
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, 2021**

OR

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

For the transition period from _____ to _____

Commission file number: **001-38855**

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

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

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

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, 2021, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately \$21.0 billion (this amount represents approximately 119.3 million shares of Nasdaq, Inc.'s common stock based on the last reported sales price of \$175.80 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.

<u>Class</u>	<u>Outstanding at February 14, 2022</u>
Common Stock, \$0.01 par value per share	164,412,114 shares

Documents Incorporated by Reference: Certain portions of the Definitive Proxy Statement for the 2022 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K.

	<u>Page</u>
Part I.	
Item 1. Business	1
Item 1A. Risk Factors	18
Item 1B. Unresolved Staff Comments	32
Item 2. Properties	32
Item 3. Legal Proceedings	32
Item 4. Mine Safety Disclosures	32
Part II.	
Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	32
Item 6. [Reserved]	35
Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations	35
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	55
Item 8. Financial Statements and Supplementary Data	55
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	55
Item 9A. Controls and Procedures	55
Item 9B. Other Information	57
Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	57
Part III.	
Item 10. Directors, Executive Officers and Corporate Governance	57
Item 11. Executive Compensation	57
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	57
Item 13. Certain Relationships and Related Transactions, and Director Independence	57
Item 14. Principal Accounting Fees and Services	58
Part IV.	
Item 15. Exhibits, Financial Statement Schedules	58
Item 16. Form 10-K Summary	61

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.

401(k) Plan: Voluntary Defined Contribution Savings Plan

2020 Credit Facility: \$1.25 billion senior unsecured revolving credit facility, which matures on December 22, 2025

2022 Notes: \$600 million aggregate principal amount of 0.445% senior unsecured notes due December 21, 2022

2023 Notes: €600 million aggregate principal amount of 1.75% senior unsecured notes; repaid in full and terminated in August 2021

2024 Notes: \$500 million aggregate principal amount of 4.25% senior unsecured notes due June 1, 2024

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

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

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

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

ARR: Annualized Recurring Revenue

ASU: Accounting Standards Update

ASU 2016-13: Measurement of Credit Losses on Financial Instruments

ASR: Accelerated Share Repurchase

ATS: Alternative Trading System

AUM: Assets Under Management

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

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 Authority

IPO: Initial Public Offering

LIBOR: London Interbank Offered Rate

MiFID II: Update to the Markets in Financial Instruments Directive

MiFIR: Markets in Financial Instruments Regulation

MTF: Multilateral Trading Facility

NFF: Nasdaq Financial Framework; Nasdaq's end-to-end technology solutions for market infrastructure operators, buy-side firms, sell-side firms and other non-financial markets

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 2022 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

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

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 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 new listings of equity securities on The Nasdaq Stock Market is based on data generated internally by us, which includes issuers that switched from other listing venues, closed-end funds and ETPs. 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;
- 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, 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;
- 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
- the ongoing impact of the COVID-19 pandemic and the response of governments and other third parties on our business, operations, results of operations, financial condition, workforce or the operations or decisions of our customers, suppliers or business partners.

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, including our technology and analytics offerings;

- our ability to keep up with rapid technological advances 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;
- the performance and reliability of our technology and technology of third parties on which we rely;
- any significant error 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 report. 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 the capital markets and other industries. Our diverse offerings of data, analytics, software and services enables clients to optimize and execute their business vision with confidence.

We manage, operate and provide our products and services in four business segments: Market Technology, Investment Intelligence, Corporate Platforms 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.

Growth Strategy

To ensure our continued success in the evolving business environment, we have established a clear and consistent vision, mission, purpose and strategy:

Our Vision: To reimagine markets to realize the potential of tomorrow.

