

**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, 2023

☐ **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
(State of incorporation)

52-2230784
(IRS Employer Identification No.)

55 Hudson Yards, New York, New York
(Address of principal executive offices)

10001
(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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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, 2023 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately \$7.4 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 executive officers, directors and holders of 10% or more of the outstanding common stock of the registrant on that date. The registrant had 37,677,426 shares of common stock, 9,241,225 of which were held by affiliates, outstanding on that date.

As of February 20, 2024, the aggregate number of shares of the registrant's common stock outstanding was 37,867,743.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the 2024 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.
2023 FORM 10-K ANNUAL REPORT
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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. Over 2,000 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. We leverage our diverse set of trading protocols, automated and algorithmic trading solutions, intelligent data and index products and a range of post-trade services to provide an end-to-end trading solution to our robust network of platform participants.

We provide automated and algorithmic trading solutions that we believe, when combined with our integrated and actionable data offerings, help our clients make faster, better-informed decisions on when and how to trade on our platforms. In 2023, we introduced MarketAxess X-Pro (“X-Pro”), our newest trading platform, to more seamlessly combine our trading protocols with our proprietary data and pre-trade analytics. We expect that our recent acquisition of Pragma LLC and Pragma Financial Systems LLC (collectively, “Pragma”), a quantitative trading technology provider specializing in algorithmic and analytical trading services, will accelerate our development of artificial intelligence (“AI”) driven execution algorithms across all of our key product areas.

We operate in a large and growing market that provides us with a significant opportunity for future growth, due, in part, to the relatively low levels of electronic trading in many of our largest current product areas. We offer all-to-all trading (“Open Trading”) for most of our products in order to capitalize on this addressable market by increasing the number of potential trading counterparties and providing our clients with a menu of solutions at each step in the trading process. We believe that Open Trading drives meaningful price improvement for our clients and reduces risk in fixed-income markets by creating a global, diversified pool of liquidity whereby our institutional investor, dealer and alternative liquidity provider clients can all interact on an anonymous basis. 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 solutions.

We also provide a number of integrated and actionable data offerings, including CP+™ and Axess All®, to assist clients with real-time pricing and trading decisions and transaction cost analysis. We offer a range of post-trade services, including straight-through processing, post-trade matching, trade publication, regulatory transaction reporting and market and reference data across fixed-income and other products. In 2023, 88.1% of our revenues were derived from commissions for transactions executed on our platforms. We also derive revenues from information services, post-trade services and technology services. 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

MarketAxess has been an innovative leader in electronic trading since its founding in 2000. Throughout our history, our primary goals have remained the same: improve trading efficiency and deliver meaningful transaction price improvement 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 enabled institutional investors to trade electronically with over thirty broker-dealers. During the global financial crisis of 2007-2008, 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 over 1,700 global market participants to trade a wide variety of fixed-income securities with each other.

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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:

Expansive Liquidity Pool Comprised of 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. We believe that our broker-dealer clients are incentivized to use 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 has increased from approximately \$2.0 trillion in 2019 to \$3.1 trillion in 2023 and our estimated market share of U.S. high-grade and high-yield corporate bond volumes in 2023 was 20.4% and 17.1%, respectively. Approximately 90.9% of credit volume on our platforms during 2023 was executed by institutional clients with the remaining 9.1% of credit volume conducted between dealers.

Open Trading is a Differentiator that Expands the Liquidity Pool and Drives Price Improvement for Broker-Dealers and Institutional Investors

Global liquidity has remained a persistent concern for market participants as regulators raised bank 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 functionality, has emerged as a solution to this liquidity problem. 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 2023, over 1,700 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 Open Trading generated \$701.9 million of price improvement for our clients in 2023, consisting of an estimated \$471.5 million of liquidity taker price improvement (defined as the difference between the winning price and the best disclosed dealer cover price) and an estimated \$230.4 million of liquidity provider price improvement (defined as the difference between the winning price and then current CP+ bid or offer level, offer if the provider is buying, bid if provider is selling) at the time of the inquiry. This Open Trading price improvement is 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. 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.

Advanced End-to-End Technology

Our electronic trading platforms are based on a secure and scalable architecture that makes broad use of distributed computing to achieve speed and reliability. Our technology provides clients with end-to-end and customizable connectivity to fixed-income markets. In designing X-Pro, our newest platform, we enhanced the trading experience by providing traders with a flexible user experience, intuitive workflows and easy access to our proprietary data and pre-trade analytics. To further support more efficient trade execution, we also offer several automated and algorithmic trading solutions, 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. For example, we introduced our Adaptive Auto-X automated and algorithmic trading solution for fixed-income in 2023, which provides our clients with a suite of AI-driven algorithms that integrate all our trading protocols. We believe that these automated and algorithmic trading solutions reduce trading inefficiencies and human errors while allowing traders to focus on higher-value trades.

In addition to services directly related to the execution of trades, we also offer our clients several other pre- and post-trade services. In the pre-trade period, our platforms assist participants with price discovery by providing them with dealer pricing and real-time and historical trade data. Following the execution of a trade, our platforms support all of the essential tools and functionalities to enable our participants to achieve straight through processing ("STP") for trade settlement and to measure transaction costs to evidence best execution.

The Company is focused on investing in our resiliency, scalability and risk management systems. We also prioritize continuing product delivery on current technologies, delivering approximately 1,000 unique new business and technical features to our clients during the year ended December 31, 2023.

Growing, Comprehensive International Offering and Client Base

Our platforms provide global fixed-income market participants with trading functionality across Eurobond and emerging markets credit and rates markets, connecting clients in over 90 countries to local and global dealers. MarketAxess has over 1,000 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 access cross-border liquidity more efficiently 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 130 broker-dealers.

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, benefiting our current clients and attracting new market participants to our network. For example, we believe that our automation solutions enable more efficient execution of smaller trades, and allow traders to instead focus their attention on larger, and often higher-value, trades.

Our Strategy

Our objective is to provide the leading global electronic trading platforms for fixed-income securities, allowing broker-dealers and institutional investors to connect, trade and achieve cost savings more easily and efficiently, while offering a broad array of information, trading and technology services to market participants across an end-to-end trading solution. The key elements of our strategy are:

Increase Penetration in Credit Markets

We believe that we have a large opportunity remaining to capture additional market share in the credit product markets in which we have already established a leadership position. For example, the estimated Composite Corporate Bond average daily volume (“ADV”) on our platforms for the year ended December 31, 2023 for our combined U.S. high-grade, U.S. high-yield, emerging markets and Eurobonds product areas (collectively, “Composite Corporate Bond”) was approximately \$9.8 billion, representing just 19.3% of the estimated addressable market of approximately \$51.1 billion. The traditional methods of bilateral trading, including the telephone or electronic messaging, continue to be one of our principal competitors in the credit markets in which we have established a leadership position. We continue to focus on capturing additional market share across our core credit markets. In 2023, we introduced X-Pro, our new trading platform, to clients in the United States. We believe that the modernized design of X-Pro will help increase our market share in our core markets. X-Pro also includes enhanced functionality for portfolio trading, which has represented a larger proportion of trading volumes in recent periods.

Continue Expansion into New Product Areas

By leveraging our Open Trading functionality and capitalizing on our experience of building market share in markets like U.S high-grade and U.S. high-yield bonds, we plan to increase our product footprint in newer product areas, including emerging market local currency bonds, municipal bonds, U.S. government bonds and European government bonds. Each of these markets has unique trading protocols, market structures and settlement solutions that require a lengthy ramp-up period, but which will provide diverse revenue sources if we can obtain significant market share. 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. In addition, with the acquisition of Pragma in 2023, we have expanded our automated and algorithmic trading solutions to new asset classes, including equities and foreign exchange.

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 number of potential trading counterparties by allowing both our broker-dealer clients and institutional investor clients to interact in an all-to-all trading environment of over 1,700 firms. Our clients executed approximately \$955.6 billion in credit trading volume using Open Trading during 2023, representing 35.2% of total eligible credit trading volume on our platforms, and realized approximately \$701.9 million in estimated price improvement through this unique liquidity solution in 2023. We believe that the combination of Open Trading and our vast client network provides the basis for MarketAxess to enhance liquidity and improve market resiliency in global fixed-income markets. In 2023, we introduced Open Trading for emerging market local currency bonds, including for the local currency markets of Poland, Czech Republic, Hungary and South Africa.

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 16.9% of total revenue in 2019 to 20.8% of total revenues for the year ended December 31, 2023. As of December 31, 2023, our institutional investor and broker-dealer clients are based in over 90 countries with over 1,000 total active international client firms and approximately 5,800 total active international traders. We offer cross-regional electronic trading services in U.S fixed-income markets for international clients, as well as in Eurobonds and emerging market debt. By offering liquidity in both hard-currency and local currency emerging market debt, 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, Middle East and Africa (“EMEA”), Latin America and APAC regions. The ADV in the EMEA, Latin America and APAC regions on the MarketAxess platforms has grown from \$2.5 billion in 2019 to \$4.2 billion in 2023. We believe we can increase our penetration and revenue opportunities in international markets by continuing to invest in creating client relationships abroad.

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 product offerings. For example, 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. In 2022, we made a significant minority investment in RFQ-hub, a bilateral multi-asset and multi-dealer RFQ platform. In 2023, we acquired Pragma, expanding our automated and algorithmic trading solutions to equities and foreign exchange. In addition, we expect the acquisition of Pragma to accelerate development of execution algorithms and data-driven analytics across all of our fixed-income product areas.

The Fixed-Income Products Available on our Platform

We operate in a large and 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, 2023, the most recent date available, there were approximately \$10.6 trillion in principal amount of fixed-income securities outstanding in the U.S. corporate bond market, which reflects a five-year compound annual growth rate of 4.5%. In addition, according to SIFMA, as of December 31, 2023, there were approximately \$26.4 trillion in principal amount of fixed-income securities outstanding in the U.S. government bond market, which reflects a five-year compound annual growth rate of 11.1%.

Our proprietary technology allows institutional investor and broker-dealer clients to access this market by trading both 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 for the year ended December 31, 2023 were U.S. high-grade, U.S. high-yield, emerging market debt, Eurobonds, municipal bonds and U.S. government bonds. In the chart below, we show MarketAxess' ADV and the amount of new issuance of such product areas for the years ended December 31, 2023 and 2022, except where indicated:

	MarketAxess ADV ⁽¹⁾			Amount of New Issuance		
	2023	2022	% Change	2023	2022	% Change
	(In billions)					
U.S. high-grade ⁽²⁾	\$ 5.9	\$ 5.5	6.8 %	\$1,207.0	\$1,215.7	(0.7) %
U.S. high-yield ⁽²⁾	1.6	1.7	(6.3)	175.2	106.5	64.5
Emerging market debt ⁽³⁾	2.9	2.8	3.5	245.0	219.0	11.9
Eurobonds ⁽²⁾	1.8	1.5	21.2	567.7	460.0	23.4
Municipal bonds ⁽⁴⁾	0.4	0.4	16.1	380.5	386.6	(1.6)
U.S. government bonds ⁽⁴⁾	18.3	21.5	(15.0)	22,699.6	16,730.9	35.7

(1) There were 249 U.S. trading days in each of 2023 and 2022, based on the SIFMA holiday recommendation calendar and 251 and 250 United Kingdom ("U.K") trading days in each of 2023 and 2022, respectively, based primarily on the U.K. bank holiday schedule.

(2) For U.S. high-grade, U.S. high-yield and Eurobonds, the amount of new issuance is according to J.P. Morgan Markets.

(3) For emerging markets debt, the 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.

(4) For municipal bonds and U.S. government bonds, the amount of new issuance is according to SIFMA.

We plan to leverage our Open Trading functionality to continue to capture additional market share across our core credit markets while increasing our footprint in newer product areas. In the chart below, we show estimated market ADV and our estimated market share for the years ended December 31, 2023 and 2022, of U.S. high-grade/high-yield bonds combined, U.S. high-grade bonds, U.S. high-yield bonds, municipal bonds and U.S. government bonds.

	Market ADV			Estimated Market Share		
	2023	2022	% Change	2023	2022	Bps Change
	(In billions)					
U.S. high-grade/U.S. high-yield combined ⁽¹⁾	\$ 38.1	\$ 35.3	7.9 %	19.6 %	20.4 %	(80) Bps
U.S. high-grade ⁽¹⁾	28.7	25.7	11.7	20.4	21.3	(90)
U.S. high-yield ⁽¹⁾	9.3	9.5	(2.1)	17.1	17.9	(80)
Municipal bonds ⁽²⁾	7.4	8.4	(11.7)	5.9	4.5	140
U.S. government bonds ⁽³⁾	653.8	612.8	6.7	2.8	3.5	(70)

(1) For U.S. high-grade and high-yield, market ADV is as measured by the Financial Industry Regulatory Authority ("FINRA") Trade Reporting and Compliance Engine ("TRACE").

(2) For municipal bonds, 2023 and 2022 market ADV is estimated by excluding estimates for new issuance, commercial paper and variable-rate trading activity from the data reported by the Municipal Securities Rulemaking Board (the "MSRB").

(3) For U.S. government bonds, market ADV is as reported by the Federal Reserve Bank's Reported Primary Dealer U.S. Treasury Bond Trading Volumes, which was reported on a one-week lag.

Finally, we believe that the current level of electronic trading in our largest product areas is relatively low, creating a long runway for future market share 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 and U.S. high-yield bonds is approximately 45.0% and 30.0%, respectively. As a comparison, based on third party estimates, the level of electronic market share for U.S. exchange traded cash equities, U.S. equity options and foreign exchange spots are each over 90.0%.

Our End-to-End Trading Solutions

A key principle of our strategy is connecting the most robust network of participants through our end-to-end trading solutions. The diverse trading protocols available on our platforms are complemented by pre-trade intelligent data products and a range of post-trade services. In 2023, 88.1% of our revenues were derived from commissions for transactions executed on our platforms, 6.2% of our revenues were derived from our data products and 5.3% of our revenues were derived from our post-trade services.

Trade Execution Solutions

Through our platforms, our broker-dealer and institutional investor clients have access to a wide range of trading protocols to assist them with achieving best execution. In addition, we are innovating and modernizing our platforms by integrating a suite of automated and algorithmic trading solutions, as well as order and execution workflow solutions, to help clients manage risks, establish guardrails, streamline processes, remain compliant and improve execution quality.

In 2023, we introduced X-Pro to select clients in the United States. We believe that this new platform more seamlessly combines our trading protocols with our proprietary data and pre-trade analytics discussed under “— Integrated and Actionable Data” below. We further believe that it provides enhanced low- and high-touch trading workflows, from automation with Auto-X to portfolio trading. We plan to continue to expand the use of X-Pro by our broker-dealer and institutional investor clients.

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 counterparty to any of the disclosed RFQ trades that are executed on our platforms between institutional investor clients and dealer clients; rather, our platforms enable them to meet, agree on a price and then execute and settle the transaction directly with each other. The disclosed RFQ protocol is available for transactions in all our product areas and can be used for:

- multiple-dealer inquiries to over 140 dealers;
- list trading, which is the ability to request bids and offers on up to 60 bonds at the same time;
- portfolio trading, which allows our market participants to transact bond basket trades of up to 2,100 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 2023, over 60.0% of all credit volume on the MarketAxess platform was executed via a form of our disclosed RFQ protocol.

Open Trading

We offer Open Trading, our all-to-all trading solution, for most of our products and trading protocols. Open Trading complements our disclosed RFQ protocol by increasing the number of potential counterparties through allowing all participants to interact anonymously in an all-to-all trading environment of over 1,700 potential counterparties. We believe the increased liquidity drives meaningful price improvement to our clients and helps reduce liquidity risk in the fixed-income markets in which we participate. 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. government bonds, 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. We now offer several Open Trading protocols, including:

- Open Trading 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 Open Trading RFQ protocol is typically used simultaneously with a disclosed RFQ, providing the requestor with an increased likelihood of achieving best execution by seeking pricing from a participant's known dealer 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;

•Mid-X sessions, a sessions-based mid-point matching tool that allows broker-dealers to trade against the mid-point price established by CP+ 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 allows participants to post one or two-way, live, executable quotes for the most active corporate bonds and U.S. government bonds, including newly issued debt, benchmark issues and news-driven securities;

•Public Axes™, which is an order book-style price discovery process that gives participants the ability to view and execute trades upon anonymous or disclosed indications of interest from the inventory posted on our platforms; and

•Diversity Dealer Initiative, which leverages the liquidity-enhancing features of Open Trading, but also allows institutional investor clients to select minority-, women- and veteran-owned broker-dealers to intermediate the resulting Open Trading transaction.

In 2023, approximately 35.2% of all eligible credit volume on the MarketAxess platform was executed via Open Trading protocols.

Automated and Algorithmic Trading Solutions

We believe that our automated and algorithmic trading solutions, which allow clients to set eligibility criteria for their orders that our platforms will use to determine whether to execute a trade in accordance with the pre-defined parameters, increase trading efficiency and allow traders to focus on higher-value trades. We expect that bond trading velocity will grow in the years ahead due to the increased adoption of trading automation by both broker-dealer and institutional investor participants.

Some of our fixed-income automation tools include:

- Auto-X RFQ, which allows clients to automatically execute a request-for-quote using simple variables such as trade size, price and number of respondents. In 2023, Auto-X RFQ represented 23.1% of total trade count and 9.7% of our credit trading volume. 41.0% of Auto-X RFQ trades in 2023 were “no touch,” meaning such trades were initiated automatically by clients using pre-specified instructions, up from 33.0% in 2022;
- Auto-X Responder, which allows clients to automatically respond to requests using either a specified response level or a mid-point price generated by one of our data products;
- Adaptive Auto-X, which provides our clients with a suite of AI-driven algorithms that integrate many of our key trading protocols to help the trader decide the size of their order, which MarketAxess protocol to use, which counterparty to trade with and what time of day to trade; and
- U.S. Treasury Hedging, which automatically provides a U.S. Treasury hedge for trades in credit products available on our platforms.

In addition, we support a large and growing base of dealer market making algorithms. Dealer market making algorithms enhance the liquidity available on our platforms by increasing the number of competitive responses to each RFQ, thereby increasing a participant’s likelihood of completing a trade at the best price. In 2023, there were 32.5 million dealer algorithmic responses on our platforms, up 37.0% from 2022. In addition, dealers are increasingly using algorithmic responses to execute larger trades. In 2023, 69.2% of client-to-dealer inquiries for a trade of greater than \$5.0 million notional value in U.S. high grade bonds received one or more algorithmic responses, up from 57.0% in 2022. In 2023, there were 204 client firms using our automated and algorithmic trading solutions, up 25.9% from 2022.

In 2023, we acquired Pragma, expanding our automated and algorithmic trading solutions offerings to include equities and foreign exchange for institutional clients, banks and broker-dealers, and securities exchanges. The Pragma360 platform provides a customized software-as-a-service algorithmic trading solution with hosted and dedicated trading environments for clients, which is integrated with Panorama, Pragma’s advanced, web-based algorithm management system. Pragma also provides Polaris, a customizable trading platform available to floor brokers of the New York Stock Exchange and their clients.

Order and Execution Workflow Solutions

We provide order and execution workflow solutions designed to meet the specific needs of our institutional investor and broker-dealer clients. For example, LiquidityBridge®, is our execution management system offered 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. In addition, 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.

Integrated and Actionable Data

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. We offer the following data products and index solutions:

Data Products

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, completed transactions and trade reporting services that occur on or through our platforms, as well as public sources such as TRACE.

Our data products include:

CP+, a pricing algorithm that generates near real-time pricing for U.S. high grade, U.S. high yield, Eurobonds, emerging markets and European government bonds based on a variety of data inputs, including feeds from our trading platforms, our post-trade services and TRACE. CP+ is used by clients as a pre-trade reference price to enhance trading outcomes and transaction cost analysis. CP+ 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 the thousands of daily bond transactions processed by our post-trade services business and includes aggregated volume and pricing for the most actively traded European fixed-income instruments.

Axess All Prints®, which is an enhanced, real-time transacted price service for the most actively traded European fixed-income instruments.

BondTicker®, which provides real-time TRACE data enhanced 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.

Relative Liquidity Score, 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 when transacting in such instruments.

