Under the plan, eligible employees may defer up to 100% of their annual cash incentive pay. The Company has elected to fund its deferred compensation obligations through a rabbi trust. The rabbi trust is subject to creditor claims in the event of insolvency, but such assets are not available for general corporate purposes. Assets held in the rabbi trust are invested in mutual funds, as selected by the participants, which are designated as trading securities and carried at fair value. As of December 31, 2021 and 2020, the fair value of the mutual fund investments and deferred compensation obligations were $11.2 million and $8.9 million, respectively. Changes in the fair value of securities held in the rabbi trust and offsetting increases or decreases in the deferred compensation obligation are recognized in other, net in the Company's Consolidated Statements of Operations.

18. Cash and Cash Equivalents and Restricted Cash

The following table provides a reconciliation of cash and cash equivalents together with restricted or segregated cash as reported within the Consolidated Statements of Financial Condition to the sum of the same such amounts shown in the Consolidated Statements of Cash Flows:

	Statement of Financial Condition Location	December 31, 2021	December 31, 2020	December 31, 2019
			(In thousands)	
Cash and cash equivalents	Cash and cash equivalents	$ 506,735	$ 460,858	$ 270,124
Cash segregated for regulatory purposes	Cash segregated under federal regulations	50,159	50,059	—
Deposits with clearing organizations and broker-dealers	Receivables from broker-dealers, clearing organizations and customers	68,565	97,043	—
Other deposits	Prepaid expenses and other assets	108	90	4,129
Total		$ 625,567	$ 608,050	$ 274,253

19. Parent Company Information

The following tables present Parent Company-only financial information and should be read in conjunction with the consolidated financial statements of the Company.

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Financial Condition

	As of	
	December 31, 2021	December 31, 2020
	(In thousands)	
ASSETS		
Cash and cash equivalents	$ 61,820	$ 55,747
Investments, at fair value	6,327	4,811
Accounts receivable	—	178
Receivable from subsidiaries	3,488	41,986
Intangible assets, net of accumulated amortization	25	27
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	21,596	23,518
Operating lease right-of-use assets	60,753	64,460
Investments in subsidiaries	982,029	853,626
Prepaid expenses and other assets	4,810	4,591
Income and other tax receivable	1,763	9,028
Total assets	$ 1,142,611	$ 1,057,972
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	$ 11,065	$ 10,241
Income and other tax liabilities	5,026	3,457
Accounts payable, accrued expenses and other liabilities	9,233	9,341
Operating lease liabilities	75,978	79,872
Total liabilities	101,302	102,911
Stockholders' equity		
Preferred stock	—	—
Series A Preferred Stock	—	—
Common stock voting	123	123
Common stock non-voting	—	—
Additional paid-in capital	330,262	329,742
Treasury stock	(232,712)	(169,523)
Retained earnings	956,966	799,369
Accumulated other comprehensive loss	(13,330)	(4,650)
Total stockholders' equity	1,041,309	955,061
Total liabilities and stockholders' equity	$ 1,142,611	$ 1,057,972

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Operations and Comprehensive Income

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Dividends from subsidiaries	$ 173,000	$ 30,000	$ 165,000
Expenses			
Employee compensation and benefits	17,887	19,710	16,100
Depreciation and amortization	2,123	2,068	1,919
Professional and consulting fees	7,081	7,332	6,523
General and administrative	3,620	2,723	3,115
Total expenses	30,711	31,833	27,657
Operating income (loss)	142,289	(1,833)	137,343
Other income (expense)			
Investment income	132	2,799	5,305
Interest expense	—	(805)	—
Other, net	(2,950)	(318)	(1,344)
Total other income (expense)	(2,818)	1,676	3,961
Income (loss) before income taxes and equity in undistributed earnings of subsidiaries	139,471	(157)	141,304
Benefit from income taxes	(6,472)	(23,444)	(9,442)
Income before equity in undistributed income of subsidiaries	145,943	23,287	150,746
Equity in undistributed income of subsidiaries	111,945	276,090	54,156
Net income	257,888	299,377	204,902
Other comprehensive income (loss), net	(8,680)	5,620	2,124
Comprehensive income	$ 249,208	$ 304,997	$ 207,026

