UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2023

OR

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

For the transition period from ________ to ________

Commission file number: 001-38855

Nasdaq, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**52-1165937**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**

151 W. 42nd Street,	**New York,**	**New York**	**10036**
(Address of Principal Executive Offices)			**(Zip Code)**

Registrant's telephone number, including area code: +1 212 401 8700

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	**NDAQ**	**The Nasdaq Stock Market**
4.500% Senior Notes due 2032	**NDAQ32**	**The Nasdaq Stock Market**
0.900% Senior Notes due 2033	**NDAQ33**	**The Nasdaq Stock Market**
0.875% Senior Notes due 2030	**NDAQ30**	**The Nasdaq Stock Market**
1.75% Senior Notes due 2029	**NDAQ29**	**The Nasdaq Stock 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 Section 15(d) of the Exchange 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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

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 ☒

As of June 30, 2023, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $17.0 billion (this amount represents approximately 340.1 million shares of Nasdaq, Inc.'s common stock based on the last reported sales price of $49.85 of the common stock on The Nasdaq Stock Market on such date).

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class	Outstanding at February 13, 2024
Common Stock, $0.01 par value per share	575,206,570 shares

Documents Incorporated by Reference: Certain portions of the Definitive Proxy Statement for the 2024 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K.

About this Form 10-K

Throughout this Form 10-K, unless otherwise specified:

- "Nasdaq," "we," "us" and "our" refer to Nasdaq, Inc.
- "Nasdaq Baltic" refers to collectively, Nasdaq Tallinn AS, Nasdaq Riga, AS, and AB Nasdaq Vilnius.
- "Nasdaq BX" refers to the cash equity exchange operated by Nasdaq BX, Inc.
- "Nasdaq BX Options" refers to the options exchange operated by Nasdaq BX, Inc.
- "Nasdaq Clearing" refers to the clearing operations conducted by Nasdaq Clearing AB.
- "Nasdaq CXC" and "Nasdaq CX2" refer to the Canadian cash equity trading books operated by Nasdaq CXC Limited.
- "Nasdaq First North" refers to our alternative marketplaces for smaller companies and growth companies in the Nordic and Baltic regions.
- "Nasdaq GEMX" refers to the options exchange operated by Nasdaq GEMX, LLC.
- "Nasdaq ISE" refers to the options exchange operated by Nasdaq ISE, LLC.
- "Nasdaq MRX" refers to the options exchange operated by Nasdaq MRX, LLC.
- "Nasdaq Nordic" refers to collectively, Nasdaq Clearing AB, Nasdaq Stockholm AB, Nasdaq Copenhagen A/S, Nasdaq Helsinki Ltd, and Nasdaq Iceland hf.
- "Nasdaq PHLX" refers to the options exchange operated by Nasdaq PHLX LLC.
- "Nasdaq PSX" refers to the cash equity exchange operated by Nasdaq PHLX LLC.
- "The Nasdaq Options Market" refers to the options exchange operated by The Nasdaq Stock Market LLC.
- "The Nasdaq Stock Market" refers to the cash equity exchange and listing venue operated by The Nasdaq Stock Market LLC.

Nasdaq also provides as a tool for the reader the following list of abbreviations and acronyms that are used throughout this Annual Report on Form 10-K.

2022 Revolving Credit Facility: $1.25 billion senior unsecured revolving credit facility, which matures on December 16, 2027, which has replaced the $1.25 billion credit facility issued in 2020

2025 Notes: $500 million aggregate principal amount of 5.650% senior unsecured notes due June 28, 2025

2026 Notes: $500 million aggregate principal amount of 3.85% senior unsecured notes due June 30, 2026

2028 Notes: $1 billion aggregate principal amount of 5.350% senior unsecured notes due June 28, 2028

2029 Notes: €600 million aggregate principal amount of 1.75% senior unsecured notes due March 28, 2029

2030 Notes: €600 million aggregate principal amount of 0.875% senior unsecured notes due February 13, 2030

2031 Notes: $650 million aggregate principal amount of 1.650% senior unsecured notes due January 15, 2031

2032 Notes: €750 million aggregate principal amount of 4.500% senior unsecured notes due February 15, 2032

2033 Notes: €615 million aggregate principal amount of 0.900% senior unsecured notes due July 30, 2033

2034 Notes: $1.25 billion aggregate principal amount of 5.550% senior unsecured notes due February 15, 2034

2040 Notes: $650 million aggregate principal amount of 2.500% senior unsecured notes due December 21, 2040

2050 Notes: $500 million aggregate principal amount of 3.25% senior unsecured notes due April 28, 2050

2052 Notes: $550 million aggregate principal amount of 3.950% senior unsecured notes due March 7, 2052

2053 Notes: $750 million aggregate principal amount of 5.950% senior unsecured notes due August 15, 2053

2063 Notes: $750 million aggregate principal amount of 6.100% senior unsecured notes due June 28, 2063

AML: Anti-money Laundering

ARR: Annualized Recurring Revenue

ASC: Accounting Standards Codification

ASU: Accounting Standards Update

ASR: Accelerated Share Repurchase

ATS: Alternative Trading System

AUM: Assets Under Management

AWS: Amazon Web Services

CAT: A market-wide consolidated audit trail established under an SEC approved plan by Nasdaq and other exchanges

CCP: Central Counterparty

CFTC: U.S. Commodity Futures Trading Commission

EBITDA: Earnings before interest, taxes, depreciation and amortization

EMIR: European Market Infrastructure Regulation

Equity Plan: Nasdaq Equity Incentive Plan

ESG: Environmental, Social and Governance

ESPP: Nasdaq Employee Stock Purchase Plan

ETF: Exchange Traded Fund

ETP: Exchange Traded Product

Exchange Act: Securities Exchange Act of 1934, as amended

FASB: Financial Accounting Standards Board

FICC: Fixed Income and Commodities Trading and Clearing

FINRA: Financial Industry Regulatory

GICS: Global Industry Classification Standard

IPO: Initial Public Offering

MiFID II: Update to the Markets in Financial Instruments Directive

MiFIR: Markets in Financial Instruments Regulation

NPM: The NASDAQ Private Market, LLC

NSCC: National Securities Clearing Corporation

OCC: The Options Clearing Corporation

OTC: Over-the-Counter

Proxy Statement: Nasdaq's Definitive Proxy Statement for the 2024 Annual Meeting of Shareholders

PSU: Performance Share Unit

Regulation NMS: Regulation National Market System

Regulation SCI: Regulation Systems Compliance and Integrity

SaaS: Software as a Service

SEC: U.S. Securities and Exchange Commission

SERP: Supplemental Executive Retirement Plan

SFSA: Swedish Financial Supervisory Authority

SOFR: Secured Overnight Financing Rate

S&P: Standard & Poor's

S&P 500: S&P 500 Stock Index

SPAC: Special Purpose Acquisition Company

SRO: Self-regulatory Organization

SSMA: Swedish Securities Markets Act 2007:528

TSR: Total Shareholder Return

U.S. GAAP: U.S. Generally Accepted Accounting Principles

U.S. Tape plans: U.S. cash equity and U.S. options industry data

UTP: Unlisted Trading Privileges

UTP Plan: Joint SRO Plan Governing the Collection, Consolidation, and Dissemination of Quotation and Transaction Information for Nasdaq-Listed Securities Traded on Exchanges on a UTP Basis

NASDAQ, the NASDAQ logos, and other brand, service or product names or marks referred to in this report are trademarks or service marks, registered or otherwise, of Nasdaq, Inc. and/or its subsidiaries. FINRA and Trade Reporting Facility are registered trademarks of FINRA.

This Annual Report on Form 10-K includes market share and industry data that we obtained from industry publications and surveys, reports of governmental agencies and internal company surveys. Industry publications and surveys generally state that the information they contain has been obtained from sources believed to be reliable, but we cannot assure you that this information is accurate or complete. We have not independently verified any of the data from third-party sources nor have we ascertained the underlying economic assumptions relied upon therein. Statements as to our market position are based on the most currently available market data. For market comparison purposes, The Nasdaq Stock Market data in this Annual Report on Form 10-K for IPOs and new listings of equity securities (including issuers that switched from other listings venues, closed-end funds and ETPs) is based on data generated internally by us; therefore, the data may not be comparable to other publicly-available IPO data. Data in this Annual Report on Form 10-K for IPOs and new listings of equity securities on the Nasdaq Nordic and Nasdaq Baltic exchanges and Nasdaq First North also is based on data generated internally by us. IPOs and new listings data is presented as of period end. While we are not aware of any misstatements regarding industry data presented herein, our estimates involve risks and uncertainties and are subject to change based on various factors, including those discussed in the "Item 1A. Risk Factors" section in this Annual Report on Form 10-K.

Nasdaq intends to use its website, ir.nasdaq.com, as a means for disclosing material non-public information and for complying with SEC Regulation FD and other disclosure obligations.

Forward-Looking Statements

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This Annual Report on Form 10-K contains these types of statements. Words such as "may," "will," "could," "should," "anticipates," "envisions," "estimates," "expects," "projects," "intends," "plans," "believes" and words or terms of similar substance used in connection with any discussion of future expectations as to industry and regulatory developments or business initiatives and strategies, future operating results or financial performance, and other future developments are intended to identify forward-looking statements. These include, among others, statements relating to:

- *our strategic direction, including changes to our corporate structure;*
- *the integration of acquired businesses, including accounting decisions relating thereto;*
- *the scope, nature or impact of acquisitions, divestitures, investments, joint ventures or other transactional activities;*
- *the effective dates for, and expected benefits of, ongoing initiatives, including transactional activities and other strategic, restructuring, technology, ESG, de-leveraging and capital return initiatives;*
- *our products and services;*
- *the impact of pricing changes;*
- *tax matters;*
- *the cost and availability of liquidity and capital; and*
- *any litigation, or any regulatory or government investigation or action, to which we are or could become a party or which may affect us and any potential settlements of litigation, regulatory or governmental investigations or actions, including with respect to our CFTC investigation.*

Forward-looking statements involve risks and uncertainties. Factors that could cause actual results to differ materially from those contemplated by the forward-looking statements include, among others, the following:

- *our operating results may be lower than expected;*
- *our ability to successfully integrate acquired businesses or divest sold businesses or assets, including the fact that any integration or transition may be more difficult, time consuming or costly than expected, and we may be unable to realize synergies from business combinations, acquisitions, divestitures or other transactional activities;*
- *loss of significant trading and clearing volumes or values, fees, market share, listed companies, market data customers or other customers;*
- *our ability to develop and grow our non-trading businesses;*
- *our ability to keep up with rapid technological advances, including our ability to effectively manage the development and use of artificial intelligence in certain of our products and offerings, and adequately address cybersecurity risks;*
- *economic, political and market conditions and fluctuations, including inflation, interest rate and foreign currency risk inherent in U.S. and international operations, and geopolitical instability;*
- *the performance and reliability of our technology and technology of third parties on which we rely;*
- *any significant systems failures or errors in our operational processes;*
- *our ability to continue to generate cash and manage our indebtedness; and*
- *adverse changes that may occur in the litigation or regulatory areas, or in the securities markets generally, or increased regulatory oversight domestically or internationally.*

Most of these factors are difficult to predict accurately and are generally beyond our control. You should consider the uncertainty and any risk related to forward-looking statements that we make. These risk factors are discussed under the caption "Item 1A. Risk Factors" in this Annual Report on Form 10-K. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this Annual Report on Form 10-K. You should carefully read this entire Annual Report on Form 10-K, including "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and the related notes. Except as required by the federal securities laws, we undertake no obligation to update any forward-looking statement, release publicly any revisions to any forward-looking statements or report the occurrence of unanticipated events. For any forward-looking statements contained in any document, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

PART I

Item 1. Business

Overview

Nasdaq is a global technology company serving corporate clients, investment managers, banks, brokers, and exchange operators as they navigate and interact with the global capital markets and the broader financial system. We aspire to deliver world-leading platforms that improve the liquidity, transparency, and integrity of the global economy. Our diverse offering of data, analytics, software, exchange capabilities, and client-centric services enables clients to optimize and execute their business vision with confidence.

We manage, operate and provide our products and services in three business segments: Capital Access Platforms, Financial Technology and Market Services.

History

Nasdaq was founded in 1971 as a wholly-owned subsidiary of FINRA. Beginning in 2000, FINRA restructured and broadened ownership in Nasdaq by selling shares to FINRA members, investment companies and issuers listed on The Nasdaq Stock Market. In connection with this restructuring, FINRA fully divested its ownership of Nasdaq in 2006, and The Nasdaq Stock Market became an independent registered national securities exchange in 2007.

In February 2008, Nasdaq and OMX AB combined their businesses, and we changed our corporate name to The NASDAQ OMX Group, Inc. This transformational combination resulted in the expansion of our business from a U.S.-based exchange operator to a global exchange company offering technology that powers our own exchanges and markets as well as many other marketplaces around the world. We operated as the NASDAQ OMX Group until we rebranded our business as Nasdaq, Inc. in 2015.

In November 2023, Nasdaq completed its acquisition of Adenza. Through its two solutions, AxiomSL and Calypso, Adenza is a provider of mission-critical risk management, regulatory reporting, and capital markets software to the financial services industry. The acquisition enhances our technology solutions and further expands Nasdaq's complementary offerings across mission-critical capital markets infrastructure and compliance.

Growth Strategy

To enable success in the evolving global financial system, we have established our purpose, vision, and value proposition together with a focused growth strategy:

Our Purpose: We advance economic progress for all.

Our Vision: We will be the trusted fabric of the world's financial system.

Our Value Proposition: We deliver world-leading platforms that improve the liquidity, transparency and integrity of the global economy.

Our Strategy: In 2017, we set a new strategic direction focused on maximizing the resources, people and capital allocated to our largest growth opportunities. These opportunities, which include anti-financial crime and compliance solutions, marketplace technology, workflow for investment managers and asset owners as well as insight solutions, constituted large and growing opportunities where we felt our strengths in technology, proprietary data, analytics and capital markets expertise, combined with our expansive client network, positioned us to meet our clients' evolving needs.

Following the completion of the Adenza acquisition, including its two flagship solutions, AxiomSL and Calypso, we further aligned our business more closely with the foundational shifts that are driving the evolution of the global financial system. The divisional structure is as follows:

Pre-Acquisition		**Post-Acquisition**	
Capital Access Platforms	Data & Listings Index Workflow & Insights	**Capital Access Platforms**	Data & Listings Index Workflow & Insights
Anti-Financial Crime	Fraud & AML Surveillance	**Financial Technology**	Financial Crime Management Technology Regulatory Technology • Surveillance • **AxiomSL** Capital Markets Technology • Market Technology • Trade Management Services • **Calypso**
Market Platforms	Marketplace Technology Trading Services	**Market Services**	Trading Services

By aligning our business segments against these secular trends, we aim to deliver more for our clients and increase growth across our key pillars of liquidity, transparency and integrity:

- *Liquidity:* Within our Financial Technology and Market Services segments, we continue to modernize markets by utilizing technology to maximize the liquidity of the global economy. New technologies, including cloud, blockchain, machine learning and artificial intelligence, present significant opportunities to further enhance market resiliency and scalability and make markets even more accessible. We believe that these technologies will enable more opportunities for market participants and new asset classes to be integrated across markets globally. The Financial Technology and Market Services segments together offer complementary capabilities to capture the potential these technologies can unlock in our industry. By utilizing our Market Services segment's position at the center of markets, we believe that our Financial Technology segment will be at the forefront of the financial system's evolution and will play a critical role in advancing the modernization of markets across geographies and asset classes.

- *Transparency*: Our Capital Access Platforms segment is uniquely placed to help clients navigate the increasing complexity of the evolving financial system through access to capital and transparency which enables economic growth. With approximately 10,000 corporate clients and 5,000 clients across the investment management ecosystem, Nasdaq is a trusted partner to aid the corporate and investment communities in making more informed decisions. Leveraging the insights and capabilities across our listings, advisory, data, index, and analytics teams, we believe that Capital Access Platforms serves as a bridge between the investor and corporate communities, focused on enhancing the client experience by providing efficient routes to capital, delivering more holistic, actionable insights and intelligence, modernizing workflows, and navigating the climate and ESG landscape.
- *Integrity:* Financial Crime Management Technology and Regulatory Technology include Nasdaq's fraud detection, anti-money laundering, surveillance and risk data management and regulatory reporting solutions businesses. These businesses remain focused on capturing the growth associated with protecting the integrity of the financial system by fighting financial crime and helping our clients with their most significant compliance challenges. These businesses will continue delivering world-class solutions, leveraging the power of the cloud and machine learning across asset classes, to the full spectrum of banks and brokers, including the emerging ecosystem of financial technology, or FinTech, companies and digital banks.

Products and Services

Capital Access Platforms

Our Capital Access Platforms segment delivers liquidity, transparency and integrity to the corporate issuer and investment community by empowering our clients to effectively navigate the capital markets, achieve their sustainability goals, and drive governance excellence. We offer a suite of products to assist companies in managing corporate governance standards.

Our Capital Access Platforms segment includes Data & Listing Services, Index and Workflow & Insights.

Data & Listing Services

Our North American and European data products enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally. Our Data business distributes historical and real-time market data to sell-side customers, the institutional investing community, retail online brokers, proprietary trading firms, and other venues, as well as internet portals and data distributors.

We collect, process, and create information and earn revenues as a distributor of our own, as well as select third-party, content. We provide varying levels of quote and trade information to market participants and to data distributors who in turn provide subscriptions for this information. Our systems enable distributors to gain access to our market depth, fund valuation, order imbalances, market sentiment and other analytical data.

We distribute this proprietary market information to both market participants and non-participants through a number of proprietary products, including Nasdaq TotalView, our flagship market depth quote product. We offer TotalView products for The Nasdaq Stock Market and our Nasdaq BX, Nasdaq PSX and Nordic markets. We also offer Nordic Equity TotalView, Nordic Derivatives TotalView and Nordic Fixed Income TotalView for Nordic markets.

We operate several other proprietary services and data products to provide market information, including Nasdaq Basic, a low cost alternative to the industry Level 1 feed and Nasdaq Canada Basic, a low cost alternative to other high priced data feeds. We also provide various other data, including data relating to our U.S. equities and options exchanges and Nordic equities, derivatives, fixed income and futures.

Additionally, our Nasdaq Cloud Data Service provides a flexible and efficient method of delivery for real-time exchange data and other financial information. Data is made available through a suite of application programming interfaces, or APIs, allowing for the integration of data from disparate sources and a reduction in time to market for customer-designed applications. These APIs are highly scalable and can support the delivery of real-time exchange data.

We operate a variety of listing platforms around the world to provide multiple global capital raising solutions for public companies. Companies listed on our markets represent a diverse array of industries including, among others, healthcare, consumer products, telecommunication services, information technology, financial services, industrials and energy. Our main listing markets are The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges.

Companies seeking to list securities on The Nasdaq Stock Market may do so on one of the three market tiers: The Nasdaq Global Select Market, The Nasdaq Global Market, or The Nasdaq Capital Market. To qualify, companies must meet minimum listing requirements, including specified financial and corporate governance criteria. Once listed, companies must maintain rigorous listing and corporate governance standards.

As of December 31, 2023, a total of 5,262 companies listed securities on our U.S., Nasdaq Nordic, Nasdaq Baltic and Nasdaq First North exchanges. As of December 31, 2023, a total of 4,044 companies listed securities on The Nasdaq Stock Market, with 1,443 listings on The Nasdaq Global Select Market, 1,269 on The Nasdaq Global Market and 1,332 on The Nasdaq Capital Market.

We seek new listings from companies conducting IPOs, including SPACs, and direct listings as well as companies looking to switch from alternative exchanges. The 2023 new listings were comprised of the following:

Operating company IPOs	103
SPAC IPOs	27
Switches from the New York Stock Exchange LLC, or NYSE, and the NYSE American LLC, or NYSE American	18
Upgrades from OTC	18
ETPs and Other Listings	164
Total	330

The Nasdaq Stock Market IPO win rates:	
2023 total	82 %
Operating companies	81 %

During 2023, we had 18 new listings resulting from companies switching their listings from NYSE or NYSE American to join The Nasdaq Stock Market. Together with companies that transferred additional securities to The Nasdaq Stock Market during 2023, an aggregate of $377 billion in global equity market capitalization switched to The Nasdaq Stock Market.

We also offer listings on the exchanges that comprise Nasdaq Nordic and Nasdaq Baltic. For smaller companies and growth companies, we offer access to the financial markets through the Nasdaq First North alternative marketplaces. As of December 31, 2023, a total of 1,218 companies listed securities on our Nordic and Baltic exchanges.

Our European listing customers include companies, funds and governments. Customers issue securities in the form of cash equities, depository receipts, warrants, ETPs, convertibles, rights, options, bonds or fixed-income related products. In 2023, a total of 23 new companies listed on our Nordic and Baltic exchanges.

Index

Our Index business develops and licenses Nasdaq-branded indices and financial products. License fees for our trademark licenses vary by product based on a percentage of underlying assets, dollar value of a product issuance, number of products or number of contracts traded. We also license cash-settled options, futures and options on futures on our indices.

As of December 31, 2023, 388 ETPs listed on 27 exchanges in over 20 countries tracked a Nasdaq index and accounted for $473 billion in AUM. Our flagship index, the Nasdaq-100 Index, or NDX, includes the top 100 non-financial companies listed on The Nasdaq Stock Market. More than 100 ETPs worldwide track indices in the NDX ecosystem, and had nearly $360 billion in assets tracking the index as of December 31, 2023.

We provide index data products based on Nasdaq indices. Index data products include our Global Index Data Service, which delivers real-time index values throughout the trading day, and Global Index Watch/Global Index File Delivery Service, which delivers daily and historical weightings and components data, corporate actions and a breadth of additional data for the indices that we operate.

Workflow & Insights

Workflow & Insights includes our analytics and corporate solutions products.

Our analytics products provide asset managers, investment consultants and institutional asset owners with information and analytics to make data-driven investment decisions, deploy their resources more productively, and provide liquidity solutions for private funds. Through our eVestment and Solovis solutions, we provide a suite of cloud-based solutions that help institutional investors and consultants conduct pre-investment due diligence, and monitor their portfolios post-investment. The eVestment platform also enables asset managers to efficiently distribute information about their firms and funds to asset owners and consultants worldwide.

Through the Solovis platform, endowments, foundations, pensions and family offices transform how they collect and aggregate investment data, analyze portfolio performance, model and predict future outcomes, and share meaningful portfolio insights with key stakeholders. The Nasdaq Fund Network and Nasdaq Data Link are additional platforms in our suite of investment data analytics offerings and data management tools. Nasdaq Fund Network gathers and distributes daily net asset values from over 44,000 funds and other investment vehicles across North America. We have extended Nasdaq Fund Network to support the distribution of collective investment trusts, hedge funds, managed accounts, separate accounts, 529 educational saving plans and demand deposit accounts. Nasdaq Data Link strengthens our position as a leading source for financial, economic, and alternative datasets. For investment management firms, investment banks and other investors, the platform powers data-driven decision-making for users across the globe via universal APIs, and provides for efficient data discovery and delivery.

Corporate solutions serves both public and private companies and organizations through our Investor Relations Intelligence, Governance Solutions and ESG Solutions products. Our public company clients can be companies listed on our exchanges or other U.S. and global exchanges. Our private company clients include a diverse group of organizations ranging from family-owned companies, government organizations, law firms, privately held entities, and various non-profit organizations to hospitals and healthcare systems. We help organizations enhance their ability to understand and expand their global shareholder base, improve corporate governance, and navigate the evolving ESG landscape through our suite of advanced technology, analytics, and consulting services. We also advise clients on a range of governance and sustainability-related issues.

Our Investor Relations Intelligence offerings include a global team of expert consultants that deliver advisory services including Equity Surveillance & Shareholder Analysis, Investor Engagement and Perception Studies, as well as an industry-leading platform, Nasdaq IR Insight®, to investor relations professionals and executive teams. These solutions allow investor relations officers and executives to better manage their investor relations programs, understand their investor base, target new investors, manage meetings and consume key data such as investor profiles, equity research, consensus estimates and news.

Through our Governance Solutions products, we provide a global technology offering and consulting services that streamline the meeting process for board of directors and executive leadership teams and enable them to accelerate decision making and strengthen governance. Our solutions help protect sensitive data and facilitate productive collaboration, which enables board members and teams to work faster and more effectively.

Our ESG Solutions includes our ESG Advisory practice and our ESG software offering. Our ESG Advisory practice helps companies analyze, assess and action best practices to attract long-term capital. In June 2022, we acquired Metrio, a provider of ESG data collection, analytics and reporting services. Metrio software is a cloud-based solution that helps firms manage ESG data, perform greenhouse gas emissions calculations and accounting, and optimize granular data collection, report publication and dashboarding against targets. In September 2023, we announced the launch of Nasdaq Metrio, which integrates Nasdaq OneReport and Metrio legacy technologies into a new SaaS-based, end-to-end sustainability platform. The new platform enables corporates to collect, measure, disclose and communicate investor-grade, audited ESG data efficiently across dozens of raters, rankers and framework organizations to drive strategic outcomes and attract investors. The platform also features a new Carbon Accounting and Management product for companies looking to focus on their scope 1, 2 and 3 emissions. We continue to launch new ESG solutions as discussed further in “Environmental, Social and Governance Matters” below.

Financial Technology

The Financial Technology segment delivers world leading platforms that improve the liquidity, transparency and integrity of the global economy by architecting and operating the world’s best markets. This segment comprises Financial Crime Management Technology, Regulatory Technology and Capital Markets Technology solutions.

We are a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers, buy-side firms and corporate businesses, and power more than 130 marketplaces in more than 55 countries. Our solutions can handle a wide array of assets, including but not limited to cash equities, equity derivatives, currencies, various interest-bearing securities, commodities, energy products and digital currencies. Our solutions can also be used in the creation of new asset classes by non-capital markets customers, as discussed further below.

Financial Crime Management Technology

Our Financial Crime Management Technology business includes our Verafin solution which delivers a leading platform that improves the integrity and transparency of the financial world by providing SaaS solutions for fraud detection and AML.

The financial services industry has seen a growing demand for products and services focused on anti-financial crime. Our Verafin solution provides a cloud-based platform to help detect, investigate, and report money laundering and financial fraud to approximately 2,500 financial institutions in North America.

Regulatory Technology

Regulatory Technology includes surveillance and AxiomSL solutions.

Our surveillance solutions include a SaaS platform designed for banks, brokers and other market participants to assist in complying with market rules, regulations and internal market surveillance policies and serves more than 170 clients. We also provide a solution to regulators and exchanges with a robust platform to manage cross-market, cross-asset and multi-venue surveillance. This offering powers surveillance for more than 50 exchanges and 18 regulators.

AxiomSL is a global leader in risk data management and regulatory reporting solutions for the financial industry, including banks, broker dealers and asset managers. Its unique enterprise data management platform delivers data lineage, risk aggregation, analytics, workflow automation, reconciliation, validation and audit functionality, as well as disclosures. AxiomSL’s platform supports compliance across a wide range of global and local regulations.

Capital Markets Technology

Capital Markets Technology includes market technology, trade management services and Calypso.

Our market technology solutions can handle a wide array of assets, including but not limited to cash equities, equity derivatives, currencies, various interest-bearing securities, commodities, energy products and digital currencies. Our solutions can also be used in the creation of new asset classes by non-capital markets customers, as discussed further below.

Nasdaq's market technology is utilized by leading markets in North America, Europe and Asia as well as emerging markets in the Middle East, Latin America, and Africa.

We continue to build out our SaaS business portfolio by extending and migrating our current offerings to SaaS. Our market technology business has evolved from its origins serving the capital markets, as we leverage our flexible and modular architecture technology that provides next generation capital markets capabilities in an open and agile environment, to develop our SaaS platform and offerings. We expect to continue to expand adoption of this SaaS model by our clients in the future.

For market infrastructure operators, which include exchanges, regulators, clearinghouses and central securities depositories, we provide and deliver mission-critical solutions across the trade lifecycle, which is designed to cover all aspects of a market operator's needs, from trading and clearing to risk management, market surveillance, index development, data, management, testing and quality assurance.

In addition to serving the market operators in the core capital markets, there is a demand for mission critical solutions to enable robust operation of new emerging asset classes such as crypto currencies and native digital markets. Our market technology business currently offers its services to several digital assets exchanges, and the SaaS-based Marketplace Services Platform provides next-generation marketplace capabilities spanning the transaction lifecycle to facilitate the exchange of assets, services and information across various types of market ecosystems and machine-to-machine transactions. The Marketplace Services Platform is targeted at new emerging digital markets and enables end-to-end marketplace implementation without the resources required for on-premise solutions.

Numerous market technology projects involve complex delivery management and systems integration. Through our integration services, we can assume responsibility for projects that involve migration to a new system and the establishment of entirely new marketplaces. We also offer operation and support for the applications, systems platforms, networks and other components included in an information technology solution, as well as advisory services. Our ongoing migration to the cloud, discussed below, created a blueprint for our Marketplace Technology clients that will be used to demonstrate, guide and migrate their markets to the cloud, as well as for our own future market migrations.

Our trade management services provide market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. Our marketplaces may be accessed via a number of different protocols used for quoting, order entry, trade reporting and connectivity to various data feeds. WorkX, a web-based, front-end interface allows market participants to view data, utilize risk management tools, and submit and review trade reports. WorkX enables a seamless workflow and enhanced trade intelligence. In addition, we offer a variety of add-on compliance tools to help market participants comply with regulatory requirements.

We provide colocation services to market participants, whereby we offer firms cabinet space and power to house their own equipment and servers within our data centers. Additionally, we offer a number of wireless connectivity offerings between certain data centers using millimeter wave and microwave technology.

We completed the previously announced wind-down of our broker services operations business in 2022. This business primarily offered technology and customized securities administration solutions to financial participants in the Nordic market. Such services and solutions primarily consisted of flexible back-office systems, which allowed customers to efficiently manage safekeeping, settlement and corporate actions and reporting, and included connectivity to exchanges and central securities depositories.

Calypso is a leading provider of front-to-back trading technology solutions for the financial markets. The Calypso platform provides customers with a single platform designed to enable consolidation, innovation and growth. The platform supports front, middle and back office activities in exchange-traded and OTC instruments and supports multiple financial asset classes and the associated financial instruments. Calypso's software application specializes in capital markets, investment management, risk management, clearing, collateral, treasury and liquidity management.

Market Services

Our Market Services segment includes our equity derivative trading and clearing, cash equity trading, fixed income, currency and commodities trading. We operate 19 exchanges across several asset classes, including derivatives, commodities, cash equity, debt, structured products and ETPs.

We provide trading services in North America and Europe. In the U.S., we operate six options exchanges: Nasdaq PHLX, The Nasdaq Options Market, Nasdaq BX Options, Nasdaq ISE, Nasdaq GEMX and Nasdaq MRX. These exchanges facilitate the trading of equity, ETF, index and foreign currency options. Our combined options market share in 2023 represented the largest share of the U.S. market for multi-listed equity options. Our options trading platforms provide trading opportunities to retail investors, algorithmic trading firms and market makers, who tend to prefer electronic trading, and institutional investors, who typically require high touch services to execute their trades, which are often performed on our trading floor in Philadelphia.

We also operate three cash equity exchanges: The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX. Our U.S. cash equity exchanges offer trading of both Nasdaq-listed and non-Nasdaq-listed securities. The Nasdaq Stock Market is the largest single venue of liquidity for trading U.S.-listed cash equities. Market participants include market makers, broker-dealers, ATSs, institutional investors, and registered securities exchanges. We also operate a U.S. corporate bond exchange for the listing of corporate bonds.

Market Services also includes revenues from U.S. Tape plans. The plan administrators sell quotation and last sale information for all transactions, whether traded on The Nasdaq Stock Market or other exchanges, to market participants and to data distributors, who then provide the information to subscribers. After deducting costs, the plan administrators distribute the tape revenues to the respective plan participants based on a formula required by Regulation NMS that takes into account both trading and quoting activity.

In Canada, we operate an exchange with three independent markets for the trading of Canadian-listed securities: Nasdaq Canada CXC, Nasdaq Canada CX2 and Nasdaq Canada CXD.

In Europe, we operate exchanges in Tallinn (Estonia), Riga (Latvia) and Vilnius (Lithuania) as Nasdaq Baltic and exchanges in Stockholm (Sweden), Copenhagen (Denmark), Helsinki (Finland), and Reykjavik (Iceland) together with the clearing operations of Nasdaq Clearing, as Nasdaq Nordic.

Collectively, the Nasdaq Nordic and Nasdaq Baltic exchanges offer trading in cash equities, depository receipts, warrants, convertibles, rights, fund units and ETFs, as well as trading and clearing of derivatives and clearing of resale and repurchase agreements. Our platform allows the exchanges to share the same trading system, which enables efficient cross-border trading and settlement, cross-exchange membership and a single source for Nordic data products. Settlement and registration of cash equity trading takes place in Sweden, Finland, and Denmark via the local central securities depositories. In addition, Nasdaq owns a central securities depository that provides notary, settlement, central maintenance and other services in the Baltic countries and Iceland.

In Europe, Nasdaq Nordic offers trading in derivatives, such as stock options and futures and index options and futures. Nasdaq Clearing offers central counterparty clearing services for stock options and futures and index options and futures.

Nasdaq Fixed Income, or NFI, provides a wide range of products and services, such as trading and clearing, for fixed income products in Sweden, Denmark, Finland, Iceland, Estonia, Lithuania and Latvia. Nasdaq is the largest bond listing venue in the Nordics, with more than 5,600 listed retail and institutional bonds. In addition, Nasdaq Nordic facilitates the trading and clearing of Nordic fixed income derivatives in a unique market structure. Buyers and sellers agree to trades in fixed income derivatives through bilateral negotiations and then report those trades to Nasdaq Clearing. Nasdaq Clearing offers central counterparty clearing services for fixed-income options and futures and interest rate swaps. Nasdaq Clearing also operates a clearing service for the resale and repurchase agreement market.

Nasdaq Commodities is the brand name for Nasdaq's European commodity-related products and services such as trading and clearing. Nasdaq Commodities' offerings include derivatives in power, natural gas and carbon emission markets, seafood and electricity certificates. These products are listed on Nasdaq Oslo ASA, except for seafood, which is listed on Fish Pool, a third-party platform. In June 2023, we entered into an agreement to sell our European energy trading and clearing business, subject to regulatory approval.

Nasdaq Oslo ASA is the commodity derivatives exchange for European products. All trades with Nasdaq Oslo ASA are subject to clearing with Nasdaq Clearing, which offers central counterparty clearing services for commodities options and futures.

We also own a majority stake in Puro.earth, a Finnish-based leading platform for carbon removal. Puro.earth offers engineered carbon removal instruments that are verified and tradable through an open, online platform. Puro.earth's marketplace capabilities add to our suite of ESG-focused technologies and workflow solutions and give our clients further resources to achieve their ESG objectives.

Enablers, Differentiators and Competition

Technology

Technology plays a key role in ensuring the growth, reliability and regulation of financial markets. We have established a technology risk program to evaluate the resiliency of critical systems, including risks associated with cybersecurity. This program is focused on identifying areas for improvement in systems, and implementing changes and upgrades to technology and processes to minimize future risk. We have continued our focus on improving the security of our technology with an emphasis on employee awareness through training, targeted phishing education campaigns, and new tool deployment for our securities operations team. See "Item 1A. Risk Factors," in this Annual Report on Form 10-K for further discussion.

We are focused on amplifying the impact that artificial intelligence, or AI, has on the business and in our products. We continue to develop products and services using AI, including generative AI, and the use of AI in product development is a priority for us in 2024. We are currently leveraging AI to further develop products and solutions in investment analytics, investor relations and fraud and anti-money laundering, as well as to modernize markets with the SEC approval of the first AI-powered order type. For example, we are working on developing AI systems to track financial transactions across the ecosystem to determine potential fraud, money laundering, or other actions. These solutions can be utilized by our clients, including banks, other exchanges and brokers firms that use our solutions to reduce or eliminate threats.

We are committed to the ethical and responsible use of AI in our products, services and business operations. Our AI governance structure aligns the application of AI with our core values through a framework that addresses the new and unique risks that AI technology presents, while enabling us to explore innovation and take advantage of opportunities that AI presents to better serve our customers, advance our business objectives and bring value to our shareholders. Our AI governance framework applies risk management across AI-related product development and business usage in the company through a multi-disciplinary approach. The framework puts into practice Nasdaq's responsible AI usage principles and considers the U.S. National Institute of Standards and Technology AI Risk Management Framework. It is administered through company-wide policies, procedures and supporting preventative and detective controls.

We believe that our focus on AI to enhance features of our existing offerings and in the development of new solutions, together with our significant proprietary data sets, provides us with a competitive advantage.

During 2023, Nasdaq continued its shift to utilizing and deploying cloud infrastructure. We also migrated two additional exchanges to the cloud, in addition to the options exchange that we migrated in 2022. We believe that migrating our exchanges to the cloud, through our partnership with AWS will result in improved performance and increased flexibility for our customers. We expect to move additional North American markets to the cloud with AWS during the next several years. The shift to cloud-based markets will enable Nasdaq to provide its clients access to cloud-based capabilities, including virtual connectivity services, market analytics and machine learning, at a lower cost. We also expect to leverage the cloud-based infrastructure for our market technology clients, assisting such clients in developing their own platforms and customizing their offerings for their local, rapidly changing industry dynamics. Additionally, we expanded our existing colocation facility to meet the growing demand of market participants that seek proximity to the Nasdaq trading systems. Our expanded and enhanced facility is designed to provide the optimal environment for the next generation of compute workloads and offer clients access to a wider range of services and capabilities.

To facilitate the exchange migration to AWS, Nasdaq will also leverage its Fusion technology platform. Fusion positions Nasdaq's North American and European markets to manage, operate and deploy a common platform that can be used across our nine Nasdaq derivative markets, while enabling our markets for cloud deployment.

Competitive Strengths

We are a global, client-focused technology company with expertise in markets and financial technology. We deploy robust technology capabilities and have developed innovative solutions to further address client needs across the financial ecosystem. Our business segments complement each other and we believe that our strong competitive position in large, high-growth markets positions us for sustained growth.

A Unique Value Proposition

We operate leading platforms that can improve the liquidity, transparency, and integrity of the global financial ecosystem, allowing us to:

- Develop efficient and reliable technologies to facilitate and protect the financial system across asset classes;
- Empower our clients to effectively navigate the capital markets, achieve their sustainability goals, and maintain corporate governance excellence; and
- Provide data, tools and insights that drive sound decision making while complying with evolving regulatory requirements.

Technological Strength

The strength and resiliency of our technology, enhanced by our new Financial Technology division, in meeting the advancing demands of our global customer base is vital to the continued success of our business and distinguishes us from our competitors.

We strive to be a trusted partner to a diverse range of clients that participate across the global financial ecosystem, including:

- **Banks and Financial Institutions** - Providing safety and integrity through a suite of trade surveillance, cloud-native fraud and anti-money laundering solutions and robust regulatory reporting software.
- **Market Infrastructure Operators** - Assisting market infrastructure operators in increasing efficiency, meeting customer needs, and growing revenue across the trade lifecycle.
- **Brokers and Traders** - Helping brokers and traders to confidently plan, optimize, manage risk and execute their business vision.

- **Market Participants** - Providing market participants with access to liquidity and enabling them to efficiently consume, monitor, analyze, and capitalize on real-time market changes.
- **Listed Companies** - Enabling companies to access capital markets effectively, manage stakeholders and leverage technology to operate and govern effectively.
- **Investors and Asset Managers** - Offering products and services to assist investors and asset managers in optimizing their portfolios and offerings.

Competition

Capital Access Platforms

Our Data business includes proprietary data products. Proprietary data products are made up exclusively of data derived from each exchange's systems. Competition in the data business is influenced by rapidly changing technology and the creation of new product and service offerings.

Our proprietary data products face competition globally from alternative exchanges and trading venues that offer similar products. Our data business competes with other exchanges and third-party vendors to provide information to market participants. Examples of our competitors in proprietary data products are ICE, Cboe, and TSX.

Our Listing Services business in both the U.S. and Europe provides a means of facilitating capital formation through public capital markets. There are competing ways of raising capital, and we seek to demonstrate the benefits of listing shares on our exchange. Our primary competitor for larger company stock share listings in the U.S. is NYSE. The Nasdaq Stock Market competes with local and international markets located outside the U.S. for listings of equity securities of both U.S. and non-U.S. companies that choose to list (or dual-list) outside of their home country. For example, The Nasdaq Stock Market competes for listings with exchanges in Europe and Asia, such as London Stock Exchange Group plc, or LSE, and The Stock Exchange of Hong Kong Limited. Additionally, we face competition from private equity firms that may elect to keep their portfolio companies as private companies.

The Listings Services business in Europe is characterized by a large number of exchanges competing for new or secondary listings. Each country has one or more national exchanges, which are often the first choice of companies in each respective country. For those considering an alternative, competing European exchanges that frequently attract many listings from outside their respective home countries include LSE, Euronext N.V. and Deutsche Börse AG. In addition to the larger exchanges, companies seeking capital or liquidity from public capital markets are able to raise capital without a regulated market listing and can consider trading their shares on smaller markets and quoting facilities.

Our Index business offers Nasdaq-branded indices and financial products and faces competition from providers of various competing financial indices. For example, there are a number of indices that aim to track the technology sector and thereby compete with the Nasdaq-100 Index and the Nasdaq Composite Index. We face competition from investment banks, dedicated index providers, markets and other product developers, including S&P Dow Jones Indices, MSCI and FTSE Russell.

Workflow & Insights includes our analytics and corporate solutions businesses. Our analytics business faces competition from a broad array of data and analytics suppliers, both established firms and small start-ups. Our primary competitors are Morningstar, FactSet and any number of smaller firms along with start-up data providers and aggregators. Our analytics business offerings compete with other analytics providers, including Addepar and Caissa.

Our corporate solutions business faces competition that can be varied and fragmented. For our Investor Relations Intelligence solutions, there are many regional competitors and relatively few global providers. Other exchange operators are partnering with firms that have capabilities in this area and seeking to acquire relevant assets in order to provide investor relations services to customers alongside listing services. Our ESG Solutions, including Nasdaq Metrio and ESG Advisory, are positioned in evolving markets with competitors offering multiple point solutions providing software, data or consulting services. The competitive landscape for our Governance Solutions products varies by customer segment and geography. Most competitors offer SaaS solutions that are supported by a data centered strategy, while certain firms offer specialized services that focus on a single niche segment. Customers frequently seek single-source providers that are able to address a broad range of needs within a single platform.

Financial Technology

For our Financial Crime Management Technology and trade and market surveillance businesses, competitors include core banking solution providers ranging from small to large, independent solution providers, FinTech start-ups and in-house custom builds. We compete against enterprise solution providers and point solutions for clients with larger AUM. Competitors also include companies that serve multiple industries in addition to financial services with generalized solutions, such as business intelligence tools, data integrators, investigation platforms and software covering the broader compliance lifecycle. Recently, there has been an increase of FinTech start-ups shifting into the surveillance, fraud detection and AML space offering highly-specialized solutions for advanced data analytics, artificial intelligence and machine learning technology. The Financial Crime Management Technology and surveillance offerings compete on a number of factors, including but not limited to, increased workflow efficiency, quality of the data, quality of alerts and pricing.

Our Financial Crime Management Technology and surveillance offerings must demonstrate the ability to decrease false-positives and provide in-depth views into potential abuses and risks that stem from those cases. These offerings help firms reduce both the reputational and regulatory risk as well as the complexity in efforts to keep markets and financial institutions safe.

Our AxiomSL product, which includes financial, statistical and prudential reporting as well as shareholder disclosures, trade reporting and ESG reporting, competitors include large independent solution providers, in-house solutions at financial institutions as well as some smaller independent point solution providers. As regulatory reporting becomes more granular and time sensitive, the ability of our platform to operate with speed at scale, and with consistency across functional business domains continues to set AxiomSL apart.

For our Calypso product, which includes solutions for cross-asset, front-to-back trading, treasury, risk and collateral management, competitors include similar enterprise solution providers in size and footprint, as well as local/regional players focusing on the smaller end of the client base. In the higher tier of client base, such as global banks, internal development is very often either the incumbent solution or an alternative to FinTech vendors. Competitors also sometimes include companies that provide point solutions, such as pricing library providers, and post-trade service providers.

Our market technology business faces competition from exchanges and exchange-related businesses that internally develop their technology. This model has gradually changed as many operators have recognized the cost-savings made possible by buying technology from third parties. As a result, two types of competitors have emerged in our market technology business: exchange operators and technology providers unaffiliated with exchanges. These organizations make available a range of off-the-shelf technology, including trading, clearing, settlement, depository and information dissemination, and offer customization and operation expertise. Market conditions in market technology are evolving rapidly, which makes continuous investment and innovation a necessity. Our partnership with AWS enables us to compete with other companies that are developing cloud-based exchanges and market technology offerings.

Our trade management services business competes with other exchange operators, extranet providers, and data center providers.

Market Services

We face intense competition in North America and Europe. We seek to provide market participants with greater functionality, trading system stability and performance, high levels of customer service, and efficient pricing. In both North America and Europe, our competitors include other exchange operators, operators of non-exchange trading systems and banks and brokerages that operate their own internal trading pools and platforms.

In the U.S., our options markets compete with exchanges operated by Cboe Global Markets, Inc., or Cboe, Miami International Holdings, Inc., or MIAX, Intercontinental Exchange, Inc., or ICE, Members Exchange, or MEMX, and BOX Options Market. In cash equities in the U.S., we compete with exchanges operated by Cboe, ICE, MIAX, The Investors Exchange, Members Exchange and Long Term Stock Exchange. We also face competition from ATSs, known as “dark pools,” and other less-heavily regulated broker-owned trade facilitation systems, as well as from other types of OTC trading. In Canada, our cash equities exchange competes principally with exchanges such as the Toronto Stock Exchange, or TSX.

Our U.S. Tape plans earn revenue from consolidated data products which are distributed by SEC-mandated consolidators (one for Nasdaq-listed stocks and another for NYSE and other-listed stocks) that share the revenue among the exchanges that contribute data. The consolidated data business is under competitive pressure from other securities exchanges that trade Nasdaq-listed securities. In addition, The Nasdaq Stock Market similarly competes for the tape fees from the sale of information on securities listed on other markets.

In Europe, our cash equities markets compete with exchanges such as Euronext N.V., Deutsche Börse AG, LSE and many Multilateral Trading Facilities, or MTFs, such as Cboe, Turquoise and Aquis. Our competitors in the trading and clearing of options and futures on European equities include Eurex, Cboe, ICE Futures Europe and London Clearing House, or LCH. In addition, in equities markets in Europe, we face competition from other broker-owned systems, dark pools, Systematic Internalizers, or SIs, and other types of OTC trading. Competition among exchanges for trading European equity derivatives tends to occur where there is competition in the trading of the underlying equities. In addition to exchange-based competition, we face competition from OTC derivative markets.

The implementation of MiFID II and MiFIR has resulted in further competitive pressure on our European trading business. SIs are attracting a significant share of electronically matched volume and compete aggressively for the trading of equity securities listed on our Nordic exchanges. Different bilateral trading systems pursuing block business also remain active in Europe. Regulators are continuously monitoring the market structure and have, in a series of consultations, asked for input regarding suggested changes to MiFID II.

Our European fixed income and commodities productsand services are subject to competitive pressure from European exchanges and clearinghouses.

Intellectual Property

We believe that our intellectual property assets are important for maintaining the competitive differentiation of our products, systems, software and services, enhancing our ability to access technology of third parties and maximizing our return on research and development investments.

To support our business objectives and benefit from our investments in research and development, we actively create and maintain a wide array of intellectual property assets, including patents and patent applications related to our innovations, products and services; trademarks related to our brands, products and services; copyrights in software and creative content; trade secrets; and through other intellectual property rights, licenses of various kinds and contractual provisions. We enter into confidentiality and invention assignment agreements with our employees and contractors, and utilize non-disclosure agreements with third parties with whom we conduct business in order to secure and protect our proprietary rights and to limit access to, and disclosure of, our proprietary information.

We own, or have licensed, rights to trade names, trademarks, domain names and service marks that we use in conjunction with our operations and services. We have registered many of our most important trademarks in the U.S. and in foreign countries. For example, our primary "Nasdaq" mark is a registered trademark that we actively seek to protect in the U.S. and in over 50 other countries worldwide.

Over time, we have accumulated a robust portfolio of issued patents in the U.S. and in many other jurisdictions across the world. We currently hold rights to patents relating to certain aspects of our products, systems, software and services, but we primarily rely on the innovative skills, technical competence and marketing abilities of our personnel. No single patent is in itself core to the operations of Nasdaq or any of its principal business areas.

Corporate Venture Program

We operate a corporate venture program to make minority investments primarily in emerging growth FinTech companies that are strategically relevant to, and aligned with, Nasdaq. Investments are made through the venture program to further our research and development efforts and accelerate the path to commercial viability. We expect that capital invested will continue to be modest and will not have a material impact on our consolidated financial statements, existing capital return or deployment priorities. Since its inception in 2017, our venture program has grown in size and has invested in companies covering various sectors, including data, analytics and workflow technologies, blockchain and digital assets, market infrastructure, anti-financial crime, new marketplaces, enabling technologies and ESG. As of December 31, 2023, our investments, which include equity and convertible debt investments, were valued at $169 million.

Environmental, Social and Governance Matters

Nasdaq is committed to our long-term ESG and sustainability strategy, advocacy and oversight. We continue to engage with internal and external stakeholders at all levels regarding sustainability matters. During 2023, we advanced our corporate, community and commercial ESG efforts, including furthering our commitment to climate change awareness, reducing our environmental impact, building a workplace culture of inclusivity and expanding our portfolio of ESG-related solutions and services.

The Nominating & ESG Committee has formal responsibility and oversight for corporate ESG policies and programs and receives regular reporting on key ESG matters and initiatives. Our Corporate ESG Steering Committee serves as the central coordinating body for our ESG strategy; it is co-chaired by executive leaders and comprised of a cross-functional group of Nasdaq senior executives.

We continued to be committed to our decarbonization and climate strategy, achieving carbon neutrality across all our business operations for the sixth consecutive year and are working towards our short- and long-term net zero science-based targets, which were validated and approved by the Science Based Targets initiative in 2022. In 2023, we were named to the Dow Jones Sustainability North America Index for the eighth consecutive year. We were included on Just Capital's Just100 list of America's most just companies and received recognition from the Bloomberg Gender-Equity Index and The Human Rights Campaign's Corporate Equality Index. In addition, Nasdaq maintained industry leading scores from ESG rating agencies:

- MSCI: maintained a rating of "AA," placing Nasdaq in MSCI's "Leaders" category.
- CDP: earned a place on CDP's "Climate A List" for climate disclosures and actions for the second consecutive year.
- EcoVadis: maintained "Gold Medal" status, a recognition reserved for the top 5% of all rated companies.
- 2023 S&P Corporate Sustainability Assessment: maintained a score of 60, placing Nasdaq in the 96th percentile of our industry group.

Our environmental footprint is relatively small due to the nature of our business operations. We remain committed to reducing our environmental impact, focusing on several key areas, including our energy use, the management of our workspaces and how we conduct business travel, and engagement with our value chain. We seek to reduce our atmospheric carbon emissions and we manage our water use and the waste associated with our business operations.

We help companies of all ESG maturity levels through our robust combination of technology, tools, data, insights and capital market solutions.

In 2023, we launched three new ESG-related solutions:

- Nasdaq Metrio, a SaaS-based, end-to-end platform designed to help corporate clients collect, measure and report sustainability data;
- Nasdaq eVestment ESG Analytics, a data analytics platform that unlocks greater transparency for the global institutional market, helping investors make data-driven impact investment decisions; and
- Nasdaq Sustainable Lens, a SaaS-based ESG intelligence platform that harnesses the power of generative artificial

intelligence to help companies navigate complexity and respond to stakeholders' demands for greater transparency.

During 2023, we also maintained, and continued to expand, our portfolio of ESG services and solutions for our clients and stakeholders.

In 2023, we requested our existing leading suppliers by spend to attest to our Supplier Code of Ethics. The Supplier Code of Ethics, which is available on our website, encourages our suppliers and vendors to adopt sustainability and environmental practices in line with our published Environmental Practices Statement and to promote a diverse and inclusive workforce. Additionally, our new suppliers are required to attest to the Supplier Code of Ethics in connection with the commencement of their engagement.

For more information regarding our ESG efforts in 2023, both internally and externally, please see the section entitled "Human Capital Management" below and our Proxy Statement.

Regulation

We are subject to extensive regulation in the U.S., Canada and Europe.

U.S. Regulation

U.S. federal securities laws establish a system of cooperative regulation of securities markets, market participants and listed companies. SROs conduct the day-to-day administration and regulation of the nation's securities markets under the close supervision of, and subject to extensive regulation, oversight and enforcement by, the SEC. SROs, such as national securities exchanges, are registered with the SEC.