Index Solutions

To meet the increasing need for passive fixed-income investment strategies, we have also introduced liquid indices powered by real-time data. In 2022, we introduced the MarketAxess U.S. Investment Grade Corporate Bond 400 Index (the “MKTX 400 Index”), which is an index constructed to measure the performance of 400 U.S. dollar denominated investment grade corporate bonds with higher-than-average liquidity relative to the broader U.S. corporate bond market. The index utilizes Relative Liquidity Scores and CP+ in the construction and evaluation processes. State Street Global Advisors has launched an exchange traded fund that seeks to track the MKTX 400 Index. In addition, in 2022, we also announced a strategic collaboration with MSCI Inc. to create co-branded fixed-income indices incorporating our liquidity data. The first of such indices, the MSCI MarketAxess USD HY Tradable Corporate Bond Index, which uses Relative Liquidity Scores to identify and select the liquid fixed-income securities, launched in November 2022.

Post-Trade Services

We provide post-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 requirements of the Markets in Financial Instruments Directive (“MiFID II”) in Europe, we have developed a comprehensive suite of value-add solutions, including SensAI, 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 their regulator or use an entity that is licensed as an Approved Reporting Mechanism (“ARM”), such as our subsidiaries in the U.K. and the Netherlands, to validate and submit such reports to their regulator. Our multi-asset class ARM reporting solution allows our clients to

report to 23 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 Approved Publication Arrangement (“APA”), such as our APAs in the U.K. and the Netherlands, to comply with the post-trade transparency requirement and many firms 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.

Post-trade matching enables counterparties to match the economic trade details of a trade and settlement information 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 over 1,000 post-trade reporting, post-trade matching and transparency clients, including investment firms, venues and aggregators.

Our Clients

Over 2,000 institutional investor and broker-dealer firms are active users of our platforms. Since our founding, we have developed trusted relationships with many of our clients and have invested in maintaining strong relationships with our largest clients. 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 traditional broker-dealers still represent the principal source of secondary market liquidity in the markets in which we operate. Certain of our clients may account for a significant portion of our trading volume. Market knowledge and feedback from these clients have also been important factors in the development of many of our offerings and solutions. Our institutional investor and broker-dealer clients are increasingly trading multiple products on our platforms and using multiple trading protocols in order to execute upon their trading strategies.

Our Technology

Proprietary Technology

Our electronic trading platforms are based on a secure and scalable architecture that makes broad use of distributed computing to achieve speed and reliability. Our technology provides clients with end-to-end and customizable connectivity to fixed-income markets.

We support the achievement of best execution through our many trading protocols, including technologies such as our recently launched new platform, X-Pro, and our all-to-all Open Trading protocols. In designing X-Pro, we enhanced the trading experience by providing traders with a flexible user experience, intuitive workflows and easy access to our proprietary data and pre-trade analytics. Open Trading increases the number of potential trading counterparties by allowing participants to interact anonymously in an all-to-all trading environment of over 1,700 potential counterparties. We believe this technology enhances our institutional investor clients' ability to obtain a competitive price by allowing all Open Trading participants to interact with each other and increases the likelihood of receiving a competitive price response. We estimate that Open Trading generated approximately \$701.9 million of price improvement for our clients in 2023.

In addition, our clients have access to automated and algorithmic trading technologies, such as Auto-X RFQ, Auto-X Responder and Adaptive Auto-X, which allow clients to set eligibility criteria for their orders that will determine whether a trade is executed on our platforms in accordance with their pre-defined parameters. These automated and algorithmic trading protocols are designed to help increase trading efficiency, freeing traders to focus on more complex or higher-value trades.

In addition to services directly related to the execution of trades, MarketAxess offers clients several other pre- and post-trade services. 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 enable our participants to realize the full benefits of electronic trading and demonstrate best execution, including customization, real-time trade details, STP, account allocations, automated audit trails, regulatory trade reporting, trade detail matching and transaction cost analysis.

Technology Team

The design and quality of our technology products is supported by a team of approximately 380 full-time technology professionals led by managers with deep market knowledge and fixed-income expertise. This combination of market knowledge and industry expertise allows us to address client demand and to focus on solutions that can be scaled across client sectors, fixed-income asset classes and trading protocols. Our technology is critical to our growth and our ability to execute our business strategy.

Our technology team is focused on:

Continuing to evolve our technology platform. We believe that it is imperative that we continue to invest in and evolve our technology in order to continue innovating and delivering new features and protocols to our clients, such as the launch of X-Pro in 2023. For example, we increasingly utilize cloud technology to capitalize on innovative tooling, cost savings and improvements to development velocity.

Investing in resiliency, scale and risk management. We recognize the value of investing in our capacity and risk management capabilities. The MarketAxess platforms are built on industry-standard technologies and have been designed to handle loads that exceed our current trading volume. In addition, all critical server-side components, including networks, application servers and databases, have backup solutions. This maximizes uptime and minimizes 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. Most of our broker-dealer clients and a significant number of our institutional investor clients have redundant dedicated high-speed communication paths to our network to provide fast data transfer. Our security measures include industry-standard communications encryption.

Continuing product delivery and improvement of features. Our technology team is focused on our agile product development cycle and continued innovation of our platforms with new features. During the year ended December 31, 2023, we delivered approximately 1,000 unique new business and technical features to our clients.

See Part I, Item 1C - “Cybersecurity” for more information about our cybersecurity program as well as Part I, Item 1A. - “Risk Factors — Technology, IT Systems and Cybersecurity Risks.”

Environmental, Social and Governance

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 environmental, social and governance (“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. Our 2022 ESG Report, which can be found on our corporate website (available at <https://www.marketaxess.com/sustainability>), included the Company’s first reporting against the Task Force on Climate-Related Disclosure (TCFD) framework in order to give our stakeholders additional insight into our climate change practices and policies. The ESG Report also includes the results of the Company’s comprehensive non-financial ESG materiality and prioritization assessment, which identified eighteen key ESG topics and six priority topics critical for MarketAxess to manage and drive long-term business performance and societal impact. Finally, the Company responded to the Climate Disclosure Project’s Climate Change Questionnaire in July 2023. Please also refer to “— Human Capital Resources” for additional information on our human capital management strategies.

Our ESG Reports and CDP questionnaire responses 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, through our “Trading for Trees” program, five trees are planted by One Tree Planted, our partner charitable organization, for every \$1.0 million of green bond trades executed on our platforms. In 2023, \$74.2 billion in green bond trading volume was executed globally on our platforms, an increase of 17.2% from 2022.

In addition, our Diversity Dealer Initiative enables buy side firms to trade more easily with certain minority-, women- and veteran-owned broker-dealers, while still achieving best execution. The Diversity Dealer Initiative 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.

The Company began purchasing renewable energy-related transferable tax credits under the Inflation Reduction Act (the “IRA”) in 2023. The transferability market created by the IRA allows producers of renewable energy or related manufacturing components to sell the tax credits generated by their activities to corporate purchasers. Through the purchase of these credits, the Company has reduced its federal tax liability while supporting innovative companies as they continue to drive the United States’ transition to renewable energy.

Sales and Marketing

We sell and promote our offerings and solutions using a variety of sales and marketing strategies. Our sales organization follows a team-based approach to covering clients, deploying our product and regional expertise as best dictated by evolving market conditions. Our sales force, which works closely with our product management and technology teams, is responsible for new client acquisition and the management of ongoing client relationships to increase clients’ awareness, knowledge and usage of our solutions and products. Our sales team is also responsible for training and supporting new and

existing clients on their use of our trade execution services, integrated and actionable data offerings and post-trade solutions, including how to optimize their trading performance and efficiency through our various trading protocols.

Given the breadth of our global client network, trading volume activity and engagement with regulators, we regularly educate market participants on market trends, the impact of regulatory changes and technology advancements. Our senior executives often provide insight and thought leadership to the industry through conversations with the media, appearances at important industry events, roundtables and forums, submitting authored opinion pieces to media outlets and conducting topical webinars for our clients. We believe this provides a valued service for our constituents and enhances our brand awareness and stature within the financial community. Additionally, we employ various marketing strategies to strengthen our brand position and explain our offerings, including through our public website, advertising, digital and social media, earned media, direct marketing, promotional mailings, industry conferences and hosted events.

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 substantially all of our platforms and solutions.

We primarily compete on the basis of our client network, the liquidity provided by our broker-dealer clients, the unique liquidity and the potential for price improvement offered by our Open Trading protocols, 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 our competitive position is enhanced by the familiarity and integration of our clients' systems with our electronic trading platforms and other systems.

Our trading platforms face the following main areas of competition:

Bilateral Trading — We compete with bond trading business conducted over the telephone or electronic messaging directly between broker-dealers and their institutional investor clients. Institutional investors have historically purchased fixed-income securities by telephoning or otherwise communicating via 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 (indirectly controlled by the London Stock Exchange), Bloomberg, Intercontinental Exchange, Trumid and others in the credit and municipal markets; and Tradeweb, Bloomberg, CME Group (BrokerTec), 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.

EMS and OMS Providers — There are various providers of execution management services ("EMS") and order management services ("OMS") that have announced plans to offer aggregation of trading venue liquidity, as well as direct-to-dealer fully electronic trading solutions.

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.

Our data business competes with several large market data and information providers, such as Bloomberg, the London Stock Exchange (Refinitiv), Intercontinental Exchange and S&P Global, which currently have a data and analytics relationship with virtually every institutional firm. 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.

Our post-trade business competes 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.

Our automated and algorithmic trading solutions business competes with other providers of commercial algorithms.

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 several 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®, CP+™, Axess All® 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.

From time to time, regulations impose increased obligations on our regulated subsidiaries, including our broker-dealer subsidiaries. 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. For example, regulators are speaking more regularly about the benefits of all-to-all trading to promote market resiliency in fixed-income products. 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. One of our U.S. broker-dealer subsidiaries 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. government bonds. 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.

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 subsidiaries, the principal self-regulatory organization is FINRA. Our U.S. broker-dealer subsidiaries are subject to both scheduled and unscheduled examinations by the SEC and FINRA. In addition, our 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 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. Based on these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS and we could become subject to Regulation SCI for certain parts of our business in the future. 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.

The SEC has also adopted final rule amendments that, effective May 2024, will shorten the standard settlement cycle for most broker-dealer securities transactions from two business days after the trade date (T+2) to one business day after the trade date (T+1). The shortening of the settlement cycle will lead to a reduction in the length of exposure to trading counterparties and lower margin requirements for our clearing operations, but it is also expected to increase the operational costs and complexities associated with cross border transactions conducted on our platforms.

The SEC also adopted final rules on December 13, 2023 regarding the central clearing of certain secondary market transactions involving U.S. Treasury securities. This central clearing mandate will impact certain of our participants who do not centrally clear such trades today, and some have expressed concerns about the potential impact of additional clearing costs. The full impact of this change, and what effect it will have, whether positive or negative, on our industry, our clients or us is unknown at this time.

Non-U.S. Regulation

Outside of the United States, we are currently directly regulated by: the Financial Conduct Authority (the "FCA") in the U.K., De Nederlandsche Bank ("DNB") and the Netherlands Authority for the Financial Markets ("AFM") in the Netherlands, the European

Securities and Markets Authority (“ESMA”) in the E.U., the Monetary Authority of Singapore (the “MAS”) in Singapore, 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, the Finnish Financial Supervisory Authority, the China Foreign Exchange Trade System (“CFETS”), a direct subsidiary of the People’s Bank of China (PBC) and China’s Bond Connect Company Limited.

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 (“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 are required to obtain prior approval from the FCA.

In 2023, amendments to the FSMA repealed the financial services framework inherited from the E.U. The amended FSMA provides the FCA increased regulatory authority, including the power to reform the E.U. rules and the ability to devise a new financial services regime, and establishes a new secondary objective to promote “economic growth and international competitiveness” for the U.K. The U.K. is also reviewing and amending its MiFID II and MiFIR regime, including the U.K. CTP framework for bonds and the transparency regime for bonds and derivatives.

The securities industry and financial markets in the 27 member states of the E.U. are regulated by the National Competent Authorities in each member state, or with respect to Data Reporting Services Providers (“DRSPs”), such as our E.U. post-trade business, by ESMA itself. E.U. regulations provide for a cross-border “passporting regime”, which allows us to provide our regulated services to customers throughout the E.U. in reliance upon our authorization from any E.U. member state or ESMA. 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. We have also established regulatory branches in Italy and Germany, which allows the Company to have a physical presence in those jurisdictions.

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.

Following a recent review of the effectiveness of the changes introduced pursuant to MiFID II and MiFIR in 2018, the European Parliament, the European Council and the European Commission adopted a package of revisions to MiFID II and MiFIR in January 2024 (the “MiFIR Review”). The MiFIR Review will become effective in stages, beginning in 2024. The MiFIR Review includes; (i) changes in the SI and publication arrangements for investment firms, (ii) removal of certain best execution reporting requirements, (iii) removal of non-equity pre-trade transparency for RFQ protocols and SIs, (iv) introduction of data quality technical standards, (v) introduction of organizational requirements for APAs and ARMs, and (vi) significant changes to the proposed E.U. consolidated tape for all transactions executed on E.U. trading platforms, such as our MTFs. ESMA is currently required to select a single consolidated tape provider (the “CTP”) for bonds under its authorization and all trading venues will be obliged to share their trading data with the CTP. We currently expect the selection process for the E.U. CTP for bonds to commence in the fourth quarter of 2024, with operation no sooner than the fourth quarter of 2025.

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, Brexit has introduced additional operational complexity as the regulatory standards are diverging between the U.K. and the E.U. In general, MiFID II and MiFIR continue to cause 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, and the ongoing changes has been positive for our businesses, unintended consequences of the rules and regulations (and ongoing 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 or E.U.’s Digital Operational Resilience Act (“DORA”)) 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 growing divergence of the U.K. and European Union legal and regulatory requirements following Brexit could materially adversely impact our business, clients, financial condition, results of operations and prospects.”

DORA, which focuses on the security of network and information systems of financial services entities, as well as third parties which provide certain information communication technologies services (“ICTs”) to them, is expected to become applicable to portions of our

business in January 2025. DORA will, among other things, introduce significant additional ICT-related governance, risk management, resilience testing and sub-contracting requirements. In addition, we are subject to ESMA's guidelines on outsourcing to cloud service providers, which impose additional risk management, contractual and notification requirements related to material cloud service providers.

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 its self-clearing and settlement activities, one of our U.S. broker-dealer subsidiaries 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 an SEC registered broker-dealer and a member of FINRA, the MSRB, and the Securities Investor Protection Corporation ("SIPC"). MarketAxess Corporation is registered as a clearing broker with FINRA. Pragma LLC is an SEC registered broker-dealer and a member of FINRA and the SIPC.

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 ("SOF") as an Information System.

U.K. and Europe

MarketAxess Capital Limited is authorized and regulated by the FCA as a MiFID investment firm (limited license) 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 cross-border services throughout the 27 member states of the E.U. and EEA countries under the MiFID passport and is approved by FINMA to provide cross-border services into Switzerland as a foreign trading venue, and has regulatory branches in Germany and Italy.

MarketAxess Post-Trade NL B.V. is established in the Netherlands and holds a license to operate as a DRSP under the supervision of ESMA, specifically to act as an ARM and APA. MarketAxess Post-Trade NL B.V. may provide cross border services throughout the 27 member states of the E.U. and EEA countries under the MiFID passport, and has a regulatory branch in Germany.

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 on a cross-border basis 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.

MarketAxess Information Consulting (Shanghai) Co., Ltd. is a wholly-owned foreign enterprise (WOFE) in China. Its business scope includes non-licensed information, data and technology related services. The MarketAxess offshore electronic trading platform is recognized by CFETS and Bond Connect Company Limited for the provision of Bond Connect and CIBM Direct RFQ connectivity services.

Human Capital Resources

As of December 31, 2023, we had 881 employees, 572 of whom were based in the U.S. and 309 of whom were based outside of the U.S., principally in the U.K. During fiscal year 2023, we increased our number of employees by 137 or 18.4% compared to an increase of 68 or 10.1%, in 2022. None of our employees is 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

We believe that a workforce that reflects our society as a whole better serves our clients. As such, we are committed to fostering an equitable environment that attracts and retains a diverse workforce. We strive to make our workforce diverse, inclusive and supportive of all and the Company is committed to improving our diversity at all levels of the organization. As of December 31, 2023, (i) our global workforce was approximately 72.4% men and 27.6% women, and of our U.S. employees, our workforce was approximately 34.3% Asian, 4.4% Black or African American, 7.9% Hispanic or Latinx, 51.7% White and 1.7% identified with another race or ethnicity or did not disclose their race or ethnicity; (ii) our global management team was approximately 76.9% men and 23.1% women and was approximately 15.4% Asian and 84.6% White; and (iii) our Board of Directors (the "Board") was approximately 66.7% men and 33.3% women and was approximately 8.3% Black or African American, 8.3% Hispanic or Latinx and 83.3% White.

We use diverse hiring sources to broaden our candidate pools, including employee referrals, recruitment vendors, postings on diversity job boards, partnering with diverse professional organizations and underrepresented student organizations, and attending various recruiting events. We also focus our diversity recruiting efforts on university campuses. 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. During the spring and fall recruiting seasons, we typically host MarketAxess informational sessions, networking events, mock interviews and sponsorships focused on women and underrepresented students.

Human Capital Development

Our talent management strategy is focused on attracting, developing and retaining top talent within the Company. The market for qualified staff, especially technology professionals, continues to be competitive in our talent markets. Many companies, including our competitors and firms outside of our industry, are interested in hiring our experienced personnel. We believe that one of the ways we have successfully retained staff with lower attrition than market is through the successful implementation of our hybrid work environment.

We are committed to positioning MarketAxess for further growth through ongoing talent management, succession planning and the deepening of our leadership bench. We utilize regular critical role assessments and talent reviews to ensure that the Company has adequate talent to run the Company's business today and evolve the Company for the future. We maintain short- and long-term succession plans for the Global Management Team and certain critical roles reporting into them.

We believe that investing in development for our employees is crucial to our success and ability to attract and retain the best talent in our industry. 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 offer a range of live and on-demand technical, markets-related, product management, and professional skills development to all employees globally to enable employees to develop a broad spectrum of skills and continue their career growth at MarketAxess.

Employee Health & Wellbeing

We believe that the health and safety of our employees is of important to the Company. While the COVID-19 pandemic (the “Pandemic”) had less of an effect on our business in 2023, we continued to consider the health and welfare of our employees as a priority. We offer competitive benefits programs to employees in all regions for healthcare-related wellness and financial wellness. In addition to comprehensive medical, dental, and vision plans, and disability programs, we offer various vehicles for saving for the future.

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 Exchange Act, 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 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 and our Board 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.

Risk Factors Summary

The following is a summary of the principal risks and uncertainties described in more detail in this annual report:

Risks Relating to Market and Industry Dynamics and Competition

- Global economic, political and market factors beyond our control could reduce demand for our services, and our profitability and business could suffer.
- Decreases in trading volumes in the fixed-income markets generally or on our platforms would harm our business and profitability.
- 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.
- We face substantial competition that could reduce our market share and harm our financial performance.

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 may not grow profitably.
- 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.
- 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.
- We may face increasing challenges in our growing international operations that we may not be able to meet in the future.

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 could lose significant sources of revenue and trading volume if we lose any of our significant institutional investor clients.

Credit and Operational Risks

- We are exposed to risks in connection with certain transactions in which we act as a matched principal intermediary.
- Self-clearing exposes us to significant operational, liquidity, financing and regulatory risks.
- Economic sanctions levied against states or individuals could expose us to significant operational and regulatory risks.

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 depend on third-party suppliers for key products and services.
- Our success depends on maintaining the integrity and capacity of our electronic trading platforms, systems and infrastructure.

• 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.

• If we experience design defects, errors, failures or delays with our platforms, products or services, including our automated and algorithmic trading solutions and pricing algorithms, our business could suffer serious harm.

• Malicious cyber-attacks, attempted cybersecurity breaches, 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.

• Our actual or perceived failure to comply with privacy, data protection and information security laws, regulations, and obligations could harm our 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.

•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.

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.

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.

•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.

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 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.

•The growing divergence of the U.K. and European Union legal and regulatory requirements following Brexit could materially adversely impact our business, clients, financial condition, results of operations and prospects.

•The extensive regulation of our business means we have ongoing exposure to potentially significant costs and penalties.

•We are subject to the risks of litigation and securities laws liability.

ESG and Climate Risks

•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.

Liquidity and Funding Risks

•We cannot predict our future capital needs or our ability to obtain additional financing if we need it.

•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 maintain our cash at financial institutions, often in balances that exceed federally insured limits.