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Cash Flows

	Year Ended December 31,		
	2021	2020	2019
		(In thousands)	
Cash flows from operating activities			
Net income	$ 257,888	$ 299,377	$ 204,902
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	2,123	2,068	1,919
Amortization of operating lease right-of-use assets	4,484	4,117	4,027
Stock-based compensation expense	12,706	10,834	10,547
Deferred taxes	1,712	3,644	1,255
Equity in undistributed income of subsidiaries	(111,945)	(276,090)	(54,156)
Other	—	(671)	328
Changes in operating assets and liabilities:			
Decrease (increase) in accounts receivable	178	(115)	(4)
Decrease (increase) in receivable from subsidiaries	47,371	(25,049)	5,253
(Increase) decrease in prepaid expenses and other assets	(219)	(1,085)	933
(Increase) in mutual funds held in rabbi trust	(1,516)	(1,328)	(1,183)
Increase in accrued employee compensation	824	3,698	876
Decrease (increase) in income and other tax receivable	7,265	(1,240)	(3,219)
(Decrease) increase in income and other tax liabilities	(143)	6,676	(2,612)
(Decrease) in accounts payable, accrued expenses and other liabilities	(607)	(442)	(2,039)
(Decrease) increase in operating lease liabilities	(4,673)	(4,055)	1,191
Net cash provided by operating activities	215,449	20,339	168,018
Cash flows from investing activities			
Acquisition of business, net of cash and cash equivalents acquired	(17,079)	—	(102,320)
Available-for-sale investments			
Proceeds from maturities and sales	—	170,657	170,936
Purchases	—	(32,865)	(160,827)
Purchases of furniture, equipment and leasehold improvements	(198)	(337)	(1,424)
Purchase of intangible asset	—	—	(30)
Net cash (used in) provided by investing activities	(17,277)	137,455	(93,665)
Cash flows from financing activities			
Cash dividend on common stock	(99,791)	(90,566)	(76,231)
Exercise of stock options	7,096	4,007	1,207
Withholding tax payments on restricted stock vesting and stock option exercises	(33,890)	(42,418)	(25,820)
Repurchases of common stock	(63,189)	(16,135)	(17,256)
Proceeds from short-term borrowings	—	348,000	—
Repayments of short-term borrowings	—	(348,000)	—
Net cash (used in) financing activities	(189,774)	(145,112)	(118,100)
Effect of exchange rate changes on investments	(2,324)	(5,176)	(3,852)
Cash and cash equivalents including restricted cash			
Net increase (decrease) for the period	6,073	7,506	(47,599)
Beginning of period	55,747	48,241	95,840
End of period	$ 61,820	$ 55,747	$ 48,241
Supplemental cash flow information:			
Cash paid for income taxes	$ 41,103	$ 32,674	$ 41,025
Cash paid for interest	—	805	—
Non-cash investing and financing activity:			
Exercise of stock options - cashless	$ 2,750	$ 10,866	$ 1,811
Treasury stock used for acquisition of business	—	—	(48,830)

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.***

None.

Item 9A. ***Controls and Procedures.***

Our management, including the Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our "disclosure controls and procedures," as that term is defined in Rule 13a-15(e) and Rule 15d-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of December 31, 2021. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures are effective to ensure that information required to be disclosed by MarketAxess in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms, and to ensure that information is accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

There were no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) during the quarter ended December 31, 2021 identified in connection with the evaluation thereof by our management, including the Chief Executive Officer and Chief Financial Officer, that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's annual report on internal control over financial reporting and the report of our independent registered public accounting firm appears in Part II, Item 8. *Financial Statements and Supplementary Data* of this Annual Report on Form 10-K.

Item 9B. ***Other Information.***

None.

Item 9C. ***Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.***

Not applicable.

PART III

Item 10. ***Directors, Executive Officers and Corporate Governance.***

The information required by this item is incorporated herein by reference to the sections entitled "Proposal 1 — Election of Directors," "Corporate Governance and Board Matters," and "Executive Officers" in our definitive Proxy Statement (the "Proxy Statement") for the Annual Meeting of Stockholders to be held in the second quarter of 2022. We intend to file the Proxy Statement within 120 days after the end of our fiscal year (i.e., on or before April 30, 2022). Our Code of Conduct applicable to directors and all employees, including senior financial officers, is available on our website at www.marketaxess.com. If we make any amendments to or waivers from our Code of Conduct that are required to be disclosed pursuant to the Exchange Act, we will make such disclosures on our website.