This regulatory framework applies to our U.S. business in the following ways:

National Securities Exchanges. SROs in the securities industry are an essential component of the regulatory scheme of the Exchange Act responsible for providing fair and orderly markets and protecting investors. The Exchange Act and the rules thereunder, as well as each SRO's own rules, impose many regulatory and operational responsibilities on SROs, including the day-to-day responsibilities for market and broker-dealer oversight. Moreover, an SRO is responsible for enforcing compliance by its members, and persons associated with its members, with the provisions of the Exchange Act, the rules and regulations thereunder, and the rules of the SRO, including rules and regulations governing the business conduct of its members.

Nasdaq currently operates three cash equity, six options markets and one corporate bond market in the U.S. We operate The Nasdaq Stock Market, The Nasdaq Options Market and the Corporate Bond Market pursuant to The Nasdaq Stock Market's SRO license; Nasdaq BX and Nasdaq BX Options pursuant to Nasdaq BX's SRO license; Nasdaq PSX and Nasdaq PHLX pursuant to Nasdaq PHLX's SRO license; and Nasdaq ISE, Nasdaq GEMX and Nasdaq MRX, each of which operates an options market under its own SRO license. As SROs, each entity has separate rules pertaining to its broker-dealer members and listed companies, as applicable. Broker-dealers that choose to become members of our exchanges are subject to the rules of those exchanges.

All of our U.S. national securities exchanges are subject to SEC oversight, as prescribed by the Exchange Act, including periodic and special examinations by the SEC. Our exchanges also are potentially subject to regulatory or legal action by the SEC at any time in connection with alleged regulatory violations. We have been subject to a number of routine reviews and inspections by the SEC or external auditors in the ordinary course, and we have been and may in the future be subject to SEC enforcement proceedings. To the extent such actions or reviews and inspections result in regulatory or other changes, we may be required to modify the manner in which we conduct our business, which may adversely affect our business, operating results and financial condition.

Section 19 of the Exchange Act provides that our exchanges must submit to the SEC proposed changes to any of the SROs' rules, practices and procedures, including revisions to provisions of our certificate of incorporation and by-laws that constitute SRO rules. The SEC will typically publish such proposed changes for public comment, after which the SEC may approve or disapprove the proposal, as it deems appropriate. SEC approval requires a finding by the SEC that the proposal is consistent with the requirements of the Exchange Act and the rules and regulations thereunder. Pursuant to the requirements of the Exchange Act, our exchanges must file with the SEC, among other things, all proposals to change their pricing structure.

Nasdaq conducts real-time market monitoring, certain equity surveillance not involving cross-market activity, most options surveillance, rulemaking, enforcement and membership functions through our Nasdaq Regulation department. We review suspicious trading behavior discovered by our regulatory staff, and depending on the nature of the activity, may refer the activity to FINRA for further investigation. Pursuant to regulatory services agreements between FINRA and our SROs, FINRA provides certain regulatory services to our markets, including some regulation of trading activity and surveillance and investigative functions. Our SROs retain ultimate regulatory responsibility for all regulatory activities performed under regulatory agreements by FINRA, and for fulfilling all regulatory obligations for which FINRA does not have responsibility under the regulatory services agreements.

In addition to its other SRO responsibilities, The Nasdaq Stock Market, as a listing market, also is responsible for overseeing each listed company's compliance with The Nasdaq Stock Market's financial and corporate governance standards. Our listing qualifications department evaluates applications submitted by issuers seeking to list their securities on The Nasdaq Stock Market to determine whether the quantitative and qualitative listing standards have been satisfied. Once securities are listed, the listing qualifications department monitors each issuer's on-going compliance with The Nasdaq Stock Market's continued listing standards.

Broker-dealer regulation. Nasdaq's broker-dealer subsidiaries are subject to regulation by the SEC, the SROs and various state securities regulators. Nasdaq operates three broker-dealers: Nasdaq Execution Services, LLC, NFSTX, LLC, and Nasdaq Capital Markets Advisory LLC. Each broker-dealer is registered with the SEC, a member of FINRA and registered in the U.S. states and territories required by the operation of its business. In addition, we own a minority interest in NPM Securities, LLC.

Nasdaq Execution Services operates as our routing broker for sending orders from Nasdaq's U.S. cash equity and options exchanges to other venues for execution. NFSTX is a registered ATS and acts as an intermediary to facilitate secondary transactions in certain funds (both registered or not registered under the Investment Company Act of 1940), business development companies, certain closed-end funds and private real estate investment funds. Nasdaq Capital Markets Advisory acts as a third-party advisor to privately-held or publicly-traded companies during IPOs and various other offerings.

The SEC, FINRA and SROs adopt, and require strict compliance with, rules and regulations applicable to broker-dealers. The SEC, SROs and state securities commissions may conduct administrative proceedings which can result in censures, fines, the issuance of cease-and-desist orders or the suspension or expulsion of a broker-dealer, its officers or employees. The SEC and state regulators may also institute proceedings against broker-dealers seeking an injunction or other sanction. All broker-dealers have an SRO that is assigned by the SEC as the broker-dealer's Designated Examining Authority. The Designated Examining Authority is responsible for examining a broker-dealer for compliance with the SEC's financial responsibility rules. FINRA is the current Designated Examining Authority for each of our broker-dealer subsidiaries.

Our registered broker-dealers are subject to regulatory requirements intended to ensure their general financial soundness and liquidity, which require that they comply with certain minimum capital requirements. As of December 31, 2023, each of our broker-dealers were in compliance with applicable capital requirements.

Regulatory contractual relationships with FINRA. Our SROs have signed a series of regulatory service agreements covering the services FINRA provides to the respective SROs. Under these agreements, FINRA personnel act as our agents in performing the regulatory functions outlined above, and FINRA bills us a fee for these services. These agreements have enabled us to reduce our headcount while ensuring that the markets for which we are responsible are properly regulated. However, we have reduced the scope of services provided by FINRA under these regulatory services agreements and are performing certain of those regulatory functions directly. In addition, our SROs retain ultimate regulatory responsibility for all regulatory activities performed under these agreements by FINRA.

Exchange Act Rule 17d-2 permits SROs to enter into agreements, commonly called Rule 17d-2 agreements, approved by the SEC with respect to enforcement of common rules relating to common members. Our SROs have entered into several such agreements under which FINRA assumes regulatory responsibility for various rules or areas covered by agreements.

Regulation NMS and Options Intermarket Linkage Plan. We are subject to Regulation NMS for our cash equity markets, and our options markets have joined the Options Intermarket Linkage Plan. These are designed to facilitate the routing of orders among exchanges to create a national market system as mandated by the Exchange Act. One of the principal purposes of a national market system is to assure that brokers may execute investors' orders at the best market price. Both Regulation NMS and the Options Intermarket Linkage Plan require that exchanges avoid trade-throughs, locking or crossing of markets and provide market participants with electronic access to the best prices among the markets for the applicable cash equity or options order.

In addition, Regulation NMS requires that every national securities exchange on which an NMS stock is traded and every national securities association act jointly pursuant to one or more national market system plans to disseminate consolidated information, including a national best bid and national best offer, on quotations for transactions in NMS stocks, and that such plan or plans provide for the dissemination of all consolidated information for an individual NMS stock through a single plan processor.

The UTP Plan was filed with and approved by the SEC as a national market system plan in accordance with the Exchange Act and Regulation NMS to provide for the collection, consolidation and dissemination of such information for Nasdaq-listed securities. The Nasdaq Stock Market serves as the processor for the UTP Plan pursuant to a contract for a two-year term through October 2025. The Nasdaq Stock Market also serves as the administrator for the UTP Plan. To fulfill its obligations as the processor, The Nasdaq Stock Market has designed, implemented, maintained, and operated a data processing and communications system, hardware, software and communications infrastructure to provide processing for the UTP Plan. As the administrator, The Nasdaq Stock Market manages the distribution of market data, the collection of the resulting market data revenue, and the dissemination of that revenue to plan members in accordance with the terms of the UTP Plan and of Regulation NMS.

In September 2023, the SEC adopted an order to require changes to the governance of securities information processors. The new order would limit the voting right of affiliated SROs (including those owned by Nasdaq) and would limit the ability of SROs to serve as administrators for securities information processors. A schedule for implementing the new order has not been imposed by the SEC, so we are not certain of the timing or the impact on our business or our role as a securities information processor.

In December 2020, the SEC adopted a rule to modify the infrastructure for the collection, consolidation and dissemination of market data for exchange-listed national market stocks, or NMS data. The rule changes include, among other things, requiring exchanges to add more “core data” to the securities information processors, including partial depth-of-book, certain odd-lot quotations/transactions, auction, regulatory, and administrative data; eliminating central, official consolidators of tape plans and enabling multiple competing consolidators to register to aggregate and disseminate core data; and authorizing persons to purchase and aggregate core data directly from the exchanges for their own use. In September 2022, the SEC disapproved fees proposed by exchanges to implement the rule but did not direct the exchanges to take further action to implement the rule. Accordingly, a schedule for implementing the rule has not been imposed by the SEC, and we are not certain of the timing, or the impact, of these new rules on our business or role as a securities information processor.

Regulation SCI. Regulation SCI is a set of rules designed to strengthen the technology infrastructure of the U.S. securities markets. Regulation SCI applies to national securities exchanges, operators of certain ATSs, market data information providers and clearing agencies, subjecting these entities to extensive compliance obligations, with the goals of reducing the occurrence of technical issues that disrupt the securities markets and improving recovery time when disruptions occur. We implemented an inter-disciplinary program to ensure compliance with Regulation SCI. We have also created Regulation SCI policies and procedures, updated internal policies and procedures, and developed an information technology governance program to ensure compliance.

Regulation of Registered Investment Advisor Subsidiary. Our subsidiary NDW is an investment advisor registered with the SEC under the Investment Advisors Act of 1940. In this capacity, NDW is subject to oversight and inspections by the SEC. Among other things, registered investment advisors like NDW must comply with certain disclosure obligations, advertising and fee restrictions and requirements relating to client suitability and custody of funds and securities. Registered investment advisors are also subject to anti-fraud provisions under both federal and state law.

CFTC Regulation. The Dodd-Frank Wall Street Reform and Consumer Protection Act resulted in increased CFTC regulation of our use of certain regulated derivatives products, as well as the operations of some of our subsidiaries outside the U.S. and their customers.

Canadian Regulation

Regulation of Nasdaq Canada is performed by the Canadian Securities Administrators, an umbrella organization of Canada’s provincial and territorial securities regulators. As a recognized exchange in Ontario, Nasdaq Canada must comply with the terms and conditions of its exchange recognition order. While exempt from exchange recognition in each jurisdiction in Canada other than Ontario where Nasdaq Canada carries on business, Nasdaq must also comply with the terms and conditions of an exemption order granted by the other jurisdictions in order to maintain its exemptive status. Oversight of the exchange is performed by Nasdaq Canada’s lead regulator, the Ontario Securities Commission.

Nasdaq Canada is subject to several national marketplace related instruments which set out requirements for marketplace operations, trading rules and managing electronic trading risk. Exchange terms and conditions include but are not limited to, requirements for governance, regulation, rules and rulemaking, fair access, conflict management and financial viability.

European Regulation

Regulation of our markets in the European Union and the European Economic Area focuses on matters relating to financial services, listing and trading of securities, clearing and settlement of securities and commodities, as well as issues related to market abuse.

We are subject to MiFID II and MiFIR, the European Union’s Market Abuse Regulation, which primarily affects our European trading businesses. Many of the provisions of MiFID II and MiFIR are implemented through technical standards drafted by the European Securities and Markets Authority and approved by the European Commission. In addition, in 2016, the European Union adopted legislation on governance and control of the production and use of benchmark indices. The Benchmark Regulation became effective in the European Union beginning in 2018, and Nasdaq must be in compliance beginning January 1, 2026 in relation to benchmarks provided by non-European Nasdaq entities. As the regulatory environment continues to evolve and related opportunities arise, we intend to continue developing our products and services to ensure that the exchanges and clearinghouse that comprise Nasdaq Nordic and Nasdaq Baltic maintain favorable liquidity and offer fair and efficient trading.

In addition, proposed rules under MiFID II and MiFIR rules are expected to include provisions potentially impacting various parts of Nasdaq's exchanges and data business, including a proposal to establish a European consolidated tape of pre- and/or post-trade data. The final rules have not yet been issued, and therefore we cannot be certain of the impact on Nasdaq Europe's offerings.

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations. As a result, we have a strong local presence in each jurisdiction in which we operate regulated businesses. The regulated entities have decision-making power and can adopt policies and procedures and retain resources to manage all operations subject to their license. In Sweden, general supervision of the Nasdaq Stockholm exchange is carried out by the SFSA, while Nasdaq Clearing's role as CCP in the clearing of derivatives is supervised by the SFSA and overseen by the Swedish central bank (Riksbanken). Additionally, as a function of the Swedish two-tier supervisory model, certain surveillance of the exchange market is carried out by the Nasdaq Stockholm exchange, through its surveillance function.

Nasdaq Stockholm's exchange activities are regulated primarily by the SSMA, which implements MiFID II into Swedish law and which sets up basic requirements for the board of directors of the exchange and the exchange's share capital, and which also outlines the conditions on which exchange licenses are issued. The SSMA also provides that any changes to the exchange's articles of association following initial registration must be approved by the SFSA. Nasdaq Clearing holds the license as a CCP under EMIR.

The SSMA requires exchanges to conduct their activities in an honest, fair and professional manner, and in such a way as to maintain public confidence in the securities markets. When operating a regulated market, an exchange must apply the principles of free access (i.e., that each person which meets the requirements established by law and by the exchange may participate in trading), neutrality (i.e., that the exchange's rules for the regulated market are applied in a consistent manner to all those who participate in trading) and transparency (i.e., that the participants must be given prompt, simultaneous and correct information concerning trading and that the general public must be given the opportunity to access this information). Additionally, the exchange operator must identify and manage the risks that may arise in its operations, use secure technical systems and identify and handle the conflicts of interest that may arise between the exchange or its owners' interests and the interest in safeguarding effective risk management and secure technical systems. Similar requirements are set up by EMIR in relation to clearing operations.

The SSMA also contains the framework for both the SFSA's supervisory work in relation to exchanges and clearinghouses and the surveillance to be carried out by the exchanges themselves. The latter includes the requirement that an exchange should have "an independent surveillance function with sufficient resources and powers to meet the exchange's obligations." That requires the exchange to, among other things, supervise trading and price information, compliance with laws, regulations and good market practice, participant compliance with trading participation rules, financial instrument compliance with relevant listing rules and the extent to which issuers meet their obligation to submit regular financial information to relevant authorities.

Due to the underlying EU regulation, the regulatory requirements in the other Nordic and Baltic countries in which a Nasdaq entity has a trading venue are similar to the requirements in Sweden described above. The supervisory authorities in Sweden, Iceland, Denmark, Finland and Norway all cooperate to safeguard effective and comprehensive supervision of the exchanges comprising Nasdaq Nordic and the systems operated by it, and to ensure a common supervisory approach.

Nasdaq owns a central securities depository known as Nasdaq CSD SE (Societas Europaea)¸ that provides notary, settlement, central maintenance and other services in the Baltic countries and in Iceland. Nasdaq CSD SE is licensed under the European Central Securities Depositories Regulation and is supervised by the respective regulatory institutions.

We operate a licensed exchange, Nasdaq Oslo ASA, in Norway that trades and lists commodity derivatives. Although Norway is not a member of the EU, as a result of the European Economic Area, or EEA, agreement (entered into between the EU and European Free Trade Association) the regulatory environment is broadly similar to what applies in EU member states. Since Norway has adopted legislation mirroring the provisions of MiFID II and MIFIR, the regulatory environment in Norway is similar to Sweden. The Financial Supervisory Authority of Norway supervises the Norwegian exchange on an autonomous basis and the Norwegian exchange also has a separate market surveillance function overseen by the Financial Supervisory Authority.

Confidence in capital markets is paramount for trading to function properly. Nasdaq Nordic carries out market surveillance through an independent unit that is separate from the business operations. The surveillance work is conceptually organized into two functions: one for the review and admission of listing applications and surveillance activities related to issuers (issuer surveillance) and one for surveillance of trading (trading surveillance). The real-time trading surveillance for the Finnish, Icelandic, Danish and Swedish markets has been centralized in Stockholm. In addition, there are designated personnel who carry out surveillance activities at Nasdaq Oslo and the three Baltic exchanges. In Finland, Sweden and Estonia, decisions to list new companies on the main market are made by listing committees that have external members in addition to members from each respective exchange and in the other countries the decision is made either by the respective president of the exchange or by the executive board.

If there is suspicion that a listed company or member has acted in breach of exchange regulations, the matter is handled by the respective surveillance department. Serious breaches are considered by the respective disciplinary committee in Denmark, Finland, Iceland, Sweden and Norway. Suspected insider trading is reported to the appropriate authorities in the respective country.

In the United Kingdom, The Nasdaq Stock Market, Nasdaq Oslo ASA, Nasdaq Stockholm AB, Nasdaq Copenhagen A/S, and Nasdaq Helsinki Ltd are each subject to regulation by the Financial Conduct Authority as "Recognised Overseas Investment Exchanges." Nasdaq Clearing is registered as a recognized third country CCP with the Bank of England under the temporary recognition regime. The registration became effective on December 31, 2020, and lasts for four years (which may be extended further), during which time Nasdaq Clearing may continue to act as a CCP vis-a-vis UK members. Nasdaq Clearing has submitted its application for permanent recognition and is awaiting further information as to the process and timeline from the Bank of England.

Human Capital Management

Nasdaq has continued to strengthen our commitment to, and investment in, attracting, retaining, developing and motivating our employees during 2023.

We also continued our efforts to create a diverse and inclusive work environment of equal opportunity, where employees feel respected and valued for their contributions, and where Nasdaq and its employees have opportunities to make positive contributions to our local communities.

As of December 31, 2023, Nasdaq had 8,525 full and part-time employees, including employees of non-wholly owned consolidated subsidiaries.

Employee Safety

We are committed to ensuring the safety and well-being of our employees and stakeholders, and complying with local government regulations in the areas in which we operate. We have adopted a hybrid work environment, where employees both work in our offices and from home, which we believe enables a more consistent in-office experience, greater levels of connectivity and engagement, and an improved sense of community across Nasdaq.

Talent Management and Development

We continued to increase our efforts in attracting and retaining our employees. Nasdaq seeks to hire world-class, innovative, and diverse talent across the globe.

In 2023, our internal employee engagement score, based on our biannual employee engagement surveys, maintained its record high rating achieved in 2022. Our workforce voluntary attrition rate during 2023 was approximately 7.3%, which was nearly four percentage points lower than 2022.

Our Talent Attraction Team focused on strategic marketing and branding to position Nasdaq as a leading employer of choice for talent in our industry, helping to increase our pool of top candidates for open positions, particularly diverse candidates. We ran targeted attraction campaigns in our major markets using (with permission) local employee stories and photos, and partnered with diverse talent organizations, such as the National Society of Black Engineers, AfroTech, Sistas in Sales, Women in Tech, Information Technology Senior Management Forum and the Society of Hispanic Professional Engineers to help improve brand awareness of Nasdaq and attract a higher number of diverse candidates for potential hiring, as compared to 2022.

During 2023, we continued a series called the Manager Forum, facilitated by our CEO and other senior and mid-career leaders, to engage managers in sustained leadership development, alongside our existing formal leadership development curriculum.

Our artificial intelligence-driven career development platform, the Career Hub, matches employees, based on their career aspirations, to internal training, potential mentors, short-term projects and full-time internal roles. This helped us again increase our career satisfaction scores in our biannual employee engagement survey and supported employee retention.

We have invested in professional development for our employees, including offering access to more than 26,000 professional development programs; providing tuition assistance to employees enrolled in degree-granting academic programs; holding internal career fairs and career development programs; connecting employees to our formal mentoring programs and providing one-on-one professional coaching opportunities. We welcomed approximately 150 interns to Nasdaq during 2023.

To reward our employees at various stages of their tenure with Nasdaq, we continued our anniversary recognition program that includes Nasdaq-branded merchandise, and, for major milestones, recognition on our Nasdaq Tower in Times Square. Additionally, our peer-to-peer employee recognition program rewards employees and highlights recognized employees on our internal social media channels, further amplifying the recognition.

A Culture of Inclusion

At Nasdaq, three pillars guide our diversity, equity and inclusion efforts: *Workforce, Workplace and Marketplace*. *Workforce* seeks to ensure that our employee population is representative of the communities in which we operate. *Workplace* seeks to create a positive, equitable workplace experience for all employees of Nasdaq. *Marketplace* aims to positively influence our peers in the capital market ecosystem and invest in the local communities where we operate.

Nasdaq sponsors twelve employee-led internal affinity networks. These networks include more than 2,900 members, representing approximately 36% of our eligible employees and contractors. Nasdaq's Employee Networks support the diverse communities that comprise our workforce, including Black, Asian American, Hispanic, LGBTQ+, female, disabled, veteran, and parent/caregiver communities. Nasdaq's Employee Networks provide both formal and informal development programs and guidance for their members. The networks benefit the entire Nasdaq workforce through educational events, guest speakers, and volunteering opportunities.

Nasdaq regularly and proactively reviews and monitors diversity data across its businesses, including workforce composition, talent pipeline, and sentiment by business unit. In 2023, we expanded our Inclusion Learning Library, offering two new courses aimed at helping managers lead more inclusively in addition to our two fundamental diversity trainings. We also added customized developmental programs for underrepresented talent, including executive mentoring and accelerated leadership development programs. In 2023, we graduated our first class of Acclerate(her), which is our high-potential leadership program for our female employees to enhance their skills and increase advancement opportunities. Additionally, we expanded our leadership development program aimed to help foster community, understanding and develop fundamental leadership skills for employees from diverse backgrounds.

We continue to seek to monitor our diversity metrics, both through development of our internal talent pool and by focusing on interviewing diverse candidates externally for new employment opportunities. During our annual executive succession planning exercise with our Board of Directors, we realized a 3% increase, as compared to 2022, in the diversity of our senior executive succession candidate pool (considering gender, race and LGBTQ+ status) due to a focus by our senior executives on identifying and cultivating talent deeper in their organizations.

Nasdaq monitors our employee sentiment semi-annually, and has a 92% average participation rate in these employee surveys. We also introduced a new Inclusion Index that helps us to understand where in the organization we may have employees having a differing experience from one another, thus allowing us to seek to understand root causes and explore and implement solutions.

In 2023, Nasdaq was honored with multiple awards, affirming our commitment to excellence and inclusion in human capital management. Nasdaq was named to Seramount 100 Best Companies, the 2023 Seramount Inclusion Index and the ParityLIST for both Women and People of Color to Advance.

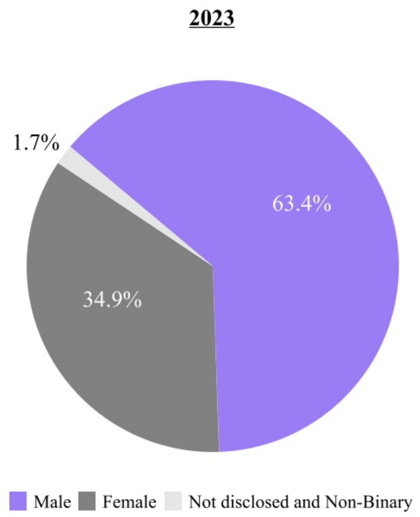
Our dedication to fostering diversity extends globally, as Nasdaq was included in the 2023 Seramount Alliance for Global Inclusion and was named to the 2023 Seramount Global Inclusion Index. We received acknowledgement from the Human Rights Campaign, for the fifth consecutive year, underscoring our commitment to LGBTQ+ employees.

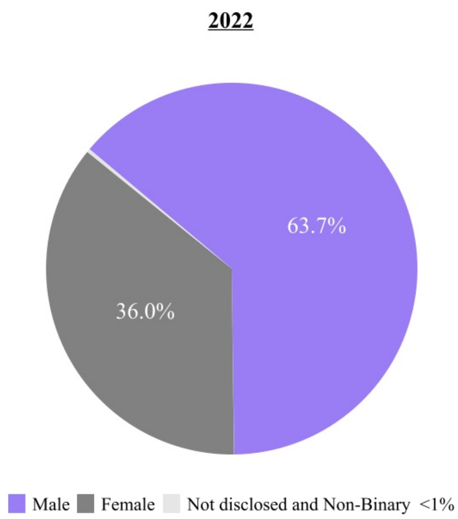
Workplace Demographics

Our global female employee base in 2023 was approximately 35%, including the employees that joined us from Adenza in November 2023. Our minority representation in the U.S., which includes Asian, Black/African American, Hispanic/Latino, Multiracial, Native American, Native Hawaiian, and Pacific Islander employees, was 32% in 2023, including Adenza employees.

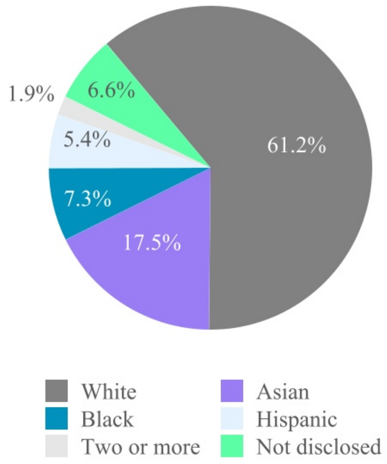
Gender and Ethnicity Performance Data as of December 31, 2023 and 2022

***Gender*:**

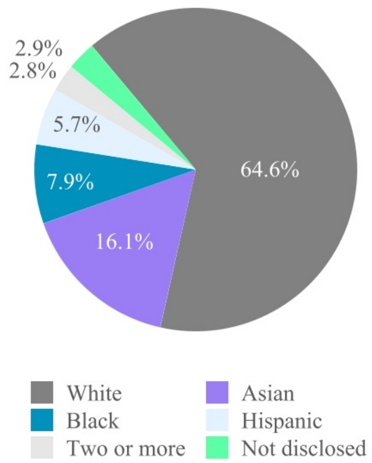




Race and Ethnicity (U.S. only) in 2023*



Race and Ethnicity (U.S. only) in 2022*



* In the charts above, not disclosed percentage includes employees that have chosen not to disclose and race and ethnicities that are less than 0.3%.

In 2023, we conducted a pay equity analysis, which supplements our annual multifaceted compensation review program, successfully concluding that review in the fourth quarter of the year. Our pay equity analysis for 2024 has already begun as part of the annual compensation review program to be completed in the same cycle next year.

Finally, to increase transparency of our workforce, Nasdaq publishes statistics on the composition of its own global workforce by gender, and of its U.S. workforce by gender, race and ethnicity, in our U.S. EEO-1 report and our Sustainability Report, which are available on our website.

Compensation and Benefits

Our Total Rewards program is designed to attract, retain, and empower employees to successfully execute our growth strategy and our mission to better serve our clients. Our comprehensive Total Rewards program reflects our commitment to protecting our employees' health, well-being and financial security.

Our pay-for-performance compensation programs includes market-competitive base salaries, annual bonuses or sales commissions, and equity grants. The majority of our employees are granted annual, long-term equity awards, enabling them to be owners of the company, committed to our long-term success and aligning their interests with the short-term and long-term interests of our shareholders.

Beyond compensation, we offer a suite of programs, benefits, perquisites, and resources. Our core benefits include health (medical, dental, and vision) and risk insurances (life and disability), retirement plans, and an employee stock purchase plan. We also offer robust paid time-off benefits which include vacation, incidental sick days and parental leave.

In addition, all Nasdaq employees, regardless of their location in any of our global offices, are offered paid time off for key life events. Beginning January 1, 2024, we announced a new flexible time off policy for our North American employees. These programs, coupled with our hybrid work schedules, are designed to meet the diverse needs of our work force.

In 2023, we recognized the importance of well-being in the overall performance of our workforce. We introduced toolkits and trainings to help to support both our leaders and employees.

Community Involvement

We are committed to creating lasting, positive change within our Company and the communities we serve. Our employees take pride in being active in our communities. Through our Nasdaq GoodWorks Corporate Responsibility Program, we have committed to supporting the communities in which we live and work by providing eligible full and part-time employees two paid days off per year to volunteer. We also match charitable donations of all Nasdaq employees and contractors up to $1,000, or more in certain circumstances, per calendar year. In 2023, Nasdaq employees raised over $450,000, including donations and matches, supporting almost 600 charities worldwide.

Nasdaq's "Purpose" comprises our philanthropic, community outreach, entrepreneurial support and employee volunteerism programs, all designed to leverage our unique place at the center of capital creation, markets, and technology and drive stronger economies, more equitable opportunities and contribute to a more sustainable world.

During 2023, Nasdaq held its third annual "Purpose Week," which is a week dedicated to celebrating and advancing economic progress for all. Purpose Week 2023 included a series of company-wide webinars, volunteer opportunities, and global activities involving and recognizing company employees. Purpose Week also included a series of workshops with Nasdaq Foundation partnership organizations. We hosted two investor education workshops for employees.

Our inaugural Purpose Forum convened thought leaders, change makers, and innovators from around the world to discuss how Nasdaq can empower individuals to embrace their purpose, advance their economic growth and reach their full potential.

The Nasdaq Foundation works with organizations that promote and support under-resourced communities by reimagining investor engagement and equipping communities with the financial knowledge needed to share in the wealth that markets create.

During 2023, the Nasdaq Foundation provided 13 grants to organizations that seek to fulfill that mission. These grants were awarded to, among others: Defy Ventures, which provides entrepreneur training for formerly incarcerated Black and indigenous men and women and people of color; the GO Project for the GO Families Financial Literacy Workshop Series in New York City; and the Global Entrepreneur Network, in partnership with Hello Alice, for the Equitable Access Program aimed at enhancing credit access and financial education to underserved entrepreneurs facing credit challenges.

Nasdaq Website and Availability of SEC Filings

We file periodic reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that site is www.sec.gov.

Our website is http://ir.nasdaq.com. Information on our website is not a part of this Form 10-K. We make available free of charge on our website, or provide a link to, our Forms 10-K, Forms 10-Q and Forms 8-K and any amendments to these documents, that are filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. To access these filings, go to our website and click on "Financials" then click on "SEC Filings."

Item 1A. Risk Factors

The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business. If any of the following risks actually occur, our business, financial condition, or operating results could be adversely affected.

RISKS RELATED TO OUR BUSINESS AND INDUSTRY

Economic conditions and market factors, which are beyond our control, may adversely affect our business and financial condition.

Our business performance is impacted by a number of factors, including general economic conditions, current or expected inflation, interest rate fluctuations, market volatility, changes in investment patterns and priorities, pandemics and other factors that are generally beyond our control. To the extent that global or national economic conditions weaken and result in slower growth or recessions, our business may be negatively impacted. Adverse market conditions could reduce customer demand for our services and the ability of our customers, lenders and other counterparties to meet their obligations to us. Poor economic conditions may result in a reduction in the demand for our products and services, including our market technology, fraud detection, AML and surveillance solutions, data, indices and corporate solutions, or could result in a decline in the number of IPOs, reduced trading volumes or values and deterioration of the economic welfare of our listed companies, which could cause an increase in delistings.

Trading volumes and values are driven primarily by general market conditions and declines in trading volumes or values may affect our market share and impact our pricing. In addition, our Market Services businesses receive revenues from a relatively small number of customers concentrated in the financial industry, so any event that impacts one or more customers or the financial industry in general could impact our revenues.

The number of listings on our markets is primarily influenced by factors such as investor demand, the global economy, available sources of financing, and tax and regulatory policies. Adverse conditions may jeopardize the ability of our listed companies to comply with the continued listing requirements of our exchanges, or reduce the number of issuers launching IPOs, including SPACs, and direct listings. The number of IPOs on our exchanges decreased in both 2023 and 2022, and the number of delistings increased in 2023.

Our Capital Access Platforms revenues may be significantly affected by global economic conditions. Professional subscriptions to our data products are at risk if staff reductions occur in financial services companies or if our customers consolidate, which could result in significant reductions in our professional user revenue or expose us to increased risks relating to dependence on a smaller number of customers. In addition, adverse market conditions may cause reductions in the number of non-professional investors with investments in the market and in ETP AUM tracking Nasdaq indices as well as trading in futures linked to Nasdaq indices.

There may be less demand for our analytics, corporate solutions, market technology and risk and regulatory products and services if global economic conditions remain weak. Our customers historically reduce purchases of new services and technology when growth rates decline, thereby diminishing our opportunities to sell new products and services or upgrade existing products and services.

Additionally, during a global economic downturn, or periods of economic, political or regulatory uncertainty, our sales cycle may become longer or more unpredictable due to customer budget constraints or unplanned administrative delays to approve purchases.

A reduction in trading volumes or values, market share of trading, the number of our listed companies, or demand for our products and services due to economic conditions or other market factors could adversely affect our business, financial condition and operating results.

The industries we operate in are highly competitive.

We face significant competition in our Capital Access Platforms, Financial Technology and Market Services segments from other market participants. We face intense competition from other exchanges and markets for market share of trading activity and listings. This competition includes both product and price competition.

The liberalization and globalization of world markets has resulted in greater mobility of capital, greater international participation in local markets and more competition. As a result, both in the U.S. and in other countries, the competition among exchanges and other execution venues has become more intense. Marketplaces in both Europe and the U.S. have also merged to achieve greater economies of scale and scope.

Regulatory changes also have facilitated the entry of new participants in the European Union that compete with our European markets. The regulatory environment, both in the U.S. and in Europe, is structured to maintain this environment of intense competition. In addition, a high proportion of business in the securities markets is becoming concentrated in a smaller number of institutions and our revenue may therefore become concentrated in a smaller number of customers.

We also compete globally with other regulated exchanges and markets, ATSs, MTFs and other traditional and non-traditional execution venues. Some of these competitors also are our customers. Competitors may develop market trading platforms that are more competitive than ours. Competitors may leverage data more effectively or enter into strategic partnerships, mergers or acquisitions that could make their trading, listings, clearing, data or technology businesses more competitive than ours.

We face intense price competition in all areas of our business. In particular, the trading industry is characterized by price competition. We have in the past lowered prices, and in the U.S., increased rebates for trade executions to attempt to gain or maintain market share. These strategies have not always been successful and have at times hurt operating performance. Additionally, we have also been, and may once again be, required to adjust pricing to respond to actions by competitors and new entrants, or due to new SEC regulations, which could adversely impact operating results. We also compete with respect to the pricing of data products and with respect to products for pre-trade book data and for post-trade last sale data.

If we are unable to compete successfully in the industries in which we do business, our business, financial condition and operating results will be adversely affected.

System limitations or failures could harm our business.

Our businesses depend on the integrity and performance of the technology, computer and communications systems supporting them. If new systems fail to operate as intended or our existing systems cannot expand to cope with increased demand or otherwise fail to perform, we could experience unanticipated disruptions in service, slower response times and delays in the introduction of new products and services. We could experience a systems failure due to human error by our employees, contractors or vendors, electrical or telecommunications failures or disruptions, hardware or software failures or defects, cyberattacks, sabotage or similar unexpected events. These consequences could result in service outages, lower trading volumes or values, financial losses, decreased customer satisfaction, litigation and regulatory sanctions. Our markets and the markets that rely on our technology have experienced systems failures and delays in the past and we could experience future systems failures and delays.

Although we currently maintain and expect to maintain multiple computer facilities, and leverage third party cloud providers, that are designed to provide redundancy and back-up to reduce the risk of system disruptions and have facilities in place that are expected to maintain service during a system disruption, such systems and facilities may prove inadequate. If trading volumes increase unexpectedly or other unanticipated events occur, we may need to expand and upgrade our technology, transaction processing systems and network infrastructure. We do not know whether we will be able to accurately project the rate, timing or cost of any volume increases, or expand and upgrade our systems and infrastructure to accommodate any increases in a timely manner.

While we have programs in place to identify and minimize our exposure to vulnerabilities and work in collaboration with the technology industry to share corrective measures with our business partners, we cannot guarantee that such events will not occur in the future. Any system issue that causes an interruption in services, decreases the responsiveness of our services or otherwise affects our services could impair our reputation, damage our brand name and negatively impact our business, financial condition and operating results.

We must continue to introduce new products, initiatives and enhancements to maintain our competitive position.

We intend to launch new products and initiatives and continue to explore and pursue opportunities to strengthen our business and grow our company. We may spend substantial time and money developing new products, initiatives and enhancements to existing products. If these products and initiatives are not successful or their launches are delayed, we may not be able to offset their costs, which could have an adverse effect on our business, financial condition and operating results.

In our technology operations, we have invested substantial amounts in the development of system platforms, the rollout of our platforms and the adoption of new technologies, including cloud-based infrastructure and artificial intelligence for certain of our offerings. Although investments are carefully planned, there can be no assurance that the demand for such platforms or technologies will justify the related investments. If we fail to generate adequate revenue from planned system platforms or the adoption of new technologies, or if we fail to do so within the envisioned timeframe, it could have an adverse effect on our results of operations and financial condition. In addition, clients may delay purchases in anticipation of new products or enhancements. We may allocate significant amounts of cash and other resources to product technologies or business models for which market demand is lower than anticipated. In addition, the introduction of new products by competitors, the emergence of new industry standards or the development of entirely new technologies to replace existing product offerings could render our existing or future products obsolete.

A decline in trading and clearing volumes or values or market share will decrease our trading and clearing revenues.

Trading and clearing volumes and values are directly affected by economic, political and market conditions, broad trends in business and finance, unforeseen market closures or other disruptions in trading, the level and volatility of interest rates, inflation, changes in price levels of securities and the overall level of investor confidence. Over the past several years, trading and clearing volumes and values across our markets have fluctuated significantly depending on market conditions and other factors beyond our control. Because a significant percentage of our revenues is tied directly to the volume or value of securities traded and cleared on our markets, it is likely that a general decline in trading and clearing volumes or values would lower revenues and may adversely affect our operating results if we are unable to offset falling volumes or values through pricing changes. Declines in trading and clearing volumes or values may also impact our market share or pricing structures and adversely affect our business and financial condition.

If our total market share in securities decreases relative to our competitors, our venues may be viewed as less attractive sources of liquidity. If our exchanges are perceived to be less liquid, then our business, financial condition and operating results could be adversely affected.

Since some of our exchanges offer clearing services in addition to trading services, a decline in market share of trading could lead to a decline in clearing and depository revenues. Declines in market share also could result in issuers viewing the value of a listing on our exchanges as less attractive, thereby adversely affecting our listing business. Finally, declines in market share of Nasdaq-listed securities, or recently adopted SEC rules and regulations, could lower The Nasdaq Stock Market’s share of tape pool revenues under the consolidated data plans, thereby reducing the revenues of our U.S. Tape plans business.

Our role in the global marketplace positions us at greater risk for a cyberattack.

Our systems and operations are vulnerable to damage or disruption from security breaches. Due to our adoption of a hybrid work environment, we have a broader and more distributed network footprint and increased reliance on the home networks of employees, and such remote work may cause heightened cybersecurity and operational risks. Some of these threats include attacks from foreign governments, hacktivists, insiders and criminal organizations. Foreign governments may seek to obtain a foothold in U.S. critical infrastructure, hacktivists may seek to deploy denial of service attacks to bring attention to their cause, insiders may pose a risk of human error or malicious activity and criminal organizations may seek to profit from stolen data. Computer malware, such as viruses and worms, also continue to be a threat with ransomware increasingly being used by criminals to extort money. Given our position in the global securities industry, we may be more likely than other companies to be a direct target, or an indirect casualty, of such events.

While we continue to employ and invest additional resources to monitor our systems and protect our infrastructure, these measures may prove insufficient depending upon the attack or threat posed. Any system issue, whether as a result of an intentional breach, collateral damage from a new virus or a non-malicious act, the use of artificial intelligence by bad actors, including the use of such tools to engage in social engineering or similar activities, or due to a cybersecurity breach of a customer that results in a loss of our data or compromises our systems or those of our other customers utilizing the same products, could damage our reputation and result in: a loss of customers; disrupted customer relationships; the loss of our intellectual property or sensitive data; lower trading volumes or values, significant liabilities, litigation or regulatory fines or otherwise have a negative impact on our business, our products and services, financial condition and operating results. Further, cybersecurity incidents that impact our vendors and other third parties that support our organization and industry could directly or indirectly impact us. For example, a data breach involving one of our vendors occurred in 2023, and was identified and mitigated by the vendor before material damage to Nasdaq occurred. There can be no assurance we will be able to identify and mitigate every incident involving cybersecurity attacks, breaches or incidents. A system breach may go undetected for an extended period of time.

Expanded cybersecurity regulations, and increased cybersecurity infrastructure and compliance costs, may adversely impact our results of operations.

As cybersecurity threats continue to increase in frequency and sophistication, and as the domestic and international regulatory and compliance structure related to information, cybersecurity, data privacy and data usage becomes increasingly complex and exacting, we may be required to devote significant additional resources to strengthen our cybersecurity capabilities, and to identify and remediate any security vulnerabilities. Compliance with laws and regulations concerning cybersecurity, data privacy and data usage could result in significant expense, and any failure to comply could result in proceedings against us by regulatory authorities or other third parties. Costs for bolstering cybersecurity capabilities, and increased cybersecurity and data privacy compliance costs, could adversely impact our business, financial condition and operating results. Additionally, our clients increasingly demand rigorous contractual, certification and audit provisions regarding cybersecurity, data protection and data usage, which may also increase our overall compliance burden and costs in meeting such obligations.

The success of our business depends on our ability to keep up with rapid technological and other competitive changes affecting our industry. Specifically, we must complete development of, successfully implement and maintain platforms that have the functionality, performance, capacity, reliability and speed required by our business and our regulators, as well as by our customers.

The markets in which we compete are characterized by rapidly changing technology, evolving industry and regulatory standards, frequent enhancements to existing products and services, the adoption of new services and products and changing customer demands. We are reliant on our customers that purchase our on-premise solutions to maintain a certain level of network infrastructure for our products to operate and to allow for our support of those products, and there is no assurance that a customer will implement such measures. We may not be able to keep up with rapid technological and other competitive changes affecting our industry. For example, we must continue to enhance our platforms to remain competitive as well as to address our regulatory responsibilities, and our business will be negatively affected if our platforms or the technology solutions we sell to our customers fail to function as expected. If we are unable to develop our platforms to include other products and markets, or if our platforms do not have the required functionality, performance, capacity, reliability and speed required by our business and our regulators, as well as by our customers, we may not be able to compete successfully. Further, our failure to anticipate or respond adequately to changes in technology and customer preferences or any significant delays in product development efforts, could have a material adverse effect on our business, financial condition and operating results.

Our artificial intelligence initiatives under development and the use of artificial intelligence in certain of our existing products may be unsuccessful and may give rise to various risks, which could adversely affect our business, reputation, or operating results.

We are making significant investments in artificial intelligence, or AI, including generative AI, to, among other things, develop new products or features for our existing products, including our anti-financial crime, investor relations and investment analytics solutions, and to enhance and refine our internal business operations. As AI is a new and evolving technology in the early stages of commercial use, there are significant risks involved in the development and deployment of AI, and there can be no assurance that the use of AI will enhance our products or services or augment our business or operating results. Market acceptance of AI technologies is uncertain, and we may be unsuccessful in our product development efforts. Moreover, our AI-related product initiatives and offerings, or use in our internal business operations, may give rise to risks related to harmful content, accuracy, bias, discrimination, intellectual property infringement, the ability to obtain intellectual property protection, misappropriation or leakage, defamation, data privacy, and cybersecurity, among others. In addition, these risks include the possibility of new or enhanced laws or regulations, for which compliance may be costly and burdensome or involve litigation or other legal liability, or additional oversight, audits or enforcement under existing laws or regulations. The use of AI may also give rise to ethical concerns or negative public perceptions, which may cause brand or reputational harm. Additionally, our competitors may be developing their own AI products and technologies, which may be superior in features or functionality, or cost, to our offerings. Any of these factors could adversely affect our business, reputation, or operating results.

Failure to attract and retain key personnel may adversely affect our ability to conduct our business.

Our future success depends, in large part, upon our ability to attract and retain highly qualified and skilled professional personnel that can learn and embrace new technologies. In the current tight labor market, we have intensified our efforts to recruit and retain talent. Competition for key personnel in the various localities and business segments in which we operate is intense. We have, and may continue to, experience higher compensation costs to retain personnel, and hire new talent, that may not be offset by improved productivity, higher revenues or increased sales. Our ability to attract and retain key personnel, in particular senior officers or technology personnel, including from companies that we acquire, will be dependent on a number of factors, including prevailing market conditions, office/remote working arrangements and compensation and benefit packages offered by companies competing for the same talent. There is no guarantee that we will have the continued service of key employees who we rely upon to execute our business strategy and identify and pursue strategic opportunities and initiatives. Our ability to execute our business strategy could be impaired if we are unable to replace such persons without incurring significant costs or in a timely manner or at all.

Our clearinghouse operations expose us to risks, including credit or liquidity risks that may include defaults by clearing members, or insufficiencies in margins or default funds.

We are subject to risks relating to our operation of a clearinghouse, including counterparty and liquidity risks, risk of defaults by clearing members and risks associated with adequacy of the customer margin and of default funds. Our clearinghouse operations expose us to counterparties with differing risk profiles. We may be adversely impacted by the financial distress or failure of a clearing member, which may cause us negative financial impact, reputational harm or regulatory consequences, including litigation or regulatory enforcement actions.

We are exposed to credit risk from third parties, including customers, counterparties and clearing agents.

We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons.

We clear a range of equity-related and fixed-income-related derivative products, commodities and resale and repurchase agreements. We assume the counterparty risk for all transactions that are cleared through Nasdaq Clearing on our markets and guarantee that our cleared contracts will be honored. We enforce minimum financial and operational criteria for membership eligibility, require members and investors to provide collateral, and maintain established risk policies and procedures to ensure that the counterparty risks are properly monitored and proactively managed; however, none of these measures provides absolute assurance against experiencing financial losses from defaults by our counterparties on their obligations. No guarantee can be given that the collateral provided will at all times be sufficient. Although we maintain clearing capital resources to serve as an additional layer of protection to help ensure that we are able to meet our obligations, these resources also may not be sufficient.

We also have credit risk related to transaction and subscription-based revenues that are billed to customers on a monthly or quarterly basis, in arrears.

Credit losses such as those described above could adversely affect our consolidated financial position and results of operations.

Technology issues relating to our role as exclusive processor for Nasdaq-listed stocks could affect our business.

Nasdaq, as technology provider to the UTP Operating Committee, has implemented measures to enhance the resiliency of the existing processor system. Nasdaq transferred the processor technology platform to our INET platform and this migration further enhanced the resiliency of the processor systems. However, if future outages occur or the processor systems fail to function properly while we are operating the systems, it could have an adverse effect on our business, reputation and financial condition.

Stagnation or decline in the listings market could have an adverse effect on our revenues.

The market for listings is dependent on the prosperity of companies and the availability of risk capital. A stagnation or decline in the number of new listings, or an increase in the number of delistings, on The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges could cause a decrease in revenues for future years. In 2023, we again experienced a decrease in new listings from IPOs, including SPACs, and an increase in delistings. A prolonged decrease in the number of listings, or failure of existing SPACs to successfully complete transactions with target companies and dissolve, could negatively impact the growth of our revenues. Our Corporate Solutions business is also impacted by declines in the listings market or increases in acquisitions activity as there may be fewer publicly-traded customers that need our products.

RISKS RELATED TO TRANSACTIONAL ACTIVITIES AND STRATEGIC RELATIONSHIPS

We may not be able to successfully integrate acquired businesses, which may result in an inability to realize the anticipated benefits of our acquisitions.

We must rationalize, coordinate and integrate the operations of our acquired businesses, including the acquisition of Adenza, which was completed in November 2023. This process involves complex technological, operational and personnel-related challenges, which are time-consuming and expensive and may disrupt our business. The difficulties, costs and delays that could be encountered may include:

- difficulties, costs or complications in combining the companies' operations, including technology platforms, and security measures and infrastructure that may need greater remediation than anticipated, which could lead to us not achieving the synergies we anticipate or customers not renewing their contracts with us as we migrate platforms;

- incompatibility of systems and operating methods;
- reliance on, or provision of, transition services;
- inability to use capital assets efficiently to develop the business of the combined company;
- difficulties of complying with government-imposed regulations in the U.S. and abroad, which may be conflicting;
- resolving possible inconsistencies in standards, controls, procedures and policies, business cultures and compensation structures;
- the diversion of management's attention from ongoing business concerns and other strategic opportunities;
- difficulties in operating businesses we have not operated before;
- difficulties of integrating multiple acquired businesses simultaneously;
- the retention of key employees and management;
- the implementation of disclosure controls, internal controls and financial reporting systems at non-U.S. subsidiaries to enable us to comply with U.S. GAAP and U.S. securities laws and regulations, including the Sarbanes-Oxley Act of 2002, required as a result of our status as a reporting company under the Exchange Act;
- the coordination of geographically separate organizations;
- the coordination and consolidation of ongoing and future research and development efforts;
- possible tax costs or inefficiencies associated with integrating the operations of a combined company;
- pre-tax restructuring and revenue investment costs;
- the retention of strategic partners and attracting new strategic partners; and
- negative impacts on employee morale and performance as a result of job changes and reassignments.

Foreign acquisitions, or acquisitions involving companies with numerous foreign subsidiaries, involve risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, our ability to enforce contracts in various jurisdictions, currency risks and the particular economic, political and regulatory risks associated with specific countries. We may not be able to address these risks successfully, or at all, without incurring significant costs, delays or other operating problems that could disrupt our business and have a material adverse effect on our financial condition.

For these reasons, we may not achieve the anticipated financial and strategic benefits from our acquisitions and strategic initiatives. Any actual cost savings and synergies may be lower than we expect and may take a longer time to achieve than we anticipate, and we may fail to realize the anticipated benefits of acquisitions.

We rely on third parties to perform certain functions, and our business could be adversely affected if these third parties fail to perform as expected or experience service interruptions affecting our operations.

We rely on third parties for regulatory, data center, cloud computing, data storage and processing, connectivity, data content, clearing, maintaining markets and exchange liquidity and other services. Interruptions or delays in services from our third-party providers could impair the delivery of our services and harm our business. To the extent that any of our vendors or other third-party service providers experiences difficulties or a significant disruption, breach or outage, materially changes their business relationship with us or is unable for any reason to perform their obligations, including due to geopolitical instability, our business or our reputation may be materially adversely affected.

Our access to cloud service provider infrastructure could be limited by a number of events, including technical or infrastructure failures, natural disasters or cybersecurity attacks. As we continue to grow our SaaS businesses, our dependency on the continuing operation and availability of these cloud service providers increases. If our cloud services from third party providers are unavailable to us for any reason, or there are cloud service disruptions or a delay or inability to access our exchanges, platforms or certain of our cloud products or features, such unavailability or delays may adversely affect our clients, which could significantly impact our reputation, operations, business, and financial results.

For example, in 2023, we continued to migrate our North American markets to AWS in a phased approach, as we added two additional exchanges to our cloud-enabled infrastructure. AWS operates a platform that we use to provide services to our clients, and therefore we are vulnerable to service outages on the AWS platform that affect Nasdaq workloads running or stored in the AWS environment. If AWS does not deliver our system requirements on time, fails to provide maintenance and support to our specifications or a migration experiences integration challenges, the successful migration of our exchanges to the AWS cloud platform may be significantly delayed, which may adversely affect our reputation and financial results.

We also rely on members of our trading community to maintain markets and add liquidity. To the extent that any of our largest members experience difficulties, materially change their business relationship with us or are unable for any reason to perform market making activities, our business or our reputation may be materially adversely affected.

We may be required to recognize impairments of our goodwill, intangible assets or other long-lived assets in the future.

Our business acquisitions typically result in the recording of goodwill and intangible assets, and the recorded values of those assets may become impaired in the future. As of December 31, 2023, goodwill totaled $14.1 billion and intangible assets, net of accumulated amortization, totaled $7.4 billion. The determination of the value of such goodwill and intangible assets requires management to make estimates and assumptions that affect our consolidated financial statements.

We assess goodwill and intangible assets, as well as other long-lived assets, including equity method investments, equity securities, and property and equipment, for potential impairment on an annual basis or more frequently if indicators of impairment arise. We estimate the fair value of such assets by assessing many factors, including historical performance and projected cash flows. Considerable management judgment is necessary to project future cash flows and evaluate the impact of expected operating and macroeconomic changes on these cash flows. The estimates and assumptions we use are consistent with our internal planning process. However, there are inherent uncertainties in these estimates.

There were no impairment charges recorded relating to goodwill and indefinite-lived intangible assets and there were no material impairment charges recorded relating to other long-lived assets in 2023, 2022 and 2021.

We may experience future events that may result in asset impairments. Future disruptions to our business, prolonged economic weakness, due to pandemics or otherwise, or significant declines in operating results at any of our reporting units or businesses, may result in impairment charges to goodwill, intangible assets or other long-lived assets. A significant impairment charge in the future could have a material adverse effect on our operating results.