Risks Relating to Market and Industry Dynamics and Competition

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. Recently, for example, the 2023 banking crisis, rising interest rates and inflation, the Pandemic and the Russia-Ukraine war, each created significant volatility in the markets we serve and increased uncertainty and economic disruption. Certain of the factors below have caused, and may in the future cause, a substantial decline in the U.S. and/or global financial services markets, resulting in reduced trading volume, and 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, including the amount of new securities issuances;
- consolidation or contraction in the number of market participants;
- the current or anticipated impact of climate change, extreme weather events, natural disasters or other catastrophic events;
- the emergence of widespread health emergencies or pandemics, including the Pandemic;
- actual or threatened acts of war or terrorism or other armed hostilities, as well as international sanctions levied against countries and other parties;
- 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, or actual, increased levels of inflation and weakening consumer confidence levels due to a recession (in the United States or globally) or otherwise;
- 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, including significant interest rate hikes, 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.

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 trading volumes in the past and may experience similar decreases in trading 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 commission revenue. During periods of increased volatility in credit markets, the use of electronic trading platforms to trade certain highly volatile or distressed bonds may decrease, such as occurred during the regional banking crisis in 2023. 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 (such as block trades or portfolio 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. Our trading platforms 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 trading platform competitors are numerous and include: (1) other multi-party electronic trading platforms; (2) EMS and OMS Providers; (3) securities and futures exchanges; and (4) technology, software, and information services or other companies that have existing commercial relationships with broker-dealers or institutional investors. Our data, post-trade and automated and algorithmic trading

solutions businesses compete against market data and information vendors, other approved regulatory reporting businesses and commercial algorithm providers, respectively.

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 have previously aggressively reduced, and may in the future further 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 and index services. 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.

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 may not 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. In certain of our product areas, the growth rates for the use of our electronic trading services that we experienced in recent years have slowed and such growth rates may not resume or increase in the future.

Our growth may also be dependent on our ability to diversify our revenue base. We currently derive approximately 40.0% 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. Our efforts may not be successful or result in increased revenues or continued profitability.

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. New fee plans may not result in an increase in the volume of transactions executed over our platforms or our revenues may not 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. For example, during 2022 and 2023, a significant rise in corporate bond yields contributed to a decrease in the duration of the bonds traded on our platforms, which had a negative effect on our average credit variable transaction fee per million. We anticipate that our average fees per million may continue to 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. For example, with the acquisition of Pragma in 2023, we began providing algorithmic trading and quantitative execution solutions in the equities and foreign exchange markets, where we previously had little 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 may not 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 may not be able to attract clients to our platforms and compete successfully in any such new markets. Our marketing efforts or our pursuit of any of these opportunities may not 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 local economic, political and social conditions, including the possibility of economic slowdowns, hyperinflationary conditions, political instability, social unrest or outbreaks of pandemic or contagious diseases. 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, e-mail and instant 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. Higher capital requirements on trading activity by bank-affiliated broker-dealers may reduce their incentives to engage in certain market making activities and may impair market liquidity. In addition, 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 Open 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 a significant percentage of our bond transactions and we may expand self-clearing to additional products and regions 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 the U.S., the SEC has adopted final rule amendments that, effective May 2024, will shorten the standard settlement cycle for most broker-dealer securities transactions from two business days after the trade date (T+2) to one business day after the trade date (T+1). The shortening of the settlement cycle will lead to a reduction in the length of exposure to trading counterparties and lower margin requirements for our clearing operations, but it is also expected to increase the operational costs and complexities associated with cross border transactions conducted on our platforms. We have in the past and may in the future also 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.

Economic sanctions levied against states or individuals could expose us to significant operational and regulatory risks.

Sanctions imposed by the United States or other countries in response to conflicts or other geopolitical events could adversely impact the financial markets and the global economy, and any economic countermeasures by the affected countries or others could exacerbate market and economic instability. For example, in February 2022, following the onset of the Russia-Ukraine war, the U.S., the U.K., and the E.U., among others, adopted sanctions that, in various ways, prohibited transactions with numerous Russian entities, including major Russian banks, and individuals; limited transactions in Russian sovereign debt; and constrained investment, trade and financing to, from or in certain regions of Ukraine. We did not incur any material losses on trades that were unsettled at the time sanctions were imposed and our business has not otherwise been materially affected by the recent sanctions. Our financial position and results of operations may be adversely affected if these sanctions are further expanded or the ongoing war or geopolitical tensions have further adverse effects on the global economy or the participants on our platforms. In addition, any such sanctions may limit our ability to effect transactions in certain instruments on our platforms.

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, such as X-Pro, our clients may forego the use of our platforms and use those of our competitors.

Further, the adoption of new internet, networking, cloud, telecommunications, AI, generative AI or blockchain technologies may require us to devote substantial resources to modify and adapt our services. We may not 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 may not 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. These providers may not be willing and/or able to (i) continue to provide these services in an efficient, cost-effective manner, if at all, (ii) adequately expand their services to meet our needs or (iii) meet the increasing regulatory requirements applicable to certain technology and data services providers to financial institutions. See "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.” 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 certain 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, rating agencies 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 (due to cybersecurity incidents or otherwise) 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. For example, we used ICBC Financial Services (“ICBC”), a wholly-owned subsidiary of the Industrial and Commercial Bank of China Limited, to clear certain U.S. government bond trades on the MarketAxess Rates platform. Following the November 2023 ransomware attack on ICBC, we switched to a different pre-existing clearing arrangement with another clearing provider. While this event did not have a material adverse effect on the Company, similar events in the future events 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 and services, such as telephone companies, online service providers, data processors, cloud computing and data centers, software and hardware vendors. 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. We have had disruptions of service in the past, and could have additional disruptions in the future, that may lead to our clients deciding to stop using or reduce their use of our platforms, which could 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. Our estimates of future trading volumes and order messages may not be accurate and our systems may not 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 may not 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, or our third-party providers, may

experience systems failures or business interruptions in the future, as has occurred from time-to-time 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, our business could suffer serious harm.

Our platforms, products and services, including our automated and algorithmic trading solutions, data products and indices, may contain design defects and errors that cause them to operate incorrectly or less effectively. To the extent that any such product or service, or the Company as a whole, suffers a reputational or credibility loss, including due to a design defect or error, it could have a material adverse impact on our business. 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 their source.

If design defects, errors or failures are discovered in our current or future platforms, protocols or products, 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, attempted cybersecurity breaches, 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 (or those of our third-party vendors) 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.

We deploy measures that seek to protect, detect, respond and recover from cyber threats, including identity and access controls, data protection, vulnerability management, incident response, secure product development, continuous monitoring of our networks, endpoints and systems, and maintenance of resilient backup and recovery capabilities. It is possible that such defensive measures will be unsuccessful in mitigating a cybersecurity event.

Despite the defensive measures we have taken, we experience cybersecurity threats and incidents from time to time. However, as of the date of this report, MarketAxess has not experienced a cybersecurity threat or incident that has materially affected the Company in at least the last three years. These events may arise 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, the increased flexibility for our employees to work remotely post-Pandemic 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 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 have that may cover all or a portion of 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, such measures may not 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, we are subject to the E.U.'s General Data Protection Regulations ("GDPR") and the U.K. equivalent, which require us to comply with regulations regarding the handling of personal data irrespective of whether the processing of data takes place within the E.U. or not. 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 data protection and privacy laws and regulations 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 several 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. These protections may not 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, a third party may 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.

Third parties may 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 and any such assertion may 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 the regulatory reporting business of Deutsche Börse in 2020, MuniBrokers in 2021 and Pragma in 2023. 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, such as the equities and foreign exchange trading algorithm markets, in which we have limited experience or 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. For example, in 2022, we made a significant minority investment in RFQ-hub, a bilateral multi-asset and multi-dealer request for quote platform. 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, including Richard M. McVey, our founder and Executive Chairman, and Christopher Concannon, our Chief Executive Officer. The terms of Messrs. McVey's and Concannon's employment agreements with us do not require them to continue to work for us and allow them to terminate their respective 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 or Mr. Concannon'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 may not 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 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, ESMA in the E.U., 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 ESMA. 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 and/or our directors, officers and employees may not 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-dealers and MTFs, 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.

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 I, 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. For example, DORA, which focuses on the security of network and information systems of financial services entities as well as ICTs is expected to become applicable to portions of our business in January 2025. DORA will, among other things, introduce significant additional ICT-related governance, risk management, resilience testing and sub-contracting requirements. In addition, we are subject to ESMA's guidelines on outsourcing to cloud service providers, which impose additional risk management, contractual and notification requirements related to material cloud service providers. Further, regulators are increasingly looking to regulate use of advanced data processing technologies such as AI or machine learning, which may impact our operations as well as our products that incorporate such technologies. There have been in the past, and could be in the future, additional 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 has 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. Based on these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS and we could become subject to Regulation SCI for certain parts of our business in the future.

The SEC has also adopted final rule amendments that, effective May 2024, will shorten the standard settlement cycle for most broker-dealer securities transactions from two business days after the trade date (T+2) to one business day after the trade date (T+1). The shortening of the settlement cycle will lead to a reduction in the length of exposure to trading counterparties and lower margin requirements for our clearing operations, but it is also expected to increase the operational costs and complexities associated with cross border transactions conducted on our platforms. The impact of any of these reform efforts on us and our operations remains uncertain.

The SEC also adopted final rules on December 13, 2023 regarding the central clearing of certain secondary market transactions involving U.S. Treasury securities. This central clearing mandate will impact certain of our participants who do not centrally clear such trades today, and some have expressed concerns about the potential impact of additional clearing costs. The full impact of this change, and what effect it will have, whether positive or negative, on our industry, our clients or us is unknown at this time.

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 growing divergence of the U.K. and European Union legal and regulatory requirements following Brexit could materially adversely impact our business, clients, financial condition, results of operations and prospects.

The U.K.'s exit from the E.U. has increased the operational complexity and cost of conducting business in both the E.U. and the U.K., and has introduced 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. 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. We expect the cost and complexity of complying with diverging E.U. and U.K. financial regulations will continue to increase following the implementation of the amendments to the FSMA in the U.K., the MiFIR Review and DORA see Part I, Item 1. "Business—Government Regulation—Non-U.S. Regulation." 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.

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, along with statutory bodies, such as the SEC, the FCA, the AFM and ESMA 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, FINRA, state securities commissions and state attorney generals in the U.S., and the FCA, ESMA 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 may 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. 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.

ESG and Climate Risks

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 tornadoes. The impact of such events could increase because of the geographical concentration of our operations and personnel in certain areas of the U.S. Any of our primary locations or those of third parties on which we rely may be vulnerable to the 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 incorporating 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. Conversely, certain U.S. states have restricted state-controlled funds from investing based on ESG factors. 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 or if the Company is perceived to have not responded appropriately to the growing concern for ESG or climate issues. 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.

Finally, the Company could experience increased operating costs or capital expenditures associated with complying with new disclosure-based or emissions-reduction requirements.

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 and settlement 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 \$750.0 million. Subject to the satisfaction of certain specified conditions, we are permitted to upsize the borrowing capacity of the credit agreement by an additional \$375.0 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 and a minimum regulatory net capital balance for certain subsidiaries. We may not 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.

We maintain our cash at financial institutions, often in balances that exceed federally insured limits.

We regularly maintain cash balances with other financial institutions in excess of the FDIC insurance limit. A failure of any of the depository institutions that hold our deposits could impact access to our invested cash or cash equivalents and could adversely impact our operating liquidity and financial performance.

Item 1B. Unresolved Staff Comments.

None.

Item 1C. Cybersecurity

As a global technology company, and the provider of electronic trading platforms and solutions for fixed-income and other securities, we view cybersecurity as fundamental to our business. Accordingly, we aim to appropriately secure all of our business operations, including information that we generate in the performance of our services, and data provided to us by third parties, including clients, vendors, business partners and employees.

Risk Management and Strategy

The Company has adopted an Enterprise Risk and Resilience Framework (the “ERRF”) to identify, assess, monitor, and control the Company’s risks, including cybersecurity risks. Our Chief Risk Officer (the “CRO”) is responsible for implementing and executing the ERRF. The Company’s information security team is staffed with skilled professionals who manage the safeguarding of our information and is led by our Chief Information Security Officer (the “CISO”). This team is responsible for aligning our practices with the requirements of local regulations and the voluntary standards to which we strive to adhere, such as ISO/IEC 27001 and the Institute of Standards and Technology (“NIST”) Cyber Security Framework. The CISO reports directly to our Chief Information Officer (the “CIO”) and CRO. The CIO is responsible for designing and executing the Company’s technology strategy, which includes overseeing the Company’s cybersecurity strategy.

The Company’s cybersecurity policies, standards, processes and practices are fully integrated into the Company’s ERRF and are based on recognized frameworks established by NIST, the International Organization for Standardization and other applicable industry standards. In general, the Company seeks to address cybersecurity risks through a comprehensive, cross-functional approach that is focused on preserving the confidentiality, integrity and availability of the information that the Company collects and stores by identifying, preventing and mitigating cybersecurity threats and effectively responding to cybersecurity incidents when they occur.

As one of the critical elements of the Company’s overall ERRF approach, the Company’s cybersecurity program is focused on the following key areas:

Governance: As discussed below in more detail under the heading “The Board’s Oversight of Cybersecurity Risk,” the Board’s oversight of cybersecurity risk management is supported by the Risk Committee of the Board (the “Risk Committee”), which regularly interacts with the Company’s CRO, CIO, CISO and other members of management.

Collaborative Approach: The Company has implemented a comprehensive, cross-functional approach to identification, protection, detection, response and recovery from cybersecurity threats and incidents, while also implementing controls and procedures that are designed to provide for the prompt escalation of certain cybersecurity incidents so that decisions regarding the public disclosure and reporting of such incidents can be made by management in a timely manner.

Technical Safeguards: The Company deploys technical safeguards that are designed to protect the Company’s information systems from cybersecurity threats, including firewalls, intrusion prevention and detection systems, anti-malware functionality and access controls, which are evaluated and improved through vulnerability assessments and cybersecurity threat intelligence.

Incident Response and Recovery Planning: The Company has established and maintains its Information Security Incident Management Policy that addresses the Company's response to a cybersecurity incident, and such policy is tested and evaluated on a regular basis. The policy applies to all full- and part-time employees and contractors. The goal of the policy is to restore normal service operation as quickly as possible following an event, provide timely and accurate information to relevant stakeholders regarding such an event, as appropriate, and minimize the impact of such an event on our business operations. The policy is designed to ensure that we are meeting both our contractual and regulatory requirements related to cybersecurity events.

Data Collection, Use, Processing and Monitoring: The Company maintains robust policies and procedures relating to our data collection, use and processing activities as well as mechanisms for monitoring our data systems and usage. We do not have retail clients and any gathering and maintaining of individual consumer data is very limited. We seek to maintain compliance with global data protection laws, including the EU General Data Protection Regulation (the "GDPR"), the UK Data Protection regime and the California Consumer Privacy Act (the "CCPA"), in the countries in which we operate, and meet our contractual commitments to our clients.

Third-Party**Risk****Management:**

The Company maintains a comprehensive, risk-based approach to identifying and overseeing cybersecurity risks presented by third parties, including vendors, service providers and other external users of the Company's systems, as well as the systems of third parties that could adversely impact our business in the event of a cybersecurity incident affecting those third-party systems.

Education and Awareness: The Company provides regular, mandatory training for personnel regarding cybersecurity threats as a means to equip the Company's personnel with effective tools to address cybersecurity threats, and to communicate the Company's evolving information security policies, standards, processes and practices. In addition, the Company provides regular, mandatory training for personnel regarding key data privacy laws and the appropriate collection, use, and storage of data.

We periodically assess and test our policies, standards, processes and practices that are designed to address cybersecurity threats and incidents. These efforts include a wide range of activities, including audits, assessments, tabletop exercises, vulnerability testing and other exercises focused on evaluating the effectiveness of our cybersecurity measures and planning. The Company regularly engages third parties to perform assessments on our cybersecurity measures, including information security maturity assessments, audits and independent reviews of our information security control environment and operating effectiveness. The results of such assessments, audits and reviews are reported, as appropriate, to the Risk Committee, and the Company adjusts its cybersecurity policies, standards, processes and practices as necessary based on the information provided by these assessments, audits and reviews.

We experience cybersecurity threats and incidents from time to time. However, as of the date of this report, we have not experienced a cybersecurity threat or incident that has materially affected the Company in at least the last three years. While we are not currently aware of any risks from cybersecurity threats that are reasonably likely to materially affect the Company, please see Part I, Item 1A. - "Risk Factors - Malicious cyber-attacks, attempted cybersecurity breaches, 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 Board's Oversight of Cybersecurity Risk

The Board recognizes the critical importance of maintaining the trust and confidence of our clients, business partners and employees. The Board is actively involved in oversight of the Company's ERM, and cybersecurity represents an important component of the Company's overall approach to enterprise risk management. The Board is responsible for overseeing the Company's risk management processes over the short-, medium- and long-term by staying informed of the Company's material risks and evaluating whether management has reasonable controls in place to address such material risks. As part of its oversight responsibilities, the Board dedicates meaningful time and attention to oversight of cybersecurity risk. The Board is not responsible, however, for defining or managing the Company's various risks. See "Management's Involvement in Cybersecurity Risk Oversight" below.

The Board 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 has primary responsibility for cybersecurity oversight. In that capacity, the Risk Committee receives quarterly presentations and reports, as well as additional reports as needed, on cybersecurity risks. Such reports address a wide range of topics including recent developments, evolving standards, vulnerability assessments, third-party and independent reviews, the threat environment, technological trends and information security considerations arising with respect to the Company's peers and third

parties. The Board and the Risk Committee also receive prompt and timely information regarding any cybersecurity incident that meets established internal escalation thresholds, as well as ongoing updates regarding any such incident until it has been addressed.

Management's Involvement in Cybersecurity Risk Oversight

The CISO, in coordination with the Information Security Management System Committee, which includes our Chief Executive Officer and Interim Chief Financial Officer ("CEO"), CIO, CRO and General Counsel & Corporate Secretary (the "GC"), works collaboratively across the Company to implement a program designed to protect the Company's information systems from cybersecurity threats and to promptly respond to any cybersecurity incidents in accordance with the Company's incident response and recovery plans. To facilitate the success of the Company's cybersecurity risk management program, multidisciplinary teams throughout the Company are deployed to address cybersecurity threats and to respond to cybersecurity incidents. Through ongoing communications with these teams, the CISO and the Information Security Management System Committee monitor the prevention, detection, mitigation and remediation of cybersecurity threats and incidents in real time, and report such threats and incidents to the Risk Committee and/or the full Board when appropriate.

The CISO has served in various roles in information technology and information security for over 30 years, including previously serving as the Deputy Chief Information Security Officer of a large European banking group. The CISO has attained the professional certification of Certified Information System Security Professional (CISSP). The CIO holds undergraduate and masters degrees in computer science and has served in various roles in information technology for over 25 years. The Company's CRO holds an undergraduate degree and has over 25 years of experience managing risks, including risks arising from cybersecurity threats.

The Company is ISO/IEC 27001:2013 certified, which is a global standard that specifies the requirements for establishing, implementing, maintaining, and continually improving information security management systems. Additionally, we have received an independent examination regarding our compliance with SOC 2 Type 1 and Type 2.

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 59,000 square feet for our other office locations in jurisdictions such as the U.S., United Kingdom, Brazil, the Netherlands, Hong Kong and Singapore.

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 20, 2024, the last reported closing price of our common stock on the NASDAQ Global Select Market was \$213.98.

Holders

There were 15 holders of record of our common stock as of February 20, 2024.

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, 2023, 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 or Programs (In thousands)
October 1, 2023 - October 31, 2023	853	\$ 213.64	—	\$ 100,016
November 1, 2023 - November 30, 2023	19,773	222.86	—	100,016
December 1, 2023 - December 31, 2023	—	—	—	100,016
Total	20,626	\$ 222.48	—	

During the three months ended December 31, 2023, we repurchased 20,626 shares of common stock that were surrendered to us to satisfy withholding tax obligations upon the exercise of stock options and vesting of restricted shares and restricted stock units. There were no shares repurchased in connection with our share repurchase program during the three months ended December 31, 2023.

In January 2021, our Board authorized a share repurchase program for up to \$100.0 million that commenced in April 2021 and was completed in January 2022. In January 2022, our Board authorized a new share repurchase program for up to \$150.0 million that commenced in March 2022. Shares repurchased under this program will be held in treasury for future use. As of December 31, 2023, we had \$100.0 million of remaining capacity under the program.



STOCK PERFORMANCE GRAPH

The following graph shows a comparison of the cumulative total return for (i) our common stock; (ii) the S&P 500 Index; and (iii) the Dow Jones U.S. Financials Index, in each case 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, 2018, 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.