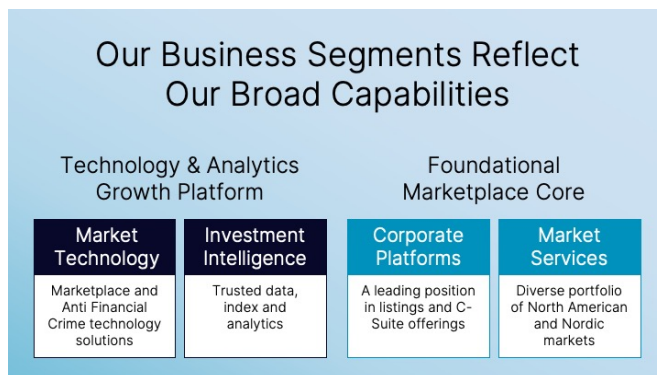
Our Mission: To provide the premier platform and ecosystem for global capital markets and beyond with unmatched technology, insights and markets expertise.

Our Purpose: To champion inclusive growth and prosperity. We power stronger economies, create more equitable opportunities and contribute to a more sustainable world to help our communities, clients, employees and people of all backgrounds reach their full potential.

Our Strategy:

Under the strategic direction that we have been implementing over the past five years, we have focused on maximizing the resources, people and capital allocated to our largest growth opportunities. These opportunities, which include anti-financial crime and market infrastructure technology solutions, analytics and workflows for investment managers and asset owners, and ESG solutions, constitute large and growing opportunities where we feel our strengths in technology, analytics and capital markets expertise, combined with our expansive client network, position us to meet our clients' evolving needs. We are also committed to investing to maintain the strong competitive positioning of our foundational marketplace and corporate businesses, as well as over time reducing capital allocated to areas that we believe are less strategic to our clients and which have less long-term growth potential within Nasdaq.

Our four business segments reflect our broad capabilities, with Market Technology and Investment Intelligence providing our technology and analytics growth platform, and Corporate Platforms and Market Services serving as our foundational marketplace core.



- *Increasing Investment in Businesses Where We See the Highest Growth Opportunity.* We have increased investment in fast-growing markets that we believe help solve our clients' biggest challenges and are likely to generate growth for our stockholders. These areas include: the index and analytics business within our Investment Intelligence segment; broader governance technology and consultative solutions, including ESG-focused solutions, within our Corporate Platforms segment; and anti-financial crime solutions and trade surveillance in our Market Technology segment.

In February 2021, we completed the acquisition of Verafin, a provider of anti-financial crime management solutions, which is part of our Market Technology segment. We are continuing to invest in the Market Technology segment through the expansion, enhancement, and flexibility of our technology platform, in addition to leveraging emerging technologies such as machine intelligence in our Trade Surveillance offering.

In December 2021, we completed the acquisition of QDiligence, a provider of software that facilitates digital director and officer questionnaires and self-evaluations for directors and corporate secretaries. We plan to integrate QDiligence as part of the Nasdaq Governance Solutions business.

- Enhancing Our Foundation.* As we strive to grow our business, we have also focused on enhancing our leadership position in the marketplaces in which we operate as we continue to innovate with new functionality and strong market share in our core markets. In December 2021, we announced a multi-year partnership with Amazon Web Services, or AWS, to migrate our North American exchanges to the cloud. Nasdaq will utilize a new edge computing solution that was co-designed by Nasdaq and AWS for market infrastructure. The partnership with AWS will also further our strategy with our market infrastructure clients, including banks, clearing houses, central securities depositories and regulators that rely on us for their core trading, clearing and settlement and surveillance technology. We believe these offerings can provide such clients with added agility in adjusting to changing industry dynamics. We plan to work with AWS to develop viable cloud choices that include public-cloud and hybrid models. The collaboration with AWS also includes opportunities to explore other ways to leverage AWS’s cloud capabilities across our other businesses, including our anti-financial crime and data and analytics businesses.
- Optimizing Slower Growth Businesses.* We continually review areas that are not critical to our core. In June 2021, we sold our U.S. Fixed Income business. This transaction aligns with our strategy to concentrate our resources and capital in order to maximize our potential as a major technology and analytics provider to the global capital markets. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion of this transaction.