Acquisitions, divestments, investments, joint ventures and other transactional activities may require significant resources and/or result in significant unanticipated losses, costs or liabilities.

Over the past several years, acquisitions, such as Adenza, have been, or are expected to be, significant factors in our growth. We have divested businesses and may continue to divest additional businesses or assets in the future. Although we cannot predict our transactional activities, we believe that additional acquisitions, divestments, investments, joint ventures and other transactional activities will be important to our strategy. Such transactions may be material in size and scope. Other potential purchasers of assets in our industry may have greater financial resources than we have. Therefore, we cannot be sure that we will be able to complete future transactions on terms favorable to us.

We also invest in early-stage companies through our Nasdaq Ventures program and hold minority interests in other entities. Given the size of these investments, we do not have operational control of these entities and may have limited visibility into risk management practices. Thus, we may be subject to additional capital requirements in certain circumstances and financial and reputational risks if there are operational failures.

We may finance future transactions by issuing additional equity and/or debt. The issuance of additional equity in connection with any such transaction could be substantially dilutive to existing shareholders. In addition, the announcement or implementation of future transactions by us or others could have a material effect on the price of our common stock. The issuance of additional debt could increase our leverage substantially. Additional debt may reduce our liquidity, curtail our access to financing markets, impact our standing with credit rating agencies and increase the cash flow required for debt service. Any incremental debt incurred to finance a transaction could also place significant constraints on the operation of our business.

Furthermore, any future transactions could entail a number of additional risks, including:

- the inability to maintain key pre-transaction business relationships;
- increased operating costs;
- the inability to meet our target for return on invested capital;
- increased debt obligations, which may adversely affect our targeted debt ratios;
- risks to the continued achievement of our strategic direction;
- risks associated with divesting employees, customers or vendors when divesting businesses or assets;
- declines in the value of investments;
- exposure to unanticipated liabilities, including after a transaction is completed;
- incurred but unreported claims for an acquired company;
- difficulties in realizing projected efficiencies, synergies and cost savings; and
- changes in our credit rating and financing costs.

RISKS RELATED TO LIQUIDITY AND CAPITAL RESOURCES

A downgrade of our credit rating could increase the cost of our funding from the capital markets.

Our debt is currently rated investment grade by two of the major rating agencies. These rating agencies regularly evaluate us, and their ratings of our long-term debt and commercial paper are based on a number of factors, including our financial strength and corporate development activity, as well as factors not entirely within our control, including conditions affecting our industry generally. There can be no assurance that we will maintain our current ratings. Our failure to maintain such ratings could reduce or eliminate our ability to issue commercial paper and adversely affect the cost and other terms upon which we are able to obtain funding and increase our cost of capital. A reduction in credit ratings would also result in increases in the cost of our commercial paper and other outstanding debt as the interest rate on the outstanding amounts under our credit facilities and our senior notes fluctuates based on our credit ratings.

Our leverage limits our financial flexibility, increases our exposure to weakening economic conditions and may adversely affect our ability to obtain additional financing.

Our indebtedness as of December 31, 2023 was $10.5 billion. We may borrow additional amounts by utilizing available liquidity under our existing credit facilities, issuing additional debt securities or issuing short-term, unsecured commercial paper notes through our commercial paper program.

Our leverage and reliance on the capital markets could:

- reduce funds available to us for operations and general corporate purposes or for capital expenditures as a result of the dedication of a substantial portion of our consolidated cash flow from operations to the payment of principal and interest on our indebtedness;
- increase our exposure to a continued downturn in general economic conditions;
- place us at a competitive disadvantage compared with our competitors with less debt;
- affect our ability to obtain additional financing in the future for refinancing indebtedness, acquisitions, working capital, capital expenditures or other purposes; and
- increase our cost of debt and reduce or eliminate our ability to issue commercial paper.

In addition, we must comply with the covenants in our credit facilities. Among other things, these covenants restrict our ability to effect certain fundamental transactions, dispose of certain assets, incur additional indebtedness and grant liens on assets. Failure to meet any of the covenant terms of our credit facilities could result in an event of default. If an event of default occurs, and we are unable to receive a waiver of default, our lenders may increase our borrowing costs, restrict our ability to obtain additional borrowings and accelerate repayment of all amounts outstanding.

We will need to invest in our operations to maintain and grow our business and to integrate acquisitions, and we may need additional funds, which may not be readily available.

We depend on the availability of adequate capital to maintain and develop our business. Although we believe that we can meet our current capital requirements from internally generated funds, cash on hand and borrowings under our revolving credit facility and commercial paper program, if the capital and credit markets experience volatility, access to capital or credit may not be available on terms acceptable to us or at all. Rising interest rates could adversely affect our ability to pursue new financing opportunities, and it may be more expensive for us to issue new debt securities. Limited access to capital or credit in the future could have an impact on our ability to refinance debt, maintain our credit rating, meet our regulatory capital requirements, engage in strategic initiatives, make acquisitions or strategic investments in other companies, pay dividends, repurchase our stock or react to changing economic and business conditions. If we are unable to fund our capital or credit requirements, it could have an adverse effect on our business, financial condition and operating results.

In addition to our debt obligations, we will need to continue to invest in our operations for the foreseeable future to integrate acquired businesses and to fund new initiatives. If we do not achieve the expected operating results, we will need to reallocate our cash resources. This may include borrowing additional funds to service debt payments, which may impair our ability to make investments in our business or to integrate acquired businesses.

If we need to raise funds through incurring additional debt, we may become subject to covenants more restrictive than those contained in our credit facilities, the indentures governing our notes and our other debt instruments. Furthermore, if adverse economic conditions occur, we could experience decreased revenues from our operations which could affect our ability to satisfy financial and other restrictive covenants to which we are subject under our existing indebtedness.

RISKS RELATED TO LEGAL AND REGULATORY MATTERS

We operate in a highly regulated industry and may be subject to censures, fines and enforcement proceedings if we fail to comply with regulatory obligations that can be ambiguous and can change unexpectedly.

We operate in a highly regulated industry and are subject to extensive regulation in the U.S., Europe and Canada. The securities trading industry is subject to significant regulatory oversight and could be subject to increased governmental and public scrutiny in the future that can change in response to global conditions and events, or due to changes in trading patterns, such as due to the recent volatility involving the trading of certain stocks.

Our ability to comply with complex and changing regulation is largely dependent on our establishment and maintenance of compliance, audit and reporting systems that can quickly adapt and respond, as well as our ability to attract and retain qualified compliance and other risk management personnel. There is no assurance that our policies and procedures will always be effective or that we will always be successful in monitoring or evaluating the risks to which we are or may be exposed.

Our regulated markets are subject to audits, investigations, administrative proceedings and enforcement actions relating to compliance with applicable rules and regulations. Regulators have broad powers to impose fines, penalties or censure, issue cease-and-desist orders, prohibit operations, revoke licenses or registrations and impose other sanctions on our exchanges, broker-dealers, central securities depositories, clearinghouse and markets for violations of applicable requirements.

In the future, we could be subject to regulatory investigations or enforcement proceedings that could result in substantial sanctions, including revocation of our operating licenses. Any such investigations or proceedings, whether successful or unsuccessful, could result in substantial costs, the diversion of resources, including management time, and potential harm to our reputation, which could have a material adverse effect on our business, results of operations or financial condition. In addition, our exchanges could be required to modify or restructure their regulatory functions in response to any changes in the regulatory environment, or they may be required to rely on third parties to perform regulatory and oversight functions, each of which may require us to incur substantial expenses and may harm our reputation if our regulatory services are deemed inadequate.

The regulatory framework under which we operate and new regulatory requirements or new interpretations of existing regulatory requirements could require substantial time and resources for compliance, which could make it difficult and costly for us to operate our business.

Under current U.S. federal securities laws, changes in the rules and operations of our securities markets, including our pricing structure, must be reviewed and in many cases explicitly approved by the SEC. The SEC may approve, disapprove, or recommend changes to proposals that we submit. In addition, the SEC may delay either the approval process or the initiation of the public comment process. Favorable SEC rulings and interpretations can be challenged in and reversed by federal courts of appeals, reducing or eliminating the value of such prior interpretations. Any delay in approving changes, or the altering of any proposed change, could have an adverse effect on our business, financial condition and operating results.

We must compete not only with non-exchanges, such as ATSs that are not subject to the same SEC approval requirements and processes, but also with other exchanges that may have lower regulation and surveillance costs than us. There is a risk that trading will shift to exchanges or non-exchanges that charge lower fees because, among other reasons, they spend significantly less on regulation.

In 2016, the SEC approved a plan for Nasdaq and other exchanges to establish a CAT to improve regulators' ability to monitor trading activity. In addition to increased regulatory obligations, implementation of a CAT has resulted in significant additional expenditures, including to implement the new technology to meet many of the plan's requirements. Creating the CAT has required the development and implementation of complex and costly technology. This development effort has been funded by the SROs (including Nasdaq) in exchange for promissory notes. In September 2023, the SEC approved a "Funding Model" for the CAT that allocated one-third of CAT expenses to the SROs, including Nasdaq, and two-thirds of CAT expenses to the industry. This SEC approval order has been appealed to the 11th Circuit U.S. Court of Appeals, and the appeal remains pending. In January 2024, the SROs submitted filings, which remain pending, to the SEC to establish the rate at which the industry would reimburse the SROs for its two-thirds share of CAT expenses. Those two pending matters could be resolved unfavorably to the SEC and to the SROs, resulting in a delay in recovering expenses or the inability to recover those expenses. As of December 31, 2023, we have accrued a net receivable of $115 million in connection with our portion of expenses related to the CAT implementation. In addition, the ongoing failure to timely launch or properly operate such technology exposes Nasdaq and other exchanges to SEC fines.

In addition, our registered broker-dealer subsidiaries are subject to regulation by the SEC, FINRA and other SROs. These subsidiaries are subject to regulatory requirements intended to ensure their general financial soundness and liquidity, which require that they comply with certain minimum capital requirements. The SEC and FINRA impose rules that require notification when a broker-dealer's net capital falls below certain predefined criteria, dictate the ratio of debt to equity in the regulatory capital composition of a broker-dealer and constrain the ability of a broker-dealer to expand its business under certain circumstances. Additionally, the SEC's Uniform Net Capital Rule and FINRA rules impose certain requirements that may have the effect of prohibiting a broker-dealer from distributing or withdrawing capital and requiring prior notice to the SEC and FINRA for certain withdrawals of capital. Any failure to comply with these broker-dealer regulations could have a material adverse effect on the operation of our business, financial condition and operating results.

Our non-U.S. business is subject to regulatory oversight in all the countries in which we operate regulated businesses, such as exchanges, clearinghouses or central securities depositories. In these countries, we have received authorization from the relevant authorities to conduct our regulated business activities. The authorities may issue regulatory fines or may ultimately revoke our authorizations if we do not suitably carry out our regulated business activities. The authorities are also entitled to request that we adopt measures in order to ensure that we continue to fulfill the authorities' requirements. We are also subject to current and forthcoming regulations applicable to the financial services sector generally including, but not limited to, the Digital Operational Resilience Act, or DORA, which will become effective in 2025. Such regulations may impact our operational, contracting and compliance costs by requiring the implementation of new risk management procedures, requirements for procuring information and communication technology services, and ongoing processes to monitor compliance; failure to maintain compliance may cause us to be subject to regulatory actions and fines. Additionally, we are subject to the obligations under the Benchmark Regulation ((EU) 2016/1011), compliance with which could be costly or cause a change in our business practices.

Certain of our customers operate in a highly regulated industry. Regulatory authorities could impose regulatory changes that could impact the ability of our customers to use our exchanges. The loss of a significant number of customers or a reduction in trading activity on any of our exchanges as a result of such changes could have a material adverse effect on our business, financial condition and operating results. In addition, regulatory changes could impact the ability of current or prospective customers to procure commercial services from us, increase our cost of delivery or performance due to regulatory-driven changes to services or related business processes and lengthen sales cycles as customers are required to conduct additional diligence and contracting processes prior to procuring our services.

Regulatory changes and changes in market structure and proprietary data could have a material adverse effect on our business.

Regulatory changes adopted by the SEC or other regulators of our markets, and regulatory changes that our markets may adopt in fulfillment of their regulatory obligations, could materially affect our business operations. In recent years, there has been increased regulatory and governmental focus on issues affecting the securities markets, including market structure, technological oversight and fees for proprietary market data, connectivity and transactions. The SEC, FINRA and the national securities exchanges have introduced several initiatives to ensure the oversight, integrity and resilience of markets. In December 2022, the SEC proposed significant rule changes that, if adopted in their current form, would substantially alter how stocks are traded in the United States. In October 2023, the SEC proposed to require exchanges to modify their pricing practices for certain types of transactions. While we and other market participants have the opportunity to submit comments on these proposals, and we will adjust our business model in accordance with any new SEC regulations implemented, the adoption of these proposals regarding trading may negatively impact our business and revenue.

With respect to our regulated businesses, our business model can be severely impacted by policy decisions. In May 2020, the SEC adopted an order to require changes to the governance of securities information processors. In December 2020, the SEC adopted a rule to modify the infrastructure for the collection, consolidation and dissemination of market data for exchange-listed national market stocks. In 2022, the U.S. Court of Appeals for District of Columbia Circuit vacated portions of the governance order but upheld the remainder of the SEC's 2022 actions. If the remaining aspects of the order and rule are fully implemented, they may adversely affect our revenues. The timing for the implementation is currently unknown, and we believe they may take two or more years to fully implement. If the remaining aspects of the order and rule are ultimately implemented as set forth in their adopting releases, demand for certain of our proprietary tape share data products may be reduced, or we may have to reduce our pricing to compete with other entrants into the market for consolidated data. Our opponents in some markets are larger and better funded and, if successful in influencing certain policies, may successfully advocate for positions that adversely impact our business. These regulatory changes could impose significant costs, including litigation costs, and other obligations on the operation of our exchanges and processor systems and have other impacts on our business.

In Canada, all new marketplace fees and changes to existing fees, including trading and market data fees, must be filed with and approved by the Ontario Securities Commission. The Canadian Securities Administrators adopted a Data Fees Methodology that restricts the total amount of fees that can be charged for professional uses by all marketplaces to a reference benchmark. Currently, all marketplaces are subject to annual reviews of their market data fees tying market data revenues to pre- and post- trade market share metrics. Permitted fee ranges are based on an interim domestic benchmark that is subject to change to an international benchmark, which could lower the permitted fees charged by marketplaces, which could adversely impact our revenues.

Our European exchanges currently offer market data products to customers on a non-discriminatory and reasonable commercial basis. The MiFID II/MiFIR rules entail that the price for regulated market data such as pre- and post-trade data shall be based on cost plus a reasonable margin. However, these terms are not clearly defined. There is a risk that a different interpretation of these terms may influence the fees for European market data products adversely. In addition, any future actions by European Union institutions could affect our ability to offer market data products in the same manner as today, thereby causing an adverse effect on our market data revenues.

We are subject to litigation risks and other liabilities.

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

We face risks related to compliance with economic sanctions (including those administered by the U.S. Office of Foreign Assets Control), export controls, corruption (including the U.S. Foreign Corrupt Practices Act) and money laundering. While we maintain compliance programs to prevent and detect potential violations, such programs cannot completely eliminate the risk of non-compliance. Since our Financial Crime Management Technology and surveillance solutions are important offerings, a significant compliance event involving one of these areas could more negatively impact our business than a comparable business without this service offering.

Liability could also result from disputes over the terms of a trade, claims that a system failure or delay cost a customer money, claims we entered into an unauthorized transaction or claims that we provided materially false or misleading statements in connection with a securities transaction. Although we carry insurance that may limit our risk of damages in some cases, we still may incur significant legal expenses and may sustain uncovered losses or losses in excess of available insurance that would affect our business, financial condition and results of operations.

We have self-regulatory obligations and also operate for-profit businesses, and these two roles may create conflicts of interest.

We have obligations to regulate and monitor activities on our markets and ensure compliance with applicable law and the rules of our markets by market participants and listed companies. In the U.S., some have expressed concern about potential conflicts of interest of "for-profit" markets performing the regulatory functions of an SRO. We perform regulatory functions and bear regulatory responsibility related to our listed companies and our markets. Any failure by us to diligently and fairly regulate our markets or to otherwise fulfill our regulatory obligations could significantly harm our reputation, prompt SEC scrutiny and adversely affect our business and reputation.

Our Nordic and Baltic exchanges monitor trading and compliance with listing standards in accordance with the European Union's Market Abuse Regulation and other applicable laws. As further described in Note 18, "Commitments, Contingencies and Guarantees" to the consolidated financial statements of this Form 10-K, during 2023, the SFSA initiated a review of the Nasdaq Stockholm exchange regarding the obligation of Nasdaq Stockholm to report suspected market abuse. Any failure to diligently and fairly regulate the Nordic and Baltic exchanges could significantly harm our reputation, prompt scrutiny from regulators and adversely affect our business and reputation.

Laws and regulations regarding security and safeguarding of our systems and services, protection of sensitive customer data and the handling of personal data and information may affect our services or result in increased costs, legal claims or fines against us.

Our business operates certain systems that may be considered "critical infrastructure" under certain regulations and licenses or sells certain systems or services to customers that are used by customers in their role as providers of critical infrastructure or to fulfill certain core business requirements or process certain sensitive data. New cybersecurity regulations may impact the requirements and cost of delivery for impacted systems and services and, in the event of an incident, increase the cost and complexity of our response and the potential financial and reputation impact from fines or private litigation. These regulations may also impact customer decision making and conditions on contracting for our services.

Our businesses and internal operations rely on the processing of data in many jurisdictions and the movement of data, including personal data, across national borders. Legal and contractual requirements relating to the processing, including, but not limited to, collection, storage, handling, use, disclosure, transfer and security, of personal data continue to evolve and regulatory scrutiny and customer requirements in this area are increasing around the world. Significant uncertainty exists as privacy and data protection laws may be interpreted and applied differently across jurisdictions and may create inconsistent or conflicting requirements with privacy and other laws to which we are subject.

Laws and regulations such as the European Union and United Kingdom General Data Protection Regulation, the California Privacy Rights Act and other comparable laws and regulations adopted globally and within the United States and Canada can apply to our processing of their residents' personal data by Nasdaq legal entities regardless of the location of such entities; such laws may also require our customers located in such jurisdictions to contractually obligate our compliance.

In addition to directly applying to some of our business activities, these laws and industry-specific regulations, such as the Health Insurance Portability and Accountability Act and the Gramm Leach Bliley Act, impact many of our customers, which may affect their decisions to purchase our services. As a supplier to such customers, regulators may engage in direct enforcement actions or seek to impose liability on us if we do not comply with applicable regulations. Our efforts to comply with privacy and data protection laws may entail substantial expenses, may divert resources from other initiatives and projects, and could impact the services that we offer. The enactment of more restrictive laws, rules or regulations, future enforcement actions or investigations, or the creation of new rights to pursue damages could impact us through increased costs or restrictions on our business, and noncompliance could result in regulatory penalties and significant legal liability.

Changes in tax laws, regulations or policies could have a material adverse effect on our financial results.

Changes in tax laws, regulations or policies could result in us having to pay higher taxes, which may reduce our net income, or could adversely affect our ability to continue our capital allocation program or effect strategic transactions in a tax-favorable manner. In addition, such changes, including federal or state financial transaction taxes, may increase the cost of our offerings or services, which may cause our clients to reduce their use of our services.

Some of our subsidiaries are subject to tax in the jurisdictions in which they are organized or operate, and in computing our tax obligation in these jurisdictions, we take various tax positions. We cannot ensure that upon review of these positions, the applicable authorities will agree with our positions. A successful challenge by a tax authority could result in additional taxes imposed on our clients or our subsidiaries.

RISKS RELATED TO INTELLECTUAL PROPERTY AND BRAND REPUTATION

Damage to our reputation or brand name could have a material adverse effect on our businesses.

One of our competitive strengths is our strong reputation and brand name. Various issues may give rise to reputational risk, including issues relating to:

- our ability to maintain the security of our data and systems;
- the quality and reliability of our technology platforms and systems;
- the ability to fulfill our regulatory obligations;
- the ability to execute our business plan, key initiatives or new business ventures and the ability to keep up with changing customer demand;
- the representation of our business in the media;
- the accuracy of our financial statements, other financial and statistical information or ESG-related disclosures;
- the accuracy of our financial guidance or other information provided to our investors;
- the quality of our corporate governance structure;
- the quality of our products the reliability of our solutions and the accuracy of our information and data offerings;
- the quality of our disclosure controls or internal controls over financial reporting, including any failures in supervision;
- extreme price volatility on our markets;
- any negative publicity surrounding our listed companies or our listing rules;
- any negative publicity surrounding the use of our products and/or services by our customers, including in connection with emerging asset classes such as crypto assets; and
- any misconduct, fraudulent activity or theft by our employees or other persons formerly or currently associated with us.

Negative publicity or misrepresentations by third parties, particularly on social media, may adversely impact our credibility as a leader in the global capital markets and as a source for data and analytics. This may have an adverse effect on our brands, business and operating results. Damage to our reputation could cause some issuers not to list their securities on our exchanges or switch to a different exchange. Reputational damage may also reduce trading volumes or values on our exchanges or cause us to lose customers. This may have a material adverse effect on our business, financial condition and operating results.

Failure to meet customer expectations or deadlines for the implementation of our products could result in negative publicity, losses and reduced sales, each of which may harm our reputation, business and results of operations.

We generally mutually agree with our customers on the duration, budget and costs associated with the implementation of certain of our products, particularly our market technology large-scale market infrastructure projects. Various factors may cause implementations to be delayed, inefficient or otherwise unsuccessful, including due to unforeseen project complexities, our deployment of insufficient resources or other external factors. The effects of a failure to meet an implementation schedule could include monetary credits for current or future service engagements, a reduction in fees for the project, or the expenditure of additional expenses to mitigate such delays. In addition, time-consuming implementations may also increase the personnel we must allocate to such customer, thereby increasing our costs and diverting attention from other projects. Unsuccessful, lengthy, or costly customer implementation projects could result in claims from customers, decreased customer satisfaction, harm to our reputation, and opportunities for competitors to displace us, each of which could have an adverse effect on our reputation, business and results of operations.

Our reputation or business could be negatively impacted by ESG matters and our reporting of such matters.

We communicate certain ESG-related initiatives, goals, and/or commitments regarding environmental matters, social matters, vendors and suppliers and other matters in our annual Sustainability Report, Task Force on Climate-related Financial Disclosures, on our website, in our filings with the SEC and elsewhere. These initiatives, goals, or commitments, such as our commitment to achieve net-zero for Scope 3 greenhouse gas emissions by 2050, could be difficult to achieve and costly to implement. We could fail to achieve, or be perceived to fail to achieve, these initiatives, goals, or commitments. In addition, we could be criticized for the timing, scope or nature of these initiatives, goals, or commitments, or for any revisions to them. We could be subject to litigation or regulatory enforcement actions regarding the accuracy, adequacy, or completeness of our ESG-related disclosures. Our actual or perceived failure to achieve our ESG-related initiatives, goals, or commitments could negatively impact our reputation or otherwise materially harm our business.

Failure to protect our intellectual property rights, or allegations that we have infringed on the intellectual property rights of others, could harm our brand-building efforts and ability to compete effectively.

To protect our intellectual property rights, we rely on a combination of trademark laws, copyright laws, patent laws, trade secret protection, confidentiality agreements and other contractual arrangements with our affiliates, clients, strategic partners, employees and others. However, the efforts we have taken to protect our intellectual property and proprietary rights might not be sufficient, or effective, at stopping unauthorized use of those rights. We may be unable to detect the unauthorized use of, or take appropriate steps to enforce, our intellectual property rights.

We have registered, or applied to register, our trademarks in the United States and in over 50 foreign jurisdictions and have pending U.S. and foreign applications for other trademarks. We also maintain copyright protection for software products and pursue patent protection for inventions developed by us. We hold a number of patents, patent applications and licenses in the United States and other foreign jurisdictions. However, effective trademark, copyright, patent and trade secret protection might not be available or cost-effective in every country in which we offer our services and products. Moreover, changes in patent law, regulation or practices at the U.S. Patent and Trademark Office and/or analogous offices in other jurisdictions, such as changes in the law regarding patentable subject matter, could also impact our ability to obtain patent protection for our innovations. The scope of protection under our patents may not be sufficient in some cases, or existing patents may be deemed invalid or unenforceable. Failure to protect our intellectual property adequately could harm our brand and affect our ability to compete effectively. Further, defending our intellectual property rights could result in the expenditure of significant financial and managerial resources.

Third parties may assert intellectual property rights claims against us, which may be costly to defend, could require the payment of damages and could limit our ability to use certain technologies, trademarks or other intellectual property. Any intellectual property claims, with or without merit, could be expensive to litigate or settle and could divert management resources and attention. Successful challenges against us could require us to modify or discontinue our use of technology or business processes where such use is found to infringe or violate the rights of others, or require us to purchase licenses from third parties, any of which could adversely affect our business, financial condition and operating results.

GENERAL RISK FACTORS

We are a holding company that depends on cash flow from our subsidiaries to meet our obligations, and any restrictions on our subsidiaries' ability to pay dividends or make other payments to us may have a material adverse effect on our results of operations and financial condition.

As a holding company, we require dividends and other payments from our subsidiaries to meet cash requirements. Minimum capital requirements mandated by regulatory authorities having jurisdiction over some of our regulated subsidiaries indirectly restrict the amount of dividends that can be paid upstream.

If our subsidiaries are unable to pay dividends and make other payments to us when needed, or if regulators or counterparties require us to increase capital deployed in certain of our regulated subsidiaries, we may be unable to satisfy our obligations, which would have a material adverse effect on our business, financial condition and operating results.

We may experience fluctuations in our operating results, which may adversely affect the market price of our common stock.

Our industry is risky and unpredictable and is directly affected by many national and international factors beyond our control, including:

- economic, political and geopolitical market conditions;
- natural disasters, terrorism, pandemics, war or other catastrophes;
- broad trends in finance and technology;
- changes in price levels and volatility in the stock markets;
- the level and volatility of interest rates;
- volatility in commodity markets, including the energy markets;
- inflation;
- disruptions or delays in our supply chains;

- changes in government monetary or tax policy;
- the imposition of governmental economic sanctions on countries in which we do business or where we plan to expand our business; and
- the perceived attractiveness of the U.S. or European capital markets.

Any one of these factors could have a material adverse effect on our business, financial condition and operating results by causing a substantial decline in the financial services markets and reducing trading volumes or values.

Additionally, since borrowings under our credit facilities bear interest at variable rates and commercial paper is issued at prevailing interest rates, any increase in interest rates on debt that we have not fixed using interest rate hedges will increase our interest expense, reduce our cash flow or increase the cost of future borrowings or refinancings. Other than variable rate debt, we believe our business has relatively large fixed costs and low variable costs, which magnifies the impact of revenue fluctuations on our operating results. As a result, a decline in our revenue may lead to a relatively larger impact on operating results. A substantial portion of our operating expenses is related to personnel costs, regulation and corporate overhead, none of which can be adjusted quickly and some of which cannot be adjusted at all. Our operating expense levels are based on our expectations for future revenue. If actual revenue is below management's expectations, or if our expenses increase before revenues do, both revenues less transaction-based expenses and operating results would be materially and adversely affected. Because of these factors, it is possible that our operating results or other operating metrics may fail to meet the expectations of stock market analysts and investors. If this happens, the market price of our common stock may be adversely affected.

Our operational processes are subject to the risk of error, which may result in financial loss or reputational damage.

We have instituted extensive controls to reduce the risk of error inherent in our operations; however, such risk cannot completely be eliminated. Our businesses are highly dependent on our ability to process and report, on a daily basis, a large number of transactions across numerous and diverse markets. Some of our operations require complex processes, and the introduction of new products or services or changes in processes or reporting due to regulatory requirements may result in an increased risk of errors for a period after implementation. Additionally, the likelihood of such errors or vulnerabilities is heightened as we acquire new products from third parties, whether as a result of acquisitions or otherwise.

Data, other content or information that we distribute may contain errors or be delayed, causing reputational harm. Use of our products and services as part of the investment process creates the risk that clients, or the parties whose assets are managed by our clients, may pursue claims against us in the event of such delay or error, and significant litigation against us might unduly burden management, personnel, financial and other resources.

In addition, the sophisticated software we sell to our customers may contain undetected errors or vulnerabilities, some of which may be discovered only after delivery, or could fail to perform its intended purpose. Because our clients depend on our solutions for critical business functions, any service interruptions, failures or other issues may result in lost or delayed market acceptance and lost sales, or negative customer experiences that could damage our reputation, resulting in the loss of customers, loss of revenues and liability for damages, which may adversely affect our business, operating results and financial condition.

Climate change may have a long-term adverse impact on our business, and climate and ESG-related disclosure requirements may reduce demand for listings on our exchanges.

While we seek to mitigate our business risks associated with climate change by establishing robust environmental and sustainability programs, there are inherent climate related risks wherever our business is conducted. There is an increased focus from our regulators, investors, clients, employees, and other stakeholders concerning corporate citizenship and sustainability matters. Access to clean water and reliable energy in the communities where we conduct our business, whether for our offices, data centers, vendors, clients or other stakeholders, is a priority. For example, changes in weather where we operate may increase the costs of powering and cooling our data centers or the facilities that we use to operate our exchanges and clearinghouses, develop our products or provide cloud-based services. Climate related events, including extreme weather events and their impact on the critical infrastructure in the United States and elsewhere, have the potential to disrupt our business or the business of our clients; cause increased volatility in commodity markets in which Nasdaq Clearing operates as a clearinghouse, which may result in Nasdaq Clearing holding insufficient collateral for such volatility; lead to an increase in costs of raw materials, which may adversely affect certain of our listed companies operating in certain sectors and create adverse market conditions, including trading volatility beyond historical levels, any of which could adversely affect our business, reputation, financial condition and operating results. Additionally, if the SEC or other federal, state or international regulatory agencies impose comprehensive reporting obligations regarding climate change on U.S. public companies, there may be a decrease in new listings or an increase in delistings of our listed companies, which may adversely affect our business, financial condition and operating results. Such new regulations, whether in the U.S.

or in other countries in which we operate, could also cause us to incur additional compliance and reporting costs.

Our businesses operate in various international markets, which are subject to political, economic and social uncertainties.

Our businesses operate in various international markets, including but not limited to Northern Europe, the Baltics, the Middle East, Latin America, Africa and Asia, and our non-U.S. operations are subject to the risk inherent in the international environment. Political, economic or social events or developments in one or more of our non-U.S. locations or in the U.S. arising from such international developments, such as limitations imposed on securing new listings on our exchanges or restrictions on entering into transactions with new or existing customers, could adversely affect our sales, operations and financial results. Some locations, such as Lithuania, India, the Philippines and in other emerging markets, have economies that may be subject to greater political, economic and social uncertainties than countries with more developed institutional structures, which may increase our operational risk.

Unforeseen or catastrophic events could interrupt our critical business functions. In addition, our U.S. and European businesses are heavily concentrated in particular areas and may be adversely affected by events in those areas.

We may incur losses as a result of unforeseen or catastrophic events, such as terrorist attacks, natural disasters, pandemics, extreme weather, fire, power loss, telecommunications failures, human error, theft, sabotage and vandalism. Given our position in the global capital markets, we may be more likely than other companies to be a target for malicious disruption activities.

In addition, our U.S. and European business operations are heavily concentrated in the east coast of the U.S., and Stockholm, Sweden, respectively. Any event that impacts either of those geographic areas could potentially affect our ability to operate our businesses.

We have disaster recovery and business continuity plans and capabilities for critical systems and business functions to mitigate the risk of an interruption. Any interruption in our critical business functions or systems could negatively impact our financial condition and operating results. Additionally, some colocation customers may lack adequate disaster recovery solutions to avoid loss of trade flow from a sustained interruption of our critical systems.

Because we have operations in numerous countries, we are exposed to currency risk.

We have operations in the U.S., the Nordic and Baltic countries, Canada, the United Kingdom, Australia and many other foreign countries. We therefore have significant exposure to exchange rate movements between the Euro, Swedish Krona, the Canadian dollar and other foreign currencies against the U.S. dollar. Significant inflation or disproportionate changes in foreign exchange rates with respect to one or more of these currencies could occur as a result of general economic conditions, acts of war or terrorism, changes in governmental monetary or tax policy, changes in local interest rates or other factors. These exchange rate differences will affect the translation of our non-U.S. results of operations, interest expense and financial condition into U.S. dollars as part of the preparation of our consolidated financial statements.

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

We utilize widely-accepted methods to identify, assess, monitor and manage our risks, including oversight of risk management by Nasdaq's Global Risk Management Committee, which comprises senior executives and has the responsibility for regularly reviewing risks and referring significant risks to the board of directors or specific board committees. Local risk management committees in our international offices provide local risk oversight and escalation to local boards, as appropriate. Certain risk management methods require subjective evaluation of dynamic information regarding markets, customers or other matters. That variable information may not in all cases be accurate, complete, up-to-date or properly evaluated. If we do not successfully identify, assess, monitor or manage the risks to which we are exposed, our business, reputation, financial condition and operating results could be materially adversely affected.

Decisions to declare future dividends on our common stock will be at the discretion of our board of directors and there can be no guarantee that we will pay future dividends to our stockholders.

Our board of directors regularly declares quarterly cash dividend payments on our outstanding common stock. Future declarations of dividends and the establishment of future record and payment dates are subject to approval by Nasdaq's board of directors. The board's determination to declare dividends will depend upon our profitability and financial condition, contractual restrictions, restrictions imposed by applicable law and other factors that the board deems relevant. Based on an evaluation of these factors, the board may determine not to declare future dividends at all or to declare future dividends at a reduced amount.

Provisions of our certificate of incorporation, by-laws, exchange rules (including provisions included to address SEC concerns) and governing law restrict the ownership and voting of our common stock. In addition, such provisions could delay or prevent a change in control of us and entrench current management.

Our organizational documents place restrictions on the voting rights of certain stockholders. The holders of our common stock are entitled to one vote per share on all matters to be voted upon by the stockholders except that no person may exercise voting rights in respect of any shares in excess of 5% of the then outstanding shares of our common stock. Any change to the 5% voting limitation would require SEC approval.

In response to the SEC's concern about a concentration of our ownership, the rules of some of our exchange subsidiaries include a prohibition on any member or any person associated with a member of the exchange from beneficially owning more than 20% of our outstanding voting interests. SEC consent would be required before any investor could obtain more than a 20% voting interest in us. The rules of some of our exchange subsidiaries also require the SEC's approval of any business ventures with exchange members, subject to exceptions.

Our organizational documents contain provisions that may be deemed to have an anti-takeover effect and may delay, deter or prevent a change of control of us, such as a tender offer or takeover proposal that might result in a premium over the market price for our common stock. Additionally, certain of these provisions make it more difficult to bring about a change in the composition of our board of directors, which could result in entrenchment of current management.

Our certificate of incorporation and by-laws:

- do not permit stockholders to act by written consent;
- require certain advance notice for director nominations and actions to be taken at annual meetings; and
- authorize the issuance of undesignated preferred stock, or "blank check" preferred stock, which could be issued by our board of directors without stockholder approval.

Section 203 of the Delaware General Corporation Law imposes restrictions on mergers and other business combinations between us and any holder of 15% or more (or, in some cases, a holder who previously held 15% or more) of our common stock. In general, Delaware law prohibits a publicly held corporation from engaging in a "business combination" with an "interested stockholder" for three years after the stockholder becomes an interested stockholder, unless the corporation's board of directors and stockholders approve the business combination in a prescribed manner.

Finally, many of the European countries where we operate regulated entities require prior governmental approval before an investor acquires 10% or greater of our common stock.

Item 1B. Unresolved Staff Comments

None.

Item 1C. Cybersecurity

Risk management and strategy

Nasdaq's brand and role as a critical infrastructure provider for global financial markets, and operator of the Nasdaq Stock Market, make us an attractive target for cybersecurity risks, including from international political opponents, hacktivists and ransomware or other financially motivated criminals targeting the financial sector. Our cybersecurity risks include financial and reputational damage, along with collateral damage from loss of customer confidence in our exchange, products or offerings, as applicable, potential regulatory enforcement actions or litigation, either from governmental authorities or shareholders, or the failure to comply with contractual breach notifications. To date, no risks from cybersecurity threats, including as a result of any previous cybersecurity incidents, have materially affected or are reasonably likely to materially affect our business, our business strategy, our results of operations or financial condition. For further information, see "Our role in the global marketplace positions us at greater risk for a cyberattack" and "Expanded cybersecurity regulations, and increased cybersecurity infrastructure and compliance costs, may adversely impact our results of operations" in "Item 1A, Risk Factors" of this Annual Report on Form 10-K.

Our risk management and mitigation approach includes the adoption of security controls and adaptive ongoing threat analysis. Our policies and our baseline security controls incorporate robust security infrastructure, risk-based controls and multi- layered defense systems. We have 16 System and Organization Controls Type 2, or SOC 2, certifications with respect to our information security and infrastructure. Our adaptive analysis monitors the threat landscape relevant to Nasdaq, our vendors and financial industry peers, and threats arising from geopolitical events. As the external threat landscape evolves, our information security controls are regularly evaluated, updated and enhanced to help protect against emerging risks. Additionally, we conduct extensive cybersecurity assessments of our acquired entities, both prior to acquisition and following completion of the transaction, to understand potential threats and mitigate any potential security gaps, as well as to ensure compliance with our security infrastructure and access management practices and policies.

We periodically engage external advisors to perform an analysis of our information security procedures, which include a review of program documentation and an overall maturity assessment of Nasdaq's information security programs. These advisors provide recommendations to further enhance our procedures. The findings are then presented to the Audit & Risk Committee of the Board of Directors, or the Audit & Risk Committee. In 2023, our management team and the Board of Directors conducted tabletop exercises and simulations in cybersecurity matters with assistance from internal and outside experts.

We use certain cloud-based third-party vendors for the core trading systems of certain of our exchanges and certain of our governance products and solutions. Prior to engaging such vendors, we analyze each provider's SOC2 certifications and perform due diligence and testing for information security and interoperability with our systems, and annually review the SOC2 certifications. Our security assurance and threat assessment team, within our Information Security organization, collaborates with our external threat intelligence providers to proactively review Nasdaq, and our vendors with respect to emerging threats and associated risks.

For our third-party service providers, our risk assessment process evaluates the probability and potential impact of incidents related to operational errors, technology disruptions, information security breaches, workforce issues, internal and external fraud, financial actions, and legal and regulatory matters. This assessment process is part of our Supplier Risk Management program, which establishes processes for identifying, assessing, and periodically reviewing our exposure to risk through third party vendors.

Governance

Cybersecurity is an integral part of risk management at Nasdaq. The Board of Directors appreciates the rapidly evolving nature of threats presented by cybersecurity incidents and is committed to the prevention, timely detection, and mitigation of the effect any such incidents may have on us. We use a cross-departmental approach to assess and manage cybersecurity risk, with our Information Security; Legal, Risk and Regulatory; and Internal Audit functions presenting on key topics to the Audit & Risk Committee, which provides oversight of our cybersecurity risk. Additionally, members from these organizations, along with Finance and Accounting, comprise a rapid response team that would mobilize in the event of a significant cybersecurity incident and would analyze and evaluate the incident while also advising the executive management team. Our Global Risk Management Committee, which includes our Chair and CEO and other senior executives, assists the Board of Directors in its cybersecurity risk oversight role.

Our Audit & Risk Committee receives quarterly or, if needed, more frequent reports on cybersecurity and information security matters from our Chief Information Security Officer, or CISO, and his team. The CISO has more than 25 years of experience in information technology and information security, particularly in the financial services industry, and our Information Security organization has more than 100 members, with expertise in application security; governance and compliance; program and vulnerability management; security engineering; security operations security assurance; and threat intelligence and security architecture.

This regular reporting to the Audit & Risk Committee also includes a cybersecurity dashboard that contains information on cybersecurity governance processes, and from time to time, also includes the status of projects to strengthen internal cybersecurity, ongoing prevention and mitigation efforts, security features of the products and services we provide our customers, or the results of security events during the period. The Audit & Risk Committee also reviews and discusses recent cyber incidents affecting the industry and the emerging threat landscape.

Cybersecurity is a shared responsibility, and our goal is for all employees to be vigilant in helping to protect our organization and themselves, at all times. We routinely perform simulations and tabletop exercises, and incorporate external resources and advisors as needed, to help strengthen our cybersecurity protection and information security procedures and safeguards. All employees are required to complete annual cybersecurity awareness training and have access to continuous cybersecurity educational opportunities throughout the year. Nasdaq also maintains a cybersecurity and information security risk insurance policy, and our Nasdaq Information Security Management System conforms to ISO 27001 requirements and is ISO 27001 certified.

On an annual basis, the Information Security team reviews and updates its governance documents, including the Information Security Charter, the Information Security Policy, and the Information Security Program Plan, and then presents the revised documents to the Audit & Risk Committee for review and/or approval. Additionally, the Information Security team maintains a formal cybersecurity strategic three-year plan, which outlines the strategic vision and associated goals for the cybersecurity of our global operations. The plan is regularly updated with new initiatives that align with technology innovations and changes in the threat landscape, and is reviewed and approved by the CISO and the Audit & Risk Committee. Throughout the three-year plan term, the CISO regularly provides management with progress reports.

Item 2. Properties

We conduct our business operations in leased facilities. We do not own any real property. Our U.S. headquarters are located in New York, New York, and our European headquarters are located in Stockholm, Sweden. We also lease space in multiple locations around the world, which are used for research and development, sales and support, and administrative activities, as well as for data centers and disaster preparedness facilities.

Generally, our properties are not allocated for use by a particular segment. Instead, most of our properties are used by two or more segments. We regularly monitor the facilities we occupy to ensure that they suit our needs in a hybrid work environment. We believe the facilities that we occupy are adequate for the purposes for which they are currently used and are well-maintained. See Note 16, "Leases," to the consolidated financial statements for further discussion.

Item 3. Legal Proceedings

For a description of our legal proceedings, if any, see “Legal and Regulatory Matters” of Note 18, “Commitments, Contingencies and Guarantees,” to the consolidated financial statements, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

Our common stock is listed on The Nasdaq Stock Market under the ticker symbol “NDAQ.” As of February 13, 2024, we had approximately 202 holders of record of our common stock.

Issuer Purchases of Equity Securities

Share Repurchase Program

See “Share Repurchase Program,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The table below represents repurchases made by or on behalf of us or any “affiliated purchaser” of our common stock during the fiscal quarter ended December 31, 2023:

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid Per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (in millions)
October 2023				
Share repurchase program	—	$ —	—	$ 2,000
Employee transactions	19,360	$ 48.85	N/A	N/A
November 2023				
Share repurchase program	1,751,513	$ 52.36	1,751,513	$ 1,908
Employee transactions	—	$ —	N/A	N/A
December 2023				
Share repurchase program	333,261	$ 54.44	333,261	$ 1,890
Employee transactions	17,883	$ 56.22	N/A	N/A
Total Quarter Ended December 31, 2023				
Share repurchase program	2,084,774	$ 52.69	2,084,774	$ 1,890
Employee transactions	37,243	$ 52.39	N/A	N/A

In the preceding table:

- N/A - Not applicable.
- See “Share Repurchase Program,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program.
- Employee transactions represents shares surrendered to us to satisfy tax withholding obligations arising from the vesting of restricted stock and PSUs previously issued to employees.

PERFORMANCE GRAPH

The following performance graph and related information shall not be deemed "filed" for purposes of Section 18 of the Exchange Act or incorporated by reference into any of our other filings under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

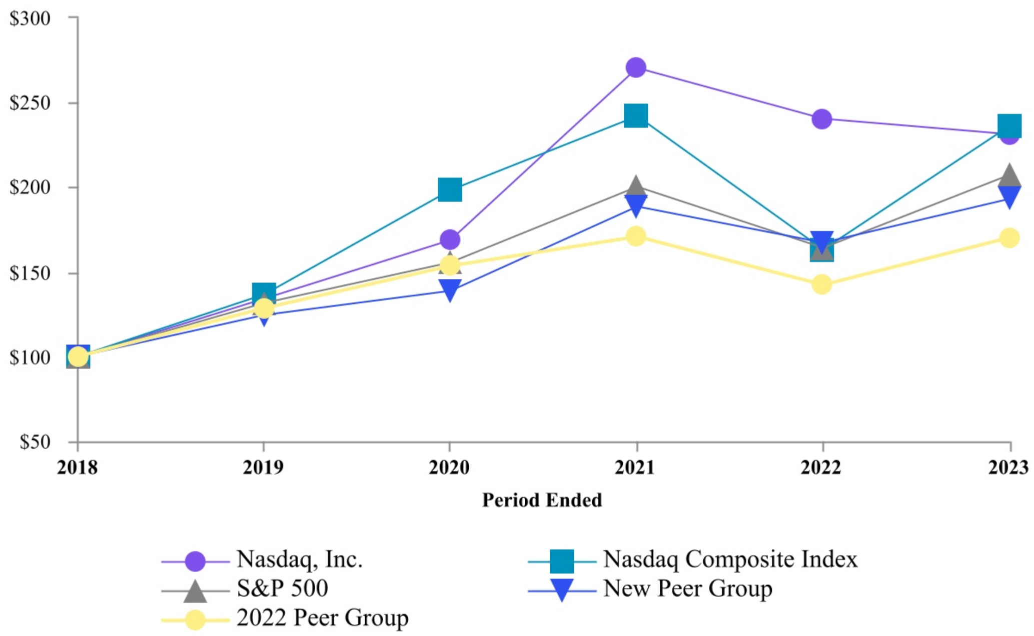
The following graph compares the total return of our common stock to the Nasdaq Composite Index, the S&P 500 and a peer group selected by us for the past five years. We changed our peer group in the table below to the S&P 500 GICS 4020 Index, or New Peer Group, which is a blend of exchanges, as well as data, financial technology and banking companies to align more closely with Nasdaq's diverse business and competitors.

	Fiscal Year Ended December 31,					
	2018	2019	2020	2021	2022	2023
Nasdaq, Inc.	$ 100	$ 134	$ 169	$ 270	$ 240	$ 231
Nasdaq Composite Index	100	137	198	242	163	236
S&P 500	100	131	156	200	164	207
New Peer Group	100	125	139	188	167	193
2022 Peer Group	100	128	153	171	142	170

The figures represented below assume an initial investment of $100 in the common stock or index at the closing price on December 31, 2018 and the reinvestment of all dividends.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN

Among Nasdaq, Inc., the Nasdaq Composite Index, the S&P 500 and Peer Groups



The prior peer group, collectively referred to as the 2022 Peer Group, was comprised of the following companies:

2022 Peer Group

• ASX Limited	• Deutsche Börse AG	• LSE
• B3 S.A.	• Euronext N.V.	• Singapore Exchange Limited
• Bolsas Mexicana de Valores, S.A.B. de C.V.	• Hong Kong Exchanges and Clearing Limited	• TMX Group Limited
• Cboe	• ICE	
• CME Group Inc.	• Japan Exchange Group, Inc.	

Item 6. [Reserved]

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

The following discussion and analysis of the financial condition and results of operations of Nasdaq refers to the year-over-year comparison for the fiscal years ended December 31, 2023 and December 31, 2022 and should be read in conjunction with our consolidated financial statements and related notes included in this Form 10-K, as well as the discussion under "Item 1A. Risk Factors." For further discussion of our growth strategy, products and services, and competitive strengths, see "Item 1. Business."

Discussion of fiscal year 2022 items and the year-over year comparison of changes in our financial condition and results of operations as of and for the fiscal years ended December 31, 2022 and December 31, 2021 can be found in Part II, "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, which was previously filed with the SEC on February 23, 2023. For the Financial Technology segment, which was impacted by the new divisional structure subsequent to the Adenza acquisition, the comparisons presented in this discussion and analysis also include the year-over-year comparison of results of operations for the fiscal years ended December 31, 2022 and December 31, 2021.

Business Segments

Our organizational structure aligns our businesses with the foundational shifts that are driving the evolution of the global financial system. Following the acquisition of Adenza, we further refined the divisional structure into Capital Access Platforms, Financial Technology and Market Services reportable segments. All prior periods have been restated to conform to the current period presentation. See Note 1, "Organization and Nature of Operations," and Note 19, "Business Segments," to the consolidated financial statements for further discussion of our reportable segments and geographic data, as well as how management allocates resources, assesses performance and manages these businesses as three separate segments. See "Part I, Item 1. Business" for additional discussion on recent developments and highlights.

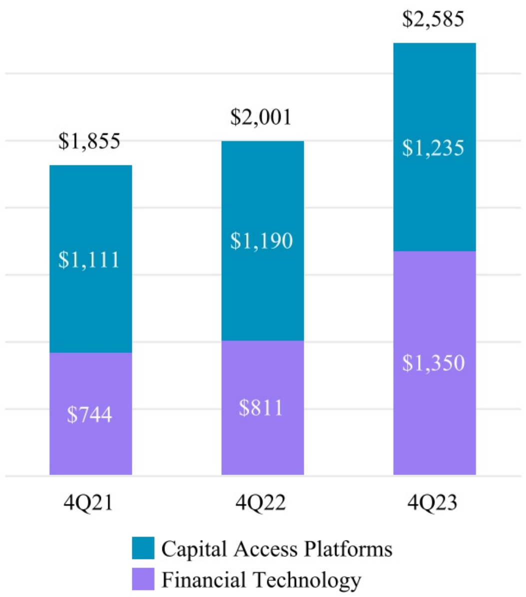
Nasdaq's Operating Results

The following tables summarize our financial performance for the year ended December 31, 2023 compared to the same period in 2022 and for the year ended December 31, 2022 when compared to the same period in 2021. The comparability of our results of operations between reported periods is impacted by the acquisition of Adenza in November 2023. See "2023 Acquisition," of Note 4, "Acquisitions," to the consolidated financial statements for further discussion. For a detailed discussion of our results of operations, see "Segment Operating Results" below.

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions, except per share amounts)				
Revenues less transaction-based expenses	$ 3,895	$ 3,582	$ 3,420	8.7 %	4.7 %
Operating expenses	2,317	2,018	1,979	14.8 %	2.0 %
Operating income	1,578	1,564	1,441	0.9 %	8.5 %
Net income attributable to Nasdaq	$ 1,059	$ 1,125	$ 1,187	(5.9)%	(5.2)%
Diluted earnings per share	$ 2.08	$ 2.26	$ 2.35	(8.0)%	(3.8)%
Cash dividends declared per common share	$ 0.86	$ 0.78	$ 0.70	10.3 %	11.4 %

In countries with currencies other than the U.S. dollar, revenues and expenses are translated using monthly average exchange rates. Impacts on our revenues less transaction-based expenses and operating income associated with fluctuations in foreign currency are discussed in more detail under "Item 7A. Quantitative and Qualitative Disclosures about Market Risk."

The following chart summarizes our ARR (in millions):

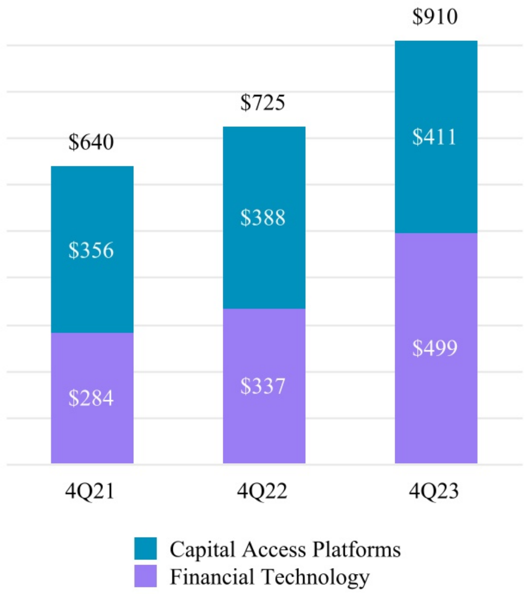


ARR for a given period is the current annualized value derived from subscription contracts with a defined contract value. This excludes contracts that are not recurring, are one-time in nature, or where the contract value fluctuates based on defined metrics. ARR is currently one of our key performance metrics to assess the health and trajectory of our recurring business. ARR does not have any standardized definition and is therefore unlikely to be comparable to similarly titled measures presented by other companies. ARR should be viewed independently of revenue and deferred revenue and is not intended to be combined with or to replace either of those items. For Adenza recurring revenue contracts, the amount included in ARR is consistent with the amount that we invoice the customer during the current period. Additionally, for Adenza recurring revenue contracts that include annual values that increase over time, we include in ARR only the annualized value of components of the contract that are considered active as of the date of the ARR calculation. We do not include the future committed increases in the contract value as of the date of the ARR calculation. ARR is not a forecast and the active contracts at the end of a reporting period used in calculating ARR may or may not be extended or renewed by our customers.