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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, 2023 and 2022, respectively. A discussion of changes in our Financial Results and Cash Flow Comparisons from the year ended December 31, 2021 to the year ended December 31, 2022 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, 2022.

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. Over 2,000 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. We leverage our diverse set of trading protocols, automated and algorithmic trading solutions, intelligent data and index products and a range of post-trade services to provide an end-to-end trading solution to our robust network of platform participants.

We provide automated and algorithmic trading solutions that we believe, when combined with our integrated and actionable data offerings, will help our clients make faster, better-informed decisions on when and how to trade on our platforms. In 2023, we introduced X-Pro, our newest trading platform, to more seamlessly combine our trading protocols with our proprietary data and pre-trade analytics. We expect that our recent acquisition of Pragma, a quantitative trading technology provider specializing in algorithmic and analytical trading services, will accelerate our development of AI driven execution algorithms across all of our key product areas.

We operate in a large and growing market that provides us with a significant opportunity for future growth, due, in part, to the relatively low levels of electronic trading in many of our largest current product areas. We offer Open Trading for most of our products in order to capitalize on this addressable market by increasing the number of potential trading counterparties and providing our clients with a menu of solutions at each step in the trading process. We believe that Open Trading drives meaningful price improvement for our clients and reduces risk in fixed-income markets by creating a global, diversified pool of liquidity whereby our institutional investor, dealer and alternative liquidity provider clients can all interact on an anonymous basis. Institutional investors can also send trading inquiries directly to their traditional broker-dealer counterparties on a disclosed basis, while simultaneously accessing additional counterparties through our anonymous Open Trading solutions.

We also provide a number of integrated and actionable data offerings, including CP+™ and Axess All®, to assist clients with real-time pricing and trading decisions and transaction cost analysis. We have a range of post-trade services, including straight-through processing, post-trade matching, trade publication, regulatory transaction reporting and market and reference data across fixed-income and other products.

We derive revenue from commissions for transactions executed on our platforms, information services, post-trade services and technology services. 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 Part I, 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 impact trading volume. These factors could have a material adverse or positive 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, the duration of bonds traded, economic and political conditions in the United States, Europe and elsewhere, and the consolidation or contraction of our broker-dealer and institutional investor clients.

During the second and third quarters of 2023, we experienced challenging operating conditions in the fixed-income markets, as the prospect of renewed inflation triggered a rapid rise in long-term bond yields. Such rise in bond yields during the second and third quarters of 2023 coupled with lower years to maturity of the bonds traded on our platforms relative to 2022 resulted in a decrease in the duration of U.S. high-grade bonds traded on our platforms, which had a negative effect on our average variable transaction fee per million, principally in U.S. high-grade during the quarters. In addition, the low levels of credit spread volatility during the second and third quarters of 2023 contributed to a decrease in ETF market maker activity, which we believe had a negative impact on our ability to increase our U.S. high-yield volumes. In the fourth quarter of 2023, market volatility increased, which benefited ETF market maker activity and U.S. high-grade and U.S. high-yield market volumes.

The failures of Silicon Valley Bank and Signature Bank in March 2023 created bank-specific and broader financial institution liquidity risk and concerns, which may result in stricter bank capital and liquidity requirements. Future adverse developments with respect to specific financial institutions or the broader financial services industry may lead to market-wide liquidity shortages, impair the ability of companies to access working capital needs, and create additional market and economic uncertainty.

There has been increased demand for green bonds and other securities linked to environmental, social and governance factors in the fixed-income markets in which we operate.

Because the majority of our assets are short-term in nature, they are not significantly affected by inflation. However, the rate of inflation impacts our expenses, such as employee compensation, technology and communications expenses, which may not be readily recoverable in the prices of our services. To the extent inflation continues to result in rising interest rates or has other adverse effects on the securities markets or the economy, 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 2023 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 \$749.9 million in available borrowing capacity under the 2023 Credit Agreement and 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 lesser 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.

There has been increased demand for portfolio trading workflows over the last few years, which has resulted in heightened competition among trading platforms to enhance their portfolio trading offerings and expand them across different geographies and products.

Our competitive position is enhanced by the unique liquidity provided by our Open Trading functionalities and the integration of our broker-dealer and institutional investor clients with our electronic trading platforms and other systems. We have focused on the unique aspects of the credit markets we serve in the development of our platforms, 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. 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. Based on these proposed rules, we expect that we will have to operate all of our trading protocols in compliance with Regulation ATS and we could become subject to Regulation SCI for certain parts of our business in the future. The SEC has also adopted final rule amendments that, effective May 2024, will shorten the standard settlement cycle for most broker-dealer securities transactions from two business days after the trade date (T+2) to one business day after the trade date (T+1). The shortening of the settlement cycle will lead to a reduction in the length of exposure to trading counterparties and lower margin requirements for our clearing operations, but it is also expected to increase the operational costs and complexities associated with cross border transactions conducted on our platforms. The SEC also adopted final rules on December 13, 2023 regarding the central clearing of certain secondary market transactions involving U.S. Treasury securities. This central clearing mandate will impact certain of our participants who do not centrally clear such trades today, and some have expressed concerns about the potential impact of additional clearing costs. 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. For example, DORA, which will become applicable to portions of our business in 2025, will require us to dedicate additional financial and operational resources to meet the significant additional ICT-related governance, risk management, resilience testing and sub-contracting requirements created by the legislation. However, we also believe new regulations may 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 trading platforms that meet the various regulatory requirements and help them comply with their regulatory obligations.

For further description of the regulations which govern our business, see Part I, 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. For example, in 2023, we introduced MarketAxess X-Pro, our new trading platform, which provides traders with a flexible user experience, intuitive workflows and access to our proprietary data and pre-trade analytics. We plan to continue

to focus on technology infrastructure initiatives and improving our platforms with the goal of further enhancing our leading market position.

As the overall share of electronic trading grows in global credit products, we are experiencing continued demand for, and growth in, our automated and algorithmic trading solutions. We also support a large and growing base of dealer market making algorithms. In 2023, trading volumes in our automated trading protocols rose to \$303.3 billion, up 37.8% from \$220.2 billion in 2022. There were 204 active client firms using our automated and algorithmic trading protocols in 2023, up 25.9% from 2022. In 2023, there were 32.5 million dealer algorithmic responses on our platforms, up 37.0% from 2022.

We experience cybersecurity threats and incidents from time to time. However, as of the date of this report, MarketAxess has not experienced a cybersecurity threat or incident that has materially affected the Company in at least the past three years. 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 I, Item 1A. - “Risk Factors, Technology, IT Systems and Cybersecurity Risks” and Part I, Item 1C - “Cybersecurity.”

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 the following are the 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 other 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;
- the duration of the bonds trading on our platforms; and
- the particular fee plan under which we earn commissions and distribution fees.

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 “— Results of Operations — Year Ended December 31, 2023 Compared to Year Ended December 31, 2022”, in 2023, our trading volumes and our average variable transaction fee per million decreased.

Components of Our Results of Operations

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 the majority of U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis.

Credit

Credit includes U.S. high-grade corporate bonds, high-yield bonds, emerging markets bonds, Eurobonds, municipal bonds and leveraged loans. 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.

Commissions.

Commissions for high-yield bonds, emerging markets bonds, Eurobonds, municipal bonds and leveraged loans 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 a 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.

The average credit fees per million may vary in the future due to changes in yield, years-to-maturity and nominal size of high-grade bonds traded on our platforms and changes in product mix or trading protocols.

Credit distribution fees include any unused monthly fee commitments under our variable fee plans.

Rates Commissions. Rates includes U.S. Treasury, U.S. agency and European government bonds. 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 credit and rates commissions are not necessarily indicative of future commissions.

Other Commissions. Other commissions includes equities and foreign exchange commissions for Pragma's algorithmic trading services. Commissions for equities are volume-tiered and consist of variable transaction fees billed monthly, while commissions for foreign exchange generally incorporate variable transaction fees and fixed distribution fees that are billed monthly.

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 post-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.

Technology Services

Technology services includes technology services revenue generated by Pragma and 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 software and licenses, maintenance on software and hardware, cloud hosting costs, data feeds provided by outside vendors, U.S. government bonds technology platform licensing fees, data center hosting costs and our internal network connections. 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 branding 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, regulatory fees, media subscription costs, charitable contributions, provision for doubtful accounts, various state franchise and U.K. value-added taxes and other miscellaneous expenses.

Expenses may continue to 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 increased regulatory complexity, acquisitions or the continued effects of inflation.

Other Income (Expense)

Interest Income. Interest income consists of interest income earned on our cash and cash equivalents, restricted cash, deposits and investments.

Interest	Expense.
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Interest expense consists of financing charges incurred on short-term borrowings.

Equity in Earnings of Unconsolidated Affiliate. Equity in earnings of unconsolidated affiliate represents the proportionate share of our equity method investee's net income.

Other, Net. Other, net consists of realized and unrealized gains and losses on trading security investments and foreign currency forward contracts, foreign currency transaction gains or losses, investment advisory fees, credit facility administrative fees, gains or losses on revaluations of contingent consideration payable 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 ("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.

Stock-based compensation

We maintain the MarketAxess Holdings Inc. 2020 Equity Incentive Plan (the "2020 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 to encourage employees, consultants and non-employee directors to participate in our long-term success. We make critical accounting estimates related to performance shares and performance stock units granted under the 2020 Plan.

In 2021, 2022 and 2023, annual performance-based equity awards (collectively, the "Performance Equity Awards") were granted to the executive officers and certain senior managers. Each Performance Equity Award is earned or forfeited based on our level of achievement of certain predetermined metrics, including pre-tax adjusted operating margin and market share for the 2021 awards, and pre-tax adjusted operating margin, U.S. credit market share, and revenue growth excluding U.S. credit for the 2022 and 2023 awards. The vested share pay-out ranges from zero to 200% of the Performance Equity Award target. The number of Performance Equity Awards that vest, if any, is determined by the level of achievement of the performance metrics during the three-year performance periods, as certified by the Compensation and Talent Committee following the conclusion of the performance period. In addition, participants must provide continued service through the vesting date, subject to death, disability and qualified retirement exceptions, as applicable. Compensation expense for the 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 payouts and adjust the life-to-date compensation expense recognized since the grant date. As of December 31, 2023, a 10.0% change in the expected final share payouts would increase or decrease the life-to-date compensation expense by \$1.3 million. The estimated final share payouts for the 2021 and 2022 awards as of December 31, 2023 decreased 34.6% compared to December 31, 2022.

Recent Accounting Pronouncements

See Note 2 for a discussion of any recent accounting pronouncements relevant to our Consolidated Financial Statements.

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 products 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 GAAP.

Results of Operations

Year Ended December 31, 2023 Compared to Year Ended December 31, 2022

The following table summarizes our financial results for the years ended December 31, 2023 and 2022:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
(\$ in thousands, except per share amounts)				
Revenues	\$ 752,547	\$ 718,300	\$ 34,247	4.8 %
Expenses	437,528	391,424	46,104	11.8
Operating income	315,019	326,876	(11,857)	(3.6)
Other income (expense)	17,681	11,412	6,269	54.9
Income before income taxes	332,700	338,288	(5,588)	(1.7)
Provision for income taxes	74,645	88,064	(13,419)	(15.2)
Net income	<u>\$ 258,055</u>	<u>\$ 250,224</u>	<u>\$ 7,831</u>	<u>3.1 %</u>
Net income per common share - Diluted	\$ 6.85	\$ 6.65	\$ 0.20	3.0 %

Changes in average foreign currency exchange rates compared to the U.S. dollar had the effect of increasing revenues and expenses by \$0.9 million and \$1.1 million, respectively, for the years ended December 31, 2023 and 2022.

Revenues

Our revenues for the years ended December 31, 2023 and 2022, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,					
	2023		2022			
			(\$ in thousands)			
		% of Revenues		% of Revenues	\$ Change	% Change
Commissions	\$ 662,964	88.1 %	\$ 641,183	89.3 %	\$21,781	3.4 %
Information services	46,383	6.2	39,314	5.5	7,069	18.0
Post-trade services	40,178	5.3	36,877	5.1	3,301	9.0
Technology services	3,022	0.4	926	0.1	2,096	226.3
Total revenues	\$ 752,547	100.0 %	\$ 718,300	100.0 %	34,247	4.8 %

Commissions

Our commission revenues for the years ended December 31, 2023 and 2022, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(\$ in thousands)			
Variable transaction fees				
Credit	\$ 496,028	\$ 491,680	\$ 4,348	0.9 %
Rates	20,749	22,341	(1,592)	(7.1)
Other	4,979	—	4,979	NM
Total variable transaction fees	521,756	514,021	7,735	1.5
Fixed distribution fees				
Credit	140,700	126,915	13,785	10.9
Rates	252	247	5	2.0
Other	256	—	256	NM
Total fixed distribution fees	141,208	127,162	14,046	11.0
Total commissions	\$ 662,964	\$ 641,183	\$ 21,781	3.4 %

NM - not meaningful

Credit variable transaction fees increased by \$4.3 million, driven by a 6.2% increase in trading volume, partially offset by a 5.0% decrease in total credit average variable transaction fee per million. Open Trading credit volume totaled \$955.6 billion during the year ended December 31, 2023, up 1.7%, and Open Trading credit variable transaction fees represented 33.9% and 33.7% of total variable transaction fees for the years ended December 31, 2023 and 2022, respectively. Rates variable transaction fees decreased by \$1.6 million, driven principally by a 14.5% decrease in trading volumes, partially offset by an 8.8% increase in average variable transaction fee per million. Other variable transaction fees include equities and foreign exchange commissions earned by Pragma.

Credit fixed distribution fees increased \$13.8 million mainly due to new dealers on fixed distribution fee plans and certain dealers moving to plans with higher fixed distribution fees.

Our trading volumes for the years ended December 31, 2023 and 2022 were as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
(\$ in millions)				
Trading volume data				
Credit				
High-grade	\$ 1,457,559	\$ 1,364,530	\$ 93,029	6.8 %
High-yield	398,275	424,812	(26,537)	(6.2)
Emerging markets	717,877	693,560	24,317	3.5
Eurobonds	441,171	362,713	78,458	21.6
Other credit	112,451	99,225	13,226	13.3
Total credit	3,127,333	2,944,840	182,493	6.2
Rates				
U.S. government bonds	4,545,850	5,347,607	(801,757)	(15.0)
Agency and other government bonds	106,933	96,782	10,151	10.5
Total rates	4,652,783	5,444,389	(791,606)	(14.5)
Total trading volume	\$ 7,780,116	\$ 8,389,229	\$ (609,113)	(7.3) %
Number of U.S. Trading Days	249	249		
Number of U.K. Trading Days	251	250		

For volume reporting purposes, transactions in foreign currencies are converted to U.S. dollars at average monthly rates.

The 6.8% increase in our U.S. high-grade volume was principally due to an increase in estimated market volumes, partially offset by a decrease in our estimated market share. Estimated U.S. high-grade market volume as reported by TRACE increased by 11.7% to \$7.2 trillion for the year ended December 31, 2023 compared to the year ended December 31, 2022. Our estimated market share of total U.S. high-grade corporate bond volume decreased to 20.4% for the year ended December 31, 2023 from 21.3% for the year ended December 31, 2022. Our high-yield volume decreased by 6.2% due to decreases in our estimated market share and estimated market volumes. Our emerging markets volumes increased by 3.5%, mainly due to an increase in local markets trading volumes. Eurobond volumes increased by 21.6%, mainly due to increases in estimated market volumes and our estimated market share. Other credit volumes increased 13.3%, mainly due to an increase in our estimated municipal bond market share. Rates trading volume decreased 14.5%, primarily due to a decrease in our estimated market share.

Our average variable transaction fee per million for the years ended December 31, 2023 and 2022 was as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
Average variable transaction fee per million				
Credit	\$ 158.61	\$ 166.96	\$ (8.35)	(5.0) %
Rates	4.46	4.10	0.36	8.8



Credit average variable transaction fee per million decreased by 5.0% to \$158.61 per million for the year ended December 31, 2023, mainly due to a decrease in the duration of U.S. high-grade bonds traded on our platforms and product mix-shift in other credit products. Rates average variable transaction fee per million increased 8.8% mainly due to product mix-shift in rates products.

Information Services. Information services revenue increased by \$7.1 million for the year ended December 31, 2023, mainly due to net new data contract revenue of \$7.4 million offset by the negative impact of foreign currency fluctuations of \$0.3 million.

Post-Trade Services. Post-trade services revenue increased by \$3.3 million for the year ended December 31, 2023, principally due to net new contract revenue of \$3.7 million offset by the negative impact of foreign currency fluctuations of \$0.4 million.

Technology Services. Technology services revenue increased by \$2.1 million for the year ended December 31, 2023 due to technology services revenue generated by Pragma.

Expenses

The following table summarizes our expenses for the years ended December 31, 2023 and 2022:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(\$ in thousands)			
Expenses				
Employee compensation and benefits	\$ 206,926	\$ 182,104	\$ 24,822	13.6 %
Depreciation and amortization	70,557	61,446	9,111	14.8
Technology and communications	62,801	52,964	9,837	18.6
Professional and consulting fees	31,935	33,949	(2,014)	(5.9)
Occupancy	14,216	14,121	95	0.7
Marketing and advertising	11,049	9,977	1,072	10.7
Clearing costs	17,002	17,663	(661)	(3.7)
General and administrative	23,042	19,200	3,842	20.0
Total expenses	<u>\$ 437,528</u>	<u>\$ 391,424</u>	<u>\$ 46,104</u>	11.8 %

Employee compensation and benefits increased by \$24.8 million primarily due to increases in salaries, taxes and benefits on higher employee headcount of \$25.1 million, partially offset by lower stock-based compensation of \$0.3 million.

Depreciation and amortization increased by \$9.1 million primarily due to higher amortization of software development costs of \$6.0 million, higher amortization of acquired intangibles of \$2.2 million, and higher amortization of production software and hardware of \$2.0 million and \$0.7 million, respectively, partially offset by lower depreciation of software licenses of \$1.6 million. For the years ended December 31, 2023 and 2022, \$9.3 million and \$13.1 million, respectively, of equipment purchases and leasehold improvements and \$43.1 million and \$38.7 million, respectively, of software development costs were capitalized.

Technology and communications expenses increased by \$9.8 million primarily due to higher software subscription costs of \$4.9 million, higher data center costs of \$2.2 million, higher cloud hosting costs of \$1.6 million, and higher IT support costs of \$1.1 million.

Professional and consulting fees decreased by \$2.0 million primarily due to lower IT consulting fees of \$1.8 million, lower acquisition-related integration consulting fees of \$1.0

million, lower audit and tax fees of \$0.4 million and lower consulting costs related to our self-clearing operations of \$0.2 million, partially offset by higher acquisition-related legal and consulting fees of \$1.2 million and other consulting fees of \$0.2 million.

Marketing expenses increased by \$1.1 million primarily due to higher advertising and sales-related travel and entertainment costs.

General and administrative expenses increased by \$3.8 million primarily due to higher office-related administration costs of \$1.4 million, higher subscription costs of \$1.2 million, higher travel and entertainment costs of \$1.0 million and higher regulatory fees of \$0.2 million.

Other Income (Expense)

Our other income (expense) for the years ended December 31, 2023 and 2022, and the resulting dollar and percentage changes, were as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(\$ in thousands)			
Interest income	\$ 22,425	\$ 5,040	\$ 17,385	NM
Interest expense	(1,983)	(700)	(1,283)	183.3 %
Equity in earnings of unconsolidated affiliate	735	1,126	(391)	(34.7)
Other, net	(3,496)	5,946	(9,442)	NM
Total other income (expense)	<u>\$ 17,681</u>	<u>\$ 11,412</u>	<u>\$ 6,269</u>	54.9 %

NM - not meaningful

Interest income increased by \$17.4 million primarily due to higher interest rates.

Interest expense increased by \$1.3 million primarily due to interest charged as part of the settlement of a vendor dispute and higher financing charges incurred under our short-term borrowings for the year ended December 31, 2023 as compared to year ended December 31, 2022.

Equity in earnings of unconsolidated affiliate represents the proportionate share of net income of our equity method investee.

Other, net decreased by \$9.4 million principally due to the impact of foreign exchange transaction losses in the current year compared to gains in the prior year of \$13.3 million, partially offset by gains of \$3.0 million on foreign exchange forward contracts and income of \$1.1 million from our equity method investee for billing under a services agreement.

Provision for Income Taxes.