Item 11. ***Executive Compensation.***

The information required by this item is incorporated herein by reference to the sections entitled "Compensation Discussion and Analysis," "Report of the Compensation and Talent Committee of the Board of Directors," "Executive Compensation" and "Corporate Governance and Board Matters – Director compensation" in our Proxy Statement.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.***

The information required by this item with respect to the security ownership of certain beneficial owners and management is incorporated herein by reference to the section entitled "Security Ownership of Certain Beneficial Owners and Management" in our Proxy Statement.

Equity Compensation Plan Information

The following table provides certain information regarding common stock authorized for issuance under our incentive plan as of December 31, 2021:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights (b)	Number of Securities Remaining Available for Future Issuance under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c)
Equity compensation plans approved by stockholders	312,753	$ 274.35	2,518,888

Item 13. ***Certain Relationships and Related Transactions, and Director Independence.***

The information required by this item is incorporated herein by reference to the section entitled "Certain Relationships and Related Party Transactions" in our Proxy Statement.

Item 14. ***Principal Accounting Fees and Services.***

The information required by this item is incorporated herein by reference to the section entitled "Proposal 2 – Ratification of Selection of Independent Registered Public Accounting Firm – Audit and other fees" in our Proxy Statement.

PART IV

Item 15. *Exhibits and Financial Statement Schedules.*

(a) Financial Statements and Schedules

The financial statements are set forth under Item 8 of this Annual Report on Form 10-K. Financial statement schedules have been omitted since they are either not required, not applicable, or the information is otherwise included.

(b) Exhibit Listing

Number	Description
2.1	Unit Purchase Agreement, dated as of August 12, 2019, by and among MarketAxess Holdings Inc., LiquidityEdge LLC, each of the Sellers identified therein, RF7 LLC (as the Sellers' Representative) and David Rutter (solely for purposes of Section 6.7 thereof) (incorporated by reference to Exhibit 2.1 to the registrant's Quarterly Report on Form 10-Q dated October 25, 2019)
2.1(a)	Amendment No. 1 to Unit Purchase Agreement, dated as of November 1, 2019, by and between MarketAxess Holdings Inc. and RF7 LLC (as the Sellers' Representative) (incorporated by reference to Exhibit 2.1(a) to the registrant's Annual Report on Form 10-K for the year ended December 31, 2019)
3.1(a)	Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.2 to Amendment No.2 to the registrant's Registration Statement on Form S-1 dated May 7, 2004 (Registration No. 333-112718))
3.1(b)	Form of Certificate of Designation of Series A Preferred Stock of MarketAxess Holdings Inc. (incorporated by reference to Exhibit 3.1 to the registrant's Registration Statement on Form 8-A dated June 3, 2008)
3.2(a)	Amended and Restated Bylaws (incorporated by reference to Exhibit 3.4 to Amendment No.2 to the registrant's Registration Statement on Form S-1 dated May 7, 2004 (Registration No. 333-112718))
3.2(b)	Amendment No. 1 to the Amended and Restated Bylaws (incorporated by reference to Exhibit 3.1 to the registrant's Current Report on Form 8-K dated January 25, 2013)
4.1	Specimen Common Stock certificate (incorporated by reference to Exhibit 4.1 to Amendment No. 2 to the registrant's Registration Statement on Form S-1 dated May 7, 2004 (Registration No. 333-112718))
4.2(a)	See Exhibits 3.1 for provisions defining the rights of holders of common stock and non-voting common stock of the registrant
4.2(b)	See Exhibits 3.2 for provisions defining the rights of holders of common stock and non-voting common stock of the registrant
4.3	Description of registrant's securities (incorporated by reference to Exhibit 4.3 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2019)
10.1	MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 99.1 to the registrant's Registration Statement on Form S-8 filed on June 10, 2020)#
10.2(a)	MarketAxess Holdings Inc. 2012 Incentive Plan as Amended and Restated Effective June 7, 2016 (incorporated by reference to Appendix A to the registrant's Proxy Statement for its Annual Meeting for Stockholders held on June 7, 2016, filed on April 25, 2016)#
10.2(b)	Amendment Number One to the MarketAxess Holdings Inc. 2012 Incentive Plan as Amended and Restated Effective June 7, 2016 (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated April 21, 2017)#