The ARR chart includes:

- Proprietary market data subscriptions and annual listing fees within our Data & Listing Services business, index data subscriptions and guaranteed minimum on futures contracts within our Index business and subscription contracts under our Workflow & Insights business.
- SaaS subscription and support contracts related to Verafin, surveillance, market technology, AxiomSL, Calypso and trade management services, excluding one-time service requests.

The following chart summarizes our quarterly annualized SaaS revenues for Solutions, which comprises our Capital Access Platforms and Financial Technology segments, for December 31, 2023, 2022 and 2021 (in millions):

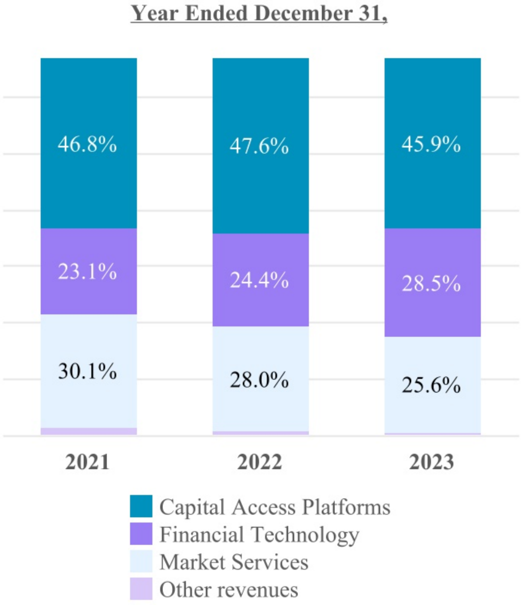


Segment Operating Results

The following table presents our revenues by segment:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Capital Access Platforms	$1,770	$1,682	$1,566	5.2 %	7.4 %
Financial Technology	1,099	864	772	27.2 %	11.9 %
Market Services, net	987	988	1,005	(0.1)%	(1.7)%
Other revenues	39	48	77	(18.8)%	(37.7)%
Total revenues less transaction-based expenses	$ 3,895	$ 3,582	$ 3,420	8.7 %	4.7 %

The following chart presents our Capital Access Platforms, Financial Technology and Market Services segments as a percentage of our total revenues, less transaction-based expenses.



CAPITAL ACCESS PLATFORMS

The following table presents revenues from our Capital Access Platforms segment:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Data & Listing Services	$ 749	$ 727	$ 678	3.0 %	7.2 %
Index	528	486	459	8.6 %	5.9 %
Workflow & Insights	493	469	429	5.1 %	9.3 %
Total Capital Access Platforms	$ 1,770	$ 1,682	$ 1,566	5.2 %	7.4 %

Data & Listing Services Revenues

The following table presents key drivers from our Data & Listing Services business:

	Year Ended December 31,		
	2023	2022	2021
IPOs			
The Nasdaq Stock Market - operating companies	103	87	319
The Nasdaq Stock Market - SPACs	27	74	433
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	7	38	174
Total new listings			
The Nasdaq Stock Market	330	366	1,000
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	23	63	207
Number of listed companies			
The Nasdaq Stock Market	4,044	4,230	4,178
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	1,218	1,251	1,235
	As of December 31,		
	2023	2022	2021
ARR (in millions)	$ 682	$ 664	$ 627

In the tables above:

- Number of total listed companies on The Nasdaq Stock Market for the years ended December 31, 2023, 2022 and 2021 included 600, 528 and 441 ETPs, respectively.
- IPOs, new listings (which includes IPOs) and total listed companies for exchanges that comprise Nasdaq Nordic and Nasdaq Baltic represent companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North.

Data & Listing Services revenues increased in 2023 compared with 2022 primarily due to an increase in proprietary data revenues driven largely by higher international demand and annual listing fee growth, partially offset by lower initial listings fees.

Index Revenues

The following table presents key drivers from our Index business:

	As of or Three Months Ended December 31, 2023	2022	2021
Number of licensed ETPs	388	379	362
TTM change in period end ETP AUM tracking Nasdaq indices (in billions)			
Beginning balance	$ 315	$ 424	$ 359
Net appreciation (depreciation)	128	(142)	83
Net impact of ETP sponsor switches	(1)	(1)	(92)
Net inflows	31	34	74
Ending balance	$ 473	$ 315	$ 424
Quarterly average ETP AUM tracking Nasdaq indices (in billions)	$ 436	$ 326	$ 400
ARR	$ 72	$ 68	$ 67

In the table above, TTM represents trailing twelve months.

Index revenues increased in 2023 compared with 2022 primarily due to higher AUM in exchange traded products linked to Nasdaq indices.

Workflow & Insights Revenues

The following table presents key drivers from our Workflow & Insights business:

	As of or Three Months Ended December 31 2023	2022	2021
	(in millions)		
ARR	$ 481	$ 458	$ 417
Quarterly annualized SaaS revenues	411	388	356

Workflow & Insights revenues increased in 2023 compared with 2022 due to an increase in both analytics and corporate solutions revenues. The increase in analytics revenues was primarily due to the growth in our eVestment and Solovis product offerings. The increase in our corporate solutions revenues was primarily due to continued demand for our ESG solutions.

FINANCIAL TECHNOLOGY

The following table presents revenues from our Financial Technology segment:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Financial Crime Management Technology	$ 223	$ 176	$ 104	26.7 %	69.2 %
Regulatory Technology	212	130	127	63.1 %	2.4 %
Capital Markets Technology	664	558	541	19.0 %	3.1 %
Total Financial Technology	$ 1,099	$ 864	$ 772	27.2 %	11.9 %

Financial Crime Management Technology Revenues

The following table presents key drivers for Financial Crime Management Technology business:

	As of or Twelve Months Ended December 31, 2023	2022	2021
	(in millions)		
ARR	$ 226	$ 182	$ 149
Quarterly annualized SaaS revenues	226	182	149

Financial Crime Management Technology revenues increased in 2023 compared with 2022 and 2022 compared with 2021 due to an increase in demand related to new sales to existing clients and new customer acquisitions. The 2022 increase was also driven by a $28 million purchase price adjustment from the Verafin acquisition on deferred revenue in 2021 and the inclusion of a full year of Verafin revenues in 2022.

Regulatory Technology Revenues

The following table presents key drivers for Regulatory Technology business:

	As of or Twelve Months Ended December 31, 2023	2022	2021
	(in millions)		
ARR	$ 325	$ 130	$ 120
Quarterly annualized SaaS revenues	165	116	104

Regulatory Technology revenues increased in 2023 compared with 2022 primarily due to the inclusion of revenues from our acquisition of Adenza and strong performance from our surveillance offerings in new sales to existing clients and new customer acquisitions. The strong performance of our surveillance offerings was also the key driver of the increase in 2022 compared with 2021.

Capital Markets Technology Revenues

The following table presents key drivers for Capital Markets Technology business:

	As of or Three Months Ended December 30,		
	2023	2022	2021
	(in millions)		
ARR	$ 799	$ 499	$ 475
Quarterly annualized SaaS revenues	108	39	31

Capital Markets Technology revenues increased in 2023 compared with 2022 and 2022 compared with 2021. The increase in 2023 was primarily due to the inclusion of revenues from our acquisition of Adenza, higher trade management services revenues mainly driven by demand for colocation and connectivity services and higher market technology revenues due to higher support revenues and higher professional services fees. The increase in 2022 was primarily due to higher trade management services revenues associated with increased demand for connectivity services, partially offset by lower market technology revenues. The decrease in market technology revenues in 2022 was due to the successful completion of long-term contracts in 2021 and the unfavorable impact of changes in foreign exchange rates of $10 million, partially offset by growth in SaaS-based revenues.

MARKET SERVICES

The following table presents revenues from our Market Services segment:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Market Services	$ 3,156	$ 3,632	$ 3,471	(13.1)%	4.6 %
Transaction-based expenses:					
Transaction rebates	(1,838)	(2,092)	(2,168)	(12.1)%	(3.5)%
Brokerage, clearance and exchange fees	(331)	(552)	(298)	(40.0)%	85.2 %
Total Market Services, net	$ 987	$ 988	$ 1,005	(0.1)%	(1.7)%

Our Market Services segment includes equity derivatives trading, cash equity trading, Nordic fixed income trading & clearing, U.S. Tape plans and other revenues. The following tables present net revenues by product from our Market Services segment:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
U.S. Equity Derivative Trading	$ 374	$ 371	$ 343	0.8 %	8.2 %
Cash Equity Trading	397	397	429	— %	(7.5)%
U.S. Tape plans	141	149	155	(5.4)%	(3.9)%
Other	75	71	78	5.6 %	(9.0)%
Total Market Services, net	$ 987	$ 988	$ 1,005	(0.1)%	(1.7)%

In the table above, Other includes Nordic fixed income trading & clearing, Nordic derivatives and Canadian cash equities trading.

U.S. Equity Derivative Trading

The following tables present total revenues, transaction-based expenses, and total revenues less transaction-based expenses as well as key drivers from our U.S. Equity Derivative Trading business:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
U.S. Equity Derivative Trading Revenues	$ 1,257	$ 1,252	$ 1,367	0.4 %	(8.4)%
Section 31 fees	55	89	32	(38.2)%	178.1 %
Transaction-based expenses:					
Transaction rebates	(879)	(878)	(1,018)	0.1 %	(13.8)%
Section 31 fees	(55)	(89)	(32)	(38.2)%	178.1 %
Brokerage and clearance fees	(4)	(3)	(6)	33.3 %	(50.0)%
U.S. Equity derivative trading revenues, net	$ 374	$ 371	$ 343	0.8 %	8.2 %

Section 31 fees are recorded as U.S. equity derivative and cash equity trading revenues with a corresponding amount recorded in transaction-based expenses. We are assessed these fees from the SEC and pass them through to our customers in the form of incremental fees. Pass-through fees can increase or decrease due to rate changes by the SEC, our percentage of the overall industry volumes processed on our systems, and differences in actual dollar value traded. Section 31 fees decreased in 2023 compared with 2022 primarily due to lower average SEC fee rates. Since the amount recorded in revenues is equal to the amount recorded as Section 31 fees, there is no impact on our net revenues.

	Year Ended December 31,		
	2023	2022	2021
U.S. equity options			
Total industry average daily volume (in millions)	40.4	38.2	37.2
Nasdaq PHLX matched market share	11.3 %	11.6 %	12.4 %
The Nasdaq Options Market matched market share	6.1 %	8.0 %	8.1 %
Nasdaq BX Options matched market share	3.3 %	2.8 %	1.4 %
Nasdaq ISE Options matched market share	5.9 %	5.7 %	6.6 %
Nasdaq GEMX Options matched market share	2.4 %	2.3 %	4.3 %
Nasdaq MRX Options matched market share	2.0 %	1.6 %	1.6 %
Total matched market share executed on Nasdaq's exchanges	31.0 %	32.0 %	34.4 %

U.S. equity derivative trading revenues, transaction rebates, in which we credit a portion of the execution charge to the market participant, and U.S. equity derivative trading revenues less transaction-based expenses remained relatively flat in 2023 compared with 2022 primarily due to higher industry trading volumes, partially offset by lower overall matched market share executed on Nasdaq's exchanges and lower gross capture rate.

Cash Equity Trading Revenues

The following tables present total revenues, transaction-based expenses, and total revenues less transaction-based expenses as well as key drivers and other metrics from our Cash Equity Trading business:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
		(in millions)			
Cash Equity Trading Revenues	$ 1,355	$ 1,605	1,578	(15.6)%	1.7 %
Section 31 fees	253	436	229	(42.0)%	90.4 %
Transaction-based expenses:					
Transaction rebates	(939)	(1,184)	(1,118)	(20.7)%	5.9 %
Section 31 fees	(253)	(436)	(229)	(42.0)%	90.4 %
Brokerage and clearance fees	(19)	(24)	(31)	(20.8)%	(22.6)%
Cash equity trading revenues, net	$ 397	$ 397	$ 429	— %	(7.5)%

See the discussion in "U.S. Equity Derivative Trading" for an explanation of Section 31 fees for 2023 as compared to 2022. Since the amount recorded in revenues is equal to the amount recorded as Section 31 fees, there is no impact on our net revenues.

	Year Ended December 31,		
	2023	2022	2021
Total U.S.-listed securities			
Total industry average daily share volume (in billions)	11.0	11.9	11.4
Matched share volume (in billions)	455.6	522.8	491.9
The Nasdaq Stock Market matched market share	15.8 %	16.2 %	15.8 %
Nasdaq BX matched market share	0.4 %	0.5 %	0.6 %
Nasdaq PSX matched market share	0.3 %	0.8 %	0.7 %
Total matched market share executed on Nasdaq's exchanges	16.5 %	17.5 %	17.1 %
Market share reported to the FINRA/Nasdaq Trade Reporting Facility	36.7 %	35.2 %	34.9 %
Total market share	53.2 %	52.7 %	52.0 %
Nasdaq Nordic and Nasdaq Baltic securities			
Average daily number of equity trades executed on Nasdaq's exchanges	666,411	908,813	1,036,523
Total average daily value of shares traded (in billions)	$ 4.5	$ 5.4	$ 6.4
Total market share executed on Nasdaq's exchanges	71.0 %	71.5 %	76.9 %

In the tables above, total market share includes transactions executed on The Nasdaq Stock Market's, Nasdaq BX's and Nasdaq PSX's systems plus trades reported through the FINRA/Nasdaq Trade Reporting Facility.

Cash equity trading revenues decreased in 2023 compared with 2022 primarily due to lower industry trading volumes, lower overall U.S. matched market share executed on Nasdaq's exchanges, as well as lower gross capture rates.

Cash equity trading revenues less transaction-based expenses remained flat in 2023 compared with 2022 primarily due to lower industry trading volumes and lower overall U.S. matched market share executed on Nasdaq's exchanges, partially offset by higher U.S. capture rate.

Transaction rebates decreased in 2023 compared with 2022. For The Nasdaq Stock Market and Nasdaq PSX, we credit a portion of the per share execution charge to the market participant that provides the liquidity, and for Nasdaq BX, we credit a portion of the per share execution charge to the market participant that takes the liquidity. The decrease was primarily due to lower rebate capture rate, lower U.S.

industry volumes, and lower U.S. matched market share executed on Nasdaq's exchanges.

U.S. Tape Plans

The following table presents revenues from our U.S. Tape plans business:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
U.S. Tape plans	$ 141	$ 149	$ 155	(5.4)%	(3.9)%

U.S. Tape plans revenues decreased in 2023 compared with 2022 primarily due to lower market share and usage.

Other

Other includes Nordic fixed income trading and clearing, Nordic derivatives and Canadian cash equities trading. The following tables present revenue and a key driver from our Other business:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Other	$ 75	$ 71	$ 78	5.6 %	(9.0)%

In the table above, other includes transaction rebates of $20 million, $30 million, and $32 million in 2023, 2022, and 2021 respectively.

	Year Ended December 31,		
	2023	2022	2021
Nasdaq Nordic and Nasdaq Baltic options and futures			
Total average daily volume of options and futures contracts	301,320	296,626	287,182

In the tables above, Nasdaq Nordic and Nasdaq Baltic total average daily volume of options and futures contracts include Finnish option contracts traded on Eurex for which Nasdaq and Eurex have a revenue sharing arrangement.

Other revenues increased in 2023 compared with 2022 primarily due to increased revenues in our Nordic derivatives trading, higher collateral management services revenues, partially offset by lower revenue from Canadian cash equities trading.

OTHER REVENUES

For the years ended December 31, 2023, 2022 and 2021, other revenues include revenues related to our European power trading and clearing business, following our announcement in June 2023 to sell this business to the European Energy Exchange, subject to regulatory approval. Prior to June 2023, these revenues were included in our Market Services and Capital Access Platforms segments. Also for the years ended December 31, 2023, 2022 and 2021, other revenues include a transitional services agreement associated with a divested business. For the year ended December 31, 2022 and 2021, other revenues also include revenues related to our Nordic broker services business for which we completed the wind-down in June 2022. Prior to June 2022, these revenues were included in our Market Services segment. Additionally, for the year ended December 31, 2021, other revenues include revenues associated with the NPM business which we contributed in July 2021 to a standalone, independent company, of which we own the largest minority interest, together with a consortium of third-party financial institutions. Prior to July 2021, these revenues were included in our Capital Access Platforms segment.

EXPENSES

Operating Expenses

The following table presents our operating expenses:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Compensation and benefits	$ 1,082	$ 1,003	$ 938	7.9%	6.9%
Professional and contract services	128	140	144	(8.6)%	(2.8)%
Computer operations and data communications	233	207	186	12.6%	11.3%
Occupancy	129	104	109	24.0%	(4.6)%
General, administrative and other	113	125	85	(9.6)%	47.1%
Marketing and advertising	47	51	57	(7.8)%	(10.5)%
Depreciation and amortization	323	258	278	25.2%	(7.2)%
Regulatory	34	33	64	3.0%	(48.4)%
Merger and strategic initiatives	148	82	87	80.5%	(5.7)%
Restructuring charges	80	15	31	433.3%	(51.6)%
Total operating expenses	$ 2,317	$ 2,018	$ 1,979	14.8%	2.0%

The increase in compensation and benefits expense for the year ended December 31, 2023 compared with the same period in 2022 was primarily driven by increased headcount. The increase in the year ended December 31, 2023 was partially offset by a favorable impact from foreign exchange rates of $12 million.

Headcount, including employees of non-wholly owned consolidated subsidiaries, increased to 8,525 employees as of December 31, 2023 from 6,377 as of December 31, 2022, primarily due to our acquisition of Adenza.

Professional and contract services expense decreased in 2023 compared with 2022 primarily due to reduced consulting costs and reduced legal fees.

Computer operations and data communications expense increased in 2023 compared with 2022 primarily due to higher costs related to our cloud initiatives.

Occupancy expense increased in 2023 compared with 2022 primarily due to a review of our real estate and facility capacity requirements due to our new and evolving work models initiated in the first quarter of 2023. As a result of this ongoing review, for the year ended December 31, 2023, we recorded $18 million in impairment charges and exit related costs following the abandonment of leased office space.

General, administrative and other expense decreased in 2023 compared with the same period in 2022 primarily due to an insurance recovery related to a legal matter in 2023 and a loss on extinguishment of debt recorded in 2022.

Marketing and advertising expense decreased in 2023 compared with 2022 primarily due to lower client incentives resulting from lower IPO activity.

Depreciation and amortization expense increased in 2023 compared with 2022 primarily due to an increase in amortization due to the intangible assets acquired as part of the Adenza acquisition.

Regulatory expense remained relatively flat in 2023 compared with 2022.

We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years, which have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third-party transaction costs and vary based on the size and frequency of the activities described above. The increase for the year ended December 31, 2023 compared with 2022 primarily reflects higher expenses related to the Adenza acquisition.

Restructuring charges increased in 2023 compared with 2022 as a result of charges from our 2022 divisional alignment program as well as the launch of our 2023 Adenza restructuring program. See Note 20, "Restructuring Charges," to the consolidated financial statements for further discussion. By 2025, we expect to achieve benefits of the 2022 divisional alignment program through combined annual run-rate operating efficiencies and revenue synergies of approximately $30 million annually. We expect to achieve $80 million of net expense synergies two years following the closing of the Adenza acquisition.

Non-operating Income and Expenses

The following table presents our non-operating income and expenses:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Interest income	$ 115	$ 7	$ 1	1,542.9 %	600.0 %
Interest expense	(284)	(129)	(125)	120.2 %	3.2 %
Net interest expense	(169)	(122)	(124)	38.5 %	(1.6)%
Net gain on divestiture of business	—	—	84	— %	(100.0)%
Other income (loss)	(1)	2	81	(150.0)%	(97.5)%
Net income (loss) from unconsolidated investees	(7)	31	52	(122.6)%	(40.4)%
Total non-operating income (expenses)	$ (177)	$ (89)	$ 93	98.9 %	(195.7)%

The following table presents our interest expense:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Interest expense on debt	$ 272	$ 120	$ 115	126.7 %	4.3 %
Accretion of debt issuance costs and debt discount	9	7	7	28.6 %	— %
Other fees	3	2	3	50.0 %	(33.3)%
Interest expense	$ 284	$ 129	$ 125	120.2 %	3.2 %

Interest income increased in 2023 compared with 2022 primarily due to a higher average cash balance during the period between the issuance of the senior unsecured notes in June 2023 and the closing of the Adenza acquisition, and an increase in interest rates.

Interest expense increased in 2023 compared with 2022 primarily due to debt issued in June 2023 to finance the Adenza acquisition as well as an increase in interest rates. See "Financing of the Adenza Acquisition," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.

The net gain on divestiture of business in 2021 relates to the sale of our U.S. Fixed Income business, which was part of our FICC business within our Market Services segment. We recognized a pre-tax gain on the sale of $84 million, net of disposal costs.

Other income (loss) primarily represents realized and unrealized gains and losses from strategic investments related to our corporate venture program.

Net income (loss) from unconsolidated investees decreased in 2023 compared with 2022 primarily due to lower income recognized from our equity method investments in OCC and NPM. See "Equity Method Investments," of Note 6, "Investments," to the consolidated financial statements for further discussion.

Tax Matters

The following table presents our income tax provision and effective tax rate:

	Year Ended December 31,			Percentage Change	
	2023	2022	2021	2023 vs. 2022	2022 vs. 2021
	(in millions)				
Income tax provision	$ 344	$ 352	$ 347	(2.3)%	1.4 %
Effective tax rate	24.6 %	23.9 %	22.6 %		

For further discussion of our tax matters, see Note 17, "Income Taxes," to the consolidated financial statements.

NON-GAAP FINANCIAL MEASURES

In addition to disclosing results determined in accordance with U.S. GAAP, we also provide non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share in this Annual Report on Form 10-K. Management uses this non-GAAP information internally, along with U.S. GAAP information, in evaluating our performance and in making financial and operational decisions. We believe our presentation of these measures provides investors with greater transparency and supplemental data relating to our financial condition and results of operations. In addition, we believe the presentation of these measures is useful to investors for period-to-period comparisons of our ongoing operating performance.

These measures are not in accordance with, or an alternative to, U.S. GAAP, and may be different from non-GAAP measures used by other companies. In addition, other companies, including companies in our industry, may calculate such measures differently, which reduces their usefulness as comparative measures. Investors should not rely on any single financial measure when evaluating our business. This non-GAAP information should be considered as supplemental in nature and is not meant as a substitute for our operating results in accordance with U.S. GAAP. We recommend investors review the U.S. GAAP financial measures included in this Annual Report on Form 10-K, including our consolidated financial statements and the notes thereto. When viewed in conjunction with our U.S. GAAP results and the accompanying reconciliation, we believe these non-GAAP measures provide greater transparency and a more complete understanding of factors affecting our business than U.S. GAAP measures alone.

We understand that analysts and investors regularly rely on non-GAAP financial measures, such as non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share, to assess operating performance. We use non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share because they highlight trends more clearly in our business that may not otherwise be apparent when relying solely on U.S. GAAP financial measures, since these measures eliminate from our results specific financial items that have less bearing on our ongoing operating performance. We believe that excluding the following items from the non-GAAP net income attributable to Nasdaq provides a more meaningful analysis of Nasdaq's ongoing operating performance and comparisons in Nasdaq's performance between periods:

- *Amortization expense of acquired intangible assets:* We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the businesses and the relative operating performance of the businesses between periods.

- *Merger and strategic initiatives expense:* We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years that have resulted in expenses which would not have otherwise been incurred. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction. These expenses primarily include integration costs, as well as legal, due diligence and other third-party transaction costs. The increase for the year ended December 31, 2023 compared to 2022 primarily reflects costs related to the Adenza acquisition.

- *Restructuring charges:* In the fourth quarter of 2023, following the closing of the Adenza acquisition, our management approved, committed to and initiated a restructuring program, "Adenza Restructuring" to optimize our efficiencies as a combined organization. In October 2022, following our September 2022 announcement to realign our segments and leadership, we initiated a divisional alignment program with a focus on realizing the full potential of this structure. In 2019, we initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the realignment of certain business areas. The 2019 restructuring plan was completed in June 2021. See Note 20, "Restructuring Charges," to the consolidated financial statements for further discussion of our 2023 Adenza restructuring program, our 2022 divisional alignment program and our 2019 restructuring plan.

- *Net loss (income) from unconsolidated investees*: We exclude our share of the earnings and losses of our equity method investments, primarily our equity interest in OCC and NPM. This provides a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods. See "Equity Method Investments," of Note 6, "Investments," to the consolidated financial statements for further discussion.
- *Other items:* We have excluded certain other charges or gains, including certain tax items, that are the result of other non-comparable events to measure operating performance. We believe the exclusion of such amounts allows management and investors to better understand the ongoing financial results of Nasdaq. Other significant items include:
  - *Lease asset impairments:* For 2023, this includes impairment charges related to our operating lease assets and leasehold improvements associated with vacating certain leased office space, which are recorded in occupancy and depreciation and amortization expense in our Consolidated Statements of Income.
  - *Extinguishment of debt:* For 2022 and 2021 this includes a loss on extinguishment of debt, which is recorded under general, administrative and other expense in our Consolidated Statements of Income.
  - *Legal and regulatory matters:* For 2023 and 2022, this includes accruals related to certain legal matters. For 2023, these charges were partially offset by insurance recoveries related to certain legal matters. The charges and related insurance recoveries are recorded in professional and contract services and general, administrative and other expense in the Consolidated Statements of Income. For 2022 and 2021, this also includes a charge related to an administrative fine imposed by the SFSA. related to the clearing default that occurred in 2018. This charge was included in regulatory expense in the Consolidated Statements of Income.
  - *Net gain on divestiture of business:* For 2021, this represents our pre-tax net gain of $84 million on the sale of our U.S. Fixed Income business.
  - *Pension settlement charge:* For 2023, we terminated our U.S. pension plan and recorded a partial settlement charge under compensation and benefits in the Consolidated Statements of Income. See Note 10, "Retirement Plans," to the consolidated financial statements for further discussion.
  - *Other loss (income):* For 2023, this includes certain financing costs related to the Adenza acquisition. For 2023, 2022 and 2021 this also includes net gains and losses from strategic investments entered into through our corporate venture program, which are included in other income (loss) in our Consolidated Statements of Income.
- *Significant tax items:* The non-GAAP adjustment to the income tax provision for all periods primarily includes the tax impact of each non-GAAP adjustment. In addition, for the year ended December 31, 2021, the non-GAAP adjustment to the income tax provision includes adjustments related to return-to-provision.

The following tables present reconciliations between U.S. GAAP net income attributable to Nasdaq and diluted earnings per share and non-GAAP net income attributable to Nasdaq and diluted earnings per share:

	Year Ended December 31,		
	2023	2022	2021
	(in millions, except per share amounts)		
U.S. GAAP net income attributable to Nasdaq	$ 1,059	$ 1,125	$ 1,187
Non-GAAP adjustments:			
Amortization expense of acquired intangible assets	206	153	170
Merger and strategic initiatives expense	148	82	87
Restructuring charges	80	15	31
Lease asset impairments	25	—	—
Extinguishment of debt	—	16	33
Net loss (income) from unconsolidated investees	7	(29)	(52)
Legal and regulatory matters	12	26	44
Net gain on divestiture of business	—	—	(84)
Pension settlement charge	9	—	—
Other	21	2	(82)
Total non-GAAP adjustments	508	265	147
Total non-GAAP tax adjustments	(134)	(66)	(61)
Total non-GAAP adjustments, net of tax	374	199	86
Non-GAAP net income attributable to Nasdaq	$ 1,433	$ 1,324	$ 1,273
U.S. GAAP effective tax rate	24.6 %	23.9 %	22.6 %
Total adjustments from non-GAAP tax rate	0.4 %	0.1 %	1.7 %
Non-GAAP effective tax rate	25.0 %	24.0 %	24.3 %
Weighted-average common shares outstanding for diluted earnings per share	508.4	497.9	505.1
U.S. GAAP diluted earnings per share	$ 2.08	$ 2.26	$ 2.35
Total adjustments from non-GAAP net income	0.74	0.40	0.17
Non-GAAP diluted earnings per share	$ 2.82	$ 2.66	$ 2.52

LIQUIDITY AND CAPITAL RESOURCES

Historically, we have funded our operating activities and met our commitments through cash generated by operations, augmented by the periodic issuance of debt. Currently, our cost and availability of funding remain healthy. We continue to prudently assess our capital deployment strategy through balancing acquisitions, internal investments, debt repayments, and shareholder return activity, including share repurchases and dividends.

We expect that our current cash and cash equivalents combined with cash flows provided by operating activities, supplemented with our borrowing capacity and access to additional financing, including our revolving credit facility and our commercial paper program, provides us additional flexibility to meet our ongoing obligations and the capital deployment strategic actions described above, while allowing us to invest in activities and product development that support the long-term growth of our operations.

Principal factors that could affect the availability of our internally-generated funds include:

- deterioration of our revenues in any of our business segments;
- changes in regulatory and working capital requirements; and
- an increase in our expenses.

Principal factors that could affect our ability to obtain cash from external sources include:

- operating covenants contained in our credit facilities that limit our total borrowing capacity;
- credit rating downgrades, which could limit our access to additional debt;
- a significant decrease in the market price of our common stock; and
- volatility or disruption in the public debt and equity markets.

The following table summarizes selected measures of our liquidity and capital resources:

	December 31, 2023	December 31, 2022
	(in millions)	
Cash and cash equivalents	$ 453	$ 502
Financial investments	188	181
Working capital	71	(231)

Cash and Cash Equivalents

Cash and cash equivalents includes all non-restricted cash in banks and highly liquid investments with original maturities of 90 days or less at the time of purchase. The balance retained in cash and cash equivalents is a function of anticipated or possible short-term cash needs, prevailing interest rates, our investment policy, and alternative investment choices. As of December 31, 2023, our cash and cash equivalents of $453 million were primarily invested in money market funds, commercial paper, municipal bonds and bank deposits.

Repatriation of Cash

Our cash and cash equivalents held outside of the U.S. in various foreign subsidiaries totaled $236 million as of December 31, 2023 and $275 million as of December 31, 2022. The remaining balance held in the U.S. totaled $217 million as of December 31, 2023 and $227 million as of December 31, 2022.

Cash Flow Analysis

The following table summarizes the changes in cash flows:

	Year Ended December 31,		
	2023	2022	2021
Net cash provided by (used in):	(in millions)		
Operating activities	$ 1,696	$ 1,706	$ 1,083
Investing activities	(5,994)	49	(2,653)
Financing activities	4,220	1,036	1,418

Net Cash Provided by Operating Activities

Net cash provided by operating activities primarily consists of net income adjusted for certain non-cash items, including depreciation and amortization expense, expense associated with share-based compensation, deferred income taxes and the effects of changes in working capital. Changes in working capital include changes in accounts receivable and deferred revenue which are impacted by the timing of customer billings and related collections from our customers; accounts payable and accrued expenses due to timing of payments; accrued personnel costs, which are impacted by employee performance targets and the timing of payments related to employee bonus incentives; and Section 31 fees payable to the SEC, which is impacted by the changes in SEC fee rates and the timing of collections from customers and payments to the SEC.

Net cash provided by operating activities decreased $10 million for 2023 compared with 2022, excluding the impact of the Adenza acquisition, which is reflected in net cash provided by (used in) investing activities. The decrease was primarily driven by changes in our working capital and timing of various payments and receipts of $(129) million, partially offset by an increase of $119 million driven by the increase in net income adjusted for certain noncash operating activities. The changes in working capital primarily included a decrease in Section 31 fees payable to the SEC, partially offset by lower receivables largely due to a decrease in Section 31 fees receivable as well as timing of collection and an increase in accounts payable and accrued expenses primarily due to an increase in our accrued interest payable from issuances of senior unsecured notes in connection with the Adenza acquisition. Non-cash charges in 2023 primarily included $323 million of depreciation and amortization and $122 million of share-based compensation.

Net Cash Provided by (Used in) Investing Activities

Net cash used in investing activities for the year ended December 31, 2023 primarily related to $5,766 million paid for the acquisition of Adenza, net of cash and cash equivalents acquired, purchases of property and equipment of

$158 million, net purchases of investments related to default funds and margin deposits of $74 million and $3 million from other investing activities, partially offset by proceeds from the sales and redemptions of trading securities, net of $7 million.

Net cash provided by investing activities for the year ended December 31, 2022 primarily related to net proceeds from sales and redemptions of default funds and margin deposits of $211 million and proceeds of $33 million from other investing activities, partially offset by purchases of property and equipment of $152 million and $41 million cash used for acquisitions, net of cash and cash equivalents acquired.

Net Cash Provided by Financing Activities

Net cash provided by financing activities for the year ended December 31, 2023 primarily related to $5,608 million proceeds from issuances of senior unsecured notes and the 2023 Term Loan, in connection with the Adenza acquisition, net of debt issuance costs, partially offset by $441 million of dividend payments to our shareholders, $371 million from repayments of our commercial paper, net, $269 million in repurchases of common stock and $260 million relating to partial repayment of the 2023 Term Loan.

Net cash provided by financing activities for the year ended December 31, 2022 primarily related to an increase in default funds and margin deposits of $2,440 million, proceeds of $541 million from the issuances of long-term-debt and proceeds of $238 million from the issuances of our commercial paper, net, partially offset by $1,097 million related to the repayment of our 2022 and 2024 Notes, $383 million of dividend payments to our shareholders, $325 million of repurchases of common stock pursuant to the ASR agreement and $308 million in other repurchases of common stock.

See Note 4, “Acquisitions,” to the consolidated financial statements for further discussion.

See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion of our debt obligations.

See “Share Repurchase Program,” and “Cash Dividends on Common Stock,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program and cash dividends declared and paid on our common stock.

Financial Investments

Our financial investments totaled $188 million as of December 31, 2023 and $181 million as of December 31, 2022. Of these securities, $168 million as of December 31, 2023 and $161 million as of December 31, 2022 are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing. See Note 6, “Investments,” to the consolidated financial statements for further discussion.

Regulatory Capital Requirements

Clearing Operations Regulatory Capital Requirements

We are required to maintain minimum levels of regulatory capital for the clearing operations of Nasdaq Clearing. The level of regulatory capital required to be maintained is dependent upon many factors, including market conditions and creditworthiness of the counterparty. As of December 31, 2023, our required regulatory capital of $123 million was primarily comprised of highly rated European government debt securities that are included in financial investments in the Consolidated Balance Sheets.

Broker-Dealer Net Capital Requirements

Our broker-dealer subsidiaries, Nasdaq Execution Services, NFSTX, LLC, and Nasdaq Capital Markets Advisory, are subject to regulatory requirements intended to ensure their general financial soundness and liquidity. These requirements obligate these subsidiaries to comply with minimum net capital requirements. As of December 31, 2023, the combined required minimum net capital totaled $1 million and the combined excess capital totaled $27 million, substantially all of which is held in cash and cash equivalents in the Consolidated Balance Sheets. The required minimum net capital is included in restricted cash and cash equivalents in the Consolidated Balance Sheets.

Nordic and Baltic Exchange Regulatory Capital Requirements

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations and are required to maintain regulatory capital intended to ensure their general financial soundness and liquidity. As of December 31, 2023, our required regulatory capital of $37 million was primarily invested in European government bills and mortgage bonds and Icelandic government bonds that are included in financial investments in the Consolidated Balance Sheets and cash, which is included in restricted cash and cash equivalents in the Consolidated Balance Sheets.

Other Capital Requirements

We operate several other businesses which are subject to local regulation and are required to maintain certain levels of regulatory capital. As of December 31, 2023, other required regulatory capital of $16 million, primarily related to Nasdaq Central Securities Depository, was primarily invested in European government debt securities that are included in financial investments in the Consolidated Balance Sheets.

Equity and dividends

Share Repurchase Program

See “Share Repurchase Program,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program.

Cash Dividends on Common Stock

The following table presents our quarterly cash dividends paid per common share on our outstanding common stock:

	2023	2022
First quarter	$ 0.20	$ 0.18
Second quarter	0.22	0.20
Third quarter	0.22	0.20
Fourth quarter	0.22	0.20
Total	$ 0.86	$ 0.78

See "Cash Dividends on Common Stock," of Note 12, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of the dividends.

Debt Obligations

The following table summarizes our debt obligations by contractual maturity:

	Maturity Date	December 31, 2023	December 31, 2022
		(in millions)	
Short-term debt:			
Commercial paper		$ 291	$ 664
Total short-term debt		$ 291	$ 664
Long-term debt - senior unsecured notes:			
2025 Notes	June 2025	497	—
2026 Notes	June 2026	499	498
2028 Notes	June 2028	991	—
2029 Notes	March 2029	658	637
2030 Notes	February 2030	658	637
2031 Notes	January 2031	645	644
2032 Notes	February 2032	819	—
2033 Notes	July 2033	674	653
2034 Notes	February 2034	1,239	—
2040 Notes	December 2040	644	644
2050 Notes	April 2050	487	486
2052 Notes	March 2052	541	541
2053 Notes	August 2053	738	—
2063 Notes	June 2063	738	—
2023 Term Loan	November 2026	339	—
2022 Revolving Credit Facility	December 2027	(4)	(5)
Total long-term debt		$ 10,163	$ 4,735
Total debt obligations		$ 10,454	$ 5,399

For the year ended December 31, 2023, the weighted average interest rate on our debt obligations was approximately 3.5%. This rate can fluctuate based on changes in interest rates for our variable rate debts, changes in foreign currency exchange rates and changes in the amount and duration of outstanding debt.

In December 2022, Nasdaq amended and restated its previously issued $1.25 billion five-year revolving credit facility, with a new maturity date of December 16, 2027. In addition to the 2022 Revolving Credit Facility, we also have other credit facilities primarily to support our Nasdaq Clearing operations in Europe, as well as to provide a cash pool credit line for one subsidiary. These European credit facilities, which are available in multiple currencies, totaled $191 million as of December 31, 2023 and $184 million as of December 31, 2022 in available liquidity, none of which was utilized.

Financing of the Adenza Acquisition

In June 2023, Nasdaq issued six series of notes for total proceeds of $5,016 million, net of debt issuance costs of $38 million, with various maturity dates ranging from 2025 to 2063. During the second half of 2023, we incurred an additional $6 million in debt issuance costs, for a total net proceeds from the issuance of the six series of notes of $5,010 million as of December 31, 2023. The net proceeds from these notes were used to finance the majority of the cash consideration due in connection with the Adenza acquisition.

In addition, in connection with the financing of the Adenza acquisition, we entered into the 2023 Term Loan agreement. The 2023 Term Loan provided us with the ability to borrow up to $600 million to finance a portion of the cash consideration for the Adenza acquisition and other amounts incurred in connection with this transaction. Under the 2023 Term Loan, borrowings bear interest on the principal amount outstanding at a variable interest rate based on the SOFR plus an applicable margin that varies with Nasdaq's debt rating. On November 1, 2023, we borrowed $599 million, net of fees, under this term loan towards payment of the cash consideration due in connection with the Adenza acquisition. We made a partial repayment during the fourth quarter of $260 million. As of December 31, 2023, we had $339 million outstanding under this term loan.

As of December 31, 2023, we were in compliance with the covenants of all of our debt obligations.

See Note 9, "Debt Obligations," to the consolidated financial statements for further discussion of our debt obligations.

Contractual Obligations and Contingent Commitments

Nasdaq has contractual obligations to make future payments under debt obligations by contract maturity, minimum rental commitments under non-cancelable operating leases and other obligations. The following table shows these contractual obligations as of December 31, 2023:

	Payments Due by Period				
(in millions)	Total	<1 year	1-3 years	3-5 years	5+ years
Debt obligation by contractual maturity	$ 16,759	$ 714	$ 2,103	$ 1,651	$ 12,291
Operating lease obligations	616	84	133	113	286
Purchase obligations	442	92	130	92	128
Total	$ 17,817	$ 890	$ 2,366	$ 1,856	$ 12,705

In the preceding table:

- Debt obligations by contractual maturity include both principal and interest obligations. As of December 31, 2023, an interest rate of 4.8% was used to compute the amount of the contractual obligations for interest on the 2022 Revolving Credit Facility and 6.7% was used to compute the amount of the contractual obligations for interest on the 2023 Term Loan. For our Euro denominated notes interest is calculated on an actual basis while all other debt is calculated on a 360-day basis at the contractual fixed rate multiplied by the aggregate principal amount as of December 31, 2023. See Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.
- Operating lease obligations represent our undiscounted operating lease liabilities as of December 31, 2023, as well as legally binding minimum lease payments for leases signed but not yet commenced. See Note 16, "Leases," to the consolidated financial statements for further discussion of our leases.
- Purchase obligations primarily represent minimum outstanding obligations due under software license agreements, of which the majority relates to our multi-year AWS partnership contract.

Off-Balance Sheet Arrangements

For discussion of off-balance sheet arrangements see:

- Note 15, "Clearing Operations," to the consolidated financial statements for further discussion of our non-cash default fund contributions and margin deposits received for clearing operations; and
- Note 18, "Commitments, Contingencies and Guarantees," to the consolidated financial statements for further discussion of:
  - Guarantees issued and credit facilities available;
  - Other guarantees; and
  - Routing brokerage activities.

Quantitative and Qualitative Disclosures About Market Risk

As a result of our operating, investing and financing activities, we are exposed to market risks such as interest rate risk and foreign currency exchange rate risk. We are also exposed to credit risk as a result of our normal business activities.

We have implemented policies and procedures to measure, manage, monitor and report risk exposures, which are reviewed regularly by management and the board of directors. We identify risk exposures and monitor and manage such risks on a daily basis.

We perform sensitivity analyses to determine the effects of market risk exposures. We may use derivative instruments solely to hedge financial risks related to our financial positions or risks that are incurred during the normal course of business. We do not use derivative instruments for speculative purposes.

Interest Rate Risk

We are subject to the risk of fluctuating interest rates in the normal course of business. Our exposure to market risk for changes in interest rates relates primarily to our financial investments and debt obligations, which are discussed below.

Financial Investments

As of December 31, 2023, our investment portfolio was primarily comprised of highly rated European government debt securities, which pay a fixed rate of interest. These securities are subject to interest rate risk and the fair value of these securities will decrease if market interest rates increase. If market interest rates were to increase immediately and uniformly by a hypothetical 100 basis points from levels as of December 31, 2023, the fair value of this portfolio would decline by $3 million.

Debt Obligations

As of December 31, 2023, substantially all of our debt obligations were fixed-rate obligations. Interest rates on certain tranches of notes are subject to adjustment to the extent our debt rating is downgraded below investment grade, as further discussed in Note 9, "Debt Obligations," to the consolidated financial statements. While changes in interest rates will have no impact on the interest we pay on fixed-rate obligations, we are exposed to changes in interest rates as a result of the borrowings under our 2022 Revolving Credit Facility, our commercial paper program and the 2023 Term Loan as these facilities have a variable interest rate. As of December 31, 2023, we have $291 million outstanding borrowings under our commercial paper program and $339 million outstanding under the 2023 Term Loan. A hypothetical 100 basis points increase in interest rates on our outstanding commercial paper and our 2023 Term Loan would increase our annual interest expense by approximately $6 million based on borrowings as of December 31, 2023.

We may utilize interest rate swap agreements to achieve a desired mix of variable and fixed rate debt.

Foreign Currency Exchange Rate Risk

We are subject to foreign currency exchange rate risk. Our primary transactional exposure to foreign currency denominated revenues less transaction-based expenses and operating income for the years ended December 31, 2023 and 2022 are presented in the following tables:

	Euro	Swedish Krona	Canadian Dollar	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)					
Year Ended December 31, 2023						
Average foreign currency rate to the U.S. dollar	1.081	0.094	0.741	#	N/A	N/A
Percentage of revenues less transaction-based expenses	6.6%	4.0%	0.8%	3.0%	85.6%	100.0%
Percentage of operating income	10.7%	(3.8)%	(7.0)%	(8.3)%	108.4%	100.0%
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$(26)	$(15)	$(3)	$(12)	$—	
Impact of a 10% adverse currency fluctuation on operating income	$(17)	$(6)	$(11)	$(13)	$—	

	Euro	Swedish Krona	Canadian Dollar	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)					
Year Ended December 31, 2022						
Average foreign currency rate to the U.S. dollar	1.054	0.099	0.768	#	N/A	N/A
Percentage of revenues less transaction-based expenses	6.2%	5.1%	0.9%	3.2%	84.6%	100.0%
Percentage of operating income	10.1%	(2.8)%	(5.9)%	(4.7)%	103.3%	100.0%
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$(22)	$(18)	$(3)	$(12)	$—	
Impact of a 10% adverse currency fluctuation on operating income	$(16)	$(4)	$(9)	$(8)	$—	

Represents multiple foreign currency rates.
N/A Not applicable.

The adverse impacts shown above should be viewed individually by currency and not in aggregate due to the correlation between changes in exchanges rates for certain currencies.

Our investments in foreign subsidiaries are exposed to volatility in currency exchange rates through translation of the foreign subsidiaries' net assets or equity to U.S. dollars. Substantially all of our foreign subsidiaries operate in functional currencies other than the U.S. dollar. The financial statements of these subsidiaries are translated into U.S. dollars for consolidated reporting using a current rate of exchange, with net gains or losses recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets.

Our primary exposure to net assets in foreign currencies as of December 31, 2023 is presented in the following table:

	Net Assets	Impact of a 10% Adverse Currency Fluctuation
	(in millions)	
Swedish Krona	$ 3,012	$ 301
Norwegian Krone	144	14
British Pound	140	14
Canadian Dollar	102	10
Australian Dollar	96	10
Euro	60	6

In the table above, Swedish Krona includes goodwill of $2,230 million and intangible assets, net of $498 million.

Credit Risk

Credit risk is the potential loss due to the default or deterioration in credit quality of customers or counterparties. We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. We limit our exposure to credit risk by evaluating the counterparties with which we make investments and execute agreements. For our investment portfolio, our objective is to invest in securities to preserve principal while maximizing yields, without significantly increasing risk. Credit risk associated with investments is minimized substantially by ensuring that these financial assets are placed with governments which have investment grade ratings, well-capitalized financial institutions and other creditworthy counterparties.

Our subsidiary, Nasdaq Execution Services, may be exposed to credit risk due to the default of trading counterparties in connection with the routing services it provides for our trading customers. System trades in cash equities routed to other market centers for members of our cash equity exchanges are routed by Nasdaq Execution Services for clearing to the NSCC. In this function, Nasdaq Execution Services is to be neutral by the end of the trading day, but may be exposed to intraday risk if a trade extends beyond the trading day and into the next day, thereby leaving Nasdaq Execution Services susceptible to counterparty risk in the period between accepting the trade and routing it to the clearinghouse. In this interim period, Nasdaq Execution Services is not novating like a clearing broker but instead is subject to the short-term risk of counterparty failure before the clearinghouse enters the transaction. Once the clearinghouse officially accepts the trade for novation, Nasdaq Execution Services is legally removed from trade execution risk. However, Nasdaq has membership obligations to NSCC independent of Nasdaq Execution Services' arrangements.

Pursuant to the rules of the NSCC and Nasdaq Execution Services' clearing agreement, Nasdaq Execution Services is liable for any losses incurred due to a counterparty or a clearing agent's failure to satisfy its contractual obligations, either by making payment or delivering securities. Adverse movements in the prices of securities that are subject to these transactions can increase our credit risk. However, we believe that the risk of material loss is limited, as Nasdaq Execution Services' customers are not permitted to trade on margin and NSCC rules limit counterparty risk on self-cleared transactions by establishing credit limits and capital deposit requirements for all brokers that clear with NSCC. Historically, Nasdaq Execution Services has never incurred a liability due to a customer's failure to satisfy its contractual obligations as counterparty to a system trade. Credit difficulties or insolvency, or the perceived possibility of credit difficulties or insolvency, of one or more larger or visible market participants could also result in market-wide credit difficulties or other market disruptions.

We have credit risk related to transaction and subscription-based revenues that are billed to customers on a monthly or quarterly basis, in arrears. Our potential exposure to credit losses on these transactions is represented by the receivable balances in our Consolidated Balance Sheets. We review and evaluate changes in the status of our counterparties' creditworthiness. Credit losses such as those described above could adversely affect our consolidated financial position and results of operations.

We also are exposed to credit risk through our clearing operations with Nasdaq Clearing. See Note 15, "Clearing Operations," to the consolidated financial statements for further discussion. Our clearinghouse holds material amounts of clearing member cash deposits, which are held or invested primarily to provide security of capital while minimizing credit, market and liquidity risks. While we seek to achieve a reasonable rate of return, we are primarily concerned with preservation of capital and managing the risks associated with these deposits. As the clearinghouse may pass on interest revenues (minus costs) to the members, this could include negative or reduced yield due to market conditions. The following is a summary of the risks associated with these deposits and how these risks are mitigated.

- *Credit Risk.* When the clearinghouse has the ability to hold cash collateral at a central bank, the clearinghouse utilizes its access to the central bank system to minimize credit risk exposures. When funds are not held at a central bank, we seek to substantially mitigate credit risk by ensuring that investments are primarily placed in large, highly rated financial institutions, highly rated government debt instruments and other creditworthy counterparties.
- *Liquidity Risk.* Liquidity risk is the risk a clearinghouse may not be able to meet its payment obligations in the right currency, in the right place and the right time. To mitigate this risk, the clearinghouse monitors liquidity requirements closely and maintains funds and assets in a manner which minimizes the risk of loss or delay in the access by the clearinghouse to such funds and assets. For example, holding funds with a central bank where possible or investing in highly liquid government debt instruments serves to reduce liquidity risks.
- *Interest Rate Risk.* Interest rate risk is the risk that interest rates rise causing the value of purchased securities to decline. If we were required to sell securities prior to maturity, and interest rates had risen, the sale of the securities might be made at a loss relative to the latest market price. Our clearinghouse seeks to manage this risk by making short term investments of members' cash deposits. In addition, the clearinghouse investment guidelines allow for direct purchases or repurchase agreements with short dated maturities of high quality sovereign debt (for example, European government and U.S. Treasury securities), central bank certificates and multilateral development bank debt instruments.
- *Security Issuer Risk.* Security issuer risk is the risk that an issuer of a security defaults on its payment when the security matures. This risk is mitigated by limiting allowable investments and collateral under reverse repurchase agreements to high quality sovereign, government agency or multilateral development bank debt instruments.

Critical Accounting Policies and Estimates

The preparation of financial statements and related disclosures in conformity with U.S. GAAP requires management to make judgments, assumptions, and estimates that affect the amounts reported in the consolidated financial statements and accompanying notes. Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements describes the significant accounting policies and methods used in the preparation of the consolidated financial statements. The accounting policies described below are significantly affected by critical accounting estimates. Such accounting policies require significant judgments, assumptions, and estimates used in the preparation of the consolidated financial statements, and actual results could differ materially from the amounts reported based on these policies.

Revenue Recognition

As part of our market technology product offering, we enter into certain long-term contracts with customers to develop customized technology solutions, license the right to use software and provide support and other services to our customers which results in these contracts containing multiple performance obligations. We allocate the contract transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. In instances where standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price predominantly through an expected cost plus a margin approach.

We generally recognize revenue over time as our customers simultaneously receive and consume the benefits provided by our performance because our customer controls the asset for which we are creating, our performance does not create an asset with alternative use, and we have a right to payment for performance completed to date. For these services, we recognize revenue over time using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying our performance obligation. Incurred costs represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer.

Accounting for our long-term contracts requires judgment relative to assessing risks and their impact on the estimate of revenues and costs. Our estimates are impacted by factors such as the potential for schedule and technical issues, productivity and the complexity of work performed. Revenue and cost estimates for our long-term contracts are reviewed and reassessed at least quarterly. When adjustments in estimated total contract costs are required, any changes in the estimated revenues from prior estimates are recognized in the current period for the effect of such change. If estimates of total costs to be incurred on a contract exceed estimates of total revenues, a provision for the entire estimated loss on the contract is recorded in the period in which the loss is determined.

Due to the significance of judgment in the estimation process, as discussed above, changes in assumptions and estimates may adversely or positively affect financial performance in future periods.

For further discussion related to recognition of these revenues, see “Revenue From Contracts with Customers - Revenue Recognition - Market Technology,” of Note 2, “Summary of Significant Accounting Policies,” to the consolidated financial statements.

Business combination

We account for business acquisitions under the acquisition method of accounting. The assets acquired and liabilities assumed in connection with business acquisitions are recorded at the date of acquisition at their estimated fair values, with any excess of the purchase price over the estimated fair values of the net assets acquired recorded as goodwill. Within one year from the date of acquisition, we may update the value allocated to the assets acquired and liabilities assumed, and the resulting goodwill balance, based on information received regarding the valuation of such assets and liabilities that was not available at the time of purchase.

We use various methods to determine fair value depending on the type of assets acquired and liabilities assumed. We make estimates and assumptions about projected future cash flows including, but not limited to, forecasted revenue, cash flows, attrition rates, long term growth rates, royalty rates, EBITDA margin and discount rates.

Significant judgment is required in estimating the fair value of assets acquired and liabilities assumed and in assigning useful lives to certain definite-lived intangible and tangible assets. Accordingly, we may engage third-party valuation specialists to assist in these determinations. The fair value estimates are based on available information as of the acquisition date and assumptions deemed reasonable by management but are inherently uncertain.