The provision for income taxes and effective tax rate for the years ended December 31, 2023 and 2022 were as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(\$ in thousands)			
Provision for income taxes	\$ 74,645	\$ 88,064	\$ (13,419)	(15.2) %
Effective tax rate	22.4 %	26.0 %		

The provision for income taxes for the year ended December 31, 2023 reflected benefits of \$5.4 million for return-to-provision adjustments, \$2.0 million for the settlement of tax liability, interest and penalties in connection with unrecognized tax benefits and \$1.5 million for the purchase of renewable energy-related transferable tax credits. The provision for income taxes for the year ended December 31, 2022 included \$3.2 million of expense related to a settlement with New York State to resolve the 2010 to 2014 audits. We recorded no provision for unrecognized tax benefits and a provision for unrecognized tax benefits of \$0.2 million for the years ended December 31, 2023 and 2022, 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 year ended December 31, 2023, we have met our funding requirements through cash on hand, internally generated funds and short-term borrowings. Cash and cash equivalents and investments totaled \$586.1 million as of December 31, 2023. Our investments generally consist of investment-grade corporate bonds and 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 August 2023, we entered into the 2023 Credit Agreement, which provides aggregate commitments totaling \$750.0 million, including a revolving credit facility, a \$5.0 million letter of credit sub-limit for standby letters of credit and a \$380.0 million sub-limit for swingline loans. The 2023 Credit Agreement will mature on August 9, 2026, with our option to request up to two additional 364-day extensions at the discretion of each lender and subject to customary conditions. As of December 31, 2023, we had \$0.1 million in letters of credit outstanding and \$749.9 million in available borrowing capacity under the 2023 Credit Agreement. Borrowings under the 2023 Credit Agreement will bear interest at a rate per annum equal to the alternate base rate or the adjusted term SOFR rate, plus an applicable margin that varies with our consolidated total leverage ratio. The 2023 Credit Agreement requires that we satisfy certain covenants, including a requirement to not exceed a maximum consolidated total leverage ratio. We were in compliance with all applicable covenants at December 31, 2023. See Note 13 to the Consolidated Financial Statements for a discussion of the 2023 Credit Agreement.

In connection with their self-clearing operations, certain of our operating subsidiaries maintain agreements with a settlement bank to allow the subsidiaries to borrow an aggregate of up to \$500.0 million on an uncommitted basis, collateralized by eligible securities pledged by the subsidiaries to the settlement bank, subject to certain haircuts. Borrowings under these agreements will bear interest at a base rate per annum equal to the higher of the upper range of the Federal Funds Rate, 0.25% or one-month SOFR, plus 1.00%. As of December 31, 2023, the subsidiaries had no borrowings outstanding and up to \$500.0 million in available uncommitted borrowing capacity under such agreements. See Note 13 to the Consolidated Financial Statements for a discussion of these agreements.

Under arrangements with their settlement banks, certain of our operating subsidiaries may receive overnight financing in the form of bank overdrafts. As of December 31, 2023, 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, 2023, the aggregate amount of the positions financed, deposits and customer reserve balances associated with our self-clearing and settlement activities was \$195.5 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.

Cash Flows for the Year Ended December 31, 2023 Compared to the Year Ended December 31, 2022

Our cash flows were as follows:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(\$ in thousands)			
Net cash provided by operating activities	\$ 333,767	\$ 289,231	\$ 44,536	15.4 %
Net cash (used in) investing activities	(155,290)	(86,272)	(69,018)	80.0
Net cash (used in) financing activities	(147,057)	(242,378)	95,321	(39.3)
	7,588	(13,484)	21,072	NM

Effect of exchange rate changes on cash
and
cash equivalents

Net increase/(decrease) for the period	<u>\$ 39,008</u>	<u>\$ (52,903)</u>	<u>\$ 91,911</u>	NM
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NM - not meaningful

The \$44.5 million increase in net cash provided by operating activities was primarily due to lower net purchases of trading investments of \$24.3 million and a larger change in net receivables from broker-dealers, clearing organizations and customers associated with our clearing activities of \$19.8 million.

The \$69.0 million increase in net cash used in investing activities was primarily attributable to an increase in cash used for acquisitions of \$78.5 million and higher net purchases of available-for-sale investments of \$24.4 million, partially offset by lower cash used for equity method investments of \$34.4 million.

The \$95.3 million decrease in net cash used in financing activities was principally due to lower repurchases of common stock of \$87.5 million, lower payments of contingent consideration of \$13.7 million and higher exercises of stock options of \$0.3 million, offset by higher cash dividends of \$3.7 million and higher withholding tax payments on restricted stock vesting of \$2.4 million.

The \$21.1 million change in the effect of exchange rate changes on cash and cash equivalents was driven by changes in the cumulative translation adjustment which reflects weakening of the U.S. dollar in the year ended December 31, 2023 compared to strengthening of the U.S. dollar during the year ended December 31, 2022.

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 streams. 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 discussed above.

Certain of our U.S. subsidiaries are registered as broker-dealers and therefore are subject to the applicable rules and regulations of the SEC and FINRA. These rules contain minimum net capital requirements, as defined in the applicable regulations. 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, 2023, 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, 2023, our subsidiaries maintained aggregate net capital and financial resources that were \$605.4 million in excess of the required levels of \$36.1 million.

Each of our U.S. and foreign regulated subsidiaries are subject to local regulations which generally limit, or require the prior notification to or approval from such regulated entity's principal regulator before, the 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. As of December 31, 2023, the amount of unrestricted cash held by our non-U.S. subsidiaries was \$224.4 million.

We execute securities 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 operating subsidiaries settle such transactions using their self-clearing operations or through the use of 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, 2023 and 2022. Substantially all of our open securities failed-to-deliver and securities failed-to-receive transactions as of December 31, 2023 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.

We have leases for corporate offices and equipment with initial lease terms ranging from one year to 15 years. We have total future contractual rent payments on these leases of \$105.6 million, with \$13.1 million due within the next 12 months and \$92.5 million due beyond 12 months.

We enter into foreign currency forward contracts to economically hedge our exposure to variability in certain foreign currency transaction gains and losses. As of December 31, 2023, the notional value of our foreign currency forward contract outstanding was \$61.9 million and the fair value of the asset was \$1.9 million.

In January 2021, our Board authorized a share repurchase program for up to \$100.0 million that commenced in April 2021 and was completed in January 2022. In January 2022, our Board authorized a share repurchase program for up to \$150.0 million that commenced in March 2022. Shares repurchased under the program will be held in treasury for future use. As of December 31, 2023, we had \$100.0 million of remaining capacity under the program.

In January 2024, our Board approved a quarterly cash dividend of \$0.74 per share payable on February 28, 2024 to stockholders of record as of the close of business on February 14, 2024. Any future declaration and payment of dividends will be at the sole discretion of our Board.

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: earnings before interest, taxes, depreciation and amortization (“EBITDA”), EBITDA margin and free cash flow. Starting with the first quarter of 2023, our calculation of EBITDA has been revised to adjust for interest income in addition to interest expense. In prior periods, we only adjusted for interest expense because interest income amounts were insignificant. Prior comparable periods have now been recast to conform to the current presentation. Likewise, starting with the first quarter of 2023, EBITDA margin is calculated by adjusting for interest income in addition to interest expense and prior comparable periods have been recast to conform to the current presentation. We define EBITDA margin as EBITDA divided by revenues. We define free cash flow as net cash provided by/(used in) 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, EBITDA margin 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 these non-GAAP financial measures, when taken into consideration with the corresponding GAAP financial measures, provide additional information regarding our operating results because they assist both investors and management in analyzing and evaluating the performance of our business.

The table set forth below presents a reconciliation of our net income to EBITDA and net income margin to EBITDA margin, as defined, for the years ended December 31, 2023 and 2022:

	Year Ended December 31,	
	2023	2022
	(\$ in thousands)	
Net income	\$ 258,055	\$ 250,224
Interest income	(22,425)	(5,040)
Interest expense	1,983	700
Provision for income taxes	74,645	88,064
Depreciation and amortization	70,557	61,446
EBITDA	<u>\$ 382,815</u>	<u>\$ 395,394</u>
Net income margin	\$ 34.3 %	\$ 34.8 %
Interest income	(3.0)	(0.7)
Interest expense	0.3	0.1
Provision for income taxes	9.9	12.3
Depreciation and amortization	9.4	8.6
EBITDA margin	<u>\$ 50.9 %</u>	<u>\$ 55.0 %</u>

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, 2023 and 2022:

Year Ended December 31,
2023
2022

	(\$ in thousands)	
Net cash provided by operating activities	\$ 333,767	\$ 289,231
Exclude: Net change in trading investments	25,248	49,527
Exclude: Net change in fail-to-deliver/receive from broker-dealers, clearing organizations and customers	(46,696)	(25,994)
Less: Purchases of furniture, equipment and leasehold improvements	(9,326)	(13,142)
Less: Capitalization of software development costs	(43,122)	(38,730)
Free Cash Flow	<u>\$ 259,871</u>	<u>\$ 260,892</u>

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, 2023, we had \$99.7 million of investments in U.S. Treasuries that were classified as trading securities and \$24.7 million of investments in corporate bonds that were classified as available-for-sale. Adverse movements, such as a decrease in the value of these securities or a downturn or disruption in the markets for these securities, could result in a substantial loss. A 10.0% decrease in the market value of our U.S. Treasuries or available-for-sale investments would result in losses of approximately \$10.0 million and \$2.5 million, respectively. 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 I, 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 and cash equivalents, restricted cash and deposits. As of December 31, 2023, our cash and cash equivalents, restricted cash and deposits amounted to \$611.7 million. A hypothetical 100 basis point change in interest rates would increase or decrease our annual interest income by approximately \$6.1 million, assuming no change in the amount or composition of our cash and cash equivalents, restricted cash and deposits.

As of December 31, 2023, a hypothetical 100 basis point increase or decrease in interest rates would decrease or increase the fair value of the available-for-sale investment portfolio by approximately \$0.2 million, assuming no change in the amount or composition of the investments. The hypothetical unrealized gain (loss) of \$0.2 million would be recognized in accumulated other comprehensive loss on the Consolidated Statements of Financial Condition.

A similar hypothetical 100 basis point increase or decrease in interest rates would decrease or increase the fair value of the trading securities portfolio by approximately \$1.1 million. The hypothetical unrealized gain (loss) of \$1.1 million would be recognized in other, net in the Consolidated Statements of Operations.

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 expenses, operating income and the value of balance sheet items denominated in foreign currencies.

During the year ended December 31, 2023, approximately 15.8% of our revenue and 26.1% 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 \$11.9 million and operating expenses by approximately \$11.4 million.

Credit Risk

Through certain of our subsidiaries, we execute securities 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 operating subsidiaries settle such transactions using their self-clearing operations or through the use of 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.

Derivative Risk

Our limited derivative risk stems from our activities in the foreign currency forward contract market. We use this market to economically hedge our foreign exchange gains and losses on the Consolidated Statements of Operations that arise from our U.S. dollar versus British Pound Sterling exposure from the activities of our U.K. subsidiaries. As of December 31, 2023, the notional amount of our foreign currency forward contract was \$61.9 million. We do not hold derivative instruments for purposes other than economically hedging foreign currency risk.

Item 8. Financial Statements and Supplementary Data.

MARKETAXESS HOLDINGS INC.

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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, 2023. 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, 2023.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2023 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, 2023 and 2022, 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, 2023, 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, 2023, 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, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023 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, 2023, 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 matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate 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 matters below, providing a separate opinion on the critical audit matters or on the accounts or disclosures to which they relate.

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 \$178.5 million for the year ended December 31, 2023. 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 a high degree of auditor effort in performing procedures and evaluating audit 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 commissions. 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.

Acquisition of Pragma LLC and Pragma Financial Systems LLC - Valuation of Developed Technology

As described in Notes 2 and 6 to the consolidated financial statements, on October 2, 2023, the Company completed its acquisition of all of the outstanding ownership interests of Pragma LLC and Pragma Financial Systems LLC (collectively, "Pragma") for the aggregate purchase price of \$125.0 million. Of the acquired intangible assets, \$28.5 million of developed technology was recorded. The developed technology was valued using a relief-from-royalty method. Determining the fair value of the developed technology acquired required management judgment and involved the use of significant estimates and assumptions, including assumptions with respect to revenue growth rate, royalty rate, discount rate, obsolescence, and asset lives.

The principal considerations for our determination that performing procedures relating to the valuation of developed technology acquired in the acquisition of Pragma is a critical audit matter are (i) the significant judgment by management when developing the fair value estimate of the developed technology acquired; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the revenue growth rate, royalty rate, discount rate, obsolescence,

and asset lives used in determining the valuation of the developed technology; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

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 acquisition accounting, including controls over management's valuation of the developed technology acquired. These procedures also included, among others, (i) reading the purchase agreement; (ii) testing management's process for developing the fair value estimate of the developed technology acquired; (iii) evaluating the appropriateness of the relief-from-royalty method used by management; (iv) testing the completeness and accuracy of the underlying data used in the relief-from-royalty method; and (v) evaluating the reasonableness of the significant assumptions used by management related to revenue growth rate, royalty rate, discount rate, obsolescence, and asset lives. Evaluating management's assumption related to the revenue growth rate involved considering (i) the current and past performance of Pragma; (ii) the consistency with external market and industry data; and (iii) whether the assumption was consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating (i) the appropriateness of the relief-from-royalty method and (ii) the reasonableness of the royalty rate, discount rate, obsolescence and asset lives assumptions.

/s/ PricewaterhouseCoopers LLP

New York, New York

February 22, 2024

We have served as the Company's auditor since 2000.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF FINANCIAL CONDITION

	As of	
	December 31, 2023	December 31, 2022
	(In thousands, except share and per share amounts)	
ASSETS		
Cash and cash equivalents	\$ 451,280	\$ 430,746
Cash segregated under federal regulations	45,122	50,947
Investments, at fair value	134,861	83,792
Accounts receivable, net of allowance of \$577 and \$590 as of December 31, 2023 and 2022, respectively	89,839	78,450
Receivables from broker-dealers, clearing organizations and customers	687,936	476,335
Goodwill	236,706	154,789
Intangible assets, net of accumulated amortization	119,108	98,065
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	102,671	100,256
Operating lease right-of-use assets	63,045	66,106
Prepaid expenses and other assets	84,499	68,289
Total assets	\$ 2,015,067	\$ 1,607,775
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	60,124	56,302
Payables to broker-dealers, clearing organizations and customers	537,398	303,993
Income and other tax liabilities	7,892	28,448
Accounts payable, accrued expenses and other liabilities	37,013	55,263
Operating lease liabilities	79,677	82,676
Total liabilities	\$ 722,104	\$ 526,682
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, 2023 and 2022, respectively	—	—
Series A Preferred Stock, \$0.001 par value, 110,000 shares authorized, no shares issued and outstanding as of December 31, 2023 and 2022, respectively	—	—
Common stock voting, \$0.003 par value, 110,000,000 shares authorized, 40,940,769 shares and 40,918,660 shares issued and 37,899,688 shares	123	123

and 37,648,148 shares outstanding as of December 31, 2023 and 2022, respectively		
Common stock non-voting, \$0.003 par value, 10,000,000 shares authorized, no shares issued and outstanding as of December 31, 2023 and 2022, respectively	—	—
Additional paid-in capital	333,292	345,468
Treasury stock - Common stock voting, at cost, 3,041,081 shares and 3,270,512 shares as of December 31, 2023 and 2022, respectively	(260,298)	(328,326)
Retained earnings	1,244,216	1,101,525
Accumulated other comprehensive loss	(24,370)	(37,697)
Total stockholders' equity	<u>1,292,963</u>	<u>1,081,093</u>
Total liabilities and stockholders' equity	<u>\$ 2,015,067</u>	<u>\$ 1,607,775</u>

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2023	2022	2021
	(In thousands, except per share amounts)		
Revenues			
Commissions	\$ 662,964	\$ 641,183	\$ 621,008
Information services	46,383	39,314	38,175
Post-trade services	40,178	36,877	38,922
Technology services	3,022	926	846
Total revenues	752,547	718,300	698,951
Expenses			
Employee compensation and benefits	206,926	182,104	170,916
Depreciation and amortization	70,557	61,446	53,447
Technology and communications	62,801	52,964	42,474
Professional and consulting fees	31,935	33,949	41,925
Occupancy	14,216	14,121	13,320
Marketing and advertising	11,049	9,977	9,059
Clearing costs	17,002	17,663	16,074
General and administrative	23,042	19,200	14,501
Total expenses	437,528	391,424	361,716
Operating income	315,019	326,876	337,235
Other income (expense)			
Interest income	22,425	5,040	401
Interest expense	(1,983)	(700)	(842)
Equity in earnings of unconsolidated affiliate	735	1,126	—
Other, net	(3,496)	5,946	(2,871)
Total other income (expense)	17,681	11,412	(3,312)
Income before income taxes	332,700	338,288	333,923
Provision for income taxes	74,645	88,064	76,035
Net income	\$ 258,055	\$ 250,224	\$ 257,888
Net income per common share			
Basic	\$ 6.87	\$ 6.68	\$ 6.88
Diluted	\$ 6.85	\$ 6.65	\$ 6.77
Cash dividends declared per common share	\$ 2.88	\$ 2.80	\$ 2.64
Weighted average shares outstanding			
Basic	37,546	37,468	37,508
Diluted	37,654	37,643	38,097

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Net income	\$ 258,055	\$ 250,224	\$ 257,888
Cumulative translation adjustment	13,349	(24,367)	(8,680)
Net unrealized (loss) on securities available-for-sale, net of tax of \$12, \$0 and \$0, respectively	(22)	—	—
Comprehensive income	<u>\$ 271,382</u>	<u>\$ 225,857</u>	<u>\$ 249,208</u>

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, 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
Net income	—	—	—	250,224	—	250,224
Cumulative translation adjustment	—	—	—	—	(24,367)	(24,367)
Stock-based compensation	—	29,864	—	—	—	29,864
Exercise of stock options	—	672	—	—	—	672
Withholding tax payments on restricted stock vesting and stock option exercises	—	(23,404)	—	—	—	(23,404)
Repurchases of common stock	—	—	(87,540)	—	—	(87,540)
Treasury stock reclassification	—	8,074	(8,074)	—	—	—
Cash dividend on common stock (\$2.80 per share)	—	—	—	(105,665)	—	(105,665)
Balance at December 31, 2022	123	345,468	(328,326)	1,101,525	(37,697)	1,081,093
Net income	—	—	—	258,055	—	258,055
Cumulative translation adjustment	—	—	—	—	13,349	13,349

Unrealized net gain (loss) on securities available-for-sale, net of tax	—	—	—	—	(22)	(22)
Stock-based compensation	—	29,190	—	—	—	29,190
Exercise of stock options	—	940	—	—	—	940
Withholding tax payments on restricted stock vesting and stock option exercises	—	(25,839)	—	—	—	(25,839)
Reissuance of treasury stock	—	(242)	1,235	—	—	993
Treasury stock used for acquisition	—	(16,225)	66,793	(6,727)	—	43,841
Cash dividend on common stock (\$2.88 per share)	—	—	—	(108,637)	—	(108,637)
Balance at December 31, 2023	<u>\$ 123</u>	<u>\$ 333,292</u>	<u>\$ (260,298)</u>	<u>\$ 1,244,216</u>	<u>\$ (24,370)</u>	<u>\$ 1,292,963</u>

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Cash flows from operating activities			
Net income	\$ 258,055	\$ 250,224	\$ 257,888
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	70,557	61,446	53,447
Amortization of operating lease right-of-use assets	5,853	5,708	6,799
Stock-based compensation expense	29,190	29,864	27,314
Deferred taxes	(5,815)	(6,547)	3,118
Foreign currency transaction (gains) losses	4,718	(8,783)	—
Other	(3,113)	555	(466)
Changes in operating assets and liabilities:			
(Increase) in accounts receivable	(7,116)	(15,136)	15,598
(Increase) in receivables from broker-dealers, clearing organizations and customers	(181,044)	(47,631)	(156,909)
(Increase) in prepaid expenses and other assets	(11,898)	(4,249)	2,214
(Increase) in trading investments	(25,248)	(49,527)	(5,574)
(Increase)/decrease in mutual funds held in rabbi trust	(1,103)	1,813	(2,306)
Increase/(decrease) in accrued employee compensation	1,466	(3,417)	(2,607)
Increase in payables to broker-dealers, clearing organizations and customers	227,920	74,668	95,999
(Decrease) in income and other tax liabilities	(14,691)	(4,768)	(5,638)
(Decrease)/increase in accounts payable, accrued expenses and other liabilities	(7,229)	11,384	215
(Decrease) in operating lease liabilities	(6,735)	(6,373)	(7,001)
Net cash provided by operating activities	333,767	289,231	282,091
Cash flows from investing activities			
Available-for-sale investments			
Proceeds from maturities and sales	4,452	—	—
Purchases	(28,818)	—	—
Acquisitions, net of cash and cash equivalents acquired	(78,476)	—	(17,078)
Acquisition of equity method investment	—	(34,400)	—
Purchases of furniture, equipment and leasehold improvements	(9,326)	(13,142)	(17,493)
Capitalization of software development costs	(43,122)	(38,730)	(33,123)
Net cash (used in) investing activities	(155,290)	(86,272)	(67,694)
Cash flows from financing activities			
Cash dividend on common stock	(109,658)	(105,942)	(99,792)
Exercise of stock options	940	672	7,096
Withholding tax payments on restricted stock vesting and stock option exercises	(25,839)	(23,404)	(33,890)
Repurchases of common stock	—	(87,540)	(63,189)
Payment of contingent consideration	(12,500)	(26,164)	—
Proceeds from short-term borrowings	123,995	100,000	70,348
Repayments of short-term borrowings	(123,995)	(100,000)	(70,348)

Net cash (used in) financing activities	<u>(147,057)</u>	<u>(242,378)</u>	<u>(189,775)</u>
Effect of exchange rate changes on cash and cash equivalents	<u>7,588</u>	<u>(13,484)</u>	<u>(7,105)</u>
Cash and cash equivalents including restricted cash			
Net increase/(decrease) for the period	39,008	(52,903)	17,517
Beginning of period	<u>572,664</u>	<u>625,567</u>	<u>608,050</u>
End of period	<u><u>\$ 611,672</u></u>	<u><u>\$ 572,664</u></u>	<u><u>\$ 625,567</u></u>

The accompanying notes are an integral part of these consolidated financial statements.