Products and Services

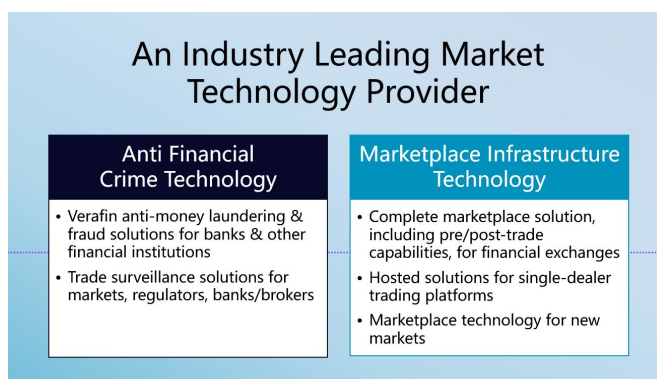
Market Technology

Powering over 130 market infrastructure operators and new market clients in more than 55 countries, 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 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, and non-capital markets customers, including those in insurance liabilities securitization, cryptocurrencies and sports wagering.

Nasdaq’s market technology is utilized by leading markets in the U.S., Europe and Asia as well as emerging markets in the Middle East, Latin America, and Africa. Additionally, more than 220 market participants leverage our surveillance technology globally to manage their integrity obligations and assist them in complying with market rules, regulations and internal market surveillance policies.

During 2021, we continued to build out our SaaS business portfolio by extending and migrating our current offerings to SaaS. Across our product portfolio, ranging from our Marketplace Service Platform to our Surveillance offerings, we added more than 25 new SaaS customers. Additionally, our Verafin solutions are offered to our clients entirely on a SaaS basis.

Our Market Technology segment has evolved from its origins serving the capital markets, as we have leveraged NFF to develop our SaaS platform and offerings. We expect to continue to expand adoption by our clients of this SaaS model in the future.



Anti Financial Crime Technology

Integrity of markets is core to everything we do at Nasdaq. As such, we continue to extend our anti-financial crime strategy in the Market Technology segment. We have seen a growing demand globally for our products and services within the Anti Financial Crime Technology business. Our Nasdaq Trade Surveillance solution is a SaaS solution designed for brokers and other market participants to assist them in complying with market rules, regulations and internal market surveillance policies. We provide an anti-money laundering offering with an automated investigator tool for retail banks, the Nasdaq Automated Investigator. Verafin provides a cloud-based platform to help detect, investigate, and report money laundering and financial fraud to more than 2,100 financial institutions in North America.

Market Infrastructure Technology

For Market Infrastructure Operators, we provide and deliver mission-critical solutions across the trade lifecycle via the NFF, which is our flexible and modular architecture and technology that provides next generation capital markets capabilities in an open and agile environment. The NFF 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.

Recently, we have seen a growing demand for our products and service outside of the traditional capital markets. Market Technology currently offers its services to several digital assets exchanges, two commercial real estate markets, the reinsurance market, and several sports wagering operators. Our Marketplaces 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 Marketplaces Services Platform is targeted at new markets and enables end-to-end marketplace implementation without the resources required with on-premise solutions.

Many Market Infrastructure 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.

Investment Intelligence

Our Investment Intelligence segment provides the global investing community with access to the financial markets together with strong investment insights.

Our Investment Intelligence segment includes our Market Data, Index and Analytics businesses.

For both institutional and retail investors, our market and alternative data enhances transparency and access to the markets we operate, and we help guide investment decisions around the globe through our proprietary indexes and analytics.

Market Data

Our Market Data business sells and distributes historical and real-time market data to the sell-side, the institutional investing community, retail online brokers, proprietary trading shops, other venues, internet portals and data distributors.

Our market data products enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally. 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 our customers 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. TotalView shows subscribers quotes, orders and total anonymous interest at every displayed price level in The Nasdaq Stock Market for Nasdaq-listed securities and critical data for the opening, closing, halt and IPO crosses. We also offer TotalView products for our Nasdaq BX, Nasdaq PSX, Nasdaq Fixed Income and other 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 six U.S. options exchanges, Nordic and U.S. futures, and Nordic commodities.