See Note 4, “Acquisitions,” to the consolidated financial statements for further discussion of the Adenza Acquisition.

During 2023, 2022 and 2021, we have not recorded any material measurement period adjustments to purchase price allocations.

Goodwill, Indefinite-Lived Intangible Assets and Related Impairment Testing

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is allocated to our reporting units based on the assignment of the fair values of each reporting unit of the acquired company. We recognize specifically identifiable intangibles, such as customer relationships, technology, exchange and clearing registrations, trade names and licenses when a specific right or contract is acquired. Goodwill and intangible assets deemed to have indefinite useful lives, primarily exchange and clearing registrations, are not amortized but instead are tested for impairment at least annually as of October 1 and more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit.

In November 2023, following the acquisition of Adenza, we refined our divisional structure. Our three previous reportable segments, Market Platforms, Capital Access Platforms and Anti-Financial Crime, have been changed to align with our new corporate structure that includes the following three segments: Capital Access Platforms, Financial Technology and Market Services. Under ASC 350-20, “Intangibles Goodwill and Other,” when a company reorganizes its reporting structure, an impairment test must be performed both before and after the change, and goodwill must be reassigned to reporting units. Accordingly, goodwill was reassigned based on relative fair value of each reporting unit.

We perform our goodwill impairment test at the reporting unit level. For 2023, we performed the goodwill impairment test under our previous organizational structure which included three reporting units: Market Platforms, Capital Access Platforms and Anti-Financial Crime segments and under our current organization structure, which includes the following three reporting units: Capital Access Platforms, Financial Technology and Market Services segments.

When testing goodwill and indefinite-lived intangible assets for impairment, we have the option of first performing a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit or indefinite-lived intangible asset is less than their respective carrying amounts as the basis to determine if it is necessary to perform a quantitative impairment test. If we choose not to complete a qualitative assessment, or if the initial assessment indicates that it is more likely than not that the carrying amount of a reporting unit or the carrying amount of an indefinite-lived intangible asset exceeds their respective estimated fair values, a quantitative test is required. Our decision to perform a qualitative impairment assessment in a given year is influenced by a number of factors, including but not limited to, the size of the reporting unit's goodwill, the significance of the excess of the reporting unit's estimated fair value or the indefinite-lived intangible asset's fair value over their respective carrying amounts at the last quantitative assessment date, and the amount of time in between quantitative fair value assessments.

In performing a quantitative impairment test, we compare the fair value of each reporting unit and indefinite-lived intangible asset with their respective carrying amounts. The fair value of each reporting unit is estimated using a combination of a discounted cash flow valuation, which incorporates assumptions regarding future growth rates, terminal values, and discount rates, as well as guideline public company valuations, which incorporates relevant trading multiples of comparable companies and other factors. The estimates and assumptions used consider historical performance and are consistent with the assumptions used in determining future profit plans for each reporting unit, which are approved by our board of directors. The fair value of indefinite-lived intangible assets is primarily determined on the basis of estimated discounted value, using the Greenfield Approach for exchange and clearing registrations and licenses, and the relief from royalty approach or excess earnings approach for trade names, both of which incorporate assumptions regarding future revenue projections and discount rates. If the carrying amounts of the reporting unit or the indefinite-lived intangible asset exceed their respective fair values, an impairment charge is recognized in an amount equal to the difference, limited to the total amount of goodwill allocated to that reporting unit or the total carrying value of the indefinite-lived intangible asset.

The following table presents the balances of goodwill for our reportable segments pre-segment realignment at the time of our 2023 annual impairment test:

	October 1, 2023 (in millions)
Market Platforms	$ 2,845
Capital Access Platforms	4,138
Anti-Financial Crime	1,005
	$ 7,988

The following table presents the balances of goodwill for our reportable segments post segment realignment, excluding the goodwill acquired as part of the Adenza acquisition. The carrying value of goodwill was reassigned to our new reportable segments based on a relative fair value allocation approach.

	October 1, 2023 (in millions)
Capital Access Platforms	$ 4,138
Financial Technology	1,922
Market Services	1,928
	$ 7,988

In 2023 and 2022, we elected to perform a quantitative impairment test for goodwill and indefinite-lived intangible assets. In conducting the quantitative assessment, we determined that the fair value of our goodwill for each of our reporting units and the fair value of our indefinite-lived intangible assets sufficiently exceed their respective carrying amounts. As a result, there were no goodwill or indefinite-lived intangible assets impairment charges recorded in any of those years.

Although we believe our estimates of fair value are reasonable, the determination of certain valuation inputs is subject to management's judgment. Changes in these inputs could materially affect the results of our impairment review. If our forecasts of cash flows or other key inputs are negatively revised in the future, the estimated fair value of each reporting unit and of our indefinite-lived intangible assets would be adversely impacted, potentially leading to an impairment in the future that could materially affect our operating results.

Subsequent to our annual impairment test, no indications of impairment were identified.

Other Long-Lived Assets and Related Impairment

We review our other long-lived assets, such as finite-lived intangible assets, property and equipment, and operating lease assets for potential impairment when there is evidence that events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The carrying amount of an asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. Fair value of finite-lived intangible assets and property and equipment is based on various valuation techniques. Any required impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value and is recorded as a reduction in the carrying amount of the related asset and a charge to operating results.

There were no material finite-lived intangible assets impairment charges in 2023 and 2022. We recorded an impairment charge of $14 million in 2021 related to a finite-lived intangible asset for customer relationships associated with the wind down of a previous acquisition included in depreciation and amortization expense in the Consolidated Statements of Income.

We recorded pre-tax, non-cash property and equipment asset impairment charges of $12 million in 2023, $14 million in 2022 and $4 million in 2021. See Note 20, "Restructuring Charges," to the consolidated financial statements for a discussion of these plans.

In the first quarter of 2023, we initiated a review of our real estate and facility capacity requirements due to our new and evolving work models. As a result of this ongoing review, we recorded impairment charges of $23 million in 2023 of which $18 million related to operating lease asset impairment and exit costs and is included in occupancy expense in the Consolidated Statements of Income and $5 million related to impairment of leasehold improvements, which are recorded in depreciation and amortization expense in the Consolidated Statements of Income. We fully impaired our lease assets for locations that we vacated with no intention to sublease. Substantially all of the property, equipment and leasehold improvements associated with the vacated leased office space were fully impaired as there are no expected future cash flows for these items.

No material impairments were recorded to reduce the carrying value of our other long-lived assets during 2023, 2022 or 2021.

Income Taxes

Estimates and judgments are required in the calculation of certain tax liabilities and in the determination of the recoverability of certain deferred tax assets, which arise from net operating loss carryforwards, tax credit carryforwards and temporary differences between the tax and financial statement recognition of revenues and expenses. Our deferred tax assets are reduced by a valuation allowance if it is more likely than not that some portion or all of the recorded deferred tax assets will not be realized in future periods. Management is required to determine whether a tax position is more likely than not to be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. Once it is determined that a position meets the recognition thresholds, the position is measured to determine the amount of benefit to be recognized in the consolidated financial statements.

In assessing the need for a valuation allowance, we consider all available evidence including past operating results, the existence of cumulative losses in the most recent fiscal years, estimates of future taxable income and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

In addition, the calculation of our tax liabilities involves uncertainties in the application of tax regulations in the U.S. and other tax jurisdictions. We recognize potential liabilities for anticipated tax audit issues in such jurisdictions based on our estimate of whether, and the extent to which, additional taxes and interest may be due. While we believe that our tax liabilities reflect the probable outcome of identified tax uncertainties, it is reasonably possible that the ultimate resolution of any tax matter may be greater or less than the amount accrued. If events occur and the payment of these amounts ultimately proves unnecessary, the reversal of the liabilities would result in tax benefits being recognized in the period when we determine the liabilities are no longer necessary. If our estimate of tax liabilities proves to be less than the ultimate assessment, a further charge to expense would result.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Information about quantitative and qualitative disclosures about market risk is incorporated herein by reference from "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Quantitative and Qualitative Disclosures About Market Risk."

Item 8. Financial Statements and Supplementary Data

Nasdaq's consolidated financial statements, including Consolidated Balance Sheets as of December 31, 2023 and 2022, Consolidated Statements of Income for the years ended December 31, 2023, 2022 and 2021, Consolidated Statements of Comprehensive Income for the years ended December 31, 2023, 2022 and 2021, Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2023, 2022 and 2021, Consolidated Statements of Cash Flows for the years ended December 31, 2023, 2022 and 2021 and notes to our consolidated financial statements, together with a report thereon of Ernst & Young LLP, dated February 21, 2024, are attached hereto as pages F-1 through F-45 and incorporated by reference herein.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure controls and procedures.

Nasdaq's management, with the participation of Nasdaq's Chief Executive Officer and Executive Vice President and Chief Financial Officer, has evaluated the effectiveness of Nasdaq's disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. In November 2023, Nasdaq completed the acquisition of Adenza. We accounted for this acquisition as a business combination. The scope of management's assessment of the effectiveness of the Company's disclosure controls and procedures did not include the internal controls over financial reporting of Adenza. This exclusion is in accordance with the SEC staff's general guidance that an assessment of a recently acquired business may be omitted from the scope of management's assessment for one year following the acquisition. The recognition of goodwill and intangible assets, however, is covered by our internal controls over mergers and acquisitions, which were included in management's assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2023. Based upon that evaluation, Nasdaq's Chief Executive Officer and Executive Vice President and Chief Financial Officer, have concluded that, as of the end of such period, Nasdaq's disclosure controls and procedures are effective.

Changes in internal control over financial reporting. Based on the evaluation completed by management, in which our Chief Executive Officer and Chief Financial Officer participated, our management has concluded that, except as noted above with respect to the acquisition of Adenza, there were no changes in Nasdaq's internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) that occurred during the quarter ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, Nasdaq's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for the preparation and integrity of the consolidated financial statements appearing in the reports that we file with the SEC. The consolidated financial statements were prepared in conformity with U.S. generally accepted accounting principles and include amounts based on management's estimates and judgments.

Management is also responsible for establishing and maintaining adequate internal control over Nasdaq's financial reporting. Although there are inherent limitations in the effectiveness of any system of internal control over financial reporting, or ICFR, we maintain a system of internal control that is designed to provide reasonable assurance as to the fair and reliable preparation and presentation of the consolidated financial statements, as well as to safeguard assets from unauthorized use or disposition that could have a material effect on the financial statements.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2013 framework). This evaluation included review of the documentation of controls, evaluation of the design effectiveness of controls, testing of the operating effectiveness of controls and a conclusion on this evaluation.

Our management has excluded the ICFR of Adenza, which we acquired on November 1, 2023 as discussed in Note 4 "Acquisitions," to the Consolidated Financial Statements included elsewhere in this Annual Report on Form 10-K. Total revenues subject to Adenza's ICFR represented 4% and 3% of revenues less transaction-based expenses and operating income, respectively, for the fiscal year ended December 31, 2023. Total assets subject to Adenza's ICFR represented 36% of our consolidated total assets as of December 31, 2023 (of which $11 billion, or 34% of our consolidated total assets, represents intangible assets acquired and the goodwill resulting from the Adenza acquisition, which were subject to our ICFR as of December 31, 2023) and net assets of Adenza represented 3% of our consolidated net assets, excluding intangible assets acquired and the corresponding deferred tax liability as well as the goodwill resulting from the Adenza acquisition, which were subject to our ICFR as of December 31, 2023. Under guidelines established by the SEC, companies are permitted to exclude acquisitions from their assessment of ICFR for a period of up to one year following an acquisition while integrating the acquired company.

Based on its assessment, our management believes that, as of December 31, 2023, our internal control over financial reporting is effective. Ernst & Young LLP, an independent registered public accounting firm, has issued an attestation report on Nasdaq's internal control over financial reporting, which is included herein.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nasdaq, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Nasdaq, Inc.'s internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Nasdaq, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on the COSO criteria.

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Adenza, which is included in the 2023 consolidated financial statements of the Company and constituted 2% and 3% of total and net assets, respectively, as of December 31, 2023 and 4% and 3% of revenues less transaction-based expenses and operating income, respectively, for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of Adenza.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2023 and 2022, the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2023, and the related notes and our report dated February 21, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ *Ernst & Young LLP*

New York, New York
February 21, 2024

Item 9B. Other Information

During the three months ended December 31, 2023, none of the Company's directors or officers adopted, terminated or modified a "Rule 10b5-1 trading arrangement" or "non-Rule 10b5-1 trading arrangement" (as such terms are defined in Item 408 of Regulation S-K).

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information about Nasdaq's directors, as required by Item 401 of Regulation S-K, is incorporated by reference, if applicable, from the discussion under the caption "Director Nominees" in Nasdaq's Proxy Statement. Information about Nasdaq's executive officers, as required by Item 401 of Regulation S-K, is incorporated by reference from the discussion under the caption "Other Items-Executive Officers" in the Proxy Statement. Information about Section 16 reports, as required by Item 405 of Regulation S-K, is incorporated by reference from the discussion under the caption "Other Items-Delinquent Section 16(a) Reports" in the Proxy Statement. Information about Nasdaq's code of ethics, as required by Item 406 of Regulation S-K, is incorporated by reference from the discussion under the caption "Operating with Integrity" in the Proxy Statement. Information about Nasdaq's nomination procedures, Audit & Risk Committee and Audit & Risk Committee financial experts, as required by Items 407(c)(3), 407(d)(4) and 407(d)(5) of Regulation S-K, is incorporated by reference from the discussions under the headings "Director Nominees" and "Board Committees" in the Proxy Statement.

Item 11. Executive Compensation

Information about Nasdaq's director and executive compensation, as required by Items 402, 407(e)(4) and 407(e)(5) of Regulation S-K, is incorporated by reference from the discussions under the headings "Director Compensation" and "Executive Compensation" in the Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information about security ownership of certain beneficial owners and management, as required by Item 403 of Regulation S-K, is incorporated by reference from the discussion under the heading "Other Items-Security Ownership of Certain Beneficial Owners and Management" in the Proxy Statement.

Equity Compensation Plan and ESPP Information

Nasdaq's Equity Plan provides for the issuance of our equity securities to all employees and directors as part of their compensation plan.

In addition, in jurisdictions where participation in the ESPP is permitted, all our employees are eligible. The employees that joined us from Adenza are not yet eligible for participation in the ESPP, as payroll and benefits integration efforts remain ongoing following the consummation of the Adenza acquisition in November 2023. Employees may purchase shares of our common stock at a 15% discount to the lesser of the closing price of our common stock on (i) the first trading day of the offering period or (ii) the last trading day of the offering period. Offering periods under the ESPP are six months in duration. As of December 31, 2023, all our employees are eligible to participate.

The Equity Plan and the ESPP have been previously approved by our stockholders. The following table sets forth information regarding outstanding options and shares reserved for future issuance under all of Nasdaq's compensation plans as of December 31, 2023.

Plan Category	Number of shares to be issued upon exercise of outstanding options, warrants and rights(a)	Weighted-average exercise price of outstanding options, warrants and rights(b)	Number of shares remaining available for future issuance under equity compensation plans (excluding shares reflected in column(a))(c)
Equity compensation plans approved by stockholders	1,420,323	$ 41.79	36,014,602
Equity compensation plans not approved by stockholders	—	—	—
Total	1,420,323	$ 41.79	36,014,602

In the table above:

- The number of shares to be issued upon exercise of outstanding options, warrants and rights include only the number of shares to be issued upon exercise of outstanding options, warrants and rights. As of December 31, 2023, we also had 6,217,621 shares to be issued upon vesting of outstanding restricted stock and PSUs.
- The number of shares remaining available for future issuance under equity compensation plans (excluding shares reflected in column (a) includes 24,598,016 shares of common stock that may be awarded pursuant to the Equity Plan and (b) 11,416,586 shares of common stock that may be issued pursuant to the ESPP.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information about certain relationships and related transactions, as required by Item 404 of Regulation S-K, is incorporated herein by reference from the discussion under the heading "Other Items-Certain Relationships and Related Transactions" in the Proxy Statement. Information about director independence, as required by Item 407(a) of Regulation S-K, is incorporated herein by reference from the discussion under the heading "Director Nominees" in the Proxy Statement.

Item 14. Principal Accountant Fees and Services

Information about principal accountant fees and services, as required by Item 9(e) of Schedule 14A, is incorporated herein by reference from the discussion under the heading "Annual Evaluation and 2024 Selection of the Independent Auditors" in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements

See "Index to Consolidated Financial Statements."

(a)(2) Financial Statement Schedules

All schedules are omitted because they are not applicable or the required information is included in the consolidated financial statements or notes.

(a)(3) Exhibits

Exhibit Number	
2.1	Share Purchase Agreement, dated as of November 18, 2020, by and among Osprey Acquisition Corporation, a wholly owned subsidiary of Nasdaq, Verafin Holdings Inc., certain shareholders of Verafin (the "Sellers"), and Shareholder Representative Services LLC, solely in its capacity as the representative of the Sellers (incorporated herein by reference to Exhibit 2.2 to the Annual Report on Form 10-K for the year ended December 31, 2020 filed on February 23, 2021).†
2.2	Amendment to Share Purchase Agreement, dated as of February 11, 2021, by and among Osprey Acquisition Corporation, a wholly owned subsidiary of Nasdaq, Verafin Holdings Inc., certain shareholders of Verafin (the "Sellers"), and Shareholder Representative Services LLC, solely in its capacity as the representative of the Sellers (incorporated herein by reference to Exhibit 2.3 to the Annual Report on Form 10-K for the year ended December 31, 2020 filed on February 23, 2021).
2.3	Agreement and Plan of Merger, dated as of June 10, 2023, by and among Nasdaq, Inc., Argus Merger Sub 1, Inc., Argus Merger Sub 2, LLC, Adenza Holdings, Inc. and Adenza Parent, LP. (incorporated herein by reference to Exhibit 2.1 to the Current Report on Form 8-K filed on June 12, 2023).†
3.1	Amended and Restated Certificate of Incorporation of Nasdaq (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.1	Certificate of Elimination of Nasdaq's Series A Convertible Preferred Stock (incorporated herein by reference to Exhibit 3.1.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.2	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on November 19, 2014).
3.1.3	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on September 8, 2015).
3.1.4	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on July 20, 2022).
3.2	Nasdaq's By-Laws (incorporated herein by reference to Exhibit 3.2 to the Current Report on Form 8-K filed on November 21, 2016).
4.1	Form of Common Stock certificate (incorporated herein by reference to Exhibit 4.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
4.2	Stockholders' Agreement, dated as of February 27, 2008, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on March 3, 2008).
4.2.1	First Amendment to Stockholders' Agreement, dated as of February 19, 2009, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 4.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.3	Registration Rights Agreement, dated as of February 27, 2008, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on March 3, 2008).

4.3.1	First Amendment to Registration Rights Agreement, dated as of February 19, 2009, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 4.11.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.4	Stockholders' Agreement, dated as of December 16, 2010, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Investor AB (incorporated herein by reference to Exhibit 4.12 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).
4.4.1	First Amendment to Nasdaq Stockholders' Agreement, dated as of December 14, 2022, between Nasdaq, Inc. and Investor AB (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on December 16, 2022).
4.5	Stockholders' Agreement, dated as of November 1, 2023, by and among Nasdaq, Inc., Adenza Parent, LP and Thoma Bravo, L.P. (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on November 3, 2023).
4.6	Registration Rights Agreement, dated as of November 1, 2023, by and among Nasdaq, Inc. and Adenza Parent, LP. (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on November 3, 2023).
4.7	Indenture, dated as of June 7, 2013, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on June 10, 2013).
4.8	Sixth Supplemental Indenture, dated as of April 1, 2019, among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee, and HSBC Bank USA, National Association, as paying agent and as registrar and transfer agent (incorporated by reference to Exhibit 4.2 to the Form 8-A filed on April 1, 2019).
4.9	Seventh Supplemental Indenture, dated February 13, 2020, among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee, and HSBC Bank USA, National Association, as paying agent and as registrar and transfer agent (incorporated herein by reference to Exhibit 4.2 to the Company's Form 8-A filed on February 13, 2020).
4.10	Eighth Supplemental Indenture, dated April 28, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on April 28, 2020).
4.11	Tenth Supplemental Indenture, dated December 21, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.3 to the Current Report on Form 8-K filed on December 21, 2020).
4.12	Eleventh Supplemental Indenture, dated December 21, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.4 to the Current Report on Form 8-K filed on December 21, 2020).
4.13	Twelfth Supplemental Indenture, dated July 30, 2021, by and among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee and HSBC Bank USA, National Association, as registrar and transfer agent (incorporated herein by reference to Exhibit 4.2 to the Company's 8-A filed on July 30, 2021).
4.14	Thirteenth Supplemental Indenture, dated as of March 7, 2022, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on March 7, 2022).
4.15	Fourteenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on June 28, 2023).
4.16	Fifteenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.3 to the Current Report on Form 8-K filed on June 28, 2023).
4.17	Sixteenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.4 to the Current Report on Form 8-K filed on June 28, 2023).
4.18	Seventeenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.5 to the Current Report on Form 8-K filed on June 28, 2023).
4.19	Eighteenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee (incorporated herein by reference to Exhibit 4.6 to the Current Report on Form 8-K filed on June 28, 2023).

4.20	Nineteenth Supplemental Indenture, dated as of June 28, 2023, by and between Nasdaq, Inc. and Computershare Trust Company, N.A. (as successor to Wells Fargo Bank, National Association), as trustee and HSBC Bank USA, National Association, as paying agent, registrar and transfer agent (incorporated herein by reference to Exhibit 4.7 to the Current Report on Form 8-K filed on June 28, 2023).
4.21	Description of Securities.
10.1	Amended and Restated Board Compensation Policy, effective on June 16, 2023 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 filed on August 2, 2023).*
10.2	Nasdaq Executive Corporate Incentive Plan, effective as of January 1, 2015 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 11, 2015).*
10.3	Nasdaq, Inc. Equity Incentive Plan (as amended and restated as of April 24, 2018) (incorporated herein by reference to Exhibit 10.1 to the Form S-8 filed on May 25, 2018).*
10.4	Form of Nasdaq Non-Qualified Stock Option Award Certificate (incorporated herein by reference to Exhibit 10.3 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).*
10.5	Form of Nasdaq Restricted Stock Unit Award Certificate (employees) (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 filed on August 2, 2023).*
10.6	Form of Nasdaq Restricted Stock Unit Award Certificate (directors) (incorporated herein by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 filed on August 2, 2023).*
10.7	Form of Nasdaq Three-Year Performance Share Unit Agreement (incorporated herein by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 filed on August 2, 2023).*
10.8	Form of Nasdaq Continuing Obligations Agreement (incorporated by reference to Exhibit 10.9 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021 filed on February 23, 2022).
10.9	Amended and Restated Supplemental Executive Retirement Plan, dated as of December 17, 2008 (incorporated herein by reference to Exhibit 10.6 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.10	Amendment No. 1 to Amended and Restated Supplemental Executive Retirement Plan, effective as of December 31, 2008 (incorporated herein by reference to Exhibit 10.6.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.11	Nasdaq Supplemental Employer Retirement Contribution Plan, dated as of December 17, 2008 (incorporated herein by reference to Exhibit 10.7 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.12	Nasdaq, Inc. Deferred Compensation Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 16, 2022).*
10.13	Nonqualified Stock Option Award Certificate to Adena T. Friedman from Nasdaq, Inc. in connection with grant made on January 3, 2017 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2017 filed on November 7, 2017).*
10.14	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 19, 2021 and effective as of January 1, 2022 (incorporated herein by reference to Exhibit 10.14 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021 filed on February 23, 2022).*
10.15	Nonqualified Stock Option Award Certificate to Adena T. Friedman from Nasdaq, Inc. in connection with grant made on January 3, 2022 (incorporated herein by reference to Exhibit 10.15 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021 filed on February 23, 2022).*
10.17	Employment Agreement by and between Nasdaq, Inc. and Bradley J. Peterson, dated June 22, 2022 (incorporated herein by reference to Exhibit 10.5 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2022 filed on August 3, 2022).*
10.18	Employment Offer Letter by and between Nasdaq, Inc. and Michelle Daly (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 3, 2021).*
10.19	General Release and Separation Agreement by and between Nasdaq, Inc. and Ann M. Dennison, dated as of August 31, 2023 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2023 filed on November 3, 2023).*
10.20	Employment Offer Letter by and between Nasdaq, Inc. and Sarah Youngwood, dated as of August 31, 2023 (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2023 filed on November 3, 2023).*

10.21	Nasdaq Change in Control Severance Plan for Executive Vice Presidents and Senior Vice Presidents, effective November 26, 2013, as amended December 6, 2022 (incorporated by reference herein to Exhibit 10.19 to the Annual Report on Form 10-K for the year ended December 31, 2022, filed on February 22, 2023.*
10.22	Amended and Restated Credit Agreement, dated as of December 16, 2022, among Nasdaq, Inc., the various lenders and issuing bank party thereto and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on December 16, 2022). †
10.23	Amendment No. 1 to Amended and Restated Credit Agreement, dated as of March 29, 2023, among Nasdaq, Inc., the Lenders party hereto, Bank of America, N.A., as administrative agent and BofA Securities, Inc., as Sustainability Coordinator (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended March 30, 2023 filed on May 4, 2023).†
10.24	Amendment No. 2 to Amended and Restated Credit Agreement, dated as of June 16, 2023, among Nasdaq, Inc., a Delaware corporation, the lenders party thereto and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on June 20, 2023).
10.25	Term Loan Credit Agreement, dated as of June 28, 2023, among Nasdaq, Inc., the lenders and other parties party thereto, and Bank of America, N.A., as Administrative Agent (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on June 28, 2023).†
10.26	Form of Commercial Paper Dealer Agreement between Nasdaq, Inc., as Issuer, and the Dealer party thereto (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on April 26, 2017).
10.27	Verafin Holdings Inc. Amended and Restated Management Incentive Plan (incorporated by reference herein to Exhibit 10.24 to the Annual Report on Form 10-K for the year ended December 31, 2022, filed on February 22, 2023.)*
10.28	Verafin Holdings Inc. Amended and Restated Management Incentive Plan Award Agreement, by and between Verafin Solutions ULC and Brendan Brothers, dated as of January 11, 2023 (incorporated by reference herein to Exhibit 10.25 to the Annual Report on Form 10-K for the year ended December 31, 2022, filed on February 22, 2023.)*
11	Statement regarding computation of per share earnings (incorporated herein by reference from Note 13 to the consolidated financial statements under Part II, Item 8 of this Form 10-K).
21.1	List of all subsidiaries.
23.1	Consent of Ernst & Young LLP.
24.1	Powers of Attorney.
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (“Sarbanes-Oxley”).
31.2	Certification of Executive Vice President and Chief Financial Officer pursuant to Section 302 of Sarbanes-Oxley.
32.1	Certifications Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of Sarbanes-Oxley.
97.1	Supplemental Executive Officer Recoupment Policy.*
101	The following materials from the Nasdaq, Inc. Annual Report on Form 10-K for the year ended December 31, 2023, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2023 and December 31, 2022; (ii) Consolidated Statements of Income for the years ended December 31, 2023, 2022 and 2021 (iii) Consolidated Statements of Comprehensive Income for the years ended December 31, 2023, 2022 and 2021; (iv) Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2023, 2022 and 2021; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2023, 2022 and 2021; and (vi) notes to consolidated financial statements.
104	Cover Page Interactive Data File, formatted in iXBRL and contained in Exhibit 101.

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* Management contract or compensatory plan or arrangement.

† Schedules have been omitted pursuant to Item 601(b)(2) of Regulation S-K.

(b) Exhibits:

See Item 15(a)(3) above.

(c) Financial Statement Schedules:

All schedules are omitted because they are not applicable or the required information is included in the consolidated financial statements or notes.

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, on February 21, 2024.

Nasdaq, Inc.
(Registrant)

By:	/s/ Adena T. Friedman
Name:	**Adena T. Friedman**
Title:	**Chief Executive Officer**
Date:	February 21, 2024

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated as of February 21, 2024.

By:	/s/ Adena T. Friedman
Name:	**Adena T. Friedman**
Title:	Chief Executive Officer and Chair of the Board
By:	/s/ Sarah Youngwood
Name:	**Sarah Youngwood**
Title:	Executive Vice President and Chief Financial Officer
By:	/s/ Michelle Daly
Name:	**Michelle Daly**
Title:	Senior Vice President, Controller and Principal Accounting Officer
By:	*
Name:	**Michael R. Splinter**
Title:	Director
By:	*
Name:	**Melissa M. Arnoldi**
Title:	Director
By:	*
Name:	**Charlene T. Begley**
Title:	Director
By:	*
Name:	**Steven D. Black**
Title:	Director
By:	*
Name:	**Essa Kazim**
Title:	Director
By:	*
Name:	**Thomas A. Kloet**
Title:	Director
By:	*
Name:	**Holden Spaht**
Title:	Director
By:	*
Name:	**Johan Torgeby**
Title:	Director
By:	*
Name:	**Toni Townes-Whitley**
Title:	Director
By:	*
Name:	**Jeffery W. Yabuki**
Title:	Director
By:	*
Name:	**Alfred W. Zollar**
Title:	Director

* Pursuant to Power of Attorney

By:	/s/ John A. Zecca
Name:	**John A. Zecca**
Title:	**Attorney-in-Fact**

Nasdaq, Inc.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

The following consolidated financial statements of Nasdaq, Inc. and its subsidiaries are presented herein on the page indicated:

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nasdaq, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Nasdaq, Inc. (the Company) as of December 31, 2023 and 2022, the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2023, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at 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 U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 21, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

Critical Audit Matter

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

Accounting for the Acquisition of Adenza

Description of the Matter	As described in Note 4 to the consolidated financial statements, during 2023 the Company completed its acquisition of Adenza, which was accounted for as a business combination for total purchase consideration of $5,750 million in cash consideration (subject to customary post-closing adjustments) and the issuance of 85,608,414 shares of Nasdaq common stock at a price of $48.71 per share. The transaction resulted in the recognition of $5,933 million of goodwill and $5,050 million of intangible assets. Intangible assets consisted of customer relationships of $3,740 million, technology of $950 million and trade names of $360 million. Auditing the Company's accounting for its acquisition of Adenza was complex due to the significant estimation uncertainty in the Company's determination of the fair value of identified intangible assets. The significant estimation uncertainty was primarily due to the sensitivity of the fair value of the customer relationships intangible asset to certain underlying assumptions. The Company used the income approach, specifically the excess earnings method, to measure the fair value of the customer relationships intangible asset, and the significant assumptions used in estimating its fair value included customer attrition rate, revenue growth, EBITDA margin, and the discount rate. These significant assumptions are forward looking and could be affected by future economic and market conditions.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's processes with respect to estimates that impact the accounting for the Adenza acquisition. For example, we tested controls over the estimation process supporting the recognition and measurement of the identified intangible assets, including the customer relationships intangible asset, which encompassed testing controls over management's review of assumptions used in the valuation model. To test the estimated fair value of the customer relationship intangible asset, we performed audit procedures that included, among others, evaluating the Company's use of valuation methodologies, evaluating significant assumptions utilized by the Company, and evaluating the completeness and accuracy of the underlying data supporting those significant assumptions. We involved our valuation specialists to assist with our evaluation of the methodology used by the Company and significant assumptions included in the fair value estimate, including testing the customer attrition rate, revenue growth, EBITDA margin that form the basis of the forecasted results, and the discount rate. Additionally, we compared the significant assumptions to current industry, market and economic trends, to the historical results of the acquired business, and to the Company's budgets and forecasts, in addition to performing sensitivity analyses over these assumptions. We also evaluated the adequacy of the Company's disclosures included in Note 4 in relation to these acquisition matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1986.

New York, New York
February 21, 2024

Nasdaq, Inc.
Consolidated Balance Sheets
(in millions, except share and par value amounts)

	December 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 453	$ 502
Restricted cash and cash equivalents	20	22
Default funds and margin deposits (including restricted cash and cash equivalents of $6,645 and $6,470, respectively)	7,275	7,021
Financial investments	188	181
Receivables, net	929	677
Other current assets	231	201
Total current assets	9,096	8,604
Property and equipment, net	576	532
Goodwill	14,112	8,099
Intangible assets, net	7,443	2,581
Operating lease assets	402	444
Other non-current assets	665	608
Total assets	$ 32,294	$ 20,868
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	$ 332	$ 185
Section 31 fees payable to SEC	84	243
Accrued personnel costs	303	243
Deferred revenue	594	357
Other current liabilities	146	122
Default funds and margin deposits	7,275	7,021
Short-term debt	291	664
Total current liabilities	9,025	8,835
Long-term debt	10,163	4,735
Deferred tax liabilities, net	1,642	456
Operating lease liabilities	417	452
Other non-current liabilities	220	226
Total liabilities	21,467	14,704
Commitments and contingencies		
Equity		
Nasdaq stockholders' equity:		
Common stock, $0.01 par value, 900,000,000 shares authorized, shares issued: 598,014,520 at December 31, 2023 and 513,157,630 at December 31, 2022; shares outstanding: 575,159,336 at December 31, 2023 and 491,592,491 at December 31, 2022	6	5
Additional paid-in capital	5,496	1,445
Common stock in treasury, at cost: 22,855,184 shares at December 31, 2023 and 21,565,139 shares at December 31, 2022	(587)	(515)
Accumulated other comprehensive loss	(1,924)	(1,991)
Retained earnings	7,825	7,207
Total Nasdaq stockholders' equity	10,816	6,151
Noncontrolling interests	11	13
Total equity	10,827	6,164
Total liabilities and equity	$ 32,294	$ 20,868

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Income
(in millions, except per share amounts)

	Year Ended December 31,		
	2023	2022	2021
Revenues:			
Capital Access Platforms	$ 1,770	$ 1,682	$ 1,566
Financial Technology	1,099	864	772
Market Services	3,156	3,632	3,471
Other revenues	39	48	77
Total revenues	6,064	6,226	5,886
Transaction-based expenses:			
Transaction rebates	(1,838)	(2,092)	(2,168)
Brokerage, clearance and exchange fees	(331)	(552)	(298)
Revenues less transaction-based expenses	3,895	3,582	3,420
Operating expenses:			
Compensation and benefits	1,082	1,003	938
Professional and contract services	128	140	144
Computer operations and data communications	233	207	186
Occupancy	129	104	109
General, administrative and other	113	125	85
Marketing and advertising	47	51	57
Depreciation and amortization	323	258	278
Regulatory	34	33	64
Merger and strategic initiatives	148	82	87
Restructuring charges	80	15	31
Total operating expenses	2,317	2,018	1,979
Operating income	1,578	1,564	1,441
Interest income	115	7	1
Interest expense	(284)	(129)	(125)
Net gain on divestiture of business	—	—	84
Other income (loss)	(1)	2	81
Net income (loss) from unconsolidated investees	(7)	31	52
Income before income taxes	1,401	1,475	1,534
Income tax provision	344	352	347
Net income	1,057	1,123	1,187
Net loss attributable to noncontrolling interests	2	2	—
Net income attributable to Nasdaq	$ 1,059	$ 1,125	$ 1,187
Per share information:			
Basic earnings per share	$ 2.10	$ 2.28	$ 2.38
Diluted earnings per share	$ 2.08	$ 2.26	$ 2.35
Cash dividends declared per common share	$ 0.86	$ 0.78	$ 0.70

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Comprehensive Income
(in millions)

	Year Ended December 31,		
	2023	2022	2021
Net income	$ 1,057	$ 1,123	$ 1,187
Other comprehensive income (loss):			
Foreign currency translation gains (losses)	39	(375)	(176)
Income tax benefit (expense)[1]	18	(32)	(42)
Foreign currency translation, net	57	(407)	(218)
Net unrealized gain from cash flow hedges	2	—	—
Employee benefit plan adjustment gains (losses)	11	5	(1)
Employee benefit plan income tax provision	(3)	(2)	—
Employee benefit plan, net	8	3	(1)
Total other comprehensive income (loss), net of tax	67	(404)	(219)
Comprehensive income	1,124	719	968
Comprehensive loss attributable to noncontrolling interests	2	2	—
Comprehensive income attributable to Nasdaq	$ 1,126	$ 721	$ 968

[1] Primarily relates to the tax effect of unrealized gains and losses on Euro denominated notes.

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Changes in Stockholders' Equity
(in millions)

	Year Ended December 31,					
	2023		2022		2021	
	Shares	$	Shares	$	Shares	$
Common stock						
Beginning balance	492	5	500	5	495	5
Acquisition-related stock issuance	86	1	—	—	—	—
Ending balance		6		5		5
Additional paid-in capital						
Beginning balance		1,445		1,949		2,544
Share repurchase program	(5)	(269)	(5)	(308)	(9)	(468)
ASR agreement	—	—	(6)	(325)	(7)	(475)
Share-based compensation	3	122	3	106	3	90
Stock option exercises, net	—	—	—	—	—	1
Acquisition-related stock issuance	—	4,169	—	—	—	—
Other issuances of common stock, net	1	29	1	23	19	257
Ending balance		5,496		1,445		1,949
Common stock in treasury, at cost						
Beginning balance		(515)		(437)		(376)
Other employee stock activity	(2)	(72)	(1)	(78)	(1)	(61)
Ending balance		(587)		(515)		(437)
Accumulated other comprehensive loss						
Beginning balance		(1,991)		(1,587)		(1,368)
Other comprehensive income (loss)		67		(404)		(219)
Ending balance		(1,924)		(1,991)		(1,587)
Retained earnings						
Beginning balance		7,207		6,465		5,628
Net income attributable to Nasdaq		1,059		1,125		1,187
Cash dividends declared and paid		(441)		(383)		(350)
Ending balance		7,825		7,207		6,465
Total Nasdaq stockholders' equity		10,816		6,151		6,395
Noncontrolling interests						
Beginning balance		13		10		3
Net activity related to noncontrolling interests		(2)		3		7
Ending balance		11		13		10
Total Equity	575	$ 10,827	492	$ 6,164	500	$ 6,405

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Cash Flows
(in millions)

	Year Ended December 31, 2023	2022	2021
Cash flows from operating activities:			
Net income	$ 1,057	$ 1,123	$ 1,187
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	323	258	278
Share-based compensation	122	106	90
Deferred income taxes	68	38	94
Extinguishment of debt and bridge fees	25	16	33
Net gain on divestiture of business	—	—	(84)
Non-cash restructuring charges	12	—	—
Net (income) loss from unconsolidated investees	7	(31)	(52)
Operating lease asset impairments	13	—	—
Other reconciling items included in net income	30	28	6
Net change in operating assets and liabilities, net of effects of acquisitions:			
Receivables, net	3	(101)	(6)
Other assets	9	98	(140)
Accounts payable and accrued expenses	149	19	(17)
Section 31 fees payable to SEC	(160)	181	(162)
Accrued personnel costs	13	—	28
Deferred revenue	88	16	106
Other liabilities	(63)	(45)	(278)
Net cash provided by operating activities	1,696	1,706	1,083
Cash flows from investing activities:			
Purchases of securities	(712)	(322)	(316)
Proceeds from sales and redemptions of securities	719	320	285
Proceeds from divestiture of business, net of cash divested	—	—	190
Acquisition of businesses, net of cash and cash equivalents acquired	(5,766)	(41)	(2,430)
Purchases of property and equipment	(158)	(152)	(163)
Investments related to default funds and margin deposits, net[(1)]	(74)	211	(132)
Other investing activities	(3)	33	(87)
Net cash provided by (used in) investing activities	(5,994)	49	(2,653)
Cash flows from financing activities:			
Proceeds from (repayments of) commercial paper, net	(371)	238	420
Repayments of debt and credit commitment	(260)	(1,097)	(804)
Payment of debt extinguishment cost and bridge fees	(25)	(16)	(33)
Proceeds from issuances of debt, net of issuance costs	5,608	541	826
Repurchases of common stock	(269)	(308)	(468)
ASR agreement	—	(325)	(475)
Dividends paid	(441)	(383)	(350)
Proceeds received from employee stock activity and other issuances	29	23	26
Payments related to employee shares withheld for taxes	(72)	(78)	(61)
Default funds and margin deposits	22	2,440	2,330
Other financing activities	(1)	1	7
Net cash provided by financing activities	4,220	1,036	1,418
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	202	(1,293)	(331)
Net increase (decrease) in cash and cash equivalents and restricted cash and cash equivalents	124	1,498	(483)
Cash and cash equivalents, restricted cash and cash equivalents at beginning of period	6,994	5,496	5,979
Cash and cash equivalents, restricted cash and cash equivalents at end of period	$ 7,118	$ 6,994	$ 5,496
Reconciliation of Cash, Cash Equivalents and Restricted Cash and Cash Equivalents			
Cash and cash equivalents	$ 453	$ 502	$ 393
Restricted cash and cash equivalents	20	22	29
Restricted cash and cash equivalents (default funds and margin deposits)	6,645	6,470	5,074
Total	$ 7,118	$ 6,994	$ 5,496
Supplemental Disclosure Cash Flow Information			
Interest paid	$ 177	$ 116	$ 118
Income taxes paid, net of refund	$ 254	$ 274	$ 501

(1) Includes purchases and proceeds from sales and redemptions related to the default funds and margin deposits of our clearing operations. For further information, see "Default Fund Contributions and Margin Deposits," within Note 15, "Clearing Operations."

See accompanying notes to consolidated financial statements.

1. ORGANIZATION AND NATURE OF OPERATIONS

Nasdaq is a global technology company serving corporate clients, investment managers, banks, brokers, and exchange operators as they navigate and interact with the global capital markets and the broader financial system. We aspire to deliver world-leading platforms that improve the liquidity, transparency, and integrity of the global economy. Our diverse offering of data, analytics, software, exchange capabilities, and client-centric services enables clients to optimize and execute their business vision with confidence.

Our organizational structure aligns our businesses with the foundational shifts that are driving the evolution of the global financial system. Following the acquisition of Adenza, we further refined the divisional structure into three business segments: Capital Access Platforms, Financial Technology and Market Services.

For further discussion of our businesses, see "Products and Services," of "Part 1, Item 1. Business."

Capital Access Platforms

Our Capital Access Platforms segment includes Data & Listing Services, Index and Workflow & Insights.

Our Data business distributes historical and real-time market data to the sell-side, the institutional investing community, retail online brokers, proprietary trading firms and other venues, as well as internet portals and data distributors. Our data products can enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally.

Our Listing Services business operates in the U.S. and Europe on a variety of listing platforms around the world to provide multiple global capital raising solutions for public companies. Our main listing markets are The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges. Through Nasdaq First North, our Nordic and Baltic operations also offer alternative marketplaces for smaller companies and growth companies.

As of December 31, 2023, there were 4,044 total listings on The Nasdaq Stock Market, including 600 ETPs. The combined market capitalization was approximately $27.2 trillion. In Europe, the Nasdaq Nordic and Nasdaq Baltic exchanges, together with Nasdaq First North, were home to 1,218 listed companies with a combined market capitalization of approximately $2.1 trillion.

Our Index business develops and licenses Nasdaq-branded indices and financial products. We also license cash-settled options, futures and options on futures on our indices. As of December 31, 2023, 388 ETPs listed on 27 exchanges in over 20 countries tracked a Nasdaq index and accounted for $473 billion in AUM.

Workflow & Insights includes our analytics and corporate solutions businesses. Our analytics business provides asset managers, investment consultants and institutional asset owners with information and analytics to make data-driven investment decisions, deploy their resources more productively, and provide liquidity solutions for private funds. Through our eVestment and Solovis solutions, we provide a suite of cloud-based solutions that help institutional investors and consultants conduct pre-investment due diligence, and monitor their portfolios post-investment. The eVestment platform also enables asset managers to efficiently distribute information about their firms and funds to asset owners and consultants worldwide.

Through our Solovis platform, endowments, foundations, pensions and family offices transform how they collect and aggregate investment data, analyze portfolio performance, model and predict future outcomes, and share meaningful portfolio insights with key stakeholders. The Nasdaq Fund Network and Nasdaq Data Link are additional platforms in our suite of investment data analytics offerings and data management tools.

Our corporate solutions business includes our Investor Relations Intelligence, ESG Solutions and Governance Solutions products, which serve both public and private companies and organizations. Our public company clients can be companies listed on our exchanges or other U.S. and global exchanges. Our private company clients include a diverse group of organizations ranging from family-owned companies, government organizations, law firms, privately held entities, and various non-profit organizations to hospitals and healthcare systems. We help organizations enhance their ability to understand and expand their global shareholder base, improve corporate governance, and navigate the evolving ESG landscape through our suite of advanced technology, analytics, reporting and consulting services.

Financial Technology

Financial Technology comprises Financial Crime Management Technology, Regulatory Technology and Capital Markets Technology solutions.

Financial Crime Management Technology includes our Verafin solution, a cloud-based anti-financial crime management platform, which helps financial institutions detect, investigate, and report money laundering and financial fraud.

Regulatory Technology comprises our surveillance solutions and AxiomSL. Our surveillance solutions are designed for brokers and other market participants to assist them in complying with market rules, regulations as well as regulators and exchanges for surveillance. AxiomSL is a global leader in risk data management and regulatory reporting solutions for the financial industry, including banks, broker dealers and asset managers. Its unique enterprise data management platform delivers data lineage, risk aggregation, analytics, workflow automation, reconciliation, validation and audit functionality, as well as disclosures. AxiomSL's platform supports compliance across a wide range of global and local regulations.

Capital Markets Technology includes market technology, trade management services and Calypso. Our market technology business is a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers, buy-side firms and corporate businesses. Our market technology solutions are utilized by leading markets in North America, Europe and Asia as well as emerging markets in the Middle East, Latin America, and Africa. Our trade management services provides market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. Our marketplaces may be accessed via a number of different protocols used for quoting, order entry, trade reporting and connectivity to various data feeds. We also provide colocation services to market participants, whereby we offer firms cabinet space and power to house their own equipment and servers within our data centers. Additionally, we offer a number of wireless connectivity offerings between select data centers using millimeter wave and microwave technology. In June 2022, we completed the wind-down of our Nordic broker services business. Calypso is a leading provider of front-to-back technology solutions for the financial markets. The Calypso platform provides customers with a single platform designed from the outset to enable consolidation, innovation and growth.

Market Services

Our Market Services segment includes revenues from equity derivatives trading, cash equity trading, Nordic fixed income trading & clearing, Nordic commodities and U.S. Tape plans data. We operate multiple exchanges and other marketplace facilities across several asset classes, including derivatives, commodities, cash equity, debt, structured products and ETPs. In addition, in certain countries where we operate exchanges, we also provide clearing, settlement and central depository services. In June 2023, we entered into an agreement to sell our European energy trading and clearing business, subject to regulatory approval. Beginning in the third quarter of 2023, revenues from this business are reflected in Other Revenues in the Consolidated Statements of Income for all periods, and in our Corporate segment for our segment disclosures. Additionally, certain data revenues from this business that were previously included in our Capital Access Platforms segment are also reflected in Other Revenues in the Consolidated Statements of Income for all periods, and in our Corporate segment for our segment disclosures.

Our transaction-based platforms provide market participants with the ability to access, process, display and integrate orders and quotes. The platforms allow the routing and execution of buy and sell orders as well as the reporting of transactions, providing fee-based revenues.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Principles of Consolidation

The consolidated financial statements are prepared in accordance with U.S. GAAP and include the accounts of Nasdaq, its wholly-owned subsidiaries and other entities in which Nasdaq has a controlling financial interest. When we do not have a controlling interest in an entity but exercise significant influence over the entity's operating and financial policies, such investment is accounted for under the equity method of accounting. We recognize our share of earnings or losses of an equity method investee based on our ownership percentage. See "Equity Method Investments," of Note 6, "Investments," for further discussion of our equity method investments.

The accompanying consolidated financial statements reflect all adjustments which are, in the opinion of management, necessary for a fair statement of the results. These adjustments are of a normal recurring nature. All significant intercompany accounts and transactions have been eliminated in consolidation.

Certain prior year amounts have been reclassified to conform to the current year presentation.

Use of Estimates

In preparing our consolidated financial statements, we make assumptions, judgments and estimates that can have a significant impact on our revenue, operating income and net income, as well as on the value of certain assets and liabilities in our consolidated balance sheets. At least quarterly, we evaluate our assumptions, judgments and estimates, and make changes as deemed necessary.

Foreign Currency

Foreign denominated assets and liabilities are remeasured into the functional currency at exchange rates in effect at the balance sheet date and recorded through the income statement. Gains or losses resulting from foreign currency transactions are remeasured using the rates on the dates on which those elements are recognized during the period, and are included in general, administrative and other expense in the Consolidated Statements of Income.

Translation gains or losses resulting from translating our subsidiaries' financial statements from the local functional currency to the reporting currency, net of tax, are included in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. Assets and liabilities are translated at the balance sheet date while revenues and expenses are translated at the date the transaction occurs or at an applicable average rate.

Cash and Cash Equivalents

Cash and cash equivalents include all non-restricted cash in banks and highly liquid investments with original maturities of 90 days or less at the time of purchase. Such equivalent investments included in cash and cash equivalents in the Consolidated Balance Sheets were $122 million as of December 31, 2023 and $242 million as of December 31, 2022. Cash equivalents are carried at cost plus accrued interest, which approximates fair value due to the short maturities of these investments.

Restricted Cash

Restricted cash and cash equivalents, which was $20 million as of December 31, 2023 and $22 million as of December 31, 2022, is restricted from withdrawal due to a contractual or regulatory requirement or not available for general use and as such is classified as restricted in the Consolidated Balance Sheets. As of December 31, 2023 and 2022, restricted cash and cash equivalents primarily includes funds held for regulatory capital for our trading and clearing businesses.

Default Funds and Margin Deposits

Nasdaq Clearing members' cash contributions are included in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. These balances may fluctuate over time due to changes in the amount of deposits required and whether members choose to provide cash or non-cash contributions. Non-cash contributions include highly rated government debt securities that must meet specific criteria approved by Nasdaq Clearing. Non-cash contributions are pledged assets that are not recorded in the Consolidated Balance Sheets as Nasdaq Clearing does not take legal ownership of these assets and the risks and rewards remain with the clearing members.

Receivables, net

Our receivables are concentrated with our customers which primarily include corporate clients, investment managers, banks, brokers, and exchange operators. Receivables are shown net of allowance for credit losses. The allowance is maintained at a level that management believes to be sufficient to absorb expected losses over the life of our accounts receivable portfolio. The allowance is increased by the provision for bad debts, which is included in general, administrative and other expense in the Consolidated Statements of Income, and decreased by the amount of charge-offs, net of recoveries.

The allowance is primarily based on an aging methodology. This method applies loss rates based on historical loss information which is disaggregated by business segment and, as deemed necessary, is adjusted for other factors and considerations that could impact collectibility. Additionally, we consider corporate default rate averages over an extended period as compared to the period covered by our historical loss data and include an adjustment to historical loss percentages for current conditions and expected future conditions if necessary.

In circumstances where a specific customer's inability to meet its financial obligations is known (i.e., bankruptcy filings), we determine whether a specific provision for bad debts is required. Accounts receivable are written-off against the allowance when collection efforts cease. Due to changing economic, business and market conditions, we review the allowance quarterly and make changes to the allowance through the provision for bad debts as appropriate. If circumstances change (i.e., higher than expected defaults or an unexpected material adverse change in a major customer's ability to pay), our estimates of recoverability could be reduced by a material amount. The total allowance netted against receivables in the Consolidated Balance Sheets was $18 million as of December 31, 2023 and $15 million as of December 31, 2022. Any provision for bad debt or write-off recorded during the year was immaterial.

Investments

Purchases and sales of investment securities are recognized on settlement date.

Financial Investments

Financial investments are comprised of trading securities bought principally to meet regulatory capital requirements mainly for our clearing operations at Nasdaq Clearing. These investments are classified as trading securities as they are generally sold in the near term, with changes in fair value included in other income in the Consolidated Statements of Income.

Fair value is generally obtained from third-party pricing sources. When available, quoted market prices are used to determine fair value. If quoted market prices are not available, fair values are estimated using pricing models with observable market inputs. The inputs to the valuation models vary by the type of security being priced but are typically benchmark yields, reported trades, broker-dealer quotes, and prices of similar assets. Pricing models generally do not entail material subjectivity because the methodologies employed use inputs observed from active markets. See "Fair Value Measurements" below for further discussion of fair value measures.

Equity Securities

Investments in equity securities with readily determinable fair values (other than those accounted for under the equity method or those that result in consolidation of the investee) are measured at fair value and any changes in fair value are recognized in other income in the Consolidated Statements of Income.

Equity investments without readily determinable fair values are accounted for under the measurement alternative, under which investments are measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer on a prospective basis. We assess relevant transactions that occur on or before the balance sheet date to identify observable price changes, and we regularly monitor these investments to evaluate whether there is an indication that the investment is impaired, based on the share price from the investee's latest financing round, the performance of the investee in relation to its own operating targets, the investee's liquidity and cash position, and general market conditions. If a qualitative assessment indicates that the security is impaired, Nasdaq will estimate the fair value of the security and, if the fair value is less than the carrying amount of the security, will recognize an impairment loss in net income equal to the difference in the period the impairment occurs. See Note 6, "Investments," for further discussion of our equity securities.