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Supplemental cash flow information			
Cash paid for income taxes	\$ 94,814	\$ 88,677	\$ 70,003
Cash paid for interest	1,870	652	830
Non-cash investing and financing activity:			
Exercise of stock options - cashless	—	3,845	2,750
Right-of-use assets obtained in exchange for operating lease liabilities	1,183	1,880	1,972
Contingent consideration payable recognized in connection with acquisitions	—	—	27,947
Liabilities assumed in connection with acquisition of business:			
Fair value of assets acquired	127,635	—	—
Cash paid for acquisition, net of cash and cash equivalents acquired	(78,476)	—	—
Treasury stock used for acquisition	(43,841)	—	—
Liabilities assumed	5,318	—	—

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. 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. Over 2,000 institutional investor and broker-dealer firms are active users of MarketAxess' patented trading technology, accessing global liquidity on its platforms in 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. 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 post-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.

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 unrealized gains or losses reported in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition and realized gains or losses reported in other, net in the Consolidated Statements of Operations. Trading investments include 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.

The Company assesses whether an impairment loss on its available-for-sale debt securities has occurred due to declines in fair value or other market conditions. When the amortized cost basis of an available-for-sale debt security exceeds its fair value, the security is deemed to be impaired. The portion of an impairment related to credit losses is determined by comparing the present value of cash flows expected to be collected from the security with the amortized cost basis of the security and is recorded as a charge in the Consolidated Statements of Operations. The remainder of an impairment is recognized in accumulated other comprehensive loss if the Company does not intend to sell the security and it is more likely than not that the Company will not be required to sell the security prior to recovery.

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, available-for-sale securities, foreign currency forward contracts and contingent consideration payables associated with acquisitions. All other financial instruments are short-term in nature and the carrying amounts reported on the Consolidated Statements of Financial Condition approximate fair value.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

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 the estimated expected credit losses in 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 \$0.6 million as of each of December 31, 2023 and 2022. The provision for bad debts was \$0.4 million, \$0.6 million and \$0.2 million for the years ended December 31, 2023, 2022 and 2021, respectively. Write-offs and other charges against the allowance for credit losses were \$0.3 million, \$0.1 million and \$0.1 million for the years ended December 31, 2023, 2022 and 2021, 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 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.

Cloud Computing Costs

The Company capitalizes certain costs associated with cloud computing arrangements, including, among other items, vendor software development costs billed to us that are part of the application development stage. These costs are recorded as a prepaid asset on the Consolidated Statements of Financial Condition and are amortized over the period of the hosting service contract, which ranges 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.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

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 enters into foreign currency forward contracts to economically hedge its foreign currency transaction gains and losses. Realized and unrealized gains and losses on these forward contracts are included in other, net in the Consolidated Statements of Operations. The Company records the fair value of the forward contract asset in prepaid expenses and other assets or the fair value of the forward contract liability in accounts payable, accrued expenses and other liabilities 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, are 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, as well as 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 the majority of the Company's U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis.

The Company also earns other commissions on equities and foreign exchange products for algorithmic trading services. These fees may incorporate variable transaction fees, which are calculated as a percentage of the notional dollar volume traded, and distribution fees.

The following table presents commission revenue by fee type:

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Commission revenue by fee type			
Variable transaction fees			
Disclosed trading	\$ 323,038	\$ 321,603	\$ 333,712

Open Trading - matched principal trading	178,517	175,440	155,465
U.S. government bonds - matched principal trading	15,222	16,978	12,400
Other	4,979	—	—
Total variable transaction fees	521,756	514,021	501,577
Distribution fees and unused minimum fees	141,208	127,162	119,431
Total commissions	<u>\$ 662,964</u>	<u>\$ 641,183</u>	<u>\$ 621,008</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

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,		
	2023	2022	2021
	(In thousands)		
Information services revenue by timing of recognition			
Services transferred over time	\$ 45,102	\$ 38,452	\$ 37,341
Services transferred at a point in time	1,281	862	834
Total information services revenues	\$ 46,383	\$ 39,314	\$ 38,175

Post-trade services - Post-trade services revenue is generated from regulatory transaction reporting, trade publication and post-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,		
	2023	2022	2021
	(In thousands)		
Post-trade services revenue by timing of recognition			
Services transferred over time	\$ 40,061	\$ 36,835	\$ 38,850
Services transferred at a point in time	117	42	72
Total post-trade services revenues	\$ 40,178	\$ 36,877	\$ 38,922

Technology services - Technology services revenue primarily includes technology services revenue generated by Pragma and 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. Deferred revenues are included in accounts payable, accrued expenses and other liabilities on the Consolidated Statements of Financial Condition. The revenue recognized from contract liabilities and the remaining balance is shown below:

December 31, 2022	Payments received	Revenue recognized	December 31, 2023
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MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

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 requires judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash flows, discount rates, revenue growth rates, customer attrition rates, royalty rates, obsolescence and asset lives. Intangible assets are valued using various methodologies, including the relief-from-royalty method and multi-period excess earnings method.

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.

Equity Investments and Consolidation

The Company evaluates equity investments for potential consolidation under the voting-interest or variable-interest models. The Company consolidates investees over which the Company determines it has control under the voting interest model, generally greater than 50% ownership, or for which the Company is the primary beneficiary under the variable-interest model. The Company uses the equity method of accounting when it exercises

significant influence over the investee, but does not have operating control, generally between 20% and 50% ownership. Under the equity method of accounting, original investments are recorded at cost in prepaid expenses and other assets on the Consolidated Statements of Financial Condition and adjusted by the Company's proportionate share of the investees' undistributed earnings or losses. Equity investments are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable.

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.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

3. Regulatory Capital Requirements

Certain of the Company's U.S. subsidiaries are registered as broker-dealers and therefore are subject to the applicable rules and regulations of the SEC and FINRA. These rules contain minimum net capital requirements, as defined in the applicable regulations. Certain of the Company's 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, 2023, 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, 2023, the Company's subsidiaries maintained aggregate net capital and financial resources that were \$605.4 million in excess of the required levels of \$36.1 million.

One of the Company's U.S. broker-dealer subsidiaries is required to segregate funds in a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Exchange Act. As of December 31, 2023, the U.S. broker-dealer subsidiary had a balance of \$45.1 million in its special reserve bank account. This U.S. broker-dealer subsidiary also maintained net capital that was \$306.3 million in excess of the required level of \$9.3 million.

Each of the Company's U.S. and foreign regulated subsidiaries are subject to local regulations which generally limit, or require the prior notification to or approval from such regulated entity's principal regulator before, the 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.

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:

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
	(In thousands)			
As of December 31, 2023				
Assets				
Money market funds	\$ 18,634	\$ —	\$ —	\$ 18,634
Securities available-for-sale				
Corporate debt	—	24,694	—	24,694
Trading securities				
U.S. Treasuries	—	99,682	—	99,682
Mutual funds held in rabbi trust	—	10,485	—	10,485
Foreign currency forward position	—	1,901	—	1,901
Total assets	<u>\$ 18,634</u>	<u>\$ 136,762</u>	<u>\$ —</u>	<u>\$ 155,396</u>
As of December 31, 2022				
Assets				
Money market funds	\$ 59,173	\$ —	\$ —	\$ 59,173
Trading securities				
U.S. Treasuries	—	74,409	—	74,409
Mutual funds held in rabbi trust	—	9,383	—	9,383
Total assets	<u>\$ 59,173</u>	<u>\$ 83,792</u>	<u>\$ —</u>	<u>\$ 142,965</u>

Liabilities								
Contingent consideration payable	\$	—	\$	—	\$	12,340	\$	12,340
Foreign currency forward position		—		1,688		—		1,688
Total liabilities	\$	—	\$	1,688	\$	12,340	\$	14,028

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Money market funds are included in cash and cash equivalents on the Consolidated Statements of Financial Condition. Securities available-for-sale and trading securities are included in investments, at fair value on the Consolidated Statements of Financial Condition. 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 included in either other assets or accounts payable, accrued expenses and other liabilities on the Consolidated Statements of Financial Condition, and 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. In May 2023, the Company made final payment on the remaining contingent consideration. The following table summarizes the change in the Company's Level 3 liabilities for the year ended December 31, 2023:

	<u>December 31, 2022</u>	<u>Payments</u>	<u>Realized (Gain)/ Loss</u>	<u>December 31, 2023</u>
	(In thousands)			
Contingent consideration payable	\$ 12,340	\$ (12,500)	\$ 160	\$ -

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 Statements 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.

	<u>Carrying Value</u>	<u>Fair Value</u>	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
	(In thousands)					
As of December 31, 2023						
Financial assets not measured at fair value:						
Cash	\$432,646	\$432,646	\$432,646	\$ —	\$ —	\$432,646
Cash segregated under federal regulations	45,122	45,122	45,122	—	—	45,122
Accounts receivable, net of allowance	89,839	89,839	—	89,839	—	89,839
Receivables from broker-dealers, clearing organizations and customers	<u>687,936</u>	<u>687,936</u>	<u>115,151</u>	<u>572,785</u>	<u>—</u>	<u>687,936</u>
Total	<u>\$1,255,543</u>	<u>\$1,255,543</u>	<u>\$592,919</u>	<u>\$662,624</u>	<u>\$ —</u>	<u>\$1,255,543</u>
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	\$537,398	\$537,398	\$ —	\$537,398	\$ —	\$537,398

As of December 31, 2022

Financial assets not measured
at fair value:

Cash	\$371,573	\$371,573	\$371,573	\$ —	\$ —	\$371,573
Cash segregated under federal regulations	50,947	50,947	50,947	—	—	50,947
Accounts receivable, net of allowance	78,450	78,450	—	78,450	—	78,450
Receivables from broker-dealers, clearing organizations and customers	476,335	476,335	88,923	387,412	—	476,335
Total	<u>\$977,305</u>	<u>\$977,305</u>	<u>\$511,443</u>	<u>\$465,862</u>	<u>\$ —</u>	<u>\$977,305</u>

Financial liabilities not
measured at fair value:

Payables to broker-dealers, clearing organizations and customers	<u>\$303,993</u>	<u>\$303,993</u>	<u>\$ —</u>	<u>\$303,993</u>	<u>\$ —</u>	<u>\$303,993</u>
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During the years ended December 31, 2023 and 2022, there were no transfers between Level 1, Level 2 and Level 3 securities.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The Company enters into foreign currency forward contracts as an economic hedge against certain foreign currency transaction gains and losses in the Consolidated Statements of Operations. These forward contracts are for one- or three-month periods and are used to limit exposure to foreign currency exchange rate fluctuations. The Company records the fair value of the asset in prepaid expenses and other assets or the fair value of the liability in accounts payable, accrued expenses and other liabilities in the Consolidated Statements of Financial Condition. The following table summarizes the Company's foreign currency forward position:

	As of	
	December 31, 2023	December 31, 2022
	(In thousands)	
Notional value	\$ 61,858	\$ 62,160
Fair value of notional	63,759	60,472
Fair value of the asset/(liability)	\$ 1,901	\$ (1,688)

Realized and unrealized gains and losses on foreign currency forward contracts are included in other, net in the Consolidated Statements of Operations. The Company recorded a net realized loss of \$1.5 million and a net realized gain of \$0.8 million for the years ended December 31, 2023 and 2022, respectively. The Company recorded a net unrealized gain of \$3.6 million and a net unrealized loss of \$1.7 million for the years ended December 31, 2023 and 2022, respectively. The Company records collateral deposits with its counterparty bank in prepaid expenses and other assets on the Consolidated Statements of Financial Condition. As of December 31, 2023, the Company did not maintain a collateral deposit with its counterparty bank.

The following table summarizes the Company's investments:

	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
(In thousands)				
As of December 31, 2023				
Securities available-for-sale				
Corporate debt	\$ 24,705	\$ 55	\$ (66)	\$ 24,694
Trading securities				
U.S. Treasuries	99,236	446	—	99,682
Mutual funds held in rabbi trust	10,962	172	(649)	10,485
Total investments	<u>\$ 134,903</u>	<u>\$ 673</u>	<u>\$ (715)</u>	<u>\$ 134,861</u>
As of December 31, 2022				
Trading securities				
U.S. Treasuries	\$ 74,943	\$ —	\$ (534)	\$ 74,409
Mutual funds held in rabbi trust	11,474	—	(2,091)	9,383
Total investments	<u>\$ 86,417</u>	<u>\$ —</u>	<u>\$ (2,625)</u>	<u>\$ 83,792</u>

Proceeds from the sales and maturities of investments were \$29.5 million and \$19.4 million for the years ended December 31, 2023 and 2021, respectively. There were no proceeds from the sales and maturities of investments during the year ended December 31,

2022. Purchases of investments were \$78.6 million, \$50.1 million and \$25.0 million for the years ended December 31, 2023, 2022 and 2021, respectively.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The following table summarizes the Company's unrealized and realized gains and losses on investments:

	Year ended December 31,		
	2023	2022	2021
	(In thousands)		
Unrealized gains/(losses)			
Securities available-for-sale			
Corporate debt	\$ (11)	\$ —	\$ —
Trading securities			
U.S. Treasuries	446	(534)	(111)
Mutual funds held in rabbi trust	1,284	(2,091)	1,254
Total investments	<u>\$ 1,719</u>	<u>\$ (2,625)</u>	<u>\$ 1,143</u>
Realized gains/(losses)			
Securities available-for-sale			
Corporate debt	\$ (11)	\$ —	\$ —
Trading securities			
Corporate debt	—	—	89
Mutual funds held in rabbi trust	(138)	—	—
Total investments	<u>\$ (149)</u>	<u>\$ —</u>	<u>\$ 89</u>

Unrealized gains and losses on securities available-for-sale are included in accumulated other comprehensive loss on the Consolidated Statements of Financial Condition. Realized gains and losses on securities available-for-sale and realized and unrealized gains and losses on trading securities are included in other, net on the Consolidated Statements of Operations.

The following table summarizes the fair value of the investments based upon the contractual maturities:

	Less than one year	Due in 1 - 5 years	Total
	(In thousands)		
As of December 31, 2023			
Securities available-for-sale			
Corporate debt	\$ 10,727	\$ 13,967	\$ 24,694
Trading securities			
U.S. Treasuries	49,756	49,926	99,682
Mutual funds held in rabbi trust	10,485	—	10,485
Total	<u>\$ 70,968</u>	<u>\$ 63,893</u>	<u>\$ 134,861</u>
As of December 31, 2022			
Trading securities			
U.S. Treasuries	\$ 24,618	\$ 49,791	\$ 74,409
Mutual funds held in rabbi trust	9,383	—	9,383
Total	<u>\$ 34,001</u>	<u>\$ 49,791</u>	<u>\$ 83,792</u>

The following table provides fair values and unrealized losses on the Company's available-for-sale investments and the aging of securities' continuous unrealized loss position as of December 31, 2023:

	Less than Twelve Months		Twelve Months or More		Total	
	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses
	(In thousands)					
As of December 31, 2023						
Corporate debt	<u>\$17,658</u>	<u>\$ (66)</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$17,658</u>	<u>\$ (66)</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

During the years ended December 31, 2023 and 2022, the Company did not recognize any credit losses on its available-for-sale securities. The unrealized losses on securities are due to changes in interest rates and market liquidity.

5. Receivables from and Payables to Broker-dealers, Clearing Organizations and Customers

Receivables from and payables to broker-dealers, clearing organizations and customers consisted of the following:

	As of	
	December 31, 2023	December 31, 2022
Receivables from broker-dealers, clearing organizations and customers:	(In thousands)	
Securities failed-to-deliver – broker-dealers and clearing organizations	\$ 282,125	\$ 144,523
Securities failed-to-deliver – customers	284,322	235,056
Deposits with clearing organizations and broker-dealers	115,151	88,923
Other	6,338	7,833
Total	<u>\$ 687,936</u>	<u>\$ 476,335</u>

Payables to broker-dealers, clearing organizations and customers:

Securities failed-to-receive – broker-dealers and clearing organizations	\$ 125,022	\$ 224,816
Securities failed-to-receive – customers	405,186	71,828
Other	7,190	7,349
Total	<u>\$ 537,398</u>	<u>\$ 303,993</u>

6. Acquisitions and Equity Investments

Acquisition of Pragma

On October 2, 2023, the Company completed its acquisition (the “Pragma Acquisition”) of all of the outstanding ownership interests of Pragma LLC and Pragma Financial Systems LLC (collectively “Pragma”) pursuant to the terms and conditions of a Membership Interest Purchase Agreement entered into among the Company, Pragma Weeden Holdings LLC, Pragma Financial Systems LLC, Pragma LLC and, solely for certain limited purposes, David Mechner, Pragma’s chief executive officer, on August 5, 2023 (the “Purchase Agreement”). Following customary adjustments for cash, debt, transaction expenses and working capital, the aggregate purchase price for the Acquisition was \$125.0 million, comprised of approximately \$81.2 million in cash and 224,776 shares of common stock of the Company, valued at approximately \$43.8 million as of the closing date of the Pragma Acquisition, as described below. A portion of the stock consideration, amounting to 8,603 shares of common stock, was placed in escrow for 12 months to secure the sellers’ indemnification obligations under the Purchase Agreement. In addition, pursuant to the Purchase Agreement and subject to certain exceptions, the sellers and their affiliates are prohibited

from transferring any of the Company common stock received in the Acquisition for a period of six months following the October 2, 2023 closing date. The value ascribed to the shares by the Company was discounted from the market value on the date of closing to reflect the non-marketability of such shares during the restriction period.

Pragma is a quantitative trading technology provider specializing in algorithmic and analytical services. Pragma LLC is a registered broker-dealer. The Company has performed an allocation of the purchase price to the fair value of assets acquired and liabilities assumed at the date of acquisition. The Company utilized an independent third-party to assist in determining the fair value of the acquired intangible assets. The purchase price allocation is as follows (in thousands):

Purchase price	\$	125,002
Less: acquired cash		(2,685)
Purchase price, net of acquired cash		122,317
Intangible assets		(38,900)
Accounts receivable		(2,637)
Prepaid expenses and other assets		(4,181)
Accounts payable, accrued expenses and other liabilities		5,318
Goodwill	\$	81,917

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The acquired developed technology and customer relationships intangible assets were valued using the relief-from-royalty method and multi-period excess earnings method, respectively. The fair values of the intangible assets acquired are as follows (in thousands, except for useful lives):

	Costs	Useful Lives
Developed technology	\$ 28,500	7 years
Customer relationships	9,200	15 years
Tradename - finite life	1,200	15 years
Total	\$ 38,900	

The goodwill recognized in connection with the Pragma Acquisition is primarily attributable to the acquisition of an assembled workforce and expected future technology and synergies from the integration of the operations of Pragma into the Company's operations. All of the goodwill recognized in connection with the Pragma Acquisition is expected to be deductible for income tax purposes.