10.2(c)	Amendment to the MarketAxess Holdings Inc. 2012 Incentive Plan (Amended and Restated Effective June 7, 2016), as amended (incorporated by reference to Appendix A to the registrant's Proxy Statement for its Annual Meeting of Stockholders held on June 7, 2018, filed April 25, 2018)#
10.3	MarketAxess Holdings Inc. 2004 Annual Performance Incentive Plan (incorporated by reference to Exhibit 10.11 to Amendment No. 2 to the registrant's Registration Statement on Form S-1 dated May 7, 2004 (Registration No. 333-112718))#
10.4	MarketAxess Holdings Inc. Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.4 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.5*	MarketAxess Holdings Inc. 2009 Employee Performance Incentive Plan, as amended#
10.6*	MarketAxess Holdings Inc. Nonqualified Deferred Compensation Plan#
10.7	Form of Indemnification Agreement for Directors (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017)#
10.8	Form of Restricted Stock Agreement for Employees other than Richard M. McVey pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated January 15, 2008)#
10.9(a)	Form of Restricted Stock Unit Agreement for executive officers other than Richard M. McVey pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated January 22, 2016)#
10.9(b)	Form of Restricted Stock Unit Agreement (annual vesting) for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated January 4, 2019)#
10.9(c)	Form of Restricted Stock Unit Agreement (cliff vesting) for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K dated January 4, 2019)#
10.9(d)	Guidelines for Restricted Stock Units granted under the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 19, 2011)#
10.10	Form of Performance Share Award Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated January 4, 2019)#
10.11(a)	Form of Incentive Stock Option Agreement for Employees other than Richard M. McVey pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated January 15, 2008)#
10.11(b)	Form of Incentive Stock Option Agreement pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated January 22, 2016)#
10.11(c)	Form of Incentive Stock Option Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated January 4, 2019)#
10.12(a)	Employment Letter Agreement, dated as of January 15, 2015, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 15, 2015)#

10.12(b)	Amendment to Richard M. McVey Employment Agreement, dated as of January 12, 2017, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 6, 2017)#
10.12(c)	Second Amendment to Richard M. McVey Employment Agreement, dated as of November 6, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated November 6, 2018)#
10.12(d)	Incentive Stock Option Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated November 6, 2018)#
10.12(e)	Incentive Stock Option Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated November 6, 2018)#
10.12(f)	Performance Award Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated November 6, 2018)#
10.12(g)	Performance Award Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey (incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K November 6, 2018)#
10.13(a)	Contract of Employment, dated March 15, 2017, between MarketAxess Europe Limited and Christophe Roupie (incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017)#
10.13(b)	Restricted Stock Agreement Pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan, dated as of April 1, 2017, by and between MarketAxess Holdings, Inc. and Christophe Roupie (incorporated by reference to Exhibit 10.11(b) to the registrant's Annual Report on Form 10-K for the year ended December 31, 2019)#
10.13(c)	Amendment, dated as of August 14, 2017, to the Restricted Stock Agreement, dated April 1, 2017, between MarketAxess Holdings Inc. and Christophe Roupie (incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017)#
10.14	Employment Letter Agreement, dated as of January 7, 2019, by and between MarketAxess Holdings Inc. and Christopher R. Concannon (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 4, 2019)#
10.15	Form of 2021 Restricted Stock Unit Agreement (Deferred) for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.13 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.16	Form of 2021 Restricted Stock Unit Agreement (Non-Deferred) for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.14 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.17	Guidelines for Restricted Stock Units granted under the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.15 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.18	Form of 2021 Performance Stock Unit Agreement for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.16 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#