For the years ended December 31, 2023, 2022 and 2021, no material adjustments were made to the carrying value of our equity securities.

Our investments in equity securities are included in other non-current assets in the Consolidated Balance Sheets, as we intend to hold these investments for more than one year.

Equity Method Investments

In general, the equity method of accounting is used when we own 20% to 50% of the outstanding voting stock of a company or when we are able to exercise significant influence over the operating and financial policies of a company. We have certain investments in which we have determined that we have significant influence and as such account for the investments under the equity method of accounting. We record our estimated pro-rata share of earnings or losses each reporting period and record any dividends as a reduction in the investment balance. We evaluate our equity method investments for other-than-temporary declines in value by considering a variety of factors such as the earnings capacity of the investment and the fair value of the investment compared to its carrying amount. In addition, for investments where the market value is readily determinable, we consider the underlying stock price. If the estimated fair value of the investment is less than the carrying amount and management considers the decline in value to be other than temporary, the excess of the carrying amount over the estimated fair value is recognized in net income in the period the impairment occurs. See Note 6, "Investments," for further discussion of our equity method investments.

No material impairments were recorded to reduce the carrying value of our equity method investments in 2023, 2022 or 2021.

Derivative Financial Instruments and Hedging Activities

Non-Designated Derivatives

We use foreign exchange forward contracts to manage foreign currency exposure of intercompany loans, accounts receivable, accounts payable and other balance sheet items. These contracts are not designated as hedges for financial reporting purposes. The change in fair value of these contracts is recognized in general, administrative and other expense in the Consolidated Statements of Income and offsets the foreign currency exposure.

As of December 31, 2023 and 2022, the fair value amounts of our derivative instruments were immaterial.

Net Investment Hedges

Net assets of our foreign subsidiaries are exposed to volatility in foreign currency exchange rates. We may utilize net investment hedges to offset the translation adjustment arising from re-measuring our investment in foreign subsidiaries.

Our 2029, 2030, 2032 and 2033 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries. Any increase or decrease related to the remeasurement of the 2029, 2030, 2032 and 2033 Notes into U.S. dollars is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. See "Net Investment Hedge" of Note 9, "Debt Obligations," for further discussion.

Property and Equipment, net

Property and equipment, including leasehold improvements, are carried at cost less asset impairment charges and accumulated depreciation and amortization. Depreciation and amortization are recognized using the straight-line method over the estimated useful lives of the related assets, which range from 10 to 40 years for buildings and improvements, 3 to 5 years for data processing equipment, and 5 to 10 years for furniture and equipment.

Leasehold improvements are amortized using the straight-line method over the shorter of their estimated useful lives or the remaining term of the related lease.

We develop systems solutions for both internal and external use. Certain costs incurred in connection with developing or obtaining internal use software are capitalized. In addition, certain costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process are capitalized beginning when a product's technological feasibility has been established and ending when a product is available for general release. Technological feasibility is established upon completion of a detailed program design or, in its absence, completion. Prior to reaching technological feasibility, all costs are charged to expense. Unamortized capitalized costs are included in data processing equipment and software, within property and equipment, net in the Consolidated Balance Sheets. Capitalized software costs are amortized on a straight-line basis over the estimated useful lives of the software, generally 5 to 10 years. Amortization of these costs is included in depreciation and amortization expense in the Consolidated Statements of Income.

Implementation costs incurred in a cloud computing arrangement that is a service contract are capitalized as a prepaid asset, included in other assets in our Consolidated Balance Sheets, and are amortized over the expected service period in the relevant expense category in the Consolidated Statements of Income.

Property and equipment are subject to impairment testing when events or conditions indicate that the carrying amount of an asset may not be recoverable. The carrying amount of an asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset, or for internal use software, the fair value of the asset. Any required impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value and is recorded as a reduction in the carrying amount of the related asset and a charge to operating results.

See Note 7, "Property and Equipment, net," for further discussion.

Leases

At inception, we determine whether a contract is or contains a lease. We have operating leases which are primarily real estate leases for our U.S. and European headquarters and for general office space. As of December 31, 2023, these leases have varying lease terms with remaining maturities ranging up to 13 years. Operating lease balances are included in operating lease assets, other current liabilities, and operating lease liabilities in our Consolidated Balance Sheets. We do not have any leases classified as finance leases.

Operating lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. Since our leases do not provide an implicit rate, we use our incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date in determining the present value of lease payments. The operating lease asset also includes any lease payments made and excludes lease incentives. Our lease terms include options to extend or terminate the lease when we are reasonably certain that we will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. Certain of our lease agreements include rental payments adjusted periodically for inflation based on an index or rate. These payments are included in the initial measurement of the operating lease liability and operating lease asset. However, rental payments that are based on a change in an index or a rate are considered variable lease payments and are expensed as incurred.

We have lease agreements with lease and non-lease components, which are accounted for as a single performance obligation to the extent that the timing and pattern of transfer are similar for the lease and non-lease components and the lease component qualifies as an operating lease. We do not recognize lease liabilities and operating lease assets for leases with a term of 12 months or less. We recognize these lease payments on a straight-line basis over the lease term.

We review our operating lease assets for potential impairment when there is evidence that events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. We fully impair our lease assets for locations that we vacate with no intention to sublease.

See Note 16, "Leases," for further discussion.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is allocated to our reporting units based on the assignment of the fair values of each reporting unit of the acquired company. We recognize specifically identifiable intangibles, such as customer relationships, technology, exchange and clearing registrations, trade names and licenses when a specific right or contract is acquired. Goodwill and intangible assets deemed to have indefinite useful lives, primarily exchange and clearing registrations, are not amortized but instead are tested for impairment at least annually as of October 1 and more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. When testing goodwill and indefinite-lived intangible assets for impairment, we have the option of first performing a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit or indefinite-lived intangible asset is less than their respective carrying amounts as the basis to determine if it is necessary to perform a quantitative impairment test. If we choose not to complete a qualitative assessment, or if the initial assessment indicates that it is more likely than not that the carrying amount of a reporting unit or the carrying amount of an indefinite-lived intangible asset exceeds their respective estimated fair values, a quantitative test is required.

In performing a quantitative impairment test, we compare the fair value of each reporting unit and indefinite-lived intangible asset with their respective carrying amounts. If the carrying amounts of the reporting unit or the indefinite-lived intangible asset exceed their respective fair values, an impairment charge is recognized in an amount equal to the difference, limited to the total amount of goodwill allocated to that reporting unit or the total carrying value of the indefinite-lived intangible asset.

There was no impairment of goodwill or indefinite-lived intangible assets for the years ended December 31, 2023, 2022 and 2021. Future disruptions to our business and events, such as prolonged economic weakness or unexpected significant declines in operating results of any of our reporting units or businesses, may result in goodwill or indefinite-lived intangible asset impairment charges in the future.

Other Long-Lived Assets

We review our other long-lived assets, such as finite-lived intangible assets and property and equipment, for potential impairment when there is evidence that events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The carrying amount of an asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. Fair value of finite-lived intangible assets and property and equipment is based on various valuation techniques. Any required impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value and is recorded as a reduction in the carrying amount of the related asset and a charge to operating results.

There were no material finite-lived impairment charges in 2023 and 2022. We recorded pre-tax, non-cash finite-lived intangible assets impairment charges of $14 million in 2021 related to a finite-lived intangible asset for customer relationships associated with the wind down of a previous acquisition. In addition, we also recorded pre-tax, non-cash property and equipment asset impairment charges of $12 million in 2023, $8 million in 2022, and $4 million in 2021.

Revenue Recognition and Transaction-Based Expenses

Revenue From Contracts With Customers

Our revenue recognition policies under “Revenue from Contracts with Customers (Topic 606),” are described in the following paragraphs.

<u>Contract Balances</u>

Substantially all of our revenues are considered to be revenues from contracts with customers. The related accounts receivable balances are recorded in our Consolidated Balance Sheets as receivables which are net of an allowance for credit losses of $18 million as of December 31, 2023 and $15 million as of December 31, 2022. The activity during the period relating to changes in the allowance for credit losses was immaterial. We do not have obligations for warranties, returns or refunds to customers.

The majority of our contracts with customers do not have significant variable consideration. We do not have a material amount of revenues recognized from performance obligations that were satisfied in prior periods. We do not provide disclosures about transaction price allocated to unsatisfied performance obligations if contract durations are less than one year.

For contract durations that are one-year or greater, the portion of transaction price allocated to unsatisfied performance obligations is included in Note 3, “Revenue From Contracts With Customers.” Our deferred revenue primarily arises from contract liabilities related to our fees for annual and initial listings, workflow & insights, regulatory technology, and capital markets technology contracts. Deferred revenue is the only significant contract asset or liability as of December 31, 2023 and 2022. See Note 8, “Deferred Revenue,” for our discussion of deferred revenue balances, activity, and expected timing of recognition. See “Revenue Recognition” below for further descriptions of our revenue contracts.

Sales commissions earned by our sales force are considered incremental and recoverable costs of obtaining a contract with a customer. These costs are deferred and amortized on a straight-line basis over the period of benefit that we have determined to be the contract term or estimated service period. Sales commissions for renewal contracts are deferred and amortized on a straight-line basis over the related contractual renewal period. Amortization expense is included in compensation and benefits expense in the Consolidated Statements of Income. The balance of deferred costs and related amortization expense are not material to our consolidated financial statements. Sales commissions are expensed when incurred if contract durations are one year or less. Sales taxes are excluded from transaction prices.

Certain judgments and estimates were used in the identification and timing of satisfaction of performance obligations and the related allocation of transaction price and are discussed below. We believe that these represent a faithful depiction of the transfer of services to our customers.

<u>Revenue Recognition</u>

Our primary revenue contract classifications are described below. Revenues are categorized based on similar economic characteristics of the nature, amount, timing and uncertainty of our revenues and cash flows.

Capital Access Platforms

<u>Data and Listings</u>

Data revenues are earned from U.S. and European proprietary data products. We earn revenues primarily based on the number of data subscribers and distributors of our data. Data revenues are subscription-based and are recognized on a monthly basis.

Listing services revenues primarily include initial listing fees and annual renewal fees. Under Topic 606, the initial listing fee is allocated to multiple performance obligations including initial and subsequent listing services and corporate solutions products (when a company qualifies to receive certain complimentary IPO products under the applicable Nasdaq rule), as well as a customer’s material right to renew the option to list on our exchanges. In performing this allocation, the standalone selling price of the performance obligations is based on the initial and annual listing fees and the standalone selling price of the IPO complimentary services is based on its market value. All listing fees are billed upfront and the identified performance obligations are satisfied over time since the customer receives and consumes the benefit as Nasdaq provides the listing service. The amount of revenue related to the IPO complimentary services performance obligation is recognized ratably over a three-year period, which is based on contract terms, with the remaining revenue recognized ratably over six years which is based on our historical listing experience and projected future listing duration.

In the U.S., annual renewal fees are charged to listed companies based on their number of outstanding shares at the end of the prior year and are recognized ratably over the following twelve-month period since the customer receives and consumes the benefit as Nasdaq provides the service. Annual fees are charged to newly listed companies on a pro-rata basis, based on outstanding shares at the time of listing and recognized over the remainder of the year. European annual renewal fees, which are received from companies listed on our Nasdaq Nordic and Nasdaq Baltic exchanges and Nasdaq First North, are directly related to the listed companies' market capitalization on a trailing twelve-month basis and are recognized ratably over the following twelve-month period since the customer receives and consumes the benefit as Nasdaq provides the service.

Index

We develop and license Nasdaq-branded indices and financial products and provide index data products for third-party clients. Revenues primarily include license fees from these branded indices and financial products in the U.S. and abroad. We primarily have two types of license agreements: asset-based licenses and transaction-based licenses. Asset-based licenses are generally renewable agreements. Customers are charged based on a percentage of AUM for licensed products, per the agreement, on a monthly or quarterly basis. These revenues are recognized over the term of the license agreement since the customer receives and consumes the benefit as Nasdaq provides the service. Revenue from index data subscriptions are recognized on a monthly basis. Transaction-based licenses are also generally renewable agreements. Customers are charged based on transaction volume or a minimum contract amount, or both. If a customer is charged based on transaction volume, we recognize revenue when the transaction occurs. If a customer is charged based on a minimum contract amount, we recognize revenue on a pro-rata basis over the licensing term since the customer receives and consumes the benefit as Nasdaq provides the service.

Workflow & Insights

Analytics revenues are earned from investment content and analytics products. We earn revenues primarily based on the number of content and analytics subscribers and distributors.

Subscription agreements are generally one to three years in term, payable in advance, and provide for automatic renewal. Subscription-based revenues are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

Our corporate solutions business includes our Investor Relations Intelligence, ESG Services and Governance Solutions businesses, which serve both public and private companies and organizations.

Corporate solutions revenues primarily include subscription and transaction-based income from our investor relations intelligence and governance solutions products and services. Subscription-based revenues earned are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service. Generally, fees are billed in advance and the contract provides for automatic renewal. As part of subscription agreements, customers can also be charged usage fees based upon actual usage of the services provided. Revenues from usage fees are recognized at a point in time when the service is provided.

Financial Technology

Financial Crime Management Technology

Our financial crime management technology solution primarily consists of SaaS revenues. We enter into subscription agreements which allow customers access to our cloud platform. Subscription agreements are generally three years in term, payable in advance, with the option of automatic renewal for some products. Subscription-based revenues are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

Regulatory Technology

Our surveillance solutions primarily consist of SaaS revenues and we enter into subscription agreements which allow customers access to our cloud platform or a connection to our servers to access the software. We recognize revenue from these agreements similarly to our revenue recognition for the Financial Crime Management Technology agreements discussed above.

AxiomSL provides financial institutions with risk & financial regulatory reporting and risk management solutions. The products can be offered as an on-premise or as a cloud service agreement.

A license for on-premise software provides customers with the right to use the software at its current state at the time made available to the customer. These contracts generally consist of the following distinct performance obligations: license, professional services and maintenance.

In allocating the contractual price to each performance obligation, we have used our best estimate of the stand-alone selling price. Consideration is first allocated to performance obligations with established stand-alone selling prices based on observable evidence such as professional services with the residual being split between license and maintenance.

License revenue is recognized upfront at the point in time when the software is made available to the customer as this is the point the user of the software can direct the use of and obtain substantially all of the remaining benefits from the software license. Maintenance revenue is recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

Professional services are typically billed on a time and expense basis and revenue is recognized based on actual hours incurred. Nasdaq also offers fixed price contract agreements and revenue is recognized using the input method to measure progress towards complete satisfaction of the services, because the customer simultaneously receives and consumes the benefits provided by the Company.

AxiomSL can also be offered as a cloud service whereby the software is hosted and managed for customers. These hosted agreements generally include a license, hosting services and maintenance services. We have determined that these services are not distinct in the context of the hosting arrangement as the customer cannot benefit from the license or maintenance without the hosting services. Cloud revenues are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

Capital Markets Technology

Calypso's capital market product consists of the provision of cloud-enabled, cross-asset, front-to-back solutions for financial markets. Our Calypso product offering includes on-premise and cloud service agreements and we recognize revenue from these agreements similarly to our revenue recognition for the AxiomSL agreements discussed above.

Through our trade management services, we provide market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. We also offer market participants colocation services, whereby we charge firms for cabinet space and power to house their own equipment and servers within our data centers. These participants are charged monthly fees for cabinet space, connectivity and support in accordance with our published fee schedules. These fees are recognized on a monthly basis when the performance obligation is met. We also earn revenues from annual and monthly exchange membership and registration fees. Revenues for monthly exchange membership and registration fees are recognized on a monthly basis as the service is provided. Revenues from annual fees for exchange membership and registration fees are recognized ratably over the following twelve-month period since the customer receives and consumes the benefit as Nasdaq provides the service.

Market technology revenues primarily consist of software, license and support revenues, SaaS revenues, and change request revenues.

We enter into long-term contracts with customers to develop customized technology solutions, license the right to use software, and provide support and other services to our customers. We also enter into agreements to modify the system solutions sold by Nasdaq after delivery has occurred. In addition, we enter into subscription agreements which allow customers to connect to our servers to access our software.

Our long-term contracts with customers to develop customized technology solutions, license the right to use software and provide support and other services to our customers have multiple performance obligations. The performance obligations are generally: (i) software license and installation service and (ii) software support. We have determined that the software license and installation service are not distinct as the license and the customized installation service are inputs to produce the combined output, a functional and integrated software system.

For contracts with multiple performance obligations, we allocate the contract transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. In instances where standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price predominantly through an expected cost plus a margin approach. For the years ended December 31, 2023, 2022 and 2021 we recognized revenues of $75 million, $75 million and $77 million, respectively, related to the market technology contracts described above.

Contract modifications are routine in the performance of our contracts. Contracts are often modified to account for changes in contract specifications or requirements. In most instances, contract modifications are for goods and services that are not distinct, and, therefore, are accounted for as part of the existing contract.

For our long-term contracts, payments are generally made throughout the contract life and can be dependent on either reaching certain milestones or paid upfront in advance of the service period depending on the stage of the contract. For subscription agreements, contract payment terms can be quarterly, annually or monthly, in advance. For all other contracts, payment terms vary.

We generally recognize revenue over time as our customers simultaneously receive and consume the benefits provided by our performance because our customer controls the asset for which we are creating, our performance does not create an asset with alternative use, and we have a right to payment for performance completed to date. For these services, we recognize revenue over time using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying our performance obligation. Incurred costs represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer. Contract costs generally include labor and direct overhead. For software support and update services, and for subscription agreements which allow customers to connect to our servers to access our software, we generally recognize revenue ratably over the service period beginning on the date our service is made available to the customer since the customer receives and consumes the benefit consistently over the period as Nasdaq provides the services.

Accounting for our long-term contracts requires judgment relative to assessing risks and their impact on the estimate of revenues and costs. Our estimates are impacted by factors such as the potential for schedule and technical issues, productivity, and the complexity of work performed. When adjustments in estimated total contract costs are required, any changes in the estimated revenues from prior estimates are recognized in the current period for the effect of such change. If estimates of total costs to be incurred on a contract exceed estimates of total revenues, a provision for the entire estimated loss on the contract is recorded in the period in which the loss is determined.

Market Technology SaaS revenues are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer due to the fact that the customer receives and consumes the benefit as Nasdaq provides the service.

Market Services

Transaction-Based Trading and Clearing

Transaction-based trading and clearing includes equity derivative trading and clearing, cash equity trading and FICC revenues. Nasdaq charges transaction fees for trades executed on our exchanges, as well as on orders that are routed to and executed on other market venues. Nasdaq charges clearing fees for contracts cleared with Nasdaq Clearing.

In the U.S., transaction fees are based on trading volumes for trades executed on our U.S. exchanges and in Europe, transaction fees are based on the volume and value of traded and cleared contracts. In Canada, transaction fees are based on trading volumes for trades executed on our Canadian exchange.

Nasdaq satisfies its performance obligation for trading services upon the execution of a customer trade and clearing services when a contract is cleared, as trading and clearing transactions are substantially complete when they are executed and we have no further obligation to the customer at that time. Transaction-based trading and clearing fees can be variable and are based on trade volume tiered discounts. Transaction revenues, as well as any tiered volume discounts, are calculated and billed monthly in accordance with our published fee schedules. In the U.S., we also pay liquidity payments to customers based on our published fee schedules. We use these payments to improve the liquidity on our markets and therefore recognize those payments as a cost of revenue.

For U.S. equity derivative trading, we credit a portion of the per share execution charge to the market participant that provides the liquidity. For U.S. and Canadian cash equity trading, including for The Nasdaq Stock Market, Nasdaq PSX and Nasdaq CXC, we credit a portion of the per share execution charge to the market participant that provides the liquidity, and for Nasdaq BX and Nasdaq CX2, we credit a portion of the per share execution charge to the market participant that takes the liquidity. We record these credits as transaction rebates that are included in transaction-based expenses in the Consolidated Statements of Income. These transaction rebates are paid on a monthly basis and the amounts due are included in accounts payable and accrued expenses in the Consolidated Balance Sheets.

In the U.S., we pay Section 31 fees to the SEC for supervision and regulation of securities markets. We pass these costs along to our customers through our equity derivative trading and clearing fees and our cash equity trading fees. We collect the fees as a pass-through charge from organizations executing eligible trades on our options exchanges and our cash equity platforms and we recognize these amounts in transaction-based expenses when incurred. Section 31 fees received are included in cash and cash equivalents in the Consolidated Balance Sheets at the time of receipt and, as required by law, the amount due to the SEC is remitted semiannually and recorded as Section 31 fees payable to the SEC in the Consolidated Balance Sheets until paid. Since the amount recorded as revenues is equal to the amount recorded as transaction-based expenses, there is no impact on our revenues less transaction-based expenses. As we hold the cash received until payment to the SEC, we earn interest income on the related cash balances.

Under our Limitation of Liability Rule and procedures, we may, subject to certain caps, provide compensation for losses directly resulting from our systems' actual failure to correctly process an order, quote, message or other data into our platform. We do not record a liability for any potential claims that may be submitted under the Limitation of Liability Rule unless they meet the provisions required in accordance with U.S. GAAP. As such, losses arising as a result of the rule are accrued and charged to expense only if the loss is probable and estimable.

U.S. Tape Plans

For U.S. Tape plans, revenues are collected monthly based on published fee schedules and distributed quarterly to the U.S. exchanges based on a formula required by Regulation NMS that takes into account both trading and quoting activity. These revenues are presented on a net basis as all indicators of principal versus agent reporting under U.S. GAAP have been considered in analyzing the appropriate presentation of the revenue sharing. The following are primary indicators of net reporting:

- We are the administrator for the UTP plan, in addition to being a participant in the plan. In our unique role as administrator, we facilitate the collection and dissemination of revenues on behalf of the plan participants. As a participant, we share in the net distribution of revenues according to the plan on the same terms as all other plan participants.

- The operating committee of the plan, which comprises representatives from each of the participants, including us solely in our capacity as a plan participant, is responsible for setting the level of fees to be paid by distributors and subscribers and taking action in accordance with the provisions of the plan, subject to SEC approval.
- Risk of loss on the revenue is shared equally among plan participants according to the plan.

Other Revenues

Other revenues related to our European power trading and clearing business, following our announcement in June 2023 to sell this business, subject to regulatory approval. Prior to June 2023, these amounts were included in our Market Services and Capital Access Platforms segments. Other revenues also include revenues related to our Nordic broker services business for which we completed the wind-down in June 2022, as well as revenues associated with our U.S. Fixed Income business, which was sold in June 2021. Prior to the closing of the transaction, these revenues were included in our Market Services and Capital Access Platforms segments. Additionally, for the year ended December 31, 2021, other revenues include revenues associated with the NPM business which we contributed in July 2021 to a standalone, independent company, of which we own the largest minority interest, together with a consortium of third-party financial institutions. Prior to July 2021, these revenues were included in our Capital Access Platforms segment. For the years ended December 31, 2023, 2022 and 2021, other revenues also include a transitional services agreement associated with a divested business.

Earnings Per Share

We present both basic and diluted earnings per share. Basic earnings per share is computed by dividing net income attributable to Nasdaq by the weighted-average number of common shares outstanding for the period. Diluted earnings per share is computed by dividing net income attributable to Nasdaq by the weighted-average number of common shares and common share equivalents outstanding during the period and reflects the assumed conversion of all dilutive securities, which primarily consist of restricted stock, PSUs, and employee stock options. Common share equivalents are excluded from the computation in periods for which they have an anti-dilutive effect. Stock options for which the exercise price exceeds the average market price over the period are anti-dilutive and, accordingly, are excluded from the calculation. Shares which are considered contingently issuable are included in the computation of dilutive earnings per share on a weighted average basis when management determines the applicable performance criteria would have been met if the performance period ended as of the date of the relevant computation. See Note 13, “Earnings Per Share,” for further discussion.

Pension and Post-Retirement Benefits

Pension and other post-retirement benefit plan information for financial reporting purposes is developed using actuarial valuations. We assess our pension and other post-retirement benefit plan assumptions on a regular basis. In evaluating these assumptions, we consider many factors, including evaluation of the discount rate, expected rate of return on plan assets, mortality rate, healthcare cost trend rate, retirement age assumption, our historical assumptions compared with actual results and analysis of current market conditions and asset allocations. See Note 10, “Retirement Plans,” for further discussion.

Discount rates used for pension and other post-retirement benefit plan calculations are evaluated annually and modified to reflect the prevailing market rates at the measurement date of a high-quality fixed-income debt instrument portfolio that would provide the future cash flows needed to pay the benefits included in the benefit obligations as they come due. Actuarial assumptions are based upon management’s best estimates and judgment.

The expected rate of return on plan assets for our U.S. pension plans represents our long-term assessment of return expectations which may change based on significant shifts in economic and financial market conditions. The long-term rate of return on plan assets is derived from return assumptions based on targeted allocations for various asset classes. While we consider the pension plans’ recent performance and other economic growth and inflation factors, which are supported by long-term historical data, the return expectations for the targeted asset categories represent a long-term prospective return.

Share-Based Compensation

Nasdaq uses the fair value method of accounting for share-based awards. Share-based awards, or equity awards, include restricted stock, PSUs, and stock options. The fair value of restricted stock awards and PSUs, other than PSUs granted with market conditions, is determined based on the grant date closing stock price less the present value of future cash dividends. We estimate the fair value of PSUs granted with market conditions using a Monte Carlo simulation model at the date of grant. The fair value of stock options are estimated using the Black-Scholes option-pricing model.

We generally recognize compensation expense for equity awards on a straight-line basis over the requisite service period of the award, taking into account an estimated forfeiture rate. Granted but unvested shares are generally forfeited upon termination of employment.

Excess tax benefits or expense related to employee share-based payments, if any, are recognized as income tax benefit or expense in the Consolidated Statements of Income when the awards vest or are settled.

Nasdaq also has an ESPP that allows eligible employees to purchase a limited number of shares of our common stock at six-month intervals, called offering periods, at 85.0% of the lower of the fair market value on the first or the last day of each offering period. The 15.0% discount given to our employees is included in compensation and benefits expense in the Consolidated Statements of Income.

See Note 11, "Share-Based Compensation," for further discussion of our share-based compensation plans.

Merger and Strategic Initiatives

We incur incremental direct merger and strategic initiative costs relating to various completed and potential acquisitions, divestitures, and other strategic opportunities. These costs generally include integration costs, as well as legal, due diligence and other third-party transaction costs.

Fair Value Measurements

Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability, or the exit price, in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required or permitted to be either recorded or disclosed at fair value, we consider the principal or most advantageous market in which we would transact, and we also consider assumptions that market participants would use when pricing the asset or liability. Fair value measurement establishes a hierarchy of valuation techniques based on whether the inputs to those valuation techniques are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect Nasdaq's market assumptions. These two types of inputs create the following fair value hierarchy:

- Level 1 - Quoted prices for identical instruments in active markets.
- Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations whose inputs are observable or whose significant value drivers are observable.
- Level 3 - Instruments whose significant value drivers are unobservable.

This hierarchy requires the use of observable market data when available.

See Note 14, "Fair Value of Financial Instruments," for further discussion.

Tax Matters

We use the asset and liability method to determine income taxes on all transactions recorded in the consolidated financial statements. Deferred tax assets (net of valuation allowances) and deferred tax liabilities are presented net by jurisdiction as either a non-current asset or liability in our Consolidated Balance Sheets, as appropriate. Deferred tax assets and liabilities are determined based on differences between the financial statement carrying amounts and the tax basis of existing assets and liabilities (i.e., temporary differences) and are measured at the enacted rates that will be in effect when these differences are realized. If necessary, a valuation allowance is established to reduce deferred tax assets to the amount that is more likely than not to be realized.

In order to recognize and measure our unrecognized tax benefits, management determines whether a tax position is more likely than not to be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. Once it is determined that a position meets the recognition thresholds, the position is measured to determine the amount of benefit to be recognized in the consolidated financial statements. Interest and/or penalties related to income tax matters are recognized in income tax expense.

Subsequent Events

We have evaluated subsequent events through the issuance date of this Annual Report on Form 10-K.

Recent Accounting Developments

In November 2023, the FASB issued ASU 2023-07, "Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures." ASU 2023-07 requires disclosure of significant segment expenses that are regularly provided to the chief operating decision maker ("CODM") and included within the segment measure of profit or loss, an amount and description of its composition for other segment items to reconcile to segment profit or loss, and the title and position of the entity's CODM and an explanation of how the CODM uses the reported measure of segment profit or loss in assessing segment performance and deciding how to allocate resources. ASU 2023-07 will be applied retrospectively and is effective for annual reporting periods in fiscal years beginning after December 15, 2023, and interim reporting periods in fiscal years beginning after December 31, 2024. We are currently reviewing the impact that the adoption of ASU 2023-07 may have on our Consolidated Financial Statements and disclosures.

3. REVENUE FROM CONTRACTS WITH CUSTOMERS

Disaggregation of Revenue

The following tables summarize the disaggregation of revenue by major product and service and by segment for the years ended December 31, 2023 and 2022:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Capital Access Platforms			
Data & Listing Services	$ 749	$ 727	$ 678
Index	528	486	459
Workflow & Insights	493	469	429
Financial Technology			
Financial Crime Management Technology	223	176	104
Regulatory Technology	212	130	127
Capital Markets Technology	664	558	541
Market Services, net	987	988	1,005
Other revenues	39	48	77
Revenues less transaction-based expenses	$ 3,895	$ 3,582	$ 3,420

Substantially all revenues from the Capital Access Platforms segment are recognized over time for the years ended December 31, 2023, 2022 and 2021. For 2023, 6.7% of the Financial Technology segment revenues were recognized at a point in time. This relates to AxiomSL and Calypso license revenues for the two months since acquisition. The remaining Financial Technology revenues were recognized over time. For the years ended December 31, 2023, 2022 and 2021 approximately 93.0%, 93.2%, and 93.6% respectively, of Market Services revenues were recognized at a point in time and 7.0%, 6.8% and 6.4%, respectively, were recognized over time.

Contract Balances

Substantially all of our revenues are considered to be revenues from contracts with customers. The related accounts receivable balances are recorded in our Consolidated Balance Sheets as receivables, which are net of allowance for doubtful accounts of $18 million as of December 31, 2023 and $15 million as of December 31, 2022. There were no material upward or downward adjustments to the allowance during the year ended December 31, 2023. We do not have obligations for warranties, returns or refunds to customers.

For the majority of our contracts with customers, except for our market technology and listing services contracts, our performance obligations range from three months to three years and there is no significant variable consideration.

Deferred revenue is the only significant contract asset or liability as of December 31, 2023. Deferred revenue represents consideration received that is yet to be recognized as revenue for unsatisfied performance obligations. Deferred revenue primarily represents our contract liabilities related to our fees for Annual and Initial Listings, Workflow & Insights, Financial Crime Management Technology, Regulatory Technology and Capital Markets Technology contracts. See Note 8, "Deferred Revenue," for our discussion on deferred revenue balances, activity, and expected timing of recognition.

We do not provide disclosures about transaction price allocated to unsatisfied performance obligations if contract durations are less than one year. For our initial listings, the transaction price allocated to remaining performance obligations is included in deferred revenue. For our Financial Crime Management Technology, Regulatory Technology, Capital Markets Technology and Workflow & Insights contracts, the portion of transaction price allocated to unsatisfied performance obligations is presented in the table below. To the extent consideration has been received, unsatisfied performance obligations would be included in the table below as well as deferred revenue.

The following table summarizes the amount of the transaction price allocated to performance obligations that are unsatisfied, for contract durations greater than one year, as of December 31, 2023:

	Financial Crime Management Technology	Regulatory Technology	Capital Markets Technology	Workflow & Insights	Total
	(in millions)				
2024	$ 224	$ 261	$ 311	$ 159	$ 955
2025	206	174	243	101	724
2026	137	78	193	47	455
2027	53	44	131	24	252
2028	16	26	71	14	127
2029+	2	5	129	—	136
Total	$ 638	$ 588	$ 1,078	$ 345	$ 2,649

4. ACQUISITIONS

2023 Acquisition

In June 2023, we entered into a definitive agreement to acquire Adenza Holdings, Inc., or Adenza, a provider of mission-critical risk management and regulatory software to the financial services industry, for $5.75 billion in cash (subject to customary post-closing adjustments) and a fixed amount of 85.6 million shares of Nasdaq common stock, based on the volume-weighted average price per share over 15 consecutive trading days prior to signing. Nasdaq issued $5.6 billion of debt and entered into a $600 million term loan and used the proceeds for the cash portion of the consideration. See "*Senior Unsecured Notes*" and "*2023 Term Loan*" in "Financing of the Adenza Acquisition" of Note 9, "Debt Obligations," for further discussion.

On November 1, 2023, Nasdaq completed the acquisition of Adenza for a total of purchase consideration of $9,984 million, which comprises the following:

		(in millions, except price per share)
Shares of Nasdaq common stock issued		85.6
Closing price per share of Nasdaq common stock on November 1, 2023	$	48.71
Fair value of equity portion of the purchase consideration	$	4,170
Cash consideration	$	5,814
Total purchase consideration	$	9,984

At the closing of the transaction, the 85.6 million shares of Nasdaq common stock were issued to Thoma Bravo, the sole shareholder of Adenza, and represented approximately 15% of the outstanding shares of Nasdaq. For further discussion on the rights of common stockholders refer to “Common Stock” of Note 12, “Nasdaq Stockholders’ Equity.” Adenza is part of our Financial Technology segment.

The amounts in the table below represent the preliminary allocation of the purchase price to the acquired intangible assets, the deferred tax liability on the acquired intangible assets and other assets acquired and liabilities assumed based on their preliminary respective estimated fair values on the date of acquisition. The excess purchase price over the net tangible and acquired intangible assets has been recorded as goodwill. The goodwill recognized is attributable primarily to expected synergies and is assigned to our Financial Technology segment.

		(in millions)
Goodwill	$	5,933
Acquired intangible assets		5,050
Receivables, net		236
Other net assets acquired		153
Cash and cash equivalents		48
Accrued personnel costs		(44)
Deferred revenue		(130)
Deferred tax liability on acquired intangible assets		(1,262)
Total purchase consideration	$	9,984

The primary areas of the preliminary purchase price allocation that are not yet finalized relate to the valuation of the identifiable intangible assets and income taxes. The allocation of the purchase price will be finalized within one year of the date of acquisition.

Intangible Assets

The following table presents the details of acquired intangible assets at the date of acquisition. Acquired intangible assets with finite lives are amortized using the straight-line method.

	Customer Relationships	Technology	Trade Names	Total Acquired Intangible Assets
Intangible asset value (in millions)	$ 3,740	$ 950	$ 360	$ 5,050
Discount rate used	9.5 %	8.5 %	8.5 %	
Estimated average useful life	22 years	6 years	20 years	

Customer Relationships

Customer relationships represent the contractual relationships with customers.

Methodology

Customer relationships were valued using the income approach, specifically an excess earnings method. The excess earnings method examines the economic returns contributed by the identified tangible and intangible assets of a company, and then isolates the excess return that is attributable to the intangible asset being valued.

Discount Rate

The discount rate used reflects the amount of risk associated with the hypothetical cash flows for the customer relationships relative to the overall business. In developing a discount rate for the customer relationships, we estimated a weighted-average cost of capital for the overall business and we utilized this rate as an input when discounting the cash flows. The resulting discounted cash flows were then tax-effected at the applicable statutory rate.

A discounted tax amortization benefit was added to the fair value of the assets under the assumption that the customer relationships would be amortized for tax purposes over a period of 15 years.

Technology

As part of our acquisition of Adenza, we acquired developed technology relating to AxiomSL and Calypso.

Methodology

The developed technology was valued using the income approach, specifically the relief-from-royalty method, or RFRM. The RFRM is used to estimate the cost savings that accrue to the owner of an intangible asset who would otherwise have to pay royalties or license fees on revenues earned through the use of the asset. The royalty rate is applied to the projected revenue over the expected remaining life of the intangible asset to estimate royalty savings. The net after-tax royalty savings are calculated for each year in the remaining economic life of the technology and discounted to present value.

Discount Rate

The discount rate used reflects the amount of risk associated with the hypothetical cash flows for the developed technology relative to the overall business as discussed above in "Customer Relationships."

Trade Name

As part of our acquisition of Adenza, we acquired the AxiomSL and Calypso trade names. The trade names are recognized in the industry and carry a reputation for quality. As such, the reputation and positive recognition embodied in the trade names is a valuable asset to Nasdaq.

Methodology

The AxiomSL and Calypso trade names were valued using the income approach, specifically the RFRM as discussed above in "Technology."

Discount Rate

The discount rate used reflects the amount of risk associated with the hypothetical cash flows for the trade name relative to the overall business as discussed above in "Customer Relationships."

Pro Forma Results and Acquisition-Related Costs

From the date of acquisition through December 31, 2023, Adenza revenues of $149 million were included in Financial Technology revenues in the Consolidated Statement of Income and Adenza operating income of $55 million was included in our operating income in the Consolidated Statement of Income.

Acquisition-related costs were expensed as incurred and are included in merger and strategic initiatives expense in the Consolidated Statements of Income.

Supplemental Pro Forma Information (Unaudited)

The unaudited supplemental pro forma financial information presented below is for illustrative purposes only and is not necessarily indicative of the financial position or results of operations that would have been realized if the acquisition had been completed on the date indicated, does not reflect synergies that might have been achieved, nor is it indicative of future operating results or financial position.

The following supplemental pro forma financial information presents the combined results of operations as if Adenza had been acquired as of January 1, 2022. The pro forma adjustments are based upon currently available information and certain assumptions we believe are reasonable under the circumstances. These adjustments primarily include a net increase in amortization expense that would have been recognized due to acquired identifiable intangible assets, a net increase to interest expense to reflect the additional borrowings for the financing of the Adenza acquisition net of the interest expense relating to the repayment of Adenza's historical debt, and the related income tax effects of the adjustments noted above.

The unaudited supplemental pro forma financial information for the periods presented is as follows:

	Year Ended December 31,	
	2023	2022
	(in millions)	
Pro forma revenues less transaction-based expenses	$ 4,329	$ 4,096
Pro forma operating income	1,485	1,476
Pro forma net income attributable to Nasdaq	822	812

2022 Acquisition

In June 2022, we acquired Metrio, a provider of ESG data collection, analytics and reporting services based in Montreal, Canada. Metrio is part of our Workflow & Insights business in our Capital Access Platforms segment.

The consolidated financial statements for the years ended December 31, 2023 and 2022 include the financial results of the Metrio acquisition from the date of the acquisition. Pro forma financial results have not been presented as this acquisition was not material to our financial results.

Acquisition-related costs were expensed as incurred and are included in merger and strategic initiatives expense in the Consolidated Statements of Income.

5. GOODWILL AND ACQUIRED INTANGIBLE ASSETS

Goodwill

The following table presents the changes in goodwill by business segment during the year ended December 31, 2023:

		(in millions)
Capital Access Platforms		
Balance at December 31, 2022	$	4,178
Foreign currency translation adjustments		36
Balance at December 31, 2023	$	4,214
Financial Technology		
Balance at December 31, 2022	$	1,933
Goodwill acquired		5,933
Foreign currency translation adjustments		7
Balance at December 31, 2023	$	7,873
Market Services		
Balance at December 31, 2022	$	1,988
Foreign currency translation adjustments		37
Balance at December 31, 2023	$	2,025
Total		
Balance at December 31, 2022	$	8,099
Goodwill acquired		5,933
Foreign currency translation adjustments		80
Balance at December 31, 2023	$	14,112

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is allocated to our reporting units based on the assignment of the fair values of each reporting unit of the acquired company. We test goodwill for impairment at the reporting unit level annually, or in interim periods if certain events occur indicating that the carrying amount may be impaired, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. There was no impairment of goodwill for the years ended December 31, 2023, 2022 and 2021; however, events such as prolonged economic weakness or unexpected significant declines in operating results of any of our reporting units or businesses may result in goodwill impairment charges in the future.

Acquired Intangible Assets

The following table presents details of our total acquired intangible assets, both finite- and indefinite-lived:

		December 31, 2023		December 31, 2022
		(in millions)		
Finite-Lived Intangible Assets				
Gross Amount				
Technology	$	1,254	$	304
Customer relationships		5,743		2,005
Trade names and other		417		60
Foreign currency translation adjustment		(194)		(209)
Total gross amount	$	7,220	$	2,160
Accumulated Amortization				
Technology	$	(169)	$	(97)
Customer relationships		(912)		(778)
Trade names and other		(21)		(17)
Foreign currency translation adjustment		120		120
Total accumulated amortization	$	(982)	$	(772)
Net Amount				
Technology	$	1,085	$	207
Customer relationships		4,831		1,227
Trade names and other		396		43
Foreign currency translation adjustment		(74)		(89)
Total finite-lived intangible assets	$	6,238	$	1,388
Indefinite-Lived Intangible Assets				
Exchange and clearing registrations	$	1,257	$	1,257
Trade names		121		121
Licenses		52		52
Foreign currency translation adjustment		(225)		(237)
Total indefinite-lived intangible assets	$	1,205	$	1,193
Total intangible assets, net	$	7,443	$	2,581

There was no impairment of indefinite-lived intangible assets for 2023, 2022 and 2021. There were no material finite-lived impairment charges in 2023, 2022 and 2021.

The following table presents our amortization expense for acquired finite-lived intangible assets:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Amortization expense	$ 206	$ 153	$ 170

The table below presents the estimated future amortization expense (excluding the impact of foreign currency translation adjustments of $74 million as of December 31, 2023) of acquired finite-lived intangible assets as of December 31, 2023:

	(in millions)
2024	$ 501
2025	497
2026	494
2027	494
2028	460
2029+	3,866
Total	$ 6,312

6. INVESTMENTS

The following table presents the details of our investments:

	December 31, 2023	December 31, 2022
	(in millions)	
Financial investments	$ 188	$ 181
Equity method investments	380	390
Equity securities	87	86

Financial Investments

Financial investments are comprised of trading securities, primarily highly rated European government debt securities, of which $168 million as of December 31, 2023 and $161 million as of December 31, 2022 are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing.

Equity Method Investments

We record our estimated pro-rata share of earnings or losses each reporting period and record any dividends as a reduction in the investment balance. As of December 31, 2023 and 2022, our equity method investments primarily included our 40.0% equity interest in OCC.

The carrying amounts of our equity method investments are included in other non-current assets in the Consolidated Balance Sheets. No material impairments were recorded for the years ended December 31, 2023, 2022 and 2021.

Net income (loss) recognized from our equity interest in the earnings and losses of these equity method investments, primarily OCC and NPM, was $(7) million, $31 million, and $52 million for the years ended December 31, 2023, 2022 and 2021, respectively. For the year ended December 31, 2023, equity interest in the earnings of OCC was offset by our equity interest in the loss of NPM and another equity method investment. For the year ended December 31, 2022, lower equity interest in the earnings of OCC, as compared to 2021, was primarily driven by a reduction in the clearing fee rate that OCC charges its customers, partially offset by elevated U.S. industry trading volumes.

Equity Securities

The carrying amounts of our equity securities are included in other non-current assets in the Consolidated Balance Sheets. We elected the measurement alternative for substantially all of our equity securities as they do not have a readily determinable fair value. No material adjustments were made to the carrying value of our equity securities for the years ended December 31, 2023, 2022 and 2021. As of December 31, 2023 and December 31, 2022, our equity securities primarily represent various strategic investments made through our corporate venture program.

7. PROPERTY AND EQUIPMENT, NET

The following table presents our major categories of property and equipment, net:

	Year Ended December 31,	
	2023	2022
	(in millions)	
Data processing equipment and software	$ 913	$ 786
Furniture, equipment and leasehold improvements	325	305
Total property and equipment	1,238	1,091
Less: accumulated depreciation and amortization and impairment charges	(662)	(559)
Total property and equipment, net	$ 576	$ 532

Depreciation and amortization expense for property and equipment was $117 million for the year ended December 31, 2023, $105 million for the year ended December 31, 2022, and $108 million for the year ended December 31, 2021. These amounts are included in depreciation and amortization expense in the Consolidated Statements of Income.

We recorded pre-tax, non-cash property and equipment asset impairment charges on capitalized software that was retired and accelerated depreciation expense on certain assets as a result of a decrease in their useful life of $12 million in 2023, $8 million in 2022 and $4 million in 2021. These charges are included in restructuring charges in the Consolidated Statements of Income. See Note 20, "Restructuring Charges," for further discussion. There were no other material impairments of property and equipment recorded in 2023, 2022 and 2021.

As of December 31, 2023 and 2022, we did not own any real estate properties.

8. DEFERRED REVENUE

Deferred revenue represents consideration received that is yet to be recognized as revenue. The changes in our deferred revenue during the year ended December 31, 2023 are reflected in the following table:

	Balance at December 31, 2022	Additions	Revenue Recognized	Adjustments	Balance at December 31, 2023
			(in millions)		
Capital Access Platforms:					
Initial Listings	$ 116	$ 19	$ (39)	$ 1	$ 97
Annual Listings	2	2	(1)	—	3
Workflow & Insights	172	177	(169)	—	180
Financial Technology:					
Financial Crime Management Technology	103	122	(102)	—	123
Regulatory Technology	5	81	(19)	1	68
Capital Markets Technology	29	211	(59)	2	183
Other	21	9	(9)	—	21
Total	$ 448	$ 621	$ (398)	$ 4	$ 675

In the above table:

- Additions reflect deferred revenue billed in the current period, net of recognition. Regulatory Technology and Capital Markets Technology additions include deferred revenue acquired as part of the acquisition of Adenza.
- Revenue recognized includes revenue recognized during the current period that was included in the beginning balance.
- Adjustments reflect foreign currency translation adjustments.
- Other primarily includes deferred revenue from our non-U.S. listing of additional shares fees and our Index business. These fees are included in our Capital Access Platforms segment.

As of December 31, 2023, we estimate that our deferred revenue will be recognized in the following years:

Fiscal year ended:	2024	2025	2026	2027	2028	2029+	Total
				(in millions)			
Capital Access Platforms:							
Initial Listings	$ 37	$ 26	$ 20	$ 10	$ 3	$ 1	$ 97
Annual Listings	3	—	—	—	—	—	3
Workflow & Insights	178	2	—	—	—	—	180
Financial Technology:							
Financial Crime Management Technology	120	2	1	—	—	—	123
Regulatory Technology	68	—	—	—	—	—	68
Capital Markets Technology	176	3	2	2	—	—	183
Other	12	5	3	1	—	—	21
Total	$ 594	$ 38	$ 26	$ 13	$ 3	$ 1	$ 675

Deferred revenue that will be recognized in 2025 and beyond is included in other non-current liabilities in the Consolidated Balance Sheets. The timing of recognition of deferred revenue related to certain market technology contracts represents our best estimates as the recognition is primarily dependent upon the completion of customization and any significant modifications made pursuant to existing market technology contracts.

9. DEBT OBLIGATIONS

The following table presents the carrying amounts of our debt outstanding, net of unamortized debt issuance costs:

	December 31, 2023	December 31, 2022
	(in millions)	
Short-term debt:		
Commercial paper	$ 291	$ 664
Long-term debt - senior unsecured notes:		
2025 Notes, $500 million, 5.650% notes due June 28, 2025	497	—
2026 Notes, $500 million, 3.850% notes due June 30, 2026	499	498
2028 Notes, $1 billion, 5.350% notes due June 28, 2028	991	—
2029 Notes, €600 million, 1.75% notes due March 28, 2029	658	637
2030 Notes, €600 million, 0.875% notes due February 13, 2030	658	637
2031 Notes, $650 million, 1.650% notes due January 15, 2031	645	644
2032 Notes, €750 million, 4.500% notes due February 15, 2032	819	—
2033 Notes, €615 million, 0.900% notes due July 30, 2033	674	653
2034 Notes $1.25 billion, 5.550% notes due February 15, 2034	1,239	—
2040 Notes, $650 million, 2.500% notes due December 21, 2040	644	644
2050 Notes, $500 million, 3.250% notes due April 28, 2050	487	486
2052 Notes, $550 million, 3.950% notes due March 7, 2052	541	541
2053 Notes, $750 million, 5.950% notes due August 15, 2053	738	—
2063 Notes, $750 million, 6.100% notes due June 28, 2063	738	—
2023 Term Loan	339	—
2022 Revolving Credit Facility	(4)	(5)
Total long-term debt	$ 10,163	$ 4,735
Total debt obligations	$ 10,454	$ 5,399

Commercial Paper Program

Our U.S. dollar commercial paper program is supported by our 2022 Revolving Credit Facility, which provides liquidity support for the repayment of commercial paper issued through this program. See “2022 Revolving Credit Facility” below for further discussion. The effective interest rate of commercial paper issuances fluctuates as short-term interest rates and demand fluctuate. The fluctuation of these rates may impact our interest expense. As of December 31, 2023, we had $291 million outstanding under the commercial paper program.

Senior Unsecured Notes

Our 2040 Notes were issued at par. All of our other outstanding senior unsecured notes were issued at a discount. As a result of the discount, the proceeds received from each issuance were less than the aggregate principal amount. As of December 31, 2023, the amounts in the table above reflect the aggregate principal amount, less the unamortized debt issuance costs, which are being accreted through interest expense over the life of the applicable notes. The accretion of these costs was $10 million for the year ended December 31, 2023. Our Euro denominated notes are adjusted for the impact of foreign currency translation. Our senior unsecured notes are general unsecured obligations which rank equally with all of our existing and future unsubordinated obligations and are not guaranteed by any of our subsidiaries. The senior unsecured notes were issued under indentures that, among other things, limit our ability to consolidate, merge or sell all or substantially all of our assets, create liens, and enter into sale and leaseback transactions. The senior unsecured notes may be redeemed by Nasdaq at any time, subject to a make-whole amount.

Upon a change of control triggering event (as defined in the various supplemental indentures governing the applicable notes), the terms require us to repurchase all or part of each holder’s notes for cash equal to 101% of the aggregate principal amount purchased plus accrued and unpaid interest, if any.

The 2029 Notes, 2030 Notes, 2032 Notes and 2033 Notes pay interest annually. All other notes pay interest semi-annually. The U.S senior unsecured notes coupon rates may vary with Nasdaq’s debt rating, to the extent Nasdaq is downgraded below investment grade, up to an upward rate adjustment not to exceed 2%.

Net Investment Hedge

Our Euro denominated notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries. Accordingly, the remeasurement of these notes is recorded in accumulated other comprehensive loss within Nasdaq’s stockholders’ equity in the Consolidated Balance Sheets. For the year ended December 31, 2023, the impact of translation decreased the U.S. dollar value of our Euro denominated notes by $70 million.

Financing of the Adenza Acquisition

Senior Unsecured Notes

In June 2023, Nasdaq issued six series of notes for total proceeds of $5,016 million, net of debt issuance costs of $38 million, with various maturity dates ranging from 2025 to 2063. During the second half of 2023, we incurred an additional $6 million in debt issuance costs, for total net proceeds from the issuance of the six series of notes of $5,010 million as of December 31, 2023. The net proceeds from these notes were used to finance the majority of the cash consideration due in connection with the Adenza acquisition. For further discussion of the Adenza acquisition, see "2023 Acquisition," of Note 4, "Acquisitions."

2023 Term Loan

In June 2023, in connection with the financing of the Adenza acquisition, we entered into a term loan credit agreement, or the 2023 Term Loan. The 2023 Term Loan provided us with the ability to borrow up to $600 million to finance a portion of the cash consideration for the Adenza acquisition, for repayment of certain debt of Adenza and its subsidiaries, and to pay fees, costs and expenses related to the transaction. Under the 2023 Term Loan, borrowings bear interest on the principal amount outstanding at a variable interest rate based on the SOFR plus an applicable margin that varies with Nasdaq's credit rating. On November 1, 2023, we borrowed $599 million, net of fees, under this term loan towards payment of the cash consideration due in connection with the Adenza acquisition. We made a partial repayment during the fourth quarter of $260 million. As of December 31, 2023, we had $339 million outstanding under this term loan.

Credit Facilities

2022 Revolving Credit Facility

In December 2022, Nasdaq amended and restated its previously issued $1.25 billion five-year revolving credit facility, with a new maturity date of December 16, 2027. Nasdaq intends to use funds available under the 2022 Revolving Credit Facility for general corporate purposes and to provide liquidity support for the repayment of commercial paper issued through the commercial paper program. Nasdaq is permitted to repay borrowings under our 2022 Revolving Credit Facility at any time in whole or in part, without penalty.

As of December 31, 2023, no amounts were outstanding on the 2022 Revolving Credit Facility. The $(4) million balance represents unamortized debt issuance costs which are being accreted through interest expense over the life of the credit facility.