Our Market Data business also includes revenues from U.S. tape plans. The plan administrators sell quotation and last sale information for all transactions in Nasdaq-listed securities, 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.

The Nasdaq Nordic and Nasdaq Baltic exchanges, as well as Nasdaq Commodities, also offer data products and services. These data products and services provide critical market transparency to professional and non-professional investors who participate in European marketplaces and, at the same time, give investors greater insight into these markets.

Much like the U.S. products, European data products and services are based on trading information from the Nasdaq Nordic and Nasdaq Baltic exchanges, as well as Nasdaq Commodities, for the following classes of assets: cash equities, bonds, derivatives and commodities. We provide varying levels of quote and trade information to market participants and to data distributors, who in turn provide subscriptions for this information. Significant European data products include Nordic Equity TotalView, Nordic Derivatives TotalView, and Nordic Fixed Income TotalView, Level 2 and Analytics.

Index

Our Index business develops and licenses Nasdaq-branded indexes 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 indexes.

As of December 31, 2021, 362 ETPs listed on 25 exchanges in over 20 countries tracked a Nasdaq index and accounted for \$424 billion in AUM. This includes approximately \$94 billion in ETP AUM, or 22% of the total AUM that tracked our smart beta indexes during this same time period. Our flagship index, the Nasdaq-100 Index, includes the top 100 non-financial companies listed on The Nasdaq Stock Market, and is tracked by more than 100 ETPs worldwide, and had nearly \$300 billion in assets tracking the index as of December 31, 2021.

We provide index data products based on Nasdaq indexes. 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 as well as historical weightings and components data, corporate actions and a breadth of additional data for the indexes that we operate.

Nasdaq Dorsey Wright, or NDW, provides passive indexing and smart beta strategies to support the financial advisor community, as well as Systematic Relative Strength strategies to manage separately and unified managed accounts. NDW strengthens Nasdaq's position as a leading smart beta index provider in the U.S.

Analytics

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.

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. The API is highly scalable and can support the delivery of real-time exchange data.

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 35,000 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 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 highly efficient data discovery and delivery. Additionally, our Data Fabric solution, launched in 2021, enables investment firms to leverage the technology and team that powers Nasdaq Data Link to manage their own internal data with greater speed and efficiency.

Corporate Platforms

Our Corporate Platforms segment includes our Listing Services and IR & ESG Services businesses. These businesses deliver critical capital market and ESG solutions across the lifecycle of public and private companies.

Listing Services

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, health care, 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. We offer a suite of products to assist companies manage corporate governance standards, discussed below in "IR & ESG Services."

As of December 31, 2021, a total of 4,178 companies listed securities on The Nasdaq Stock Market, with 1,632 listings on The Nasdaq Global Select Market, 1,169 on The Nasdaq Global Market and 1,377 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. In 2021, The Nasdaq Stock Market attracted 1,000 new listings, including 752 IPOs, representing 73% of U.S. IPOs in 2021. Of the 752 IPOs that listed on The Nasdaq Stock Market, 319 were operating companies, representing 76% of all operating company IPOs in 2021 and 71% of SPACs IPOs. Nasdaq featured the year's largest IPO as well as the largest direct listing by first trade volume. The new listings were comprised of the following:

IPOs	752
Switches from the New York Stock Exchange LLC, or NYSE and the NYSE American LLC, or NYSE American	33
Upgrades from OTC	112
ETPs and Other Listings	103
Total	<u>1,000</u>

During 2021, we had 33 new listings resulting from companies switching their listings from NYSE or NYSE American to join Nasdaq. Together with companies that transferred additional securities to Nasdaq during 2021, an aggregate of \$361 billion in global equity market capitalization switched to Nasdaq. Notable switches in 2021 included Honeywell, Palo Alto Networks and Lucid Group.

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, 2021, a total of 1,235 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 2021, a total of 207 new companies listed on our Nordic and Baltic exchanges. In addition, 12 companies upgraded their listings from Nasdaq First North to Nasdaq Main Market.