Pro forma financial information and current period results for the Pragma Acquisition were not material to the Company's consolidated financial statements and therefore have not been presented.

RFQ Hub LLC Equity Investment

In May 2022, the Company invested \$34.4 million to acquire a minority ownership stake in RFQ-hub Holdings LLC, an entity formed with a consortium of market participants to support the growth of RFQ-hub, a multi-asset request for quote platform. The Company possesses significant influence over RFQ-hub Holdings LLC and is accounting for its investment under the equity method of accounting. As of December 31, 2023, the Company's investment is recorded at carrying value of \$36.3 million within prepaid expenses and other assets on the Consolidated Statements of Financial Condition. The Company's proportionate share of RFQ-hub Holdings LLC's net earnings was \$0.7 million and \$1.1 million for the years ended December 31, 2023 and 2022, respectively, and is recorded within equity in earnings of unconsolidated affiliate on the Consolidated Statements of Operations.

Under a services agreement, the Company charges its equity method investee for certain reimbursable support costs incurred by the Company, including personnel compensation, and certain operational overhead costs. The amount billed for the year ended December 31, 2023 was \$1.1 million and is included within other, net on the Consolidated Statements of Operations. The receivable from the equity method investee was \$1.1 million as of December 31, 2023 and is included within accounts receivable, net on the Consolidated Statements of Financial Condition.

Acquisition of MuniBrokers LLC

On April 9, 2021, the Company acquired MuniBrokers LLC, a central electronic venue serving municipal bond brokers and dealers. As part of the purchase price, the Company recorded \$22.5 million of contingent consideration payable, which was included within accounts payable, accrued expenses, and other liabilities on the Consolidated Statements of Financial Condition. In May 2022, the Company made a payment of \$8.3 million to settle the first earn-out period consideration. In May 2023, the Company made a payment of \$12.5 million to settle the second earn-out period consideration. As of December 31, 2023, the Company had no remaining outstanding contingent consideration payable.

7. Goodwill and Intangible Assets

Goodwill and intangible assets with indefinite lives were \$236.7 million and \$154.8 million as of December 31, 2023 and 2022, respectively. The following is a summary of changes in goodwill and intangible assets for the year ended December 31, 2023:

	(In thousands)
Balance at December 31, 2022	\$ 154,789
Goodwill from Pragma Acquisition	81,917
Balance at December 31, 2023	<u>\$ 236,706</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Intangible assets that are subject to amortization, including the related accumulated amortization, are comprised of the following:

	December 31, 2023			December 31, 2022		
	Cost	Accumulated amortization	Net carrying amount	Cost	Accumulated amortization	Net carrying amount
	(In thousands)					
Customer relationships	\$ 140,348	\$ (50,987)	\$ 89,361	\$ 129,991	\$ (34,310)	\$ 95,681
Technology and other intangibles	41,130	(11,383)	29,747	11,430	(9,046)	2,384
Total	<u>\$ 181,478</u>	<u>\$ (62,370)</u>	<u>\$ 119,108</u>	<u>\$ 141,421</u>	<u>\$ (43,356)</u>	<u>\$ 98,065</u>

Amortization expense associated with identifiable intangible assets was \$18.6 million, \$16.4 million and \$13.4 million for the years ended December 31, 2023, 2022 and 2021, respectively. Annual estimated total amortization expense is \$19.9 million, \$17.0 million, \$15.3 million, \$13.9 million and \$12.3 million for the years ended December 31, 2024 through 2028, respectively.

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,	
	2023	2022
	(In thousands)	
Software development costs	\$ 261,850	\$ 218,848
Computer hardware and related software	42,913	37,614
Office hardware	7,609	8,455
Furniture and fixtures	6,508	6,952
Leasehold improvements	31,214	30,660
	350,094	302,529
Accumulated depreciation and amortization	(247,423)	(202,273)
Total	<u>\$ 102,671</u>	<u>\$ 100,256</u>

During the years ended December 31, 2023 and 2022, software development costs totaling \$43.1 million and \$38.7 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,		
	2023	2022	2021
	(In thousands)		
Current:			

Federal	\$	49,028	\$	52,865	\$	36,661
State and local		4,047		20,716		17,238
Foreign		27,385		21,030		19,018
Total current provision		<u>80,460</u>		<u>94,611</u>		<u>72,917</u>
Deferred:						
Federal		(2,823)		(5,830)		2,249
State and local		(754)		(1,350)		778
Foreign		(2,238)		633		91
Total deferred provision		<u>(5,815)</u>		<u>(6,547)</u>		<u>3,118</u>
Provision for income taxes	\$	<u>74,645</u>	\$	<u>88,064</u>	\$	<u>76,035</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Pre-tax income from U.S. operations was \$228.8 million, \$236.4 million and \$234.6 million for the years ended December 31, 2023, 2022 and 2021, respectively. Pre-tax income from foreign operations was \$103.9 million, \$101.9 million and \$99.3 million for the years ended December 31, 2023, 2022 and 2021, respectively.

The difference between the U.S. federal statutory tax rate of 21.0% and the Company's effective tax rate is as follows:

	Year Ended December 31,		
	2023	2022	2021
U.S. federal statutory tax rate	21.0 %	21.0 %	21.0 %
State and local taxes - net of federal benefit	0.8	4.6	4.4
Tax credits	(1.0)	(0.4)	(0.4)
Foreign rate differential benefit	0.9	(0.1)	(0.2)
Excess tax benefit from stock-based compensation	0.1	(0.1)	(2.9)
Other, net	0.6	1.0	0.9
Effective tax rate	<u>22.4 %</u>	<u>26.0 %</u>	<u>22.8 %</u>

The following is a summary of the Company's net deferred tax assets:

	As of December 31,	
	2023	2022
	(In thousands)	
Deferred tax assets:		
Stock compensation expense	\$ 4,441	\$ 3,451
Operating lease liabilities	17,128	17,842
Deferred Compensation	2,596	2,425
Other	1,015	1,774
Total deferred tax assets	25,180	25,492
Valuation allowance	—	—
Net deferred tax assets	25,180	25,492
Deferred tax liabilities:		
Depreciation	(8,617)	(9,956)
Capitalized software development costs	—	(3,923)
Goodwill and intangible assets	(3,987)	(4,829)
Operating lease right-of-use assets	(13,507)	(14,176)
Other deferred tax liabilities	(276)	—
Deferred tax (liability) asset, net	<u>\$ (1,207)</u>	<u>\$ (7,392)</u>

The Company or one of its subsidiaries files U.S. federal, state and foreign income tax returns. In 2022, the Company settled its New York State income tax examination for tax years 2010 through 2014 and is currently under a New York State income tax examination for tax years 2015 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 2020.

A reconciliation of the unrecognized tax benefits is as follows:

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Balance at beginning of year	\$ 9,835	\$ 15,089	\$ 16,317
Increase/(decrease) based on tax positions related to prior periods	—	160	(1,228)
(Decrease) related to settlements with taxing authorities	(6,705)	(5,414)	—
Balance at end of year	<u>\$ 3,130</u>	<u>\$ 9,835</u>	<u>\$ 15,089</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

As of December 31, 2023, the Company recorded \$3.1 million of net unrecognized tax benefits which, if recognized, would affect the Company's effective tax rate. The Company estimates that this remaining unrecognized tax benefit will be settled within the next 12 months. However, due to the uncertainty related to the timing and potential outcome of the audits, the Company cannot reasonably estimate the amount of any additional unrecognized tax benefit that could be adjusted in the next 12 months. During the years ended December 31, 2023, 2022 and 2021, the Company recognized gross expenses of \$1.6 million, \$5.8 million and \$3.3 million, respectively, in penalties and interest. The Company had \$2.6 million and \$7.9 million accrued for the payment of interest and penalties as of December 31, 2023 and 2022, respectively.

The Company will recognize any U.S. income tax expense the Company may incur on global intangible low-taxed income as income tax expense in the period in which the tax is incurred.

10. Stockholders' Equity

Common Stock

As of December 31, 2023, 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:

	December 31, 2023		
	2023	2022	2021
	(In thousands)		
Outstanding shares of voting common stock at the beginning of year	37,648	37,919	38,005
Exercise of stock options	6	29	92
Issuance of restricted stock and performance shares, net of cancellations	97	66	48
Shares withheld for withholding tax payments	(81)	(86)	(75)
Repurchases	—	(280)	(151)
Reissuance of treasury stock	5	—	—
Treasury stock used for acquisition	225	—	—
Outstanding shares of voting common stock at the end of year	<u>37,900</u>	<u>37,648</u>	<u>37,919</u>

In January 2019, the Board authorized a 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 authorized a share repurchase program for up to \$100.0 million that commenced in April 2021 and was completed in January 2022. In January 2022, the Board authorized a share repurchase program for up to \$150.0 million. Shares repurchased under each program will be held in treasury for future use.

Dividends

During 2023, 2022 and 2021, the Company paid quarterly cash dividends of \$0.72 per share, \$0.70 per share and \$0.66 per share, respectively. Any future declaration and payment of dividends will be at the sole discretion of the Company's Board. The Board may take into account such matters as general business conditions, the Company's financial

results and condition, capital requirements, contractual obligations, and 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 may deem relevant.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

11. Stock-Based Compensation Plans

The Company maintains the 2020 Plan which provides for the grant of stock options, restricted stock, restricted stock units, performance shares, performance stock units and other stock-based awards as incentives to encourage employees, consultants and non-employee directors to participate in the long-term success of the Company. As of December 31, 2023, there were 2,436,113 shares available for grant under the 2020 Plan.

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. Total stock-based compensation expense was as follows:

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Employees			
Restricted stock, restricted stock units, performance shares and performance stock units	\$ 24,205	\$ 24,593	\$ 23,041
Stock options	3,592	3,583	2,961
	<u>27,797</u>	<u>28,176</u>	<u>26,002</u>
Non-employee directors			
Restricted stock and restricted stock units	1,393	1,688	1,312
Total stock-based compensation	<u>\$ 29,190</u>	<u>\$ 29,864</u>	<u>\$ 27,314</u>

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 the years ended December 31, 2023, 2022 and 2021 were \$123.47, \$101.38 and \$137.66, 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 based on the Monte Carlo model discussed below:

	Year Ended December 31,		
	2023	2022	2021
Expected life (years)	5.0	5.0	5.0
Risk-free interest rate	3.6 %	1.5 %	0.4 %

Expected volatility	35.8 %	32.6 %	31.2 %
Expected dividend yield	0.8 %	0.7 %	0.4 %

In addition to the stock option grants above, the Company granted 148,524 and 76,868 premium-priced stock options to the Company's then-Chief Executive Officer and then-President and Chief Operating Officer in November 2018 and January 2019, respectively. The stock options vested in November 2023 and January 2024, respectively. The fair value of each option award was estimated on the date of grant using the Monte Carlo model.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The following table reports stock option activity during the years ended December 31, 2023, 2022 and 2021 and the intrinsic value as of December 31, 2023, 2022 and 2021:

	Number of Shares	Weighted- Average Exercise Price (\$)	Remaining Contractual Term	Intrinsic Value (\$) (In thousands)
Outstanding at December 31, 2020	387,372	223.60		
Granted	17,897	517.88		
Canceled	(616)	394.77		
Exercised	(91,900)	107.05		
Outstanding at December 31, 2021	312,753	274.35		
Granted	23,904	352.15		
Canceled	(1,646)	421.08		
Exercised	(28,758)	157.08		
Outstanding at December 31, 2022	306,253	290.65		
Granted	13,908	358.53		
Canceled	(551)	382.12		
Exercised	(5,653)	166.34		761
Outstanding at December 31, 2023	313,957	295.74	1.1	6,214
Exercisable at December 31, 2023	202,562	285.35	0.7	5,502

The intrinsic value is the amount by which the closing price of the Company's common stock on December 31, 2023 of \$292.85 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, 2023, there was \$2.2 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 0.5 years.

Annual 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 vest ratably over a three-year period, subject to continued service to the Company. In addition, we grant share-based compensation awards in conjunction with certain new hires and for retention purposes. These awards generally vest over a three- or four-year period. In addition, the Company grants share-based compensation awards to its non-employee directors as part of such directors' compensation. These awards generally vest on the date of the Company's next annual stockholders' meeting, subject to continued service to the Company. Such share-based compensation awards are expensed over the requisite service period.

Annual Performance-based Performance Shares and Performance Stock Unit Awards

The Company grants performance equity awards to certain executives and certain senior managers of the firm as a component of their total compensation and in conjunction with certain new hires and for retention purposes. Annual performance equity awards generally cliff-vest on the third anniversary of the grant date based on the certification of certain performance metrics and subject to the applicable employee's continued employment with the Company. The Company has also previously granted performance-based awards with a five-year vesting period that vested in November 2023 and January 2024.

In January 2021, annual performance equity awards were granted with a three-year performance period that would vest based on the level of achievement by the Company of certain predetermined metrics, including pre-tax adjusted operating margin and market share for the years ended December 31, 2021, 2022 and 2023, subject to continued service with the Company through the vesting date. In January 2024, the Company's Compensation and Talent Committee of the Board certified the Company's performance against such metrics at 38.9%. Compensation expense for the three-year performance equity awards 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.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

In January 2022 and February 2023, annual performance stock units were granted with a three-year performance period that will vest based on the level of achievement by the Company of certain predetermined metrics, including pre-tax adjusted operating margin, U.S. credit market share and revenue growth excluding U.S. credit for the following three fiscal years, including the year of grant. The final awarded payout for the awards granted in 2022 and 2023 will range from zero to 200%. 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 stock units 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.

Other Performance Stock Unit Awards

The Company granted 37,742 and 18,914 performance shares to the Company's then-Chief Executive Officer and then-President and Chief Operating Officer in November 2018 and January 2019, respectively. The performance shares vested in November 2023 and January 2024, respectively.

In August 2021, the Company's then-Chief Financial Officer received a one-time equity award in connection with his promotion to Chief Financial Officer consisting, in part, of a performance stock unit award with a target of 1,070 shares. The award was scheduled to vest on August 1, 2024, but was forfeited upon the termination of his employment in January 2024.

In March 2022, the Company's Chief Information Officer received a one-time sign-on equity award consisting, in part, of a performance stock unit award with a target of 3,986 shares. The award will vest on March 1, 2025 after certification of the performance criteria, subject to his continued employment through such date.

In April 2023, in connection with his appointment to the position, the Company's Chief Executive Officer received a one-time equity award consisting, in part, of a performance stock unit award with a target of 5,039 shares. The performance stock units vest 25% on each of the third and fourth anniversaries of the grant date and 50% on the fifth anniversary of the grant date, subject to certification of the performance criteria and his continued service through the respective vesting dates.

Performance Equity Award Estimates

The following table reports the Company's performance payout estimates for three-year performance period awards as of December 31, 2023, as well as the target and maximum share payouts for each award date granted:

Award Date	2023 Estimate	Target	Maximum
January 15, 2021	4,739	12,185	24,370
August 1, 2021	437	1,070	2,140
January 31, 2022	11,343	18,155	36,310
March 1, 2022	2,490	3,986	7,972
February 15, 2023	14,178	18,263	36,526

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Equity Grant Activity

The following table reports restricted stock, restricted stock unit, performance share and performance stock unit activity during the years ended December 31, 2023, 2022 and 2021:

	Number of Restricted Shares	Weighted-Average Grant Date Fair Value
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
Granted	72,861	
Performance share pay-out	—	
Canceled	(8,513)	
Vested	(64,602)	
Outstanding at December 31, 2022	162,356	\$ 321.04
Granted	90,242	
Performance share pay-out	12,145	
Canceled	(5,272)	
Vested	(98,927)	
Outstanding at December 31, 2023	160,544	\$ 346.15

As of December 31, 2023, there was \$38.4 million of total unrecognized compensation cost related to non-vested restricted stock, restricted stock units, performance shares, and performance stock units. That cost is expected to be recognized over a weighted-average period of 1.5 years.

Employee Stock Purchase Plans

The Company maintains the MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan (the “ESPP”) pursuant to which a total of 121,221 shares of the Company’s Common Stock will be made available for purchase by employees. For the year ended December 31, 2023, the Company issued 4,655 shares of common stock under the ESPP. As of December 31, 2023, there were 116,566 shares available for purchase under the ESPP.

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,		
	2023	2022	2021
	(In thousands, except per share amounts)		
Basic weighted average shares outstanding	37,546	37,468	37,508
Dilutive effect of stock options and restricted stock	108	175	589

Diluted weighted average shares outstanding		37,654		37,643		38,097
Basic earnings per share	\$	6.87	\$	6.68	\$	6.88
Diluted earnings per share		6.85		6.65		6.77

Stock options and restricted stock totaling 306,678 shares, 310,447 shares and 41,240 shares for the years ended December 31, 2023, 2022 and 2021, 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.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

13. Credit Agreements and Short-term Financing

2021 Credit Agreement

On October 15, 2021, the Company entered into a 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 provided aggregate commitments totaling \$500.0 million, including a revolving credit facility, a \$5.0 million letter of credit sub-limit for standby letters of credit and a \$50.0 million sub-limit for swingline loans. The 2021 Credit Agreement was scheduled to mature on October 15, 2024, but was replaced by the 2023 Credit Agreement (as defined below).

The 2021 Credit Agreement required that the Company satisfy certain covenants, including a requirement to not exceed a maximum consolidated total leverage ratio. The Company incurred \$0.1 million and \$0.3 million of interest expense under the 2021 Credit Agreement for the years ended December 31, 2023 and 2022, respectively. The Company did not incur any interest expense under the 2021 Credit Agreement for the year ended December 31, 2021.

2023 Credit Agreement

On August 9, 2023, the Company replaced the 2021 Credit Agreement with a new three-year revolving credit facility (the “2023 Credit Agreement”) provided by a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, which provides aggregate commitments totaling \$750.0 million, including a revolving credit facility, a \$5.0 million letter of credit sub-limit for standby letters of credit and a \$380.0 million sub-limit for swingline loans. The 2023 Credit Agreement will mature on August 9, 2026, 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 2023 Credit Agreement by up to \$375.0 million in total. As of December 31, 2023, the Company had \$0.1 million in letters of credit outstanding and \$749.9 million in available borrowing capacity under the 2023 Credit Agreement.

Borrowings under the 2023 Credit Agreement will bear interest at a rate per annum equal to the alternate base rate or the adjusted term Secured Overnight Financing Rate (“SOFR”) rate, plus an applicable margin that varies with the Company’s consolidated total leverage ratio. The 2023 Credit Agreement requires that the Company satisfy certain covenants, including a requirement not to exceed a maximum consolidated total leverage ratio. The Company incurred \$0.1 million of interest expense under the 2023 Credit Agreement for the year ended December 31, 2023.

Uncommitted Collateralized Agreements

In connection with their self-clearing operations, certain of the Company’s U.S. and U.K. operating subsidiaries maintain agreements with a settlement bank to allow the subsidiaries to borrow in the aggregate of up to \$500.0 million on an uncommitted basis, collateralized by eligible securities pledged by the subsidiaries to the settlement bank, subject to certain haircuts. Borrowings under these agreements will bear interest at a base rate per annum equal to the higher of the upper range of the Federal Funds Rate, 0.25% or one-month SOFR, plus 1.00%.

The Company incurred \$0.1 million of interest expense on borrowings under such agreements during the each of the years ended December 31, 2023 and 2021, and no interest expense on borrowings under such agreements during the year ended December 31, 2022. As of December 31, 2023, the Company had no borrowings outstanding and up to \$500.0 million in available uncommitted borrowing capacity under such agreements.

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 \$0.7 million, \$0.4 million and \$0.8 million during the years ended December 31, 2023, 2022 and 2021, respectively. As of December 31, 2023, 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 Company also has operating and finance leases for equipment with initial lease terms ranging from one-year to 5 years.

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The following table presents the components of operating lease expense for the years ended December 31, 2023, 2022 and 2021:

Lease cost:	Classification	Year Ended December 31,		
		2023	2022	2021
		(In thousands)		
Operating lease cost - office space	Occupancy	\$ 12,861	\$ 13,015	\$ 13,202
Operating lease cost for subleased/ assigned properties	Other, net	—	469	2,054
Operating lease cost - equipment	Technology and communications	98	—	—
Variable lease costs	Occupancy	237	96	13
Sublease income	Other, net	—	(405)	(2,079)
Net operating lease cost		\$ 13,196	\$ 13,175	\$ 13,190

Finance lease expense was \$0.1 million for the year ended December 31, 2023.