Borrowings under the revolving credit facility and swingline borrowings bear interest on the principal amount outstanding at a variable interest rate based on either the SOFR (or a successor rate to SOFR), the base rate (as defined in the 2022 Revolving Credit Facility agreement), or other applicable rate with respect to non-dollar borrowings, plus an applicable margin that varies with Nasdaq's debt rating. We are charged commitment fees of 0.100% to 0.250%, depending on our credit rating, whether or not amounts have been borrowed. These commitment fees are included in interest expense and were not material for the years ended December 31, 2023 and 2022.

The 2022 Revolving Credit Facility contains financial and operating covenants. Financial covenants include a maximum leverage ratio. Operating covenants include, among other things, limitations on Nasdaq's ability to incur additional indebtedness, grant liens on assets, dispose of assets and make certain restricted payments. The facility also contains customary affirmative covenants, including access to financial statements, notice of defaults and certain other material events, maintenance of properties and insurance, and customary events of default, including cross-defaults to our material indebtedness.

The 2022 Revolving Credit Facility includes an option for Nasdaq to increase the available aggregate amount by up to $750 million, subject to the consent of the lenders funding the increase and certain other conditions.

Other Credit Facilities

Certain of our European subsidiaries have several other credit facilities, which are available in multiple currencies, primarily to support our Nasdaq Clearing operations in Europe, as well as to provide a cash pool credit line for one subsidiary. These credit facilities, in aggregate, totaled $191 million as of December 31, 2023 and $184 million as of December 31, 2022 in available liquidity, none of which was utilized. Generally, these facilities each have a one-year term. The amounts borrowed under these various credit facilities bear interest on the principal amount outstanding at a variable interest rate based on a base rate (as defined in the applicable credit agreement), plus an applicable margin. We are charged commitment fees (as defined in the applicable credit agreement), whether or not amounts have been borrowed. These commitment fees are included in interest expense and were not material for the years ended December 31, 2023 and 2022.

These facilities include customary affirmative and negative operating covenants and events of default.

Debt Covenants

As of December 31, 2023, we were in compliance with the covenants of all of our debt obligations.

10. RETIREMENT PLANS

Defined Contribution Savings Plan

We sponsor a 401(k) plan which is a voluntary defined contribution savings plan, for U.S. employees. Employees are immediately eligible to make contributions to the plan and are also eligible for an employer contribution match at an amount equal to 100.0% of the first 6.0% of eligible employee contributions. Savings plan expense is included in compensation and benefits expense in the Consolidated Statements of Income:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Savings Plan expense	$ 19	$ 17	$ 14

Pension and Supplemental Executive Retirement Plans

We maintain non-contributory, a defined-benefit pension plan, non-qualified SERPs for certain senior executives and other post-retirement benefit plans for eligible employees in the U.S. Our pension plan and SERPs are frozen. Future service and salary for all participants do not count toward an accrual of benefits under the pension plan and SERPs. Most employees outside the U.S. are covered by local retirement plans or by applicable social laws. Benefits under social laws are generally expensed in the periods in which the costs are incurred. In June 2023, we terminated our U.S. pension plan and are taking steps to wind down the plan and transfer the resulting liability to an insurance company which started in 2023 and will be completed in 2024. These steps include settling all future obligations under our U.S. pension plan through a combination of lump sum payments to eligible, electing participants (completed in 2023) and the transfer of any remaining benefits to a third-party insurance company through a group annuity contract. In connection with the plan termination and partial settlement, a loss of $9 million was recorded to compensation and benefits expense in the Consolidated Statement of Income. We expect to incur an additional settlement loss upon the finalization of the group annuity purchase during the first half of 2024. The total expense for these plans is included in compensation and benefits expense in the Consolidated Statements of Income:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Retirement Plans expense	$ 34	$ 24	$ 26

Nasdaq recognizes the funded status of our U.S. defined-benefit pension plan, measured as the difference between the fair value of the plan assets and the benefit obligation, in the Consolidated Balance Sheets.

As of December 31, 2023, the fair value of our U.S. defined-benefit pension plan's assets was $57 million and the benefit obligation was $57 million. As a result, the U.S. defined-benefit pension plan is fully funded as of December 31, 2023.

As of December 31, 2022, the fair value of our U.S. defined-benefit pension plan's assets was $79 million and the benefit obligation was $81 million. As a result, the U.S. defined-benefit pension plan was underfunded by $2 million as of December 31, 2022.

During 2023 and 2022, we did not make any contributions to our U.S. defined-benefit pension plan. For our SERP and other post-retirement benefit plans, the net underfunded liability was $27 million as of December 31, 2023 and $28 million as of December 31, 2022. The underfunded liability for the above plans is included in accrued personnel costs and other non-current liabilities in the Consolidated Balance Sheets. The U.S. pension plan's assets are invested per target allocations adopted by Nasdaq's Pension and 401(k) Committee and are primarily invested in liability driven portfolios that have underlying investments in fixed income securities. More specifically, the plan has investments in long duration cash bonds, as well co-mingled investment options referred to as a separate account under a life insurance company group annuity contract. The life insurance company owns the underlying financial instruments held within the separate accounts and plan sponsors gain access to them through the purchase of a group annuity contract. These group annuity contracts are valued on a daily basis and offer daily liquidity, and use a unit value system of recordkeeping to track a plan sponsor's interest in the separate account investment.

Accumulated Other Comprehensive Loss

As of December 31, 2023, accumulated other comprehensive loss for the U.S. pension plan was $15 million reflecting an unrecognized net loss of $17 million, partially offset by an income tax benefit of $2 million.

Estimated Future Benefit Payments

We expect to make future benefit payments to participants in SERPs of approximately $20 million over the next ten years.

Nonqualified Deferred Compensation Plan

In June 2022, we established the Nasdaq, Inc. Nonqualified Deferred Compensation Plan. This plan provides certain eligible employees with the opportunity to defer a portion of their annual salary and bonus up to certain approval limits. All deferrals and associated earnings are our general unsecured obligations and were immaterial for the year ended December 31, 2023 and 2022.

11. SHARE-BASED COMPENSATION

We have a share-based compensation program for employees and non-employee directors. Share-based awards granted under this program include restricted stock (consisting of restricted stock units), PSUs and stock options. For accounting purposes, we consider PSUs to be a form of restricted stock. Generally, annual employee awards are granted on or about April 1st of each year.

Summary of Share-Based Compensation Expense

The following table presents the total share-based compensation expense resulting from equity awards and the 15.0% discount for the ESPP for the years ended December 31, 2023, 2022 and 2021, which is included in compensation and benefits expense in the Consolidated Statements of Income:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Share-based compensation expense before income taxes	$ 122	$ 106	$ 90

Common Shares Available Under Our Equity Plan

As of December 31, 2023, we had approximately 24.6 million shares of common stock authorized for future issuance under our Equity Plan.

Restricted Stock

We grant restricted stock to most employees. The grant date fair value of restricted stock awards is based on the closing stock price at the date of grant less the present value of future cash dividends. Restricted stock awards granted to employees below the manager level generally vest 33% on the first anniversary of the grant date, 33% on the second anniversary of the grant date, and the remainder on the third anniversary of the grant date. Restricted stock awards granted to employees at or above the manager level generally vest 33% on the second anniversary of the grant date, 33% on the third anniversary of the grant date, and the remainder on the fourth anniversary of the grant date.

Summary of Restricted Stock Activity

The following table summarizes our restricted stock activity for the year ended December 31, 2023, 2022, and 2021:

	Restricted Stock	
	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2020	4,917,153	$ 28.07
Granted	1,523,235	50.52
Vested	(1,624,809)	27.78
Forfeited	(416,559)	34.04
Unvested at December 31, 2021	4,399,020	$ 35.39
Granted	1,785,138	57.65
Vested	(1,525,442)	31.22
Forfeited	(278,203)	42.07
Unvested at December 31, 2022	4,380,513	$ 45.48
Granted	1,850,790	52.66
Vested	(1,703,252)	38.21
Forfeited	(318,752)	51.15
Unvested at December 31, 2023	4,209,299	$ 51.15

As of December 31, 2023, $119 million of total unrecognized compensation cost related to restricted stock is expected to be recognized over a weighted-average period of 1.7 years.

PSUs

PSUs are based on performance measures that impact the amount of shares that each recipient will receive upon vesting. Prior to April 1, 2020, we had two performance-based PSU programs for certain officers, a one-year performance-based program and a three-year cumulative performance-based program that focuses on TSR. Effective April 1, 2020, to better align the equity programs for eligible officers, the one-year performance-based program was eliminated and all eligible officers now participate in the three-year cumulative performance-based program. The performance periods are complete for all PSUs granted under the one-year performance-based program, and all shares underlying these PSUs have vested as of December 31, 2022.

One-Year PSU Program

The grant date fair value of PSUs under the one-year performance-based program was based on the closing stock price at the date of grant less the present value of future cash dividends. Under this program, an eligible employee received a target grant of PSUs, but could have received from 0.0% to 150.0% of the target amount granted, depending on the achievement of performance measures. These awards vest ratably on an annual basis over a three-year period commencing with the end of the one-year performance period. Compensation cost was recognized over the performance period and the three-year vesting period based on the probability that such performance measures will be achieved, taking into account an estimated forfeiture rate.

Three-Year PSU Program

Under the three-year performance-based program, each eligible individual receives PSUs, subject to the satisfaction of applicable market performance conditions, with a three-year cumulative performance period that vest at the end of the performance period and which settle in shares of our common stock. Compensation cost is recognized over the three-year performance period, taking into account an estimated forfeiture rate, regardless of whether the market condition is satisfied, provided that the requisite service period has been completed. Performance will be determined by comparing Nasdaq's TSR to two peer groups, each weighted 50.0%. The first peer group consists of exchange companies, and the second peer group consists of all companies in the S&P 500. For the PSU awards that will be granted in 2024, we will replace the exchange company peer group with the S&P 500 GICS 4020 Index, which is a blend of exchanges, as well as data, financial technology and banking companies to align more closely with Nasdaq's diverse business and competitors. The PSU award granted to our Chief Financial Officer in December 2023, in connection with the commencement of her employment, also included this new peer group. Nasdaq's relative performance ranking against each of these groups will determine the final number of shares delivered to each individual under the program. The award issuance under this program will be between 0.0% and 200.0% of the number of PSUs granted and will be determined by Nasdaq's overall performance against both peer groups. However, if Nasdaq's TSR is negative for the three-year performance period, regardless of TSR ranking, the award issuance will not exceed 100.0% of the number of PSUs granted. We estimate the fair value of PSUs granted under the three-year PSU program using the Monte Carlo simulation model, as these awards contain a market condition.

Grants of PSUs that were issued in 2021 with a three-year performance period exceeded the applicable performance parameters. As a result, an additional 387,011 units above the original target were granted in the first quarter of 2024 and were fully vested upon issuance.

The following weighted-average assumptions were used to determine the weighted-average fair values of the outstanding PSU awards granted under the three-year PSU program during the years ended December 31, 2023 and 2022:

	Year Ended December 31,	
	2023	2022
Weighted-average risk-free interest rate	3.87 %	2.61 %
Expected volatility	23.94 %	30.04 %
Weighted-average grant date share price	$ 54.68	$ 60.55
Weighted-average fair value at grant date	$ 55.36	$ 63.68

In the table above, the risk-free interest rate for periods within the expected life of the award is based on the U.S. Treasury yield curve in effect at the time of grant; and we use historic volatility for PSU awards issued under the three-year PSU program, as implied volatility data could not be obtained for all the companies in the peer groups used for relative performance measurement within the program.

In addition, the annual dividend assumption utilized in the Monte Carlo simulation model is based on Nasdaq's dividend yield at the date of grant.

Summary of PSU Activity

The following table summarizes our PSU activity for the years ended December 31, 2023, 2022, and 2021:

	PSUs			
	One-Year Program		Three-Year Program	
	Number of Awards	Weighted-Average Grant Date Fair Value	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2020	508,644	$ 27.78	2,429,967	$ 36.04
Granted	—	—	1,081,707	58.66
Vested	(299,292)	27.66	(1,178,181)	38.95
Forfeited	(60,150)	27.76	(41,121)	47.43
Unvested at December 31, 2021	149,202	$ 28.01	2,292,372	$ 45.01
Granted	—	—	1,495,092	45.66
Vested	(142,459)	28.02	(1,735,842)	32.57
Forfeited	(6,743)	27.85	(85,080)	52.27
Unvested at December 31, 2022	—	$ —	1,966,542	$ 56.44
Granted	—	—	1,693,065	47.14
Vested	—	—	(1,552,311)	37.59
Forfeited	—	—	(98,974)	57.51
Unvested at December 31, 2023	—	$ —	2,008,322	$ 62.86

In the table above, the granted amount also includes additional awards granted based on overachievement of performance parameters.

As of December 31, 2023, the total unrecognized compensation cost related to the PSU program is $52 million and is expected to be recognized over a weighted-average period of 1.5 years.

Stock Options

In January 2022, in connection with a new five year employment agreement, our Chief Executive Officer received an aggregate of 613,872 performance-based non-qualified stock options, which will vest as follows:

- 50% will vest contingent upon the achievement of certain performance conditions; and
- 50% will vest five years after the grant date, subject to continued employment through such date.

The fair value of stock options are estimated using the Black-Scholes option-pricing model. These options expire 10 years after the date of grant. There were no stock option awards granted for the years ended December 31, 2023 and 2021.

A summary of our outstanding and exercisable stock options at December 31, 2023, 2022 and 2021 is as follows:

	Number of Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding at December 31, 2020	880,059	$ 21.07		
Exercised	(73,227)	8.43		
Forfeited	(381)	8.43		
Outstanding at December 31, 2021	806,451	$ 22.23	5.0	$ 39
Granted	613,872	67.49		
Outstanding at December 31, 2022	1,420,323	$ 41.79	6.2	$ 32
Outstanding at December 31, 2023	1,420,323	$ 41.79	5.2	$ 29
Exercisable at December 31, 2023	806,451	$ 22.23	3.0	$ 29

There were no stock options exercised in 2023 and 2022. The net cash proceeds from the exercise of 73,227 stock options for the year ended December 31, 2021 was $1 million. The total pre-tax intrinsic value of stock options exercised was $3 million for the year ended December 31, 2021.

As of December 31, 2023, the aggregate pre-tax intrinsic value of the outstanding and exercisable stock options in the above table was $29 million and represents the difference between our closing stock price on December 31, 2023 of $58.14 and the exercise price, times the number of shares that would have been received by the option holder had the option holder exercised the stock options on that date. This amount can change based on the fair market value of our common stock. As of December 31, 2023 and 2022, 0.8 million outstanding stock options were exercisable and the weighted-average exercise price was $22.23.

ESPP

We have an ESPP under which approximately 11.4 million shares of our common stock were available for future issuance as of December 31, 2023. Under our ESPP, employees may purchase shares having a value not exceeding 10.0% of their annual compensation, subject to applicable annual Internal Revenue Service limitations. We record compensation expense related to the 15.0% discount that is given to our employees.

	Year Ended December 31,		
	2023	2022	2021
Number of shares purchased by employees	687,688	591,820	605,274
Weighted-average price of shares purchased	$ 42.33	$ 43.54	$ 41.41
Compensation expense (in millions)	$ 7	$ 8	$ 7

12. NASDAQ STOCKHOLDERS' EQUITY

Common Stock

As of December 31, 2023, 900,000,000 shares of our common stock were authorized, 598,014,520 shares were issued and 575,159,336 shares were outstanding. As of December 31, 2022, 900,000,000 shares of our common stock were authorized, 513,157,630 shares were issued and 491,592,491 shares were outstanding. The holders of common stock are entitled to one vote per share, except that our certificate of incorporation limits the ability of any shareholder to vote in excess of 5.0% of the then-outstanding shares of Nasdaq common stock.

Common Stock in Treasury, at Cost

We account for the purchase of treasury stock under the cost method with the shares of stock repurchased reflected as a reduction to Nasdaq stockholders' equity and included in common stock in treasury, at cost in the Consolidated Balance Sheets. Shares repurchased under our share repurchase program are currently retired and canceled and are therefore not included in the common stock in treasury balance. If treasury shares are reissued, they are recorded at the average cost of the treasury shares acquired. We held 22,855,184 shares of common stock in treasury as of December 31, 2023 and 21,565,139 shares as of December 31, 2022, most of which are related to shares of our common stock withheld for the settlement of employee tax withholding obligations arising from the vesting of restricted stock and PSUs.

Share Repurchase Program

In September 2023, our board of directors authorized an increase to our share repurchase program, bringing the aggregate authorized amount to $2.0 billion. As of December 31, 2023, the remaining aggregate authorized amount under the existing share repurchase program was $1.9 billion.

These repurchases may be made from time to time at prevailing market prices in open market purchases, privately-negotiated transactions, block purchase techniques, an accelerated share repurchase program or otherwise, as determined by our management. The repurchases are primarily funded from existing cash balances. The share repurchase program may be suspended, modified or discontinued at any time, and has no defined expiration date.

The following is a summary of our share repurchase activity, reported based on settlement date, for the year ended December 31, 2023:

	Year Ended December 31, 2023
Number of shares of common stock repurchased	4,694,774
Average price paid per share	$ 57.36
Total purchase price (in millions)	$ 269

In the table above, the number of shares of common stock repurchased excludes an aggregate of 1,290,045 shares withheld to satisfy tax obligations of the grantee upon the vesting of restricted stock and PSUs for the year ended December 31, 2023.

As discussed above in "Common Stock in Treasury, at Cost," shares repurchased under our share repurchase program are currently retired and cancelled.

Preferred Stock

Our certificate of incorporation authorizes the issuance of 30,000,000 shares of preferred stock, par value $0.01 per share, issuable from time to time in one or more series. As of December 31, 2023 and December 31, 2022, no shares of preferred stock were issued or outstanding.

Cash Dividends on Common Stock

During 2023, our board of directors declared and paid the following cash dividends:

Declaration Date	Dividend Per Common Share	Record Date	Total Amount Paid (in millions)	Payment Date
January 24, 2023	$ 0.20	March 17, 2023	$ 97	March 31, 2023
April 18, 2023	0.22	June 16, 2023	109	June 30, 2023
July 18, 2023	0.22	September 15, 2023	108	September 29, 2023
October 17, 2023	0.22	December 8, 2023	127	December 22, 2023
			$ 441	

The total amount paid of $441 million was recorded in retained earnings within Nasdaq's stockholders' equity in the Consolidated Balance Sheets at December 31, 2023.

In January 2024, the board of directors approved a regular quarterly cash dividend of $0.22 per share on our outstanding common stock. The dividend is payable on March 28, 2024 to shareholders of record at the close of business on March 14, 2024. The estimated aggregate payment of this dividend is $127 million. Future declarations of quarterly dividends and the establishment of future record and payment dates are subject to approval by the board of directors.

The board of directors maintains a dividend policy with the intention to provide shareholders with regular and increasing dividends as earnings and cash flows increase.

13. EARNINGS PER SHARE

The following table sets forth the computation of basic and diluted earnings per share:

	Year Ended December 31,		
	2023	2022	2021
Numerator:	(in millions, except share and per share amounts)		
Net income attributable to common shareholders	$ 1,059	$ 1,125	$ 1,187
Denominator:			
Weighted-average common shares outstanding for basic earnings per share	504,909,392	492,420,787	497,698,377
Weighted-average effect of dilutive securities - Employee equity awards	3,483,590	5,436,778	7,389,189
Weighted-average common shares outstanding for diluted earnings per share	508,392,982	497,857,565	505,087,566
Basic and diluted earnings per share:			
Basic earnings per share	$ 2.10	$ 2.28	$ 2.38
Diluted earnings per share	$ 2.08	$ 2.26	$ 2.35

In the table above, employee equity awards from our PSU program, which are considered contingently issuable, are included in the computation of dilutive earnings per share on a weighted average basis when management determines that the applicable performance criteria would have been met if the performance period ended as of the date of the relevant computation.

Securities that were not included in the computation of diluted earnings per share because their effect was antidilutive were immaterial for the years ended December 31, 2023, 2022 and 2021.

14. FAIR VALUE OF FINANCIAL INSTRUMENTS

The following tables present our financial assets and financial liabilities that were measured at fair value on a recurring basis as of December 31, 2023 and December 31, 2022.

	December 31, 2023			
	Total	Level 1	Level 2	Level 3
	(in millions)			
European government debt securities	$ 170	$ 170	$ —	$ —
State-owned enterprises and municipal securities	11	—	11	—
Swedish mortgage bonds	6	—	6	—
Total assets at fair value	$ 187	$ 170	$ 17	$ —

	December 31, 2022			
	Total	Level 1	Level 2	Level 3
	(in millions)			
European government debt securities	$ 147	$ 147	$ —	$ —
State-owned enterprises and municipal securities	7	—	7	—
Swedish mortgage bonds	20	—	20	—
Corporate debt securities	7	—	7	—
Total assets at fair value	$ 181	$ 147	$ 34	$ —

Financial Instruments Not Measured at Fair Value on a Recurring Basis

Some of our financial instruments are not measured at fair value on a recurring basis but are recorded at amounts that approximate fair value due to their liquid or short-term nature. Such financial assets and financial liabilities include: cash and cash equivalents, restricted cash and cash equivalents, receivables, net, certain other current assets, accounts payable and accrued expenses, Section 31 fees payable to SEC, accrued personnel costs, commercial paper and certain other current liabilities.

We have certain investments, primarily our investment in OCC, which are accounted for under the equity method of accounting. We have elected the measurement alternative for the majority of our equity securities, which primarily represent various strategic investments made through our corporate venture program. See "Equity Method Investments," and "Equity Securities," of Note 6, "Investments," for further discussion.

We also consider our debt obligations to be financial instruments. As of December 31, 2023, the majority of our debt obligations were fixed-rate obligations. We are exposed to changes in interest rates as a result of borrowings under our 2022 Revolving Credit Facility, as the interest rates on this facility have a variable rate depending on the maturity of the borrowing and the implied underlying reference rate. We are also exposed to changes in interest rates on amounts outstanding from the sale of commercial paper under our commercial paper program and under the 2023 Term Loan where the interest rates are based on either the SOFR or the base rate (or other applicable rate with respect to non-dollar borrowings), plus an applicable margin that varies with Nasdaq's credit rating. The fair value of our remaining debt obligations utilizing discounted cash flow analyses for our floating rate debt, and prevailing market rates for our fixed rate debt was $10.0 billion as of December 31, 2023 and $4.4 billion as of December 31, 2022. The discounted cash flow analyses are based on borrowing rates currently available to us for debt with similar terms and maturities. Our commercial paper and our fixed rate and floating rate debt are categorized as Level 2 in the fair value hierarchy.

For further discussion of our debt obligations, see Note 9, "Debt Obligations."

Non-Financial Assets Measured at Fair Value on a Non-Recurring Basis

Our non-financial assets, which include goodwill, intangible assets, and other long-lived assets, are not required to be carried at fair value on a recurring basis. Fair value measures of non-financial assets are primarily used in the impairment analysis of these assets. Any resulting asset impairment would require that the non-financial asset be recorded at its fair value. Nasdaq uses Level 3 inputs to measure the fair value of the above assets on a non-recurring basis. As of December 31, 2023 and December 31, 2022, there were no non-financial assets measured at fair value on a non-recurring basis.

15. CLEARING OPERATIONS

Nasdaq Clearing

Nasdaq Clearing is authorized and supervised under EMIR as a multi-asset clearinghouse by the SFSA. Such authorization is effective for all member states of the European Union and certain other non-member states that are part of the European Economic Area, including Norway. The clearinghouse acts as the CCP for exchange and OTC trades in equity derivatives, fixed income derivatives, resale and repurchase contracts, power derivatives, emission allowance derivatives, and seafood derivatives. In June 2023, we entered into an agreement to sell our European energy trading and clearing business, subject to regulatory approval.

Through our clearing operations in the financial markets, which include the resale and repurchase market, the commodities markets, and the seafood market, Nasdaq Clearing is the legal counterparty for, and guarantees the fulfillment of, each contract cleared. These contracts are not used by Nasdaq Clearing for the purpose of trading on its own behalf. As the legal counterparty of each transaction, Nasdaq Clearing bears the counterparty risk between the purchaser and seller in the contract. In its guarantor role, Nasdaq Clearing has precisely equal and offsetting claims to and from clearing members on opposite sides of each contract, standing as the CCP on every contract cleared. In accordance with the rules and regulations of Nasdaq Clearing, default fund and margin collateral requirements are calculated for each clearing member's positions in accounts with the CCP. See "Default Fund Contributions and Margin Deposits" below for further discussion of Nasdaq Clearing's default fund and margin requirements.

Nasdaq Clearing maintains three member sponsored default funds: one related to financial markets, one related to commodities markets and one related to the seafood market. Under this structure, Nasdaq Clearing and its clearing members must contribute to the total regulatory capital related to the clearing operations of Nasdaq Clearing. This structure applies an initial separation of default fund contributions for the financial, commodities and seafood markets in order to create a buffer for each market's counterparty risks. See "Default Fund Contributions" below for further discussion of Nasdaq Clearing's default fund. A power of assessment and a liability waterfall have also been implemented to further align risk between Nasdaq Clearing and its clearing members. See "Power of Assessment" and "Liability Waterfall" below for further discussion.

Default Fund Contributions and Margin Deposits

As of December 31, 2023, clearing member default fund contributions and margin deposits were as follows:

	December 31, 2023		
	Cash Contributions	Non-Cash Contributions	Total Contributions
	(in millions)		
Default fund contributions	$ 900	$ 222	$ 1,122
Margin deposits	6,375	5,750	12,125
Total	$ 7,275	$ 5,972	$ 13,247

Of the total default fund contributions of $1,122 million, Nasdaq Clearing can utilize $858 million as capital resources in the event of a counterparty default. The remaining balance of $264 million pertains to member posted surplus balances.

Our clearinghouse holds material amounts of clearing member cash deposits which are held or invested primarily to provide security of capital while minimizing credit, market and liquidity risks. While we seek to achieve a reasonable rate of return, we are primarily concerned with preservation of capital and managing the risks associated with these deposits.

Clearing member cash contributions are maintained in demand deposits held at central banks and large, highly rated financial institutions or secured through direct investments, primarily central bank certificates and highly rated European government debt securities with original maturities primarily one year or less, reverse repurchase agreements and multilateral development bank debt securities. Investments in reverse repurchase agreements range in maturity from 3 to 5 days and are secured with highly rated government securities and multilateral development banks. The carrying value of these securities approximates their fair value due to the short-term nature of the instruments and reverse repurchase agreements.

Nasdaq Clearing has invested the total cash contributions of $7,275 million as of December 31, 2023 and $7,021 million as of December 31, 2022, in accordance with its investment policy as follows:

	December 31, 2023		December 31, 2022	
	(in millions)			
Demand deposits	$	5,344	$	4,775
Central bank certificates		1,301		1,695
Restricted cash and cash equivalents	**$**	**6,645**	**$**	**6,470**
European government debt securities		306		222
Reverse repurchase agreements		209		192
Multilateral development bank debt securities		115		137
Investments	**$**	**630**	**$**	**551**
Total	**$**	**7,275**	**$**	**7,021**

In the table above, the change from December 31, 2022 to December 31, 2023 includes currency translation adjustments of $229 million for restricted cash and cash equivalents and $5 million for investments.

For the years ended December 31, 2023, 2022 and 2021 investments related to default funds and margin deposits, net includes purchases of investment securities of $53,657 million and $47,525 million, and $41,098 million respectively, and proceeds from sales and redemptions of investment securities of $53,583 million, $47,736 million and $40,966 million respectively.

In the investment activity related to default fund and margin contributions, we are exposed to counterparty risk related to reverse repurchase agreement transactions, which reflect the risk that the counterparty might become insolvent and, thus, fail to meet its obligations to Nasdaq Clearing. We mitigate this risk by only engaging in transactions with high credit quality reverse repurchase agreement counterparties and by limiting the acceptable collateral under the reverse repurchase agreement to high quality issuers, primarily government securities and other securities explicitly guaranteed by a government. The value of the underlying security is monitored during the lifetime of the contract, and in the event the market value of the underlying security falls below the reverse repurchase amount, our clearinghouse may require additional collateral or a reset of the contract.

Default Fund Contributions

Required contributions to the default funds are proportional to the exposures of each clearing member. When a clearing member is active in more than one market, contributions must be made to all markets' default funds in which the member is active. Clearing members' eligible contributions may include cash and non-cash contributions. Cash contributions received are maintained in demand deposits held at central banks and large, highly rated financial institutions or invested by Nasdaq Clearing, in accordance with its investment policy, either in central bank certificates, highly rated government debt securities, reverse repurchase agreements with highly rated government debt securities as collateral, or multilateral development bank debt securities. Nasdaq Clearing maintains and manages all cash deposits related to margin collateral. All risks and rewards of collateral ownership, including interest, belong to Nasdaq Clearing. Clearing members' cash contributions are included in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. Non-cash contributions include highly rated government debt securities that must meet specific criteria approved by Nasdaq Clearing. Non-cash contributions are pledged assets that are not recorded in the Consolidated Balance Sheets as Nasdaq Clearing does not take legal ownership of these assets and the risks and rewards remain with the clearing members. These balances may fluctuate over time due to changes in the amount of deposits required and whether members choose to provide cash or non-cash contributions. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default.

In addition to clearing members' required contributions to the liability waterfall, Nasdaq Clearing is also required to contribute capital to the liability waterfall and overall regulatory capital as specified under its clearinghouse rules. As of December 31, 2023, Nasdaq Clearing committed capital totaling $123 million to the liability waterfall and overall regulatory capital, in the form of government debt securities, which are recorded as financial investments in the Consolidated Balance Sheets. The combined regulatory capital of the clearing members and Nasdaq Clearing is intended to secure the obligations of a clearing member exceeding such member's own margin and default fund deposits and may be used to cover losses sustained by a clearing member in the event of a default.

Margin Deposits

Nasdaq Clearing requires all clearing members to provide collateral, which may consist of cash and non-cash contributions, to guarantee performance on the clearing members' open positions, or initial margin. In addition, clearing members must also provide collateral to cover the daily margin call if needed. See "Default Fund Contributions" above for further discussion of cash and non-cash contributions.

Similar to default fund contributions, Nasdaq Clearing maintains and manages all cash deposits related to margin collateral. All risks and rewards of collateral ownership, including interest, belong to Nasdaq Clearing and are recorded in revenues. These cash deposits are recorded in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. Pledged margin collateral is not recorded in our Consolidated Balance Sheets as all risks and rewards of collateral ownership, including interest, belong to the counterparty. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default.

Nasdaq Clearing marks to market all outstanding contracts and requires payment from clearing members whose positions have lost value. The mark-to-market process helps identify any clearing members that may not be able to satisfy their financial obligations in a timely manner allowing Nasdaq Clearing the ability to mitigate the risk of a clearing member defaulting due to exceptionally large losses. In the event of a default, Nasdaq Clearing can access the defaulting member's margin and default fund deposits to cover the defaulting member's losses.

Regulatory Capital and Risk Management Calculations

Nasdaq Clearing manages risk through a comprehensive counterparty risk management framework, which comprises policies, procedures, standards and financial resources. The level of regulatory capital is determined in accordance with Nasdaq Clearing's regulatory capital and default fund policy, as approved by the SFSA. Regulatory capital calculations are continuously updated through a proprietary capital-at-risk calculation model that establishes the appropriate level of capital.

As mentioned above, Nasdaq Clearing is the legal counterparty for each contract cleared and thereby guarantees the fulfillment of each contract. Nasdaq Clearing accounts for this guarantee as a performance guarantee. We determine the fair value of the performance guarantee by considering daily settlement of contracts and other margining and default fund requirements, the risk management program, historical evidence of default payments, and the estimated probability of potential default payouts. The calculation is determined using proprietary risk management software that simulates gains and losses based on historical market prices, extreme but plausible market scenarios, volatility and other factors present at that point in time for those particular unsettled contracts. Based on this analysis, excluding any liability related to the Nasdaq commodities clearing default (see discussion above), the estimated liability was nominal and no liability was recorded as of December 31, 2023.

Power of Assessment

To further strengthen the contingent financial resources of the clearinghouse, Nasdaq Clearing has power of assessment that provides the ability to collect additional funds from its clearing members to cover a defaulting member's remaining obligations up to the limits established under the terms of the clearinghouse rules. The power of assessment corresponds to 230% of the clearing member's aggregate contribution to the financial, commodities and seafood markets' default funds.

Liability Waterfall

The liability waterfall is the priority order in which the capital resources would be utilized in the event of a default where the defaulting clearing member's collateral and default fund contribution would not be sufficient to cover the cost to settle its portfolio. If a default occurs and the defaulting clearing member's collateral, including cash deposits and pledged assets, is depleted, then capital is utilized in the following amount and order:

- junior capital contributed by Nasdaq Clearing, which totaled $41 million as of December 31, 2023;
- a loss-sharing pool related only to the financial market that is contributed to by clearing members and only applies if the defaulting member's portfolio includes interest rate swap products;

- specific market default fund where the loss occurred (i.e., the financial, commodities, or seafood market), which includes capital contributions of the clearing members on a pro-rata basis; and
- fully segregated senior capital for each specific market contributed by Nasdaq Clearing, calculated in accordance with clearinghouse rules, which totaled $17 million as of December 31, 2023.

If additional funds are needed after utilization of the liability waterfall, or if part of the waterfall has been utilized and needs to be replenished, then Nasdaq Clearing will utilize its power of assessment and additional capital contributions will be required by non-defaulting members up to the limits established under the terms of the clearinghouse rules.

During 2022, Nasdaq Clearing updated its recovery plan and rule book by introducing additional recovery tools, in line with the new European Union regulations for the recovery and resolution of central counterparties, which became effective during 2022.

In addition to the capital held to withstand counterparty defaults described above, Nasdaq Clearing also has committed capital of $65 million to ensure that it can handle an orderly wind-down of its operation, and that it is adequately protected against investment, operational, legal, and business risks.

Market Value of Derivative Contracts Outstanding

The following table presents the market value of derivative contracts outstanding prior to netting:

	December 31, 2023 (in millions)
Commodity and seafood options, futures and forwards	$ 139
Fixed-income options and futures	1,027
Stock options and futures	140
Index options and futures	32
Total	$ 1,338

In the table above:

- We determined the fair value of our option contracts using standard valuation models that were based on market-based observable inputs including implied volatility, interest rates and the spot price of the underlying instrument.
- We determined the fair value of our futures contracts based upon quoted market prices and average quoted market yields.
- We determined the fair value of our forward contracts using standard valuation models that were based on market-based observable inputs including benchmark rates and the spot price of the underlying instrument.

Derivative Contracts Cleared

The following table presents the total number of derivative contracts cleared through Nasdaq Clearing for the years ended December 31, 2023 and 2022:

	Year Ended December 31,	
	2023	2022
Commodity and seafood options, futures and forwards	233,194	288,142
Fixed-income options and futures	19,175,402	21,992,124
Stock options and futures	20,728,290	18,619,950
Index options and futures	40,009,367	45,616,647
Total	80,146,253	86,516,863

In the table above, the total volume in cleared power related to commodity contracts was 422 Terawatt hours (TWh) and 413 TWh for the years ended December 31, 2023 and 2022, respectively.

Resale and Repurchase Agreements Contracts Outstanding and Cleared

The outstanding contract value of resale and repurchase agreements was $580 million and $120 million as of December 31, 2023 and 2022, respectively. The total number of resale and repurchase agreements contracts cleared was 4,669,740 and 6,287,717 for the years ended December 31, 2023 and 2022, respectively.

16. LEASES

We have operating leases which are primarily real estate leases predominantly for our U.S. and European headquarters, data centers and for general office space. The following table provides supplemental balance sheet information related to Nasdaq's operating leases:

Leases	Balance Sheet Classification	December 31, 2023	December 31, 2022
		(in millions)	
Assets:			
Operating lease assets	Operating lease assets	$ 402	$ 444
Liabilities:			
Current lease liabilities	Other current liabilities	$ 62	$ 54
Non-current lease liabilities	Operating lease liabilities	417	452
Total lease liabilities		$ 479	$ 506

The following table summarizes Nasdaq's lease cost:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Operating lease cost	$ 88	$ 75	$ 85
Variable lease cost	44	32	28
Sublease income	(3)	(3)	(4)
Total lease cost	$ 129	$ 104	$ 109

In the table above, operating lease costs include short-term lease cost, which was immaterial.

In the first quarter of 2023, we initiated a review of our real estate and facility capacity requirements due to our new and evolving work models. As a result of this ongoing review, for the year ended December 31, 2023, we recorded impairment charges of $23 million, of which $13 million related to operating lease asset impairment and is included in operating lease cost in the table above, $5 million related to exit costs and is included in variable lease cost in the table above and $5 million related to impairment of leasehold improvements, which are recorded in depreciation and amortization expense in the Consolidated Statements of Income. We fully impaired our lease assets for locations that we vacated with no intention to sublease. Substantially all of the property, equipment and leasehold improvements associated with the vacated leased office space were fully impaired as there are no expected future cash flows for these items.

The following table reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the operating lease liabilities recorded in our Consolidated Balance Sheets.

	December 31, 2023
	(in millions)
2024	$ 80
2025	68
2026	55
2027	52
2028	50
2029+	270
Total lease payments	575
Less: interest	(96)
Present value of lease liabilities	$ 479

In the table above, interest is calculated using the interest rate for each lease. Present value of lease liabilities includes the current portion of $62 million.

Total lease payments in the table above exclude $41 million of legally binding minimum lease payments for leases signed but not yet commenced.

The following table provides information related to Nasdaq's lease term and discount rate:

	December 31, 2023
Weighted-average remaining lease term (in years)	9.6
Weighted-average discount rate	3.8 %

The following table provides supplemental cash flow information related to Nasdaq's operating leases:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Cash paid for amounts included in the measurement of operating lease liabilities	$ 78	$ 66	$ 77
Lease assets obtained in exchange for operating lease liabilities	$ 26	$ 137	$ 45

17. INCOME TAXES

Income Before Income Tax Provision

The following table presents the domestic and foreign components of income before income tax provision:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Domestic	$ 1,073	$ 1,216	$ 1,299
Foreign	328	259	235
Income before income tax provision	$ 1,401	$ 1,475	$ 1,534

Income Tax Provision

The income tax provision consists of the following amounts:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Current income taxes provision:			
Federal	$ 145	$ 170	$ 144
State	52	67	45
Foreign	79	77	64
Total current income taxes provision	276	314	253
Deferred income taxes provision (benefit):			
Federal	51	36	82
State	8	6	22
Foreign	9	(4)	(10)
Total deferred income taxes provision	68	38	94
Total income tax provision	$ 344	$ 352	$ 347

We have determined that undistributed earnings of certain non-U.S. subsidiaries are not considered indefinitely reinvested and would not give rise to a material tax liability when remitted. Nasdaq continues to indefinitely reinvest all other outside basis differences to the extent reversal would incur a significant tax liability. A determination of an unrecognized deferred tax liability related to such outside basis differences is not practicable.

A reconciliation of the income tax provision, based on the U.S. federal statutory rate, to our actual income tax provision for the years ended December 31, 2023, 2022 and 2021 is as follows:

	Year Ended December 31,		
	2023	2022	2021
Federal income tax provision at the statutory rate	21.0 %	21.0 %	21.0 %
State income tax provision, net of federal effect	3.2 %	3.8 %	3.9 %
Deduction for foreign derived intangible income	(1.6)%	(1.0)%	(1.2)%
Excess tax benefits related to employee share-based compensation	(0.7)%	(0.9)%	(1.4)%
Non-U.S. subsidiary earnings	2.5 %	1.2 %	1.2 %
Tax credits and deductions	(0.2)%	(0.3)%	(0.3)%
Change in unrecognized tax benefits	1.0 %	1.1 %	0.6 %
Other, net	(0.6)%	(1.0)%	(1.2)%
Actual income tax provision	24.6 %	23.9 %	22.6 %

The increase in our effective tax rate in 2023 compared to 2022 was primarily due to increased US tax on overseas earnings. The increase in our effective tax rate in 2022 compared to 2021 was primarily due to an increase in state unrecognized tax benefits.

The effective tax rate may vary from period to period depending on, among other factors, the geographic and business mix of earnings and losses. These same and other factors, including history of pre-tax earnings and losses, are taken into account in assessing the ability to realize deferred tax assets.

Deferred Income Taxes

The temporary differences, which give rise to our deferred tax assets and (liabilities), consisted of the following:

	December 31,	
	2023	2022
	(in millions)	
Deferred tax assets:		
Deferred revenues	$ 19	$ 18
U.S. federal net operating loss	—	5
Foreign net operating loss	12	12
State net operating loss	3	3
Compensation and benefits	45	42
Deferred interest expense	55	—
Tax credits	26	3
Federal benefit of uncertain tax positions	12	9
Operating lease liabilities	118	118
Other	29	33
Gross deferred tax assets	319	243
Less: valuation allowance	(4)	(4)
Total deferred tax assets, net of valuation allowance	$ 315	$ 239
Deferred tax liabilities:		
Amortization of software development costs and depreciation	$ (21)	$ (65)
Amortization of acquired intangible assets and goodwill	(1,736)	(375)
Investments	(74)	(105)
Unrealized gains	(11)	(29)
Operating lease assets	(99)	(103)
Other	(9)	(15)
Gross deferred tax liabilities	$ (1,950)	$ (692)
Net deferred tax liabilities	$ (1,635)	$ (453)
Reported as:		
Non-current deferred tax assets	$ 7	$ 3
Deferred tax liabilities, net	(1,642)	(456)
Net deferred tax liabilities	$ (1,635)	$ (453)

In the table above, non-current deferred tax assets are included in other non-current assets in the Consolidated Balance Sheets.

We recognized a valuation allowance of $4 million as of December 31, 2023 and 2022 due to recurring operating losses in a foreign jurisdiction. Based on all available positive and negative evidence, we believe the sources of future taxable income are sufficient to realize the remainder of Nasdaq's deferred tax asset inventory.

Nasdaq has deferred tax assets associated with net operating losses, or NOLs, in U.S. state and local and non-U.S. jurisdictions with the following expiration dates:

Jurisdiction	December 31, 2023		Expiration Date
	(in millions)		
Foreign NOL	$	12	2039-2043
U.S. state and local NOL		3	2025-2042

Unrecognized Tax Benefits

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Beginning balance	$ 70	$ 57	$ 42
Additions as a result of tax positions taken in prior periods	2	13	16
Additions as a result of tax positions taken in the current period	25	9	11
Reductions related to settlements with taxing authorities	(14)	(7)	(6)
Reductions as a result of lapses of the applicable statute of limitations	(3)	(2)	(6)
Ending balance	$ 80	$ 70	$ 57

We had $80 million of unrecognized tax benefits as of December 31, 2023, $70 million as of December 31, 2022, and $57 million as of December 31, 2021 which, if recognized in the future, would affect our effective tax rate. Nasdaq does not believe that our unrecognized tax benefits will materially change over the next 12 months.

We recognize interest and/or penalties related to income tax matters in the provision for income taxes in our Consolidated Statements of Income, which was $3 million tax expense for the year ended December 31, 2023 and less than $1 million for the year ended December 31, 2022 and $2 million tax benefit for the year ended for December 31, 2021. Accrued interest and penalties, net of tax effect were $6 million as of December 31, 2023 and $5 million as of December 31, 2022.

Tax Audits

Nasdaq and its eligible subsidiaries file a consolidated U.S. federal income tax return and applicable state and local income tax returns and non-U.S. income tax returns. We are subject to examination by federal, state and local, and foreign tax authorities. Our Federal income tax return is under audit for tax year 2018 and is subject to examination by the Internal Revenue Service for the years 2020 through 2022. Several state tax returns are currently under examination by the respective tax authorities for the years 2014 through 2022. Non-U.S. tax returns are subject to examination by the respective tax authorities for the years 2018 through 2023. We regularly assess the likelihood of additional assessments by each jurisdiction and have established tax reserves that we believe are adequate in relation to the potential for additional assessments. Examination outcomes and the timing of examination settlements are subject to uncertainty. Although the results of such examinations may have an impact on our unrecognized tax benefits, we do not anticipate that such impact will be material to our consolidated financial position or results of operations. We do not expect to settle any material tax audits in the next twelve months.

18. COMMITMENTS, CONTINGENCIES AND GUARANTEES

Guarantees Issued and Credit Facilities Available

In addition to the default fund contributions and margin collateral pledged by clearing members discussed in Note 15, "Clearing Operations," we have obtained financial guarantees and credit facilities, which are guaranteed by us through counter indemnities, to provide further liquidity related to our clearing businesses. Financial guarantees issued to us totaled $4 million as of December 31, 2023 and 2022. As discussed in "Other Credit Facilities," of Note 9, "Debt Obligations," we also have credit facilities primarily related to our Nasdaq Clearing operations, which are available in multiple currencies, and totaled $191 million as of December 31, 2023 and $184 million as of December 31, 2022 in available liquidity, none of which was utilized.

Other Guarantees

Through our clearing operations in the financial markets, Nasdaq Clearing is the legal counterparty for, and guarantees the performance of, its clearing members. See Note 15, "Clearing Operations," for further discussion of Nasdaq Clearing performance guarantees.

We have provided a guarantee related to lease obligations for The Nasdaq Entrepreneurial Center, Inc., which is a not-for-profit organization designed to convene, connect and engage aspiring and current entrepreneurs. This entity is not included in the consolidated financial statements of Nasdaq.

We believe that the potential for us to be required to make payments under these arrangements is unlikely. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for the above guarantees.

Routing Brokerage Activities

One of our broker-dealer subsidiaries, Nasdaq Execution Services, provides a guarantee to securities clearinghouses and exchanges under its standard membership agreements, which require members to guarantee the performance of other members. If a member becomes unable to satisfy its obligations to a clearinghouse or exchange, other members would be required to meet its shortfalls. To mitigate these performance risks, the exchanges and clearinghouses often require members to post collateral, as well as meet certain minimum financial standards. Nasdaq Execution Services' maximum potential liability under these arrangements cannot be quantified. However, we believe that the potential for Nasdaq Execution Services to be required to make payments under these arrangements is unlikely. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for these arrangements.

Legal and Regulatory Matters

Armenian Stock Exchange Investigation

As disclosed in our prior filings with the SEC, a former non-U.S. subsidiary of Nasdaq, NASDAQ OMX Armenia OJSC, operated the Armenian Stock Exchange and the Central Depository of Armenia, which are regulated by the Central Bank of Armenia under Armenian law. In accordance with the requirements of Armenian law, Mellat Bank SB CJSC, an Armenian entity that is designated under Executive Order 13382, was a market participant on the Armenian Stock Exchange and, as a result, paid participation and transaction fees to the Armenian Stock Exchange during the period from 2012-2014. In 2014, we voluntarily self-disclosed this matter to the U.S. Department of Treasury's Office of Foreign Assets Control, or OFAC, and received authorization from OFAC to continue, if necessary, certain activities pertaining to Mellat Bank SB CJSC in Armenia in a limited manner. In 2015, Nasdaq sold a majority of its ownership of Nasdaq OMX Armenia OJSC, with the remaining minority interest sold in 2018.

As previously disclosed, OFAC conducted an inquiry into the Armenian Stock Exchange matter described above and in our prior filings since 2016. During the first quarter of 2021, we were advised that OFAC was considering a civil monetary penalty in connection with that matter. In November 2023, we reached a settlement with, and made a payment to, OFAC, which was materially in line with the immaterial loss contingency we had accrued in 2022.

CFTC Matter

In June 2022, NASDAQ Futures, Inc. ("NFX"), a non-operational, wholly-owned subsidiary of Nasdaq, received a telephonic "Wells Notice" from the staff of the CFTC relating to certain alleged potential violations by NFX of provisions of the Commodity Exchange Act and CFTC rules thereunder during the period beginning July 2015 through October 2018. The alleged potential violations concern the accuracy of NFX's description of one of its market maker incentive programs. The Wells Notice informed NFX that the CFTC staff has made, subject to consideration of NFX's response, a preliminary determination to recommend that the CFTC authorize an enforcement action against NFX in connection with its former futures exchange business. Nasdaq sold NFX's futures exchange business to a third-party in November 2019, including the portfolio of open interest in NFX contracts. During 2020, all remaining open interest in NFX contracts was migrated to other exchanges and NFX ceased operation. A Wells Notice is neither a formal charge of wrongdoing nor a final determination that the recipient has violated any law. NFX has submitted a response to the Wells Notice that contests all aspects of the CFTC staff's position. The CFTC staff subsequently informed us that it plans to formally recommend that the CFTC authorize a civil enforcement action. We cannot predict if or when such an action will be brought, including the scope of the claims or the remedy sought, but such action could commence at any time, and the scope of claims or remedies sought could be material. We believe that NFX would have defenses to any claims if they are the same as those alleged by the CFTC staff during the Wells Notice process. We are unable to predict the ultimate outcome of this matter or the amount or type of remedies that the CFTC may seek or obtain, but any such remedies could have a material negative effect on our operating results and reputation.

SFSA Inquiry

In September 2023, Nasdaq Stockholm AB, a wholly-owned subsidiary of Nasdaq and the operator of the Nasdaq Stockholm exchange, received a written notification from the SFSA regarding a review initiated with regard to the obligation of Nasdaq Stockholm AB to report suspected market abuse. The review was initiated in connection with an investigation of alleged insider trading in the shares of four companies listed on the Nasdaq Stockholm exchange. The SFSA's preliminary assessment is that Nasdaq Stockholm AB, by not reporting certain suspicious transactions in the four listed companies, breached its obligation under certain provisions of the Market Abuse Regulation and the Swedish Securities Market Act. In January 2024, the SFSA notified Nasdaq Stockholm AB that the review will continue, and in February the SFSA sent a request for submission to Nasdaq for our review and response. Nasdaq Stockholm AB is cooperating fully and is engaged in ongoing communications with the SFSA.

Other Matters

Except as disclosed above and in our prior reports filed under the Exchange Act, we are not currently a party to any litigation or proceeding that we believe could have a material adverse effect on our business, consolidated financial condition, or operating results. However, from time to time, we have been threatened with, or named as a defendant in, lawsuits or involved in regulatory proceedings.

In the normal course of business, Nasdaq discusses matters with its regulators raised during regulatory examinations or otherwise subject to their inquiries. Management believes that censures, fines, penalties or other sanctions that could result from any ongoing examinations or inquiries will not have a material impact on its consolidated financial position or results of operations. However, we are unable to predict the outcome or the timing of the ultimate resolution of these matters, or the potential fines, penalties or injunctive or other equitable relief, if any, that may result from these matters.

Related to the legal and regulatory matters described above we have recorded immaterial legal accruals during the year ended 2023.

Tax Audits

We are engaged in ongoing discussions and audits with taxing authorities on various tax matters, the resolutions of which are uncertain. Currently, there are matters that may lead to assessments, some of which may not be resolved for several years. Based on currently available information, we believe we have adequately provided for any assessments that could result from those proceedings where it is more likely than not that we will be assessed. We review our positions on these matters as they progress. See "Tax Audits," of Note 17, "Income Taxes," for further discussion.

19. BUSINESS SEGMENTS

Prior to November 1, 2023, we managed, operated and provided our products and services in three business segments: Market Platforms, Capital Access Platforms and Anti-Financial Crime. After the closing of the Adenza acquisition, we realigned our reportable segments to Capital Access Platforms, Financial Technology and Market Services. See Note 1, "Organization and Nature of Operations," for further discussion of our reportable segments.

This Annual Report on Form 10-K presents our results in alignment with the new corporate structure. All periods presented are restated to reflect the new structure.

Our management allocates resources, assesses performance and manages these businesses as three separate segments. We evaluate the performance of our segments based on several factors, of which the primary financial measure is operating income. Results of individual businesses are presented based on our management accounting practices and structure. Our chief operating decision maker does not review total assets or statements of income below operating income by segments as key performance metrics; therefore, such information is not presented below.