During 2021, we announced a joint venture with several financial institutions to establish an institutional-grade, centralized secondary trading venue for issuers, brokers, shareholders and prospective investors of private company stock. We contributed our Nasdaq Private Market platform to this new, standalone, independent company, of which we own the largest minority interest. Nasdaq Private Market's existing technology, client relationships and regulatory infrastructure will provide the foundation for the joint venture to develop a full suite of liquidity solutions for private companies. Private companies, brokers and investors

will be able to access, connect, manage and execute their private company stock transactions through a global marketplace and customized technology solutions. The platform will continue to manage and support private company stock transactions including tender offers, buy-side book-building, auctions, investor block trades, company directed windows of liquidity and pre-direct listing continuous trading. In addition, the platform will provide end-to-end settlement process management and an inter-broker global marketplace through its existing ATS for all customers, from employees to institutions, to access and transact.

We are continuing to grow our U.S. Corporate Bond exchange for the listing of corporate bonds. This exchange operates pursuant to The Nasdaq Stock Market exchange license and is powered by the NFF. Surveillance is conducted by the Nasdaq regulatory team, assisted by our Nasdaq Trade Surveillance solution. As of December 31, 2021, 107 corporate bonds were listed on the Corporate Bond exchange. Our U.S. corporate bond listing offering won 23 new issues and we added five existing bond listings that transferred from the NYSE.

IR & ESG Services

Our IR & ESG Services business serves 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. 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 consultative services. We also provide clients with counsel on a range of governance and sustainability-related issues.

As of December 31, 2021, we provided IR & ESG Services offerings in the following key areas:

- *Investor Relations Intelligence.* We offer a global team of consultative experts 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.
- *Environmental, Social and Governance Solutions.* Our ESG Advisory practice helps companies analyze, assess and action best practices to attract long-term capital. OneReport, a SaaS solution, helps organizations to navigate corporate responsibility frameworks, manage information capture and response process, and deliver ESG data to ratings agencies and other stakeholders.

We also provide a global technology offering and consultative services that streamline the meeting process for board of directors and executive leadership teams and help them accelerate decision making and strengthen governance. Our solutions protect sensitive data and facilitate productive collaboration, which enables board members and teams to work faster and more effectively. In December 2021, we enhanced our position as a provider of governance technology and consultative solutions with the acquisition of QDiligence, a provider of software that facilitates digital director and officer questionnaires and self-evaluations for boards of directors and corporate secretaries.

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC and Trade Management Services businesses.

Equity Derivative Trading and Clearing

We operate six options exchanges in the U.S.: 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. Together, our combined options market share in 2021 represented the largest share of the U.S. market for all categories, including single-exchange-listed options products. Our options trading platforms provide trading opportunities to both 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.

In Europe, Nasdaq 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.

Cash Equity Trading

In the U.S., we 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.

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

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

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 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.

FICC

Our FICC business includes Nasdaq Fixed Income, or NFI, offering trading and clearing services for fixed income products in Europe and Nasdaq Commodities.

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. Nasdaq Commodities' offerings include derivatives in power, natural gas and carbon emission markets, seafood, electricity certificates and clearing services. These products are listed on Nasdaq Oslo ASA, except for seafood, which is listed on Fishpool, a third party platform.

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.

In June 2021, we sold our U.S. Fixed Income business, which included an electronic platform for the trading of U.S. Treasuries.

Additionally, in June 2021, we completed the acquisition of a majority stake in Puro.earth, a Finnish-based leading marketplace for carbon removal. Puro.earth offers industrial carbon removal instruments that are verifiable and tradable through an open, online platform. The addition of Puro.earth's marketplace capabilities to our suite of ESG-focused technologies and workflow solutions gives our clients further resources to successfully achieve their ESG objectives.