The Company determines whether an arrangement is, or includes, a lease at contract inception. 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, 2023	December 31, 2022
Weighted average remaining lease term (in years) - operating leases	9.6	10.6
Weighted average discount rate - operating leases	6.0 %	5.9 %
Weighted average remaining lease term (in years) - finance leases	1.8	—
Weighted average discount rate - finance leases	7.2 %	—

The following table presents the maturity of lease liabilities as of December 31, 2023:

	Operating Leases	Finance Leases
	(In thousands)	
2024	\$ 12,986	\$ 117
2025	12,093	88
2026	11,521	—
2027	8,956	—
2028	8,602	—
2029 and thereafter	51,269	—
Total lease payments	<u>105,427</u>	<u>205</u>

Less: imputed interest	25,750	13
Present value of lease liabilities	<u>\$ 79,677</u>	<u>\$ 192</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

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 will establish an accrual for the loss. Once established, the accrual will 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 securities 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 operating subsidiaries settle such transactions pursuant to their self-clearing operations or through the use of 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 years ended December 31, 2023, 2022 and 2021, respectively.

In the normal course of business, the Company enters into contracts that contain a variety of representations, warranties and indemnification provisions. 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 electronic platforms for the trading of fixed-income securities and provides related data, analytics, compliance tools, post-trade services and technology services. The Company considers its operations to constitute a single business segment because of the highly integrated nature of these products and services, the financial markets in which the Company competes and 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, 2023, 2022 and 2021, 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 a 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 years ended December 31, 2023, 2022 and 2021, and long-lived assets as of December 31, 2023 and 2022 were as follows:

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Revenues			
Americas	\$ 597,145	\$ 581,935	\$ 568,918
Europe	136,989	119,112	110,068
Asia	18,413	17,253	19,965
Total	<u>\$ 752,547</u>	<u>\$ 718,300</u>	<u>\$ 698,951</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

	As of	
	December 31, 2023	December 31, 2022
	(In thousands)	
Long-lived assets, as defined		
Americas	\$ 87,513	\$ 82,008
Europe	14,717	17,723
Asia	441	525
Total	\$ 102,671	\$ 100,256

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, 2023, 2022 and 2021, respectively, the Company contributed \$7.6 million, \$6.1 million and \$5.8 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, 2023 and 2022, the fair value of the mutual fund investments and deferred compensation obligations were \$10.5 million and \$9.4 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:

		As of December 31,		
	Statement of Financial Condition Location	2023	2022	2021
		(In thousands)		
Cash and cash equivalents	Cash and cash equivalents	\$ 451,280	\$ 430,746	\$ 506,735
Cash segregated for regulatory purposes	Cash segregated under federal regulations	45,122	50,947	50,159
Deposits with clearing organizations and broker-dealers	Receivables from broker-dealers, clearing organizations and customers	115,151	88,923	68,565
Other deposits	Prepaid expenses and other assets	119	2,048	108

Total

\$ 611,672 \$ 572,664 \$ 625,567

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

19. Parent Company Information

The following tables present Parent Company-only financial information that 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, 2023	December 31, 2022
	(In thousands)	
ASSETS		
Cash and cash equivalents	\$ 65,951	\$ 43,909
Investments, at fair value	30,225	5,343
Accounts receivable	1,923	769
Receivable from subsidiaries	18,010	8,962
Intangible assets, net of accumulated amortization	21	23
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	17,644	19,557
Operating lease right-of-use assets	55,113	57,402
Investments in subsidiaries	1,140,798	985,222
Prepaid expenses and other assets	45,140	41,511
Income and other tax receivable	7,674	11,474
Total assets	\$ 1,382,499	\$ 1,174,172
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	8,589	\$ 9,693
Income and other tax liabilities	3,000	12
Accounts payable, accrued expenses and other liabilities	8,212	11,087
Operating lease liabilities	69,735	72,287
Total liabilities	89,536	93,079
Stockholders' equity		
Preferred stock	—	—
Series A Preferred Stock	—	—
Common stock voting	123	123
Common stock non-voting	—	—
Additional paid-in capital	333,292	345,468
Treasury stock	(260,298)	(328,326)
Retained earnings	1,244,216	1,101,525
Accumulated other comprehensive loss	(24,370)	(37,697)
Total stockholders' equity	1,292,963	1,081,093

Total liabilities and stockholders' equity	\$	1,382,499	\$	1,174,172
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MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Operations

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Revenues	\$ 270,700	\$ 257,200	\$ 173,000
Expenses			
Employee compensation and benefits	13,938	17,655	17,887
Depreciation and amortization	2,153	2,136	2,123
Professional and consulting fees	5,828	5,528	7,081
General and administrative	2,301	3,081	3,620
Total expenses	24,220	28,400	30,711
Operating income	246,480	228,800	142,289
Other income (expense)			
Interest income	3,557	272	132
Interest expense	(155)	(271)	—
Equity in earnings of unconsolidated affiliate	735	1,126	—
Other, net	(369)	(2,633)	(2,950)
Total other income (expense)	3,768	(1,506)	(2,818)
Income before income taxes and equity in undistributed earnings of subsidiaries	250,248	227,294	139,471
Benefit from income taxes	(5,586)	(7,710)	(6,472)
Income before equity in undistributed income of subsidiaries	255,834	235,004	145,943
Equity in undistributed income of subsidiaries	2,221	15,220	111,945
Net income	258,055	250,224	257,888
Other comprehensive income (loss), net	13,327	(24,367)	(8,680)
Comprehensive income	<u>\$ 271,382</u>	<u>\$ 225,857</u>	<u>\$ 249,208</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Cash Flows

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Cash flows from operating activities			
Net income	\$ 258,055	\$ 250,224	\$ 257,888
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	2,153	2,136	2,123
Amortization of operating lease right-of-use assets	3,361	3,347	4,484
Stock-based compensation expense	9,725	12,554	12,706
Deferred taxes	101	(5,076)	1,712
Equity in undistributed income of subsidiaries	(2,221)	(15,220)	(111,945)
Other	(4,675)	441	—
Changes in operating assets and liabilities:			
(Increase)/decrease in accounts receivable	(1,154)	(769)	178
Decrease in receivable from subsidiaries	5,474	7,931	47,371
Decrease/(increase) in prepaid expenses and other assets	1,296	(1,175)	(219)
(Increase)/decrease in mutual funds held in rabbi trust	(189)	984	(1,516)
(Decrease)/increase in accrued employee compensation	(1,104)	(1,372)	824
(Increase)/decrease in income and other tax receivables	3,800	(9,711)	7,265
Increase/(decrease) increase in income and other tax liabilities	2,287	62	(143)
(Decrease)/increase in accounts payable, accrued expenses and other liabilities	(861)	443	(607)
(Decrease) in operating lease liabilities	(3,624)	(3,689)	(4,673)
Net cash provided by operating activities	272,424	241,110	215,449
Cash flows from investing activities			
Acquisition of business, net of cash and cash equivalents acquired	(81,161)	—	(17,079)
Acquisition of equity method investment	—	(34,400)	—
Investments in subsidiaries	(10,058)	(8,326)	—
Available-for-sale investments			
Proceeds from maturities and sales	4,454	—	—
Purchases	(28,818)	—	—
Purchases of furniture, equipment and leasehold improvements	(239)	(96)	(198)
Net cash (used in) investing activities	(115,822)	(42,822)	(17,277)
Cash flows from financing activities			
Cash dividend on common stock	(109,658)	(105,942)	(99,791)
Exercise of stock options	940	672	7,096

Withholding tax payments on restricted stock vesting and stock option exercises	(25,839)	(23,404)	(33,890)
Repurchases of common stock	—	(87,540)	(63,189)
Proceeds from short-term borrowings	100,000	100,000	—
Repayments of short-term borrowings	(100,000)	(100,000)	—
Net cash (used in) financing activities	(134,557)	(216,214)	(189,774)
Effect of exchange rate changes on investments	(3)	15	(2,324)
Cash and cash equivalents including restricted cash			
Net increase (decrease) for the period	22,042	(17,911)	6,073
Beginning of period	43,909	61,820	55,747
End of period	<u>\$ 65,951</u>	<u>\$ 43,909</u>	<u>\$ 61,820</u>

MARKETAXESS HOLDINGS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

MarketAxess Holdings Inc.
(Parent Company Only)
Condensed Statements of Cash Flows (Continued)

	Year Ended December 31,		
	2023	2022	2021
	(In thousands)		
Supplemental cash flow information:			
Cash paid for income taxes	\$ 55,784	\$ 65,764	\$ 41,103
Cash paid for interest	35	271	—
Non-cash investing and financing activity:			
Exercise of stock options - cashless	\$ —	\$ 3,845	\$ 2,750
Right-of-use assets obtained in exchange for operating lease liabilities	1,072	—	—
Treasury stock used for acquisition of business	43,841	—	—

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 Interim 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 Exchange Act, as of December 31, 2023. Based on that evaluation, the Chief Executive Officer and Interim 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 Interim 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, 2023 identified in connection with the evaluation thereof by our management, including the Chief Executive Officer and Interim 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.**(b) Trading Plans**

In the fourth quarter of 2023, no director or officer (as defined in Exchange Act Rule 16a-1(f)) of the Company adopted or terminated a Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement for the purchase or sale of securities of the Company, within the meaning of Item 408 of Regulation S-K, except as follows:

Scott Pintoff, General Counsel & Corporate Secretary, adopted a trading arrangement intended to satisfy Rule 10b5-1(c) on December 7, 2023, for the sale of up to 1,500 shares of the Company’s common stock, subject to certain conditions. The arrangement’s expiration date is February 18, 2025.

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 2024. We intend to file the Proxy Statement within 120 days after the end of our fiscal year (i.e., on or before April 30, 2024). Our Code of Conduct, applicable to directors and all employees, including senior financial officers, and our Code of Ethics of the Chief Executive Officer and Senior Financial Officers, including the Interim Chief Financial Officer (the “Code of Ethics”), are available on our website at www.marketaxess.com. If we make any amendments to or waivers from our Code of Ethics 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, 2023:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted Average Exercise 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	313,957	\$ 295.74	2,436,113

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
3.1(a)	<u>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))</u>
3.1(b)	<u>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)</u>
3.2(a)	<u>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))</u>
3.2(b)	<u>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)</u>
4.1	<u>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))</u>
4.2(a)	<u>See Exhibits 3.1 for provisions defining the rights of holders of common stock and non-voting common stock of the registrant</u>
4.2(b)	<u>See Exhibits 3.2 for provisions defining the rights of holders of common stock and non-voting common stock of the registrant</u>
4.3	<u>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)</u>
10.1	<u>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)+</u>
10.2	<u>First Amendment, dated March 28, 2023, to Credit Agreement, dated as of October 15, 2021, by and among MarketAxess Holdings Inc., as borrower, a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, and certain other financial institutions party thereto (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated March 31, 2023)+</u>
10.3	

Credit Agreement, dated as of August 9, 2023, 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 in Form 8-K dated August 9, 2023).+

- 10.4 Membership Interest Purchase Agreement, dated as of August 5, 2023, by and among MarketAxess Holdings Inc., Pragma Weeden Holdings LLC, Pragma Financial Systems LLC, Pragma LLC and David Mechner (solely for purposes specified therein) (incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2023).++
- 10.5 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).#

EXHIBIT LISTING (CONTINUED)

- 10.6 [MarketAxess Holdings Inc. 2012 Incentive Plan as Amended and Restated Effective June 7, 2016 \(incorporated by reference to Appendix A to the registrant's Proxy Statement for its Annual Meeting for Stockholders held on June 7, 2016, filed on April 25, 2016\)#](#)
- 10.7 [Amendment Number One to the MarketAxess Holdings Inc. 2012 Incentive Plan as Amended and Restated Effective June 7, 2016 \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated April 21, 2017\)#](#)
- 10.8 [Amendment to the MarketAxess Holdings Inc. 2012 Incentive Plan \(Amended and Restated Effective June 7, 2016\), as amended \(incorporated by reference to Appendix A to the registrant's Proxy Statement for its Annual Meeting of Stockholders held on June 7, 2018, filed April 25, 2018\)#](#)
- 10.9 [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 \(Registration No. 333-112718\)\)#](#)
- 10.10 [MarketAxess Holdings Inc. 2022 Employee Stock Purchase Plan \(incorporated by reference to Exhibit 99.1 to the registrant's Registration Statement on Form S-8 filed on June 8, 2022\)#](#)
- 10.11 [MarketAxess Holdings Inc. 2009 Employee Performance Incentive Plan, as amended \(incorporated by reference to Exhibit 10.5 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2021\)#](#)
- 10.12 [MarketAxess Holdings Inc. Nonqualified Deferred Compensation Plan \(incorporated by reference to Exhibit 10.6 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2021\)#](#)
- 10.13 [Form of Indemnification Agreement for Directors \(incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017\)#](#)
- 10.14 [Guidelines for Restricted Stock Units granted under the MarketAxess Holdings Inc. 2012 Incentive Plan \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 19, 2011\)#](#)
- 10.15 [Form of Performance Share Award Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan \(incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated January 4, 2019\)#](#)
- 10.16 [Form of Incentive Stock Option Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2012 Incentive Plan \(incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated January 4, 2019\)#](#)
- 10.17 [Employment Letter Agreement, dated as of January 15, 2015, by and between MarketAxess Holdings Inc. and Richard M. McVey \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 15, 2015\)#](#)
- 10.18 [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)#

- 10.19 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)#
- 10.20 Employment Letter Agreement dated as of January 6, 2023, by and between Richard M. McVey and MarketAxess Holdings Inc. (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated January 9, 2023)#
- 10.21 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)#

EXHIBIT LISTING (CONTINUED)

- 10.22 [Incentive Stock Option Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey \(incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated November 6, 2018\)#](#)
- 10.23 [Performance Award Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey \(incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated November 6, 2018\)#](#)
- 10.24 [Performance Award Agreement, dated as of November 8, 2018, by and between MarketAxess Holdings Inc. and Richard M. McVey \(incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K November 6, 2018\)#](#)
- 10.25 [Contract of Employment, dated March 15, 2017, between MarketAxess Europe Limited and Christophe Roupie \(incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2017\)#](#)
- 10.26 [Employment Letter Agreement, dated as of January 7, 2019, by and between MarketAxess Holdings Inc. and Christopher R. Concannon \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 4, 2019\)#](#)
- 10.27 [Employment Letter Agreement dated as of January 6, 2023, by and between Christopher R. Concannon and MarketAxess Holdings Inc. \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated January 9, 2023\)#](#)
- 10.28 [Form of Restricted Stock Unit Award Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan. \(incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated January 9, 2023\)#](#)
- 10.29 [Form of Performance Stock Unit Agreement for Christopher R. Concannon pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan. \(incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K dated January 9, 2023\)#](#)
- 10.30 [Form of 2021 Restricted Stock Unit Agreement \(Deferred\) for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.13 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.31 [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 \(incorporated by reference to Exhibit 10.14 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.32 [Guidelines for Restricted Stock Units granted under the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.15 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.33 [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)#

- 10.34 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)#
- 10.35 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)#
- 10.36 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)#

EXHIBIT LISTING (CONTINUED)

- 10.37 [Form of Restricted Stock Agreement for Directors pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.20 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.38 [Form of Restricted Stock Unit Agreement for Directors pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.21 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.39 [Form of 2022 and 2023 Restricted Stock Unit Agreement \(Deferred\) for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.40 [Form of 2022 and 2023 Restricted Stock Unit Agreement \(Non-Deferred\) for U.S. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.41 [Form of 2022 and 2023 Performance Stock Unit Agreement for Mr. McVey pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.42 [Form of 2022 and 2023 Performance Stock Unit Agreement for U.S. based Executive Officers other than Mr. McVey pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.5 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.43 [Form of 2022 and 2023 Incentive Stock Option Agreement for Mr. McVey pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.44 [Form of 2022 and 2023 Incentive Stock Option Agreement for U.S. based Executive Officers other than Mr. McVey pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.6 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.45 [Form of 2022 and 2023 Restricted Stock Unit Agreement for U.K. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.7 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.46 [Form of 2022 and 2023 Performance Stock Unit Agreement for U.K. based Executive Officers pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to Exhibit 10.8 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)#](#)
- 10.47 [Form of Restricted Stock Unit \(Buyout\) for Naineshkumar Panchal pursuant to the MarketAxess Holdings Inc. 2020 Equity Incentive Plan \(incorporated by reference to](#)

[Exhibit 10.9 to the registrant's Quarterly Report on Form 10-Q dated April 27, 2022\)](#)#

- 10.48 [Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Scott Pintoff \(incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K dated July 31, 2020\)](#)#
- 10.49 [Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Holdings Inc. and Kevin McPherson \(incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K dated July 31, 2020\)](#)#
- 10.50 [Severance Protection Agreement, dated as of March 1, 2022, by and between MarketAxess Holdings Inc. and Naineshkumar Shantilal Panchal \(incorporated by reference to Exhibit 10.52 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2022\)](#)#
- 10.51 [Proprietary Information and Non-Competition Agreement, dated as of March 1, 2022, by and between MarketAxess Holdings Inc. and Naineshkumar Shantilal Panchal \(incorporated by reference to Exhibit 10.53 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2022\)](#)#

EXHIBIT LISTING (CONTINUED)

- 10.52 [MarketAxess Europe Limited Severance Protection Agreement, dated as of July 31, 2020, by and between MarketAxess Europe and Christophe Roupie \(incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K dated July 31, 2020\)#](#)
- 10.53 [Form of Amendment of Severance Protection Agreement for U.S. based Executive Officers, except Messrs. Gerosa and Panchal \(incorporated by reference to Exhibit 10.27 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.54 [Form of Amendment of Severance Protection Agreement for U.K. based Executive Officers \(incorporated by reference to Exhibit 10.28 to the registrant's Annual report on Form 10-K for the year ended December 31, 2020\)#](#)
- 10.55 [Severance Protection Agreement, dated as of August 12, 2021, by and between MarketAxess Holdings Inc. and Christopher N. Gerosa \(incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K dated August 12, 2021\)#](#)
- 10.56 [Offer Letter, dated November 24, 2021, by and between MarketAxess Holdings Inc. and Naineshkumar Shantilal Panchal \(incorporated by reference to Exhibit 10.32 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2021\)#†](#)
- 21.1* [Subsidiaries of the Registrant](#)
- 23.1* [Consent of PricewaterhouseCoopers LLP](#)
- 31.1* [Certification by Chief Executive Officer and Interim 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 and Interim Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002](#)
- 97.1* [MarketAxess Holdings Inc. Erroneously Awarded Compensation Recovery Policy](#)
- 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 With Embedded Linkbase Documents
- 104 The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2023 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.

+ Certain schedules and other similar attachments to this exhibit have been omitted from this filing pursuant to Item 601(a)(5) of Regulation S-K. The registrant will provide a copy of such omitted documents to the Securities and Exchange Commission upon request.

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/ CHRISTOPHER R.
CONCANNON

Christopher R. Concannon
Chief Executive Officer and
Interim Chief Financial Officer

Date: February 22, 2024

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
<u>/s/ CHRISTOPHER R. CONCANNON</u> Christopher R. Concannon	Director, Chief Executive Officer and Interim Chief Financial Officer (principal executive officer and interim principal financial officer)	February 22, 2024
<u>/s/ MICHAEL R. CIANCIULLI</u> Michael R. Cianciulli	Head of External Reporting (interim principal accounting officer)	February 22, 2024
<u>/s/ RICHARD M. MCVEY</u> Richard M. McVey	Executive Chairman of the Board of Directors	February 22, 2024
<u>/s/ NANCY ALTOBELLO</u> Nancy Altobello	Director	February 22, 2024
<u>/s/ STEVEN L. BEGLEITER</u> Steven L. Begleiter	Director	February 22, 2024
<u>/s/ STEPHEN P. CASPER</u> Stephen P. Casper	Director	February 22, 2024
<u>/s/ JANE CHWICK</u> Jane Chwick	Director	February 22, 2024
<u>/s/ WILLIAM CRUGER</u> William Cruger	Director	February 22, 2024
<u>/s/ KOURTNEY GIBSON</u> Kourtney Gibson	Director	February 22, 2024
<u>/s/ CARLOS M. HERNANDEZ</u> Carlos M. Hernandez	Director	February 22, 2024
<u>/s/ RICHARD G. KETCHUM</u> Richard G. Ketchum	Director	February 22, 2024
<u>/s/ EMILY PORTNEY</u>	Director	February 22, 2024

Emily Portney
/s/ RICHARD PRAGER

Richard Prager

Director

February 22,
2024