The following table presents certain information regarding our business segments for the years ended December 31, 2023, 2022 and 2021:

	Year Ended December 31,		
	2023	2022	2021
		(in millions)	
Capital Access Platforms			
Total revenues	$ 1,770	$ 1,682	$ 1,566
Depreciation and amortization*	39	36	34
Operating income	971	914	842
Purchase of property and equipment	53	50	50
Financial Technology			
Total revenues	1,099	864	772
Depreciation and amortization*	36	35	36
Operating income	494	299	259
Purchase of property and equipment	50	49	55
Market Services			
Total revenues	3,156	3,632	3,471
Transaction-based expenses	(2,169)	(2,644)	(2,466)
Revenues less transaction-based expenses	987	988	1,005
Depreciation and amortization*	34	32	34
Operating income	582	627	664
Purchase of property and equipment	55	53	58
Corporate Items			
Total revenues	39	48	77
Depreciation and amortization	214	155	174
Operating loss	(469)	(276)	(324)
Consolidated			
Total revenues	$ 6,064	$ 6,226	$ 5,886
Transaction-based expenses	(2,169)	(2,644)	(2,466)
Revenues less transaction-based expenses	$ 3,895	$ 3,582	$ 3,420
Depreciation and amortization	$ 323	$ 258	$ 278
Operating income	$ 1,578	$ 1,564	$ 1,441
Purchase of property and equipment	$ 158	$ 152	$ 163

* excludes amortization of acquired intangible assets

Below amounts are allocated to Corporate Items in our management reports as we believe they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance. Management does not consider these items for the purpose of evaluating the performance of our segments or their managers or when making decisions to allocate resources. Therefore, we believe performance measures excluding the below items provide management with a useful representation of our segments' ongoing activity in each period. These items, which are presented in the table below, include the following:

- *Amortization expense of acquired intangible assets:* We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the segments, and the relative operating performance of the segments between periods.
- *Merger and strategic initiatives expense:* We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years that have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third-party transaction costs. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction. For the year ended December 31, 2023, these costs primarily relate to the Adenza acquisition.
- *Restructuring charges:* In the fourth quarter of 2023, following the closing of the Adenza acquisition, our management approved, committed to and initiated a restructuring program, "Adenza Restructuring" to optimize our efficiencies as a combined organization. In October 2022, following our September 2022 announcement to realign our segments and leadership, we initiated a divisional alignment program with a focus on realizing the full potential of this structure. In 2019, we initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the realignment of certain business areas. See Note 20, "Restructuring Charges," for further discussion of this plan.
- *Revenues and expenses - divested businesses:* For the years ended December 31, 2023, 2022 and 2021, these amounts include revenues and expenses related to our European power trading and clearing business, following our announcement in June 2023 to sell this business, subject to regulatory approval. Historically, these amounts were included in our Market Services and Capital Access Platforms results. For 2022 and 2021, we have included in corporate items the revenues and expenses of our U.S. Fixed Income business, which was previously included in our Market Services and Capital Access Platforms results.

  Also included are the revenues and expenses of our Nordic broker services business for which we completed the wind-down in June 2022. For 2021, we included in corporate items the revenues and expenses associated with the NPM business which we contributed to a standalone, independent company, of which we own the largest minority interest, together with a consortium of third-party financial institutions in July 2021. Prior to July, these revenues were previously included in our Capital Access Platforms results. For the years ended December 31, 2023, 2022 and 2021, other revenues also include a transitional services agreement associated with a divested business.
- *Other items:* We have included certain other charges or gains in corporate items, to the extent we believe they should be excluded when evaluating the ongoing operating performance of each individual segment. Other items primarily include:
  - *Lease asset impairments:* For 2023, this includes impairment charges related to our operating lease assets and leasehold improvements associated with vacating certain leased office space, which are recorded in occupancy and depreciation and amortization expense in our Consolidated Statements of Income.
  - *Extinguishment of debt:* For 2022 and 2021 this includes a loss on extinguishment of debt, which is recorded under general, administrative and other expense in our Consolidated Statements of Income.
  - *Legal and regulatory matters:* For 2023 and 2022, this includes accruals related to certain legal matters. For 2023, these charges were partially offset by insurance recoveries related to certain legal matters. The charges and related insurance recoveries are recorded in professional and contract services and general, administrative and other expense in the Consolidated Statements of Income. For 2022 and 2021, this also includes a charge related to an administrative fine imposed by the SFSA related to the clearing default that occurred in 2018. This charge was included in regulatory expense in the Consolidated Statements of Income.
  - *Pension settlement charge:* For 2023, we terminated our U.S. pension plan and recorded a partial settlement charge under compensation and benefits in the Consolidated Statements of Income. See Note 10, "Retirement Plans," to the consolidated financial statements for further discussion.

	Year Ended December 31,		
	2023	2022	2021
	(in millions)		
Revenues - divested businesses	$ 39	$ 48	$ 77
Expenses:			
Amortization expense of acquired intangible assets	206	153	170
Merger and strategic initiatives expense	148	82	87
Restructuring charges	80	15	31
Lease asset impairments	25	—	—
Legal and regulatory matters	12	26	44
Extinguishment of debt	—	16	33
Pension Settlement	9	—	—
Expenses - divested businesses	21	27	38
Other	7	5	(2)
Total expenses	508	324	401
Operating loss	$ (469)	$ (276)	$ (324)

For further discussion of our segments' results, see "Segment Operating Results," of "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

Geographic Data

The following table presents total revenues and property and equipment, net by geographic area for 2023, 2022 and 2021. Revenues are classified based upon the location of the customer. Property and equipment information is based on the physical location of the assets.

	Total Revenues	Property and Equipment, Net
2023:	(in millions)	
United States	$ 4,870	$ 367
All other countries	1,194	209
Total	$ 6,064	$ 576
2022:		
United States	$ 5,100	$ 344
All other countries	1,126	188
Total	$ 6,226	$ 532
2021:		
United States	$ 4,822	$ 325
All other countries	1,064	184
Total	$ 5,886	$ 509

Property and equipment, net for all other countries primarily includes assets held in Sweden. No single customer accounted for 10.0% or more of our revenues in 2023, 2022 and 2021.

20. RESTRUCTURING CHARGES

In the fourth quarter of 2023, following the closing of the Adenza acquisition, our management approved, committed to and initiated a restructuring program, "Adenza Restructuring" to optimize our efficiencies as a combined organization. In connection with this program, we expect to incur approximately $80 million in pre-tax charges principally related to employee-related costs, contract terminations, real estate impairments and other related costs. We expect to achieve benefits primarily in the form of expense and revenue synergies. Costs related to the 2023 Adenza Restructuring program will be recorded as restructuring charges in the Consolidated Statements of Income.

In October 2022, following our September 2022 announcement to realign our segments and leadership, we initiated a divisional alignment program with a focus on realizing the full potential of this structure. In connection with the program, we expect to incur $115 million to $145 million in pre-tax charges principally related to employee-related costs, consulting, asset impairments and contract terminations over a two-year period. Costs related to the divisional alignment program will be recorded as restructuring charges in the Consolidated Statements of Income.

In September 2019, we initiated the transition of certain technology platforms to advance the Company's strategic opportunities as a technology and analytics provider and continue the realignment of certain business areas. In connection with these restructuring efforts, we retired certain elements of our market infrastructure and technology product offerings as we implemented Nasdaq Financial Framework and other technologies internally and externally. This represented a fundamental shift in our strategy and technology as well as executive realignment. In June 2021, we completed our 2019 restructuring plan and recognized total pre-tax charges of $118 million over a two-year period. Total pre-tax charges related primarily to non-cash items such as asset impairments and accelerated depreciation, and third-party consulting costs. Severance and employee-related charges were also incurred.

The following table presents a summary of the 2023 Adenza restructuring program, our 2022 divisional alignment program and our 2019 restructuring plan charges for the years ended December 31, 2023, 2022 and 2021 as well as total program costs incurred since the inception date of each program.

	Year Ended December 31,		
	2023	2022	2021
		(in millions)	
Asset impairment charges			
Divisional realignment	$ 12	$ 8	$ —
2019 program	—	—	4
Consulting services			
Adenza restructuring	3	—	—
Divisional realignment	34	3	—
2019 program	—	—	19
Employee-related costs			—
Adenza restructuring	6	—	—
Divisional realignment	13	3	—
2019 program	—	—	1
Other	—	—	—
Adenza restructuring	1	—	—
Divisional realignment	11	1	—
2019 program	—	—	7
Total restructuring charges	$ 80	$ 15	$ 31
Total Program Costs Incurred			
Adenza restructuring	$ 10		
Divisional realignment	$ 85		
2019 program	$ 118		

Exhibit 4.21

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

Nasdaq, Inc. (the "Company") has five classes of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"):

(1) Common Stock, par value $0.01 per share ("Common Stock");

(2) 4.500% Senior Notes due 2032;

(3) 0.900% Senior Notes due 2033;

(4) 0.875% Senior Notes due 2030; and

(5) 1.75% Senior Notes due 2029.

As used in this summary, the terms "Nasdaq," "the Company," "we," "our," and "us" refer solely to Nasdaq, Inc. and not its subsidiaries, unless otherwise specified.

Description of Common Stock

The following is a description of the material terms and provisions relating to our common stock. Because it is a summary, the following description is not complete and is subject to and qualified in its entirety by reference to our Amended and Restated Certificate of Incorporation, as amended, or Certificate, our By-Laws, each of which is incorporated by reference as an exhibit to the Annual Report on Form 10-K, and provisions of Delaware law, which define the rights of our stockholders.

As of December 31, 2023, 900,000,000 shares of our common stock were authorized.

The holders of our common stock are entitled to one vote per share on all matters to be voted upon by the stockholders except that no person may exercise voting rights in respect of any shares in excess of 5% of the then outstanding shares of our Common Stock. Subject to certain additional conditions, this limitation does not apply to persons exempted from this limitation by our Board of Directors prior to the time such person owns more than 5.0% of the then-outstanding shares of our common stock.

At any meeting of our stockholders, a majority of the votes entitled to be cast will constitute a quorum for such meeting.

Holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our board of directors out of funds legally available for them. In the event of our liquidation, dissolution, or winding-up, the holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding. Our common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to our common stock. All outstanding shares of common stock are fully paid and non-assessable. Future dividends, if any, will be determined by our board of directors.

Certain Provisions of our Certificate and By-Laws

Some provisions of our Certificate and By-Laws, which provisions are summarized below, may be deemed to have an anti-takeover effect and may delay, defer, or prevent a tender offer or takeover attempt that a stockholder might consider in its best interest, including those attempts that might result in a premium over the market price for the shares held by stockholders.

Advance Notice Requirements for Stockholder Proposals and Directors Nominations

Our by-laws provide that stockholders seeking to bring business before an annual meeting of stockholders, or to nominate candidates for election as directors at an annual meeting of stockholders, must provide timely notice in writing. To be timely, a stockholder's notice must be delivered to or mailed and received at our principal executive offices not less than 90 nor more than 120 days prior to the anniversary date of the immediately preceding annual meeting of stockholders; provided, that in the event that the annual meeting is called for a date that is not within 30 days before or 70 days after such anniversary date, notice by the stockholder in order to be timely must be received not earlier than 120 days prior to the meeting and not later than the later of 90 days prior to the meeting and the close of business on the 10th day following the date on which notice of the date of the annual meeting was first publicly announced by Nasdaq. In the case of a special meeting of stockholders called for the purpose of electing directors, notice by the stockholder in order to be timely must be received not earlier than 120 days prior to the meeting and not later than the later of 90 days prior to the meeting or the close of business on the 10th day following the day on which public disclosure of the date of the special meeting and our nominees was first made. In addition, our by-laws specify certain requirements as to the form and content of a stockholder's notice. These provisions may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual or special meeting of stockholders.

Proxy Access

Our by-laws include a proxy access provision that permits a stockholder, or a group of stockholders, owning at least three percent of our outstanding shares of common stock continuously for at least three years to nominate and include in the proxy materials for an annual meeting of stockholders director nominees constituting up to the greater of two individuals and 25% of the total number of directors then in office, provided that the stockholder(s) and nominee(s) satisfy the requirements specified in the by-laws.

Stockholder Action

Our Certificate provides that stockholders are not entitled to act by written consent in lieu of a meeting.

Right to Call Special Meeting

Our by-laws provide that stockholders representing 15% or more of our outstanding shares can convene a special meeting of stockholders.

Amendments; Vote Requirements

The General Corporation Law of the State of Delaware provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation, unless a corporation's certificate of incorporation requires a greater percentage. Our Certificate imposes majority voting requirements in connection with stockholder amendments to the by-laws and in connection with the amendment of certain provisions of the Certificate, including those provisions of the Certificate relating to the limitations on voting rights of certain persons, removal of directors and prohibitions on stockholder action by written consent.

Authorized But Unissued Shares

The authorized but unissued shares of our common stock will be available for future issuance without stockholder approval in most cases. These additional shares may be utilized for a variety of corporate purposes, including future public or private offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of authorized but unissued shares of our common stock could render more difficult, or discourage, an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

Delaware Business Combination Statute

We are organized under Delaware law. Delaware law generally prohibits a publicly-held or widely-held corporation from engaging in a “business combination” with an “interested stockholder” for three years after the stockholder becomes an interested stockholder. An “interested stockholder” is a person who, together with affiliates and associates, owns (or, in some cases, within three years, did own) directly or indirectly 15% or more of the corporation’s outstanding voting stock. A “business combination” includes a merger, asset sale or other transaction that results in a financial benefit to the interested stockholder. However, Delaware law does not prohibit these business combinations if:

1. before the stockholder becomes an interested stockholder, the corporation’s board approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

2. after the transaction that results in the stockholder becoming an interested stockholder, the interested stockholder owns at least 85% of the corporation’s outstanding voting stock (excluding certain shares); or

3. the corporation’s board approves the business combination and the holders of at least two-thirds of the corporation’s outstanding voting stock that the interested stockholder does not own authorize the business combination at a meeting of stockholders.

Stockholders’ Agreements

Investor AB

On December 14, 2022, we entered into an amendment to our stockholders’ agreement with Investor AB (the “Amended Stockholders’ Agreement”), amending the original stockholders’ agreement that was entered into between Nasdaq and Investor AB on December 16, 2010.

The Amended Stockholders’ Agreement reinstated Investor AB’s right to propose for nomination one person, reasonably acceptable to our Nominating & ESG Committee, for election to our Board of Directors so long as Investor AB continues to beneficially own at least 10% of the outstanding common stock of Nasdaq. We are obligated by the terms of the Amended Stockholders’ Agreement to (i) include the Investor AB designee as a nominee to the Board of Directors on each slate of nominees for election to the Board of Directors proposed by management of Nasdaq, (ii) recommend the election of the Investor AB designee to our stockholders and (iii) otherwise use our reasonable best efforts (which shall include the solicitation of proxies) to cause the Investor AB designee to be elected to the Board of Directors.

The foregoing summary of the Amended Stockholders' Agreement does not purport to be complete and is subject to, and qualified in its entirety by, the full text of the Amended Stockholders' Agreement, which was filed as Exhibit 4.1 to Nasdaq's Current Report on Form 8-K filed on December 16, 2022.

Thoma Bravo

In connection with our acquisition of Adenza Holdings, Inc. ("Adenza") on November 1, 2023, we entered into a Stockholders' Agreement with Adenza Parent, LP ("Seller"), and Thoma Bravo, LP ("Thoma Bravo" and together with Seller, the "Seller Parties"), dated as of November 1, 2023 (the "Stockholders' Agreement"), pursuant to which the Seller Parties agreed to be subject to a lock-up with respect to the transfer of the shares of our common stock issued to the Seller on the closing of the acquisition, with 50% of such shares released from the lock-up on the six-month anniversary of the closing of the acquisition and the remaining 50% of such shares released from the lock-up on the 18-month anniversary of the closing of the acquisition (subject to certain exceptions).

The Stockholders' Agreement further provides that the Seller Parties will be entitled to propose for nomination one director for election to our Board of Directors (with the initial nominee to be Mr. Holden Spaht), and such right will exist for so long as the Seller Parties and their controlled affiliates continue to beneficially own at least 10% of the shares of Nasdaq common stock outstanding as of November 1, 2023.

In addition, the Seller Parties have agreed to be subject to a standstill obligation, including a restriction on acquiring shares in excess of 19.99% of the outstanding Nasdaq common stock on a fully diluted basis, subject to certain exceptions, for at least two years following the closing date.

The foregoing description of the Stockholders' Agreement does not purport to be complete and is qualified in its entirety by the full text of the Stockholders' Agreement, which was filed as Exhibit 4.1 to Nasdaq's Current Report on Form 8-K filed on November 3, 2023.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare. Its address is 480 Washington Boulevard, Jersey City, New Jersey 07310 and its telephone number is (800) 736-3001.

Listing

Our common stock is listed on The Nasdaq Stock Market under the trading symbol “NDAQ.”

Description of the 4.500% Senior Notes due 2032

The 4.500% Senior Notes due 2032 (the "2032 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a nineteenth supplemental indenture dated as of June 28, 2023 (the "supplemental indenture" and, together with the base indenture, the "indenture") by and among Nasdaq, Computershare Trust Company, N.A., as trustee, as successor to Wells Fargo Bank, (the "Trustee") and HSBC Bank USA, National Association, as paying agent, registrar and transfer agent. The indenture is publicly available at www.sec.gov.

We issued €750 million aggregate principal amount of the 2032 Notes on June 28, 2023.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2032 Notes and the indenture, including definitions of certain terms used therein.

General

The 2032 Notes:

- are senior unsecured obligations of ours;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2032 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2032 Notes will bear interest at a rate of 4.500% per year. Interest on the Notes is payable annually in arrears on February 15 of each year, beginning on February 15, 2024, and will be computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2032 Notes (or the settlement date if no interest has been paid or duly provided for on the 2032 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2032 Notes will accrue from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2032 Notes will mature on February 15, 2032. On the maturity date of the 2032 Notes, the holders will be entitled to receive 100% of the principal amount of such 2032 Notes. The 2032 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2032 Notes, when we use the term "business day" we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2032 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2032 Notes paid for the 2032 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the 2032 Notes will be payable in euros. If, on or after the date of this prospectus supplement, the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2032 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2032 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2032 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Ranking

The 2032 Notes are general unsecured obligations of ours and will rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to your claims as holders of the 2032 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2032 Notes constituted a separate series of debt securities under the indenture, limited to €750 million. Under the indenture, we may, without the consent of the holders of the 2032 Notes, issue additional 2032 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; *provided* that if any such additional 2032 Notes are not fungible with the 2032 Notes offered hereby (or any other tranche of additional 2032 Notes) for U.S. federal income tax purposes, then such additional 2032 Notes will have different ISIN and/or Common Code numbers than the Notes offered hereby (and any such other tranche of additional 2032 Notes). The 2032 Notes and any additional 2032 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2032 Notes, as well as any additional 2032 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2032 Notes will be redeemable, in whole at any time or in part from time to time, at our option, prior to December 15, 2031, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2032 Notes and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2032 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 35 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after December 15, 2031 (three months before their maturity date), the 2032 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2032 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 10 days, but not more than 60 days, before the redemption date to each registered holder of 2032 Notes to be redeemed. Once notice of redemption is mailed, the 2032 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2032 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the 2032 Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary

financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2032 Notes, and such 2032 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2032 Notes, and any of such 2032 Notes are not represented by a global note, then the trustee will select the particular 2032 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2032 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2032 Notes, unless we have exercised our right to redeem the 2032 Notes, we will be required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2032 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2032 Notes repurchased plus accrued and unpaid interest, if any, on the 2032 Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the 2032 Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, your ability to require us to purchase your 2032 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity, (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2032 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the 2032 Notes means any of the following:

(1) we do not pay interest on any of the 2032 Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any 2033 Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) we fail to comply with certain covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2032 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2032 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $200,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2032 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $200,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2032 Notes has occurred, the trustee or the holders of at least 25% in principal amount of the 2032 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2032 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the 2032 Notes may also waive certain past defaults under the indenture with respect to the 2032 Notes on behalf of all of the holders of the 2032 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2032 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2032 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2032 Notes. Some types of changes require the approval of each holder of 2032 Notes, some require approval by a vote of a majority of the holders of the 2032 Notes, and some changes do not require any approval at all.

Description of the 0.900% Senior Notes Due 2033

The 0.900% Senior Notes due 2033 (the "2033 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a twelfth supplemental indenture dated as of July 30, 2021 (the "supplemental indenture" and, together with the base indenture, the "indenture") by and among Nasdaq, the Trustee and HSBC Bank USA, National Association, as registrar and transfer agent. The indenture is publicly available at www.sec.gov.

We issued €615 million aggregate principal amount of the 2033 Notes on July 30, 2021.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2033 Notes and the indenture, including definitions of certain terms used therein.

General

The 2033 Notes:

- are senior unsecured obligations of ours;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2033 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2033 Notes will bear interest at a rate of 0.900% per year. Interest on the Notes is payable annually in arrears on July 30 of each year, beginning on July 30, 2022, and will be computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2033 Notes (or the settlement date if no interest has been paid or duly provided for on the 2033 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2033 Notes will accrue from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2033 Notes will mature on July 30, 2033. On the maturity date of the 2033 Notes, the holders will be entitled to receive 100% of the principal amount of such 2033 Notes. The 2033 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2033 Notes, when we use the term "business day" we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2033 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2033 Notes paid for the 2033 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the 2033 Notes will be payable in euros. If, on or after the date of this prospectus supplement, the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2033 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2033 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2033 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Ranking

The 2033 Notes are general unsecured obligations of ours and will rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to your claims as holders of the 2033 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2033 Notes constituted a separate series of debt securities under the indenture, limited to €615 million. Under the indenture, we may, without the consent of the holders of the 2033 Notes, issue additional 2033 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; *provided* that if any such additional 2033 Notes are not fungible with the 2033 Notes offered hereby (or any other tranche of additional 2033 Notes) for U.S. federal income tax purposes, then such additional 2033 Notes will have different ISIN and/or Common Code numbers than the Notes offered hereby (and any such other tranche of additional 2033 Notes). The 2033 Notes and any additional 2033 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2033 Notes, as well as any additional 2033 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2033 Notes will be redeemable, in whole at any time or in part from time to time, at our option, prior to April 30, 2033, at a redemption price (the “make-whole redemption price”) equal to the greater of (i) 100% of the principal amount of the 2033 Notes and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2033 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 20 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after April 30, 2033 (three months before their maturity date), the 2033 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2033 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 10 days, but not more than 60 days, before the redemption date to each registered holder of 2033 Notes to be redeemed. Once notice of redemption is mailed, the 2033 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2033 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the 2033 Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary

financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2033 Notes, and such 2033 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2033 Notes, and any of such 2033 Notes are not represented by a global note, then the trustee will select the particular 2033 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2033 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2033 Notes, unless we have exercised our right to redeem the 2033 Notes, we will be required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2033 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2033 Notes repurchased plus accrued and unpaid interest, if any, on the 2033 Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the 2033 Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, your ability to require us to purchase your 2033 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity, (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2033 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the 2033 Notes means any of the following:

(1) we do not pay interest on any of the 2033 Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any 2033 Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) we fail to comply with certain covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2033 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2033 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $200,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2033 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $200,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2033 Notes has occurred, the trustee or the holders of at least 25% in principal amount of the 2033 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2033 Notes required for such declaration if the Event of Default is the Company’s bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the 2033 Notes may also waive certain past defaults under the indenture with respect to the 2033 Notes on behalf of all of the holders of the 2033 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2033 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2033 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2033 Notes. Some types of changes require the approval of each holder of 2033 Notes, some require approval by a vote of a majority of the holders of the 2033 Notes, and some changes do not require any approval at all.

Description of the 0.875% Senior Notes Due 2030

The 0.875% Senior Notes due 2030 (the "2030 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a seventh supplemental indenture dated as of February 13, 2020 (the "supplemental indenture" and, together with the base indenture, the "indenture"). The indenture is publicly available at www.sec.gov.

We issued €600 million aggregate principal amount of the 2030 Notes on February 13, 2020.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2030 Notes and the indenture, including definitions of certain terms used therein.

General

The 2030 Notes:

- are senior unsecured obligations of ours;

- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2030 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2030 Notes will bear interest at a rate of 0.875% per year. Interest on the Notes is payable annually in arrears on February 13 of each year, beginning on February 13, 2021, and will be computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2030 Notes (or the settlement date if no interest has been paid or duly provided for on the 2030 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2030 Notes will accrue from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2030 Notes will mature on February 13, 2030. On the maturity date of the 2030 Notes, the holders will be entitled to receive 100% of the principal amount of such 2030 Notes. The 2030 2030 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2030 Notes, when we use the term “business day” we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2030 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2030 Notes paid for the 2030 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the 2030 Notes will be payable in euros. If, on or after the date of this prospectus supplement, the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2030 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2030 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2030 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Ranking

The 2030 Notes are general unsecured obligations of ours and will rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to your claims as holders of the 2030 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2030 Notes constituted a separate series of debt securities under the indenture, limited to €600 million. Under the indenture, we may, without the consent of the holders of the 2030 Notes, issue additional 2030 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; *provided* that if any such additional 2030

Notes are not fungible with the 2030 Notes offered hereby (or any other tranche of additional 2030 Notes) for U.S. federal income tax purposes, then such additional 2030 Notes will have different ISIN and/or Common Code numbers than the Notes offered hereby (and any such other tranche of additional 2030 Notes). The 2030 Notes and any additional 2030 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2030 Notes, as well as any additional 2030 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2030 Notes will be redeemable, in whole at any time or in part from time to time, at our option, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2030 Notes and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2030 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 20 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after November 13, 2029 (three months before their maturity date), the 2030 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2030 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 30 days, but not more than 60 days, before the redemption date to each registered holder of 2030 Notes to be redeemed. Once notice of redemption is mailed, the 2030 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2030 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the 2030 Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary
financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2030 Notes, and such 2030 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2030 Notes, and any of such 2030 Notes are not represented by a global note, then the trustee will select the particular 2030 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2030 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2030 Notes, unless we have exercised our right to redeem the 2030 Notes, we will be required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2030 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2030 Notes repurchased plus accrued and unpaid interest, if any, on the 2030 Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the 2030 Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, your ability to require us to purchase your 2030 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity, (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2030 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the 2030 Notes means any of the following:

(1) we do not pay interest on any of the 2030 Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any 2030 Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) we fail to comply with certain covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2030 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2030 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $150,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2030 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $150,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2030 Notes has occurred, the trustee or the holders of at least 25% in principal amount of the 2030 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2030 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the 2030 Notes may also waive certain past defaults under the indenture with respect to the 2030 Notes on behalf of all of the holders of the 2030 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2030 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2030 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2030 Notes. Some types of changes require the approval of each holder of 2030 Notes, some require approval by a vote of a majority of the holders of the 2030 Notes, and some changes do not require any approval at all.

Description of the 1.75% Senior Notes Due 2029

The 1.75% Senior Notes due 2029 (the "2029 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a sixth supplemental indenture dated as of April 1, 2019 (the "supplemental indenture" and, together with the base indenture, the "indenture"). The indenture is publicly available at www.sec.gov.

We issued €600 million aggregate principal amount of the 2029 Notes on April 1, 2019.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2029 Notes and the indenture, including definitions of certain terms used therein.

General

The 2029 Notes:

- are senior unsecured obligations;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our 2017 credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2029 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2029 Notes bear interest at a rate of 1.75% per year. Interest on the 2029 Notes is payable annually in arrears on of each year, beginning on March 28, 2020, and is computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2029 Notes (or the settlement date if no interest has been paid or duly provided for on the 2029 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2029 Notes accrues from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2029 Notes will mature on March 28, 2029. On the maturity date of the 2029 Notes, the holders will be entitled to receive 100% of the principal amount of such 2029 Notes. The 2029 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2029 Notes, when we use the term “business day” we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2029 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2029 Notes paid for the 2029 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the Notes will be payable in euros. If the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2029 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2029 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2029 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Interest Rate Adjustment

The interest rate payable on the 2029 Notes will be subject to adjustment from time to time if either Moody's or S&P, or, in either case, any substitute rating agency downgrades (or subsequently upgrades) the credit rating assigned to the 2029 Notes.

Ranking

The 2029 Notes are general unsecured obligations of ours and rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to claims as holders of the 2029 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2029 Notes constituted a separate series of debt securities under the indenture, limited to €600 million. Under the indenture, we may, without the consent of the holders of the 2029 Notes, issue additional 2029 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; provided, that, if any such additional 2029 Notes are not fungible with the 2029 Notes (or any other tranche of additional 2029 Notes) for U.S. federal income tax purposes, then such additional 2029 Notes will have different ISIN and/or Common Code numbers than the 2029 Notes (and any such other tranche of additional 2029 Notes). The 2029 Notes and any additional 2029 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2029 Notes, as well as any additional 2029 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2029 Notes will be redeemable, in whole at any time or in part from time to time, at our option, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2029 Notes, and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2029 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 30 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after December 28, 2028 (three months before their maturity date), the 2029 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2029 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 30 days, but not more than 60 days, before the redemption date to each registered holder of 2029 Notes to be redeemed. Once notice of redemption is mailed, the 2029 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2029 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations, or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2029 Notes, and such 2029 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2029 Notes, and any of such 2029 Notes are not represented by a global note, then the trustee will select the particular 2029 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2029 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2029 Notes, unless we have exercised our right to redeem the 2029 Notes, we are required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2029 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2029 Notes repurchased plus accrued and unpaid interest, if any, on the Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned Subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, the ability to require us to purchase 2029 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity; (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2029 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the Notes means any of the following:

(1) we do not pay interest on any of the Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) failure by us to comply with the covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2029 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2029 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $150,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2029 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $150,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2029 Notes has occurred, the Trustee or the holders of at least 25% in principal amount of

the 2029 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2029 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the Notes may also waive certain past defaults under the indenture with respect to the 2029 Notes on behalf of all of the holders of the 2029 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2029 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2029 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Before holders of the 2029 Notes are allowed to bypass the trustee and bring a lawsuit or other formal legal action or take other steps to enforce their rights or protect their interests relating to the 2029 Notes, the following must occur:

- such holders must give the trustee written notice that an Event of Default has occurred and remains uncured;
- holders of at least 25% in principal amount of the 2029 Notes must make a written request that the trustee take action because of the default and must offer the Trustee indemnity satisfactory to the trustee against the cost and other liabilities of taking that action; and
- the trustee must have failed to take action for 60 days after receipt of the notice and offer of indemnity.

Holders are, however, entitled at any time to bring a lawsuit for the payment of money due on the 2029 Notes on or after the due date.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2029 Notes. Some types of changes require the approval of each holder of 2029 Notes, some require approval by a vote of a majority of the holders of the 2029 Notes, and some changes do not require any approval at all.

Exhibit 21.1

Subsidiaries of Nasdaq, Inc.*
As of February 15, 2024

U.S. Entities

1. Adenza Group, Inc. (organized in Delaware)
2. Adenza Holdings, LLC (organized in Delaware)
3. Adenza Intermediate I, LLC (organized in Delaware)
4. Adenza Intermediate II, LLC (organized in Delaware)
5. Adenza, Inc. (organized in Delaware)
6. BoardVantage, Inc (organized in Delaware)
7. Boston Stock Exchange Clearing Corporation (organized in Massachusetts)
8. Content Services, LLC (organized in Delaware)
9. Curzon Street Acquisition, LLC (organized in Delaware)
10. Directors Desk, LLC (organized in Delaware)
11. Dorsey, Wright & Associates, LLC (organized in Virginia)
12. eVestment Alliance, LLC (organized in Delaware)
13. eVestment, Inc. (organized in Delaware)
14. FINRA/Nasdaq Trade Reporting Facility LLC (organized in Delaware)
15. FRAMLxchange Inc. (organized in Delaware)
16. FTEN, Inc. (organized in Delaware)
17. Granite Redux, Inc. (organized in Delaware)
18. GraniteBlock, Inc. (organized in Delaware)
19. International Securities Exchange Holdings, Inc. (organized in Delaware)
20. Longitude LLC (organized in Delaware)
21. Nasdaq BX, Inc. (organized in Delaware)
22. Nasdaq Capital Markets Advisory LLC (organized in Delaware)
23. Nasdaq Corporate Services, LLC (organized in Delaware)
24. Nasdaq Corporate Solutions, LLC (organized in Delaware)
25. Nasdaq Digital Asset Holdings, LLC (organized in Delaware)
26. NASDAQ Energy Futures, LLC (organized in Delaware)
27. Nasdaq Execution Services, LLC (organized in Delaware)
28. Nasdaq Fund Secondaries, LLC (organized in Delaware)
29. NASDAQ Futures, Inc. (organized in Delaware)
30. Nasdaq GEMX, LLC (organized in Delaware)
31. NASDAQ Global, Inc. (organized in Delaware)
32. Nasdaq Governance Solutions, Inc. (organized in Delaware)
33. Nasdaq Information, LLC (organized in Delaware)
34. Nasdaq ISE, LLC (organized in Delaware)
35. Nasdaq MRX, LLC (organized in Delaware)
36. Nasdaq PHLX LLC (organized in Delaware)
37. Nasdaq Private Market, LLC (organized in Delaware)
38. Nasdaq SB Holdings, LLC (organized in Delaware)
39. Nasdaq SPS, LLC (organized in Delaware)
40. Nasdaq Technology Services, LLC (organized in Delaware)
41. NFSTX, LLC (organized in Delaware)
42. OneReport, LLC (organized in Delaware)
43. Operations & Compliance Network, LLC (organized in Delaware)
44. QDiligence LLC (organized in Illinois)
45. Solovis, Inc. (organized in Delaware)
46. Stock Clearing Corporation of Philadelphia (organized in Pennsylvania)
47. Strategic Financial Solutions, LLC (organized in Nevada)
48. Sybenetix Inc. (organized in Delaware)
49. The Center for Board Evaluation, Inc. (organized in North Carolina)
50. The Nasdaq Options Market LLC (organized in Delaware)
51. The Nasdaq Stock Market LLC (organized in Delaware)
52. U.S. Exchange Holdings, Inc. (organized in Delaware)
53. Verafin AcquisitionCo LLC (organized in Delaware)
54. Verafin USA Inc. (organized in Delaware)

Non-U.S. Subsidiaries

1. AB Nasdaq Vilnius (organized in Lithuania)
2. Adenza Australia Pty Ltd. (organized in Australia)
3. Adenza Brasil Ltda (organized in Brazil)
4. Adenza Canada, Inc. (organized in Canada)
5. Adenza Chile SpA (organized in Chile)
6. Adenza Colombia S.A.S. (organized in Colombia)
7. Adenza France SARL (organized in France)
8. Adenza Georgia LLC (organized in Georgia)
9. Adenza Gemany GmbH (organized in Germany)
10. Adenza Hong Kong (organized in Hong Kong)
11. Adenza India Private Ltd. (organized in India)
12. Adenza Ireland Ltd. (organized in Ireland)
13. Adenza Israel Ltd. (organized in Israel)
14. Adenza Japan KK (organized in Japan)
15. Adenza Korea LLC (organized in South Korea)
16. Adenza Ltd. (organized in the United Kingdom)
17. Adenza Netherlands B.V. (organized in the Netherlands)
18. ADENZA POLAND SOO SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA (organized in Poland)
19. Adenza Portugal S.A. (organized in Portugal)
20. Adenza Singapore Pte. Ltd. (organized in Singapore)
21. Adenza Spain S.L. (organized in Spain)
22. Adenza Technology (DIFC) Ltd. (organized in Dubai)
23. Adenza Technology de Mexico, S. de R.L. de C.V. (organized in Mexico)
24. AS Pensionikeskus AS (organized in Estonia)
25. Axioma SD, Ltd. (organized in Russia)
26. AxiomSL Holdings B.V. (organized in the Netherlands)
27. AxiomSL Ltd. (Hong Kong) (organized in Hong Kong)
28. AxiomSL Ltd. (UK) (organized in the United Kingdom)
29. AxiomSL Pty Ltd. (organized in Australia)
30. AxiomSL Software Spain, S.L. (organized in Spain)
31. Calypso Group UK Ltd. (organized in the United Kingdom)
32. Calypso Holdco Ltd. (organized in the United Kingdom)
33. Calypso Software (Beijing) Co Ltd. (organized in China)
34. Calypso Technology International Ltd. (organized in Ireland)
35. Calypso Technology Pte. Ltd. (organized in Singapore)
36. Calypso UK MidCo. Ltd. (organized in the United Kingdom)
37. Calypso UK TopCo. Ltd. (organized in the United Kingdom)
38. Capri Bidco Ltd. (UK) (organized in the United Kingdom)
39. Capri Holdco Ltd. (UK) (organized in the United Kingdom)
40. Cinnober Financial Technology AB (organized in Sweden)
41. Curzon Street Holdings Limited (organized in the United Kingdom)
42. Ensoleillement Inc. (organized in Canada)
43. eVestment Alliance (UK) Limited (organized in the United Kingdom)
44. eVestment Alliance Australia Pty Ltd (organized in Australia)
45. eVestment Alliance Hong Kong Limited (organized in Hong Kong)
46. Indxis Ltd (organized in the United Kingdom)
47. Metrio Software Inc. (organized in Quebec)
48. Nasdaq (Asia Pacific) Pte. Ltd. (organized in Singapore)
49. Nasdaq AB (organized in Sweden)
50. Nasdaq Australia Holding Pty Ltd (organized in Australia)
51. NASDAQ Canada Inc. (organized in Canada)
52. Nasdaq Clearing AB (organized in Sweden)
53. Nasdaq Copenhagen A/S (organized in Denmark)
54. Nasdaq Corporate Solutions (India) Private Limited (organized in India)
55. Nasdaq Corporate Solutions International Limited (organized in the United Kingdom)
56. Nasdaq CSD SE (organized in Latvia)
57. Nasdaq CXC Limited (organized in Canada)
58. Nasdaq Exchange and Clearing Services AB (organized in Sweden)
59. Nasdaq France SAS (organized in France)
60. Nasdaq Germany GmbH (organized in Germany)
61. Nasdaq Helsinki Ltd (organized in Finland)

62. Nasdaq Holding AB (organized in Sweden)
63. Nasdaq Holding Denmark A/S (organized in Denmark)
64. Nasdaq Holding Luxembourg Sárl (organized in Luxembourg)
65. Nasdaq Iceland hf. (organized in Iceland)
66. Nasdaq International Ltd (organized in the United Kingdom)
67. NASDAQ Korea Ltd (organized in South Korea)
68. Nasdaq Ltd (organized in Hong Kong)
69. Nasdaq Nordic Ltd (organized in Finland)
70. NASDAQ OMX Europe Ltd (organized in the United Kingdom)
71. Nasdaq Oslo ASA (organized in Norway)
72. Nasdaq Pty Ltd (organized in Australia)
73. Nasdaq Riga, AS (organized in Latvia) (92.98% owned, directly or indirectly, by Nasdaq, Inc.)
74. Nasdaq Spot AB (organized in Sweden)
75. Nasdaq Stockholm AB (organized in Sweden)
76. Nasdaq Tallinn AS (organized in Estonia)
77. Nasdaq Technology (Japan) Ltd (organized in Japan)
78. Nasdaq Technology AB (organized in Sweden)
79. Nasdaq Technology Energy Systems AS (organized in Norway)
80. Nasdaq Technology Italy Srl (organized in Italy)
81. Nasdaq Teknoloji Servisi Limited Sirketi (organized in Turkey)
82. Nasdaq Treasury AB (organized in Sweden)
83. Nasdaq Vilnius Services UAB (organized in Lithuania)
84. Nasdaq Wizer Solutions AB (organized in Sweden)
85. OMX Netherlands B.V. (organized in the Netherlands)
86. OMX Netherlands Holding B.V. (organized in the Netherlands)
87. OMX Treasury Euro AB (organized in Sweden) (99.9% owned, directly or indirectly, by Nasdaq, Inc.)
88. OMX Treasury Euro Holding AB (organized in Sweden)
89. Puro.earth (organized in Finland) (70% owned, directly or indirectly, by Nasdaq, Inc.)
90. Quandl, Inc. (organized in Canada, Federal)
91. RF Nordic Express AB (organized in Sweden) (50.1% owned, directly or indirectly, by Nasdaq, Inc.)
92. Shareholder.com B.V. (organized in the Netherlands)
93. Simplitium Ltd (organized in the United Kingdom)
94. SMARTS Broker Compliance Pty Ltd (organized in Australia)
95. SMARTS Market Surveillance Pty Ltd (organized in Australia)
96. Sybenetix Limited (organized in the United Kingdom)
97. Sybenetix Ukraine (organized in the Ukraine)
98. TopQ Software Limited (organized in the United Kingdom)
99. TOV AxiomSL (organized in the Ukraine)
100. Verafin Solutions ULC (organized in Canada)
101. Whittaker & Garnier Limited (organized in the United Kingdom)

'he list of subsidiaries does not include not-for-profit entities or foreign branches of subsidiaries, or entities in which Nasdaq owns less than 50% of the entity.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-3 No. 333-255666) of Nasdaq, Inc.,

(2) Registration Statement (Form S-8 No. 333-239891) pertaining to Nasdaq, Inc. Employee Stock Purchase Plan,

(3) Registration Statement (Form S-8 No. 333-225218) pertaining to Nasdaq, Inc. Equity Incentive Plan,

(4) Registration Statement (Form S-8 No. 333-196838) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(5) Registration Statement (Form S-8 No. 333-167724) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Employee Stock Purchase Plan,

(6) Registration Statement (Form S-8 No. 333-167723) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(7) Registration Statement (Form S-8 No. 333-110602) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan,

(8) Registration Statement (Form S-8 No. 333-106945) pertaining to the Employment Agreement with Robert Greifeld of The Nasdaq Stock Market, Inc.,

(9) Registration Statement (Form S-8 No. 333-76064) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan,

(10) Registration Statement (Form S-8 No. 333-72852) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan, and

(11) Registration Statement (Form S-8 No. 333-70992) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan;

(12) Registration Statement (Form S-8 No. 333-265824) pertaining to The Nasdaq, Inc. Deferred Compensation Plan;

of our reports dated February 21, 2024, with respect to the consolidated financial statements of Nasdaq, Inc. and the effectiveness of internal control over financial reporting of Nasdaq, Inc. included in this Annual Report (Form 10-K) of Nasdaq, Inc. for the year ended December 31, 2023.

/s/ Ernst & Young LLP

New York, New York
February 21, 2024

Exhibit 24.1

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for her and in her name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 20, 2024.

/s/ Melissa M. Arnoldi
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for her and in her name, place, and stead, in any case and all capacities to:

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(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

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IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 20, 2024.

/s/ Charlene T. Begley
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

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(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the “Annual Report”) in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact’s discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 19, 2024.

/s/ Steven D. Black
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

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(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

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IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 16, 2024.

/s/ Essa Kazim
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 20, 2024.

/s/ Thomas A. Kloet
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

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(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 20, 2024.

/s/ Holden Spaht
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 15, 2024.

/s/ Michael R. Splinter
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

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The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 19, 2024.

/s/ Johan Torgeby
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for her and in her name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 19, 2024.

/s/ Toni Townes-Whitley
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 20, 2024.

/s/ Jeffrey W. Yabuki
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all persons by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2023, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 15, 2024.

/s/ Alfred W. Zollar
Signature

Exhibit 31.1

CERTIFICATION

I, Adena T. Friedman, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

	/s/ Adena T. Friedman
Name:	Adena T. Friedman
Title:	Chief Executive Officer

Date: February 21, 2024

Exhibit 31.2

CERTIFICATION

I, Sarah Youngwood, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

	/s/ Sarah Youngwood
Name:	Sarah Youngwood
Title:	Executive Vice President and Chief Financial Officer

Date: February 21, 2024

Exhibit 32.1

Certification of CEO and CFO Pursuant to
18 U.S.C. Section 1350
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Annual Report on Form 10-K of Nasdaq, Inc. (the "Company") for the period ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Adena T. Friedman, as Chief Executive Officer of the Company, and Sarah Youngwood, as Executive Vice President and Chief Financial Officer of the Company, each hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of her knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of the operations of the Company.

	/s/ Adena T. Friedman
Name:	Adena T. Friedman
Title:	Chief Executive Officer
Date:	February 21, 2024
	/s/ Sarah Youngwood
Name:	Sarah Youngwood
Title:	Executive Vice President and Chief Financial Officer
Date:	February 21, 2024

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by the Company for purposes of § 18 of the Securities Exchange Act of 1934, as amended.

Exhibit 97.1

NASDAQ, INC.

SUPPLEMENTAL EXECUTIVE OFFICER RECOUPMENT POLICY

The Management Compensation Committee of the Board (the "Committee") of the Board of Directors (the "Board") of Nasdaq, Inc. (the "Company") believes that it is appropriate for the Company to adopt this Supplemental Executive Officer Recoupment Policy (the "Policy") to be applied to the Executive Officers of the Company and adopts this Policy to be effective as of the Effective Date.

1. Definitions

For purposes of this Policy, the following definitions shall apply:

a) "Company Group" means the Company and each of its Subsidiaries, as applicable.

b) "Covered Compensation" means any Incentive-Based Compensation granted, vested or paid to a person who served as an Executive Officer at any time during the performance period for the Incentive-Based Compensation and that was Received (i) on or after the Effective Date, (ii) after the person became an Executive Officer and (iii) at a time that the Company had a class of securities listed on a national securities exchange or a national securities association.

c) "Effective Date" means October 2, 2023, the effective date of the Nasdaq listing standard.

d) "Erroneously Awarded Compensation" means the amount of Covered Compensation granted, vested or paid to a person during the fiscal period when the applicable Financial Reporting Measure relating to such Covered Compensation was attained that exceeds the amount of Covered Compensation that otherwise would have been granted, vested or paid to the person had such amount been determined based on the applicable Restatement, computed without regard to any taxes paid (i.e., on a pre-tax basis). For Covered Compensation based on stock price or total shareholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in a Restatement, the Committee will determine the amount of such Covered Compensation that constitutes Erroneously Awarded Compensation, if any, based on a reasonable estimate of the effect of the Restatement on the stock price or total shareholder return upon which the Covered Compensation was granted, vested or paid and the Committee shall maintain documentation of such determination and provide such documentation to the Nasdaq.

e) "Exchange Act" means the Securities Exchange Act of 1934.

f) "Executive Officer" means each "officer" of the Company as defined under Rule 16a-1(f) under Section 16 of the Exchange Act, which shall be deemed to include any individuals identified by the Company as executive officers pursuant to Item 401(b) of Regulation S-K under the Exchange Act. Both current and former Executive Officers are subject to the Policy in accordance with its terms.

g) "Financial Reporting Measure" means (i) any measure that is determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measures derived wholly or in part from such measures and may consist of GAAP or non-GAAP financial measures (as defined under Regulation G of the Exchange Act and Item 10 of Regulation S-K under the Exchange Act), (ii) stock price or (iii) total shareholder return. Financial Reporting Measures may or may not be filed with the SEC and may be presented outside the Company's financial statements, such as in Managements' Discussion and Analysis of Financial Conditions and Result of Operations or in the performance graph required under Item 201(e) of Regulation S-K under the Exchange Act.

h) "Home Country" means the Company's jurisdiction of incorporation.

i) "Incentive-Based Compensation" means any compensation that is granted, earned or vested based wholly or in part upon the attainment of a Financial Reporting Measure.

j) "Lookback Period" means the three completed fiscal years (plus any transition period of less than nine months that is within or immediately following the three completed fiscal years and that results from a change in the Company's fiscal year) immediately preceding the date on which the Company is required to prepare a Restatement for a given reporting period, with such date being the earlier of: (i) the date the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare a Restatement, or (ii) the date a court, regulator or other legally authorized body directs the Company to prepare a Restatement. Recovery of any Erroneously Awarded Compensation under the Policy is not dependent on if or when the Restatement is actually filed.

k) "Nasdaq" means the Nasdaq Stock Market LLC.

l) "Received" Incentive-Based Compensation is deemed "Received" in the Company's fiscal period during which the Financial Reporting Measure specified in or otherwise relating to the Incentive-Based Compensation award is attained, even if the grant, vesting or payment of the Incentive-Based Compensation occurs after the end of that period.

m) "Restatement" means a required accounting restatement of any Company financial statement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including (i) to correct an error in previously issued financial statements that is material to the previously issued financial statements (commonly referred to as a "Big R" restatement) or (ii) to correct an error in previously issued financial statements that is not material to the previously issued financial statements but that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period (commonly referred to as a "little r" restatement). Changes to the Company's financial statements that do not represent error corrections under the then-current relevant accounting standards will not constitute Restatements. Recovery of any Erroneously Awarded Compensation under the Policy is not dependent on fraud or misconduct by any person in connection with the Restatement.

n) "SEC" means the United States Securities and Exchange Commission.

o) "Subsidiary" means any domestic or foreign corporation, partnership, association, joint stock company, joint venture, trust or unincorporated organization "affiliated" with the Company, that is, directly or indirectly, through one or more intermediaries, "controlling", "controlled by" or "under common control with", the Company. "Control" for this purpose means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of such person, whether through the ownership of voting securities, contract or otherwise.

2. Recoupment of Erroneously Awarded Compensation

In the event of a Restatement, any Erroneously Awarded Compensation Received during the Lookback Period prior to the Restatement (a) that is then-outstanding but has not yet been paid shall be automatically and immediately forfeited and (b) that has been paid to any person shall be subject to reasonably prompt repayment to the Company Group in accordance with Section 3 of this Policy. The Committee must pursue (and shall not have the discretion to waive) the forfeiture and/or repayment of such Erroneously Awarded Compensation in accordance with Section 3 of this Policy, except as provided below.

Notwithstanding the foregoing, the Committee (or, if the Committee is not a committee of the Board responsible for the Company's executive compensation decisions and composed entirely of independent directors, a majority of the independent directors serving on the Board) may determine not to pursue the forfeiture and/or recovery of Erroneously Awarded Compensation from any person if the Committee determines that such forfeiture and/or recovery would be impracticable due to any of the following circumstances: (i) the direct expense paid to a third party (for example, reasonable legal expenses and consulting fees) to assist in enforcing the Policy would exceed the amount to be recovered (following reasonable attempts by the Company Group to recover such Erroneously Awarded Compensation, the documentation of such attempts, and the provision of such documentation to Nasdaq), (ii) pursuing such recovery would violate the Company's Home Country laws adopted prior to November 28, 2022 (provided that the Company obtains an opinion of Home Country counsel acceptable to the Nasdaq that recovery would result in such a violation and provides such opinion to the Nasdaq), or (iii) recovery would likely cause any otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of Company Group, to fail to meet the requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and regulations thereunder.

3. Means of Repayment

In the event that the Committee determines that any person shall repay any Erroneously Awarded Compensation, the Committee shall provide written notice to such person by email or certified mail to the physical address on file with the Company Group for such person, and the person shall satisfy such repayment in a manner and on such terms as required by the Committee, and the Company Group shall be entitled to set off the repayment amount against any amount owed to the person by the Company Group, to require the forfeiture of any award granted by the Company Group to the person, or to take any and all necessary actions to reasonably promptly recoup the repayment amount from the person, in each case, to the fullest extent permitted under applicable law, including without limitation, Section 409A of the Internal Revenue Code and the regulations and guidance thereunder. If the Committee does not specify a repayment timing in the written notice described above, the applicable person shall be required to repay the Erroneously Awarded Compensation to the Company Group by wire, cash or cashier's check no later than thirty (30) days after receipt of such notice.

4. No Indemnification

No person shall be indemnified, insured or reimbursed by the Company Group in respect of any loss of compensation by such person in accordance with this Policy, nor shall any person receive any advancement of expenses for disputes related to any loss of compensation by such person in accordance with this Policy, and no person shall be paid or reimbursed by the Company Group for any premiums paid by such person for any third-party insurance policy covering potential recovery obligations under this Policy. For this purpose, "indemnification" includes any modification to current compensation arrangements or other means that would amount to *de facto* indemnification (for example, providing the person a new cash award which would be cancelled to effect the recovery of any Erroneously Awarded

Compensation). In no event shall the Company Group be required to award any person an additional payment if any Restatement would result in a higher incentive compensation payment.

5. Miscellaneous

This Policy generally will be administered and interpreted by the Committee, provided that the Board may, from time to time, exercise discretion to administer and interpret this Policy, in which case, all references herein to "Committee" shall be deemed to refer to the Board. Any determination by the Committee with respect to this Policy shall be final, conclusive and binding on all interested parties. Any discretionary determinations of the Committee under this Policy, if any, need not be uniform with respect to all persons, and may be made selectively amongst persons, whether or not such persons are similarly situated.

This Policy is intended to satisfy the requirements of Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, as it may be amended from time to time, and any related rules or regulations promulgated by the SEC or Nasdaq, including any additional or new requirements that become effective after the Effective Date which upon effectiveness shall be deemed to automatically amend this Policy to the extent necessary to comply with such additional or new requirements.

The provisions in this Policy are intended to be applied to the fullest extent of the law. To the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to applicable law. The invalidity or unenforceability of any provision of this Policy shall not affect the validity or enforceability of any other provision of this Policy. Recoupment of Erroneously Awarded Compensation under this Policy is not dependent upon the Company Group satisfying any conditions in this Policy, including any requirements to provide applicable documentation to Nasdaq.

The rights of the Company Group under this Policy to seek forfeiture or reimbursement are in addition to, and not in lieu of, any rights of recoupment, or remedies or rights other than recoupment, that may be available to the Company Group pursuant to the terms of any law, government regulation or stock exchange listing requirement, the Company's Compensation Recoupment Policy or any other policy, code of conduct, employee handbook, employment agreement, equity award agreement, or other plan or agreement of the Company Group.

6. Amendment and Termination

To the extent permitted by, and in a manner consistent with applicable law, including SEC and Nasdaq rules, the Committee may terminate, suspend or amend this Policy at any time in its discretion.

7. Successors

This Policy shall be binding and enforceable against all persons and their respective beneficiaries, heirs, executors, administrators or other legal representatives with respect to any Covered Compensation granted, vested or paid to or administered by such persons or entities.