Trade Management Services

We 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. In April 2021, we launched WorkX, an upgraded version of Nasdaq Workstation, a browser-based, front-end interface that allows market participants to view data and enter orders, quotes and trade reports. WorkX enables a seamless workflow and enhanced trade intelligence. All current Workstation users are expected to migrate to WorkX by the end of 2022. In addition, we offer a variety of add-on compliance tools to help firms 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 select data centers using millimeter wave and microwave technology.

Our broker services operations business primarily offers technology and customized securities administration solutions to financial participants in the Nordic market. Such services and solutions primarily consist of flexible back-office systems, which allow customers to efficiently manage safekeeping, settlement and corporate actions and reporting, and include connectivity to exchanges and central securities depositories. In January 2020, we commenced an orderly wind-down of this broker services business. We expect this wind-down to continue through the second quarter of 2022.

Technology

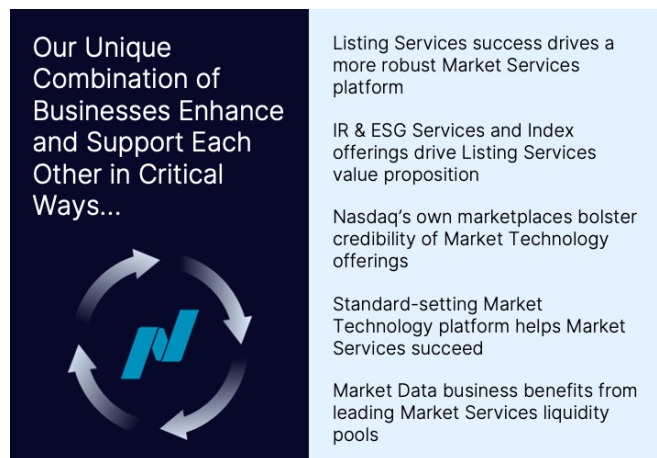
Technology plays a key role in ensuring the growth, reliability and regulation of financial markets. We have established a technology risk program to evaluate the resiliency of critical systems, including risks associated with cybersecurity. This program is focused on identifying areas for improvement 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 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.

Core Technology. The NFF is Nasdaq’s approach to delivering end-to-end solutions to market infrastructure operators, buy-side firms, sell-side firms and other non-financial markets in addition to also supporting Nasdaq’s own internal trading systems. The framework consists of a single operational core platform that ties together Nasdaq’s portfolio of functionality across the trade lifecycle, in an open framework whereby exchanges, clearinghouses, central securities depositories, and other entities can easily integrate Nasdaq’s business applications with each other, as well as other third-party solutions. In addition to being able to integrate a broad range of business functions, the NFF

enables end users to leverage recent technology developments.

Competitive Strengths

We are a global technology company and we continue to diversify our product and service offerings by having a client-first focus and orientation; unparalleled expertise in markets; a trusted, independent, global brand; unique technology capabilities and reputation; and fostering a leading issuer community and investor intelligence platform. Our business segments complement each other. We believe that our strong competitive position in large, high-growth markets positions us for sustained growth.



A Unique Value Proposition

We operate a diverse and resilient capital markets franchise with a marketplace core. Our businesses provide capital-markets infrastructure services to industry players, allowing us to:

- Develop efficient and reliable technologies to facilitate capital markets activity;
- Manage the complexities and costs of business on a global scale; and
- Provide data, tools and insights that drive sound decision making.

Technological Strength

The strength and resiliency of our technology, enhanced by our Market Technology business, 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.

A Focus on Client Needs Throughout the Marketplace

We strive to serve a diverse range of clients including:

- **Brokers and Traders** - Helping brokers and traders to confidently plan, optimize and execute their business vision.
- **Market Participants** - Enabling market participants to monitor and capitalize on real-time market changes.

- **Investors and Asset Managers** - Offering products and services to assist investors and asset managers in optimizing their portfolios and offerings.
- **Listed Companies** - Promoting the capital health of our listed companies.
- **Market Infrastructure Players** - Assisting market infrastructure players (exchanges, regulators, clearinghouses, and central securities depositories) in increasing efficiency, meeting customer needs and growing revenue.
- **Capital Markets** - Delivering efficiencies through economies of scale (cost, speed, connectivity) to all members of the capital-markets ecosystem.
- **Banks and Financial Institutions** - Providing a suite of trade surveillance and anti-financial crime management solutions.