10.19	Form of 2021 Incentive Stock Option Agreement for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Incentive Plan (incorporated by reference to Exhibit 10.17 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.20	Form of 2021 Restricted Stock Agreement for U.K. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.18 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.21	Form of 2021 Restricted Stock Agreement (Performance) for U.K. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.19 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.22	Form of 2021 Restricted Stock Agreement for Directors pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.20 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.23	Form of Restricted Stock Unit Agreement for Directors pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.21 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.24	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Antonio DeLise (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated July 31, 2020)#
10.25	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Scott Pintoff (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated July 31, 2020)#
10.26	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Kevin McPherson (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated July 31, 2020)#
10.27	Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Nicholas Themelis (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated July 31, 2020)#
10.28	MarketAxess Europe Limited Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Europe and Christophe Roupie (incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K dated July 31, 2020)#
10.29	Form of Amendment of Severance Protection Agreement for U.S. based Executive Officers, except Messrs. Gerosa and Panchal (incorporated by reference to Exhibit 10.27 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020)#
10.30	Form of Amendment of Severance Protection Agreement for U.K. based Executive Officers (incorporated by reference to Exhibit 10.28 to the registrant's Annual report on Form 10-K for the year ended December 31, 2020)#
10.31	Severance Protection Agreement, dated as of August 12, 2021, by and between MarketAxess Holdings Inc. and Christopher N. Gerosa (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated August 12, 2021)#
10.32*	Offer Letter, dated November 24, 2021, by and between MarketAxess Holdings Inc. and Naineshkumar Shantilal Panchal#†
10.33	Credit Agreement, dated as of November 13, 2020, among MarketAxess Holdings Inc., a Delaware corporation, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated November 18, 2020)
10.34	Credit Agreement, dated as of October 15, 2021, among MarketAxess Holdings Inc., a Delaware corporation, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated October 15, 2021)

21.1*	Subsidiaries of the Registrant
23.1*	Consent of PricewaterhouseCoopers LLP
31.1*	Certification by Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification by Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification by Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2*	Certification by Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
104	The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2021 has been formatted in Inline XBRL and is included in Exhibits 101.

* Filed herewith.

† Certain confidential information, identified by bracketed asterisks "[*****]" has been omitted from this exhibit pursuant to Item 601(b)(10) of Regulation S-K because it is both (i) not material and (ii) is the type that the registrant treats as private or confidential.

Management contract or compensatory plan or arrangement.

Item 16. *Form 10-K Summary*

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MARKETAXESS HOLDINGS INC.

By: /s/ RICHARD M. MCVEY
Richard M. McVey
Chief Executive Officer

Date: February 23, 2022

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

Signature	Title(s)	Date
/s/ RICHARD M. MCVEY Richard M. McVey	Chief Executive Officer and Chairman of the Board of Directors (principal executive officer)	February 23, 2022
/s/ CHRISTOPHER N. GEROSA Christopher N. Gerosa	Chief Financial Officer (principal financial and accounting officer)	February 23, 2022
/s/ CHRISTOPHER R. CONCANNON Christopher R. Concannon	Director, President and Chief Operating Officer	February 23, 2022
/s/ NANCY ALTOBELLO Nancy Altobello	Director	February 23, 2022
/s/ STEVEN L. BEGLEITER Steven L. Begleiter	Director	February 23, 2022
/s/ STEPHEN P. CASPER Stephen P. Casper	Director	February 23, 2022
/s/ JANE CHWICK Jane Chwick	Director	February 23, 2022
/s/ WILLIAM CRUGER William Cruger	Director	February 23, 2022
/s/ KOURTNEY GIBSON Kourtney Gibson	Director	February 23, 2022
/s/ JUSTIN GMELICH Justin Gmelich	Director	February 23, 2022
/s/ RICHARD G. KETCHUM Richard G. Ketchum	Director	February 23, 2022
/s/ XIAOJIA CHARLES LI Xiaojia Charles Li	Director	February 23, 2022
/s/ EMILY PORTNEY Emily Portney	Director	February 23, 2022
/s/ RICHARD PRAGER Richard Prager	Director	February 23, 2022

[This page intentionally left blank]

[This page intentionally left blank]

[This page intentionally left blank]

MarketAxess®

NYC Headquarters

55 Hudson Yards Floor 15
New York NY 10001 USA

T +1 212 813 6000
marketaxess.com