Competition

Market Technology

Traditionally, exchanges and exchange-related businesses would internally develop technology, sometimes aided by consultants. However, over time this model has 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 segment: exchange operators and technology providers unaffiliated with exchanges. These organizations make available a range of off-the-shelf technology, including trading, clearing, market surveillance, 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 to migrate our exchanges, in a phased approach, to the cloud enables us to compete with other companies that are developing cloud-based exchanges and market technology offerings.

A wide range of providers compete with us in surveillance, where standardization of products and budget pressures drive customers to focus on pricing. Our competitors range from large enterprise software providers that cover the broader compliance lifecycle to smaller vendors focusing on a single silo of the compliance workflow. Recently, an influx of start-ups have entered the space from the FinTech landscape, often shifting from data and analytics, or a complementary silo like electronic communications, to surveillance. For our anti-financial crime offering, competitors include core banking solution providers, independent fraud and anti-money laundering solution providers and FinTech start-ups. We also compete against enterprise solution providers and point solutions for clients with larger AUM. The anti-financial crime offering competes on a number of factors, including but not limited to, increased workflow efficiency, quality of the data output and pricing.

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

Investment Intelligence

Our Market Data business in the U.S. includes both proprietary and consolidated data products. Proprietary data products are made up exclusively of data derived from each exchange's systems. Consolidated data products 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. In Europe, all data products are proprietary, as there is no official data consolidator. Competition in the data business is intense and is influenced by rapidly changing technology and the creation of new product and service offerings.

The sale of our proprietary data products is under competitive threat 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, TSX, and Dow Jones & Company.

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.

Our Index business faces competition from providers of various competing financial indexes. For example, there are a number of indexes 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.

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 Solovis offering competes with other analytics providers, including Addepar and Caissa. Additionally, other large providers to the financial services industry, such as Bloomberg and Refinitiv, are believed to be interested in pursuing certain aspects of the services we provide.

Corporate Platforms

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 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.

In our IR & ESG Services business, competition is varied and can be 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. The competitive landscape for our Governance Solutions business varies by customer segment and geography. Most competitors offer SaaS solutions that are supported by a data centered strategy. Some firms offer specialized services that focus on a single niche segment. The larger players often offer additional services. Customers frequently seek single-source providers that are able to address a broad range of needs within a single platform. Our ESG-focused services, including Nasdaq OneReport and ESG Advisory, are positioned in evolving markets with competitors offering multiple point solutions providing software, data or consulting services.

Market Services

We face intense competition in North America and Europe in businesses that comprise our Market Services segment. 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, and Boston Options Market. In cash equities in the U.S., we compete with exchanges operated by Cboe, ICE, MIAX, The Investors Exchange, and the recently launched Members Exchange and the 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 with exchanges such as the Toronto Stock Exchange, or TSX, and other marketplaces.

In Europe, our cash equities markets compete with exchanges such as Euronext N.V., Deutsche Börse AG and London Stock Exchange Group plc, or LSE, and many 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 in Europe we face competition from other broker-owned systems, dark pools, 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 already attracting a significant share of electronically matched volume and we expect such venues to 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. As part of this, trading on SIs has increased markedly as volumes migrate from more transparent types of trading venues. 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 products and services are subject to competitive pressure from European exchanges and clearinghouses.

Our Trade Management Services business competes with other exchange operators, extranet providers, and data center providers.

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 Practice

We operate a corporate venture program to make minority investments primarily in emerging growth financial technology 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, with aggregate initial and follow-on investments of approximately \$90 million in 19 companies in various sectors, including data, analytics and workflow, digital assets, market infrastructure, anti-financial crime, new marketplaces, and ESG.

Environmental, Social and Governance Matters

Nasdaq is committed to further advancing our longer-term ESG strategy, advocacy and oversight. We continue to engage with internal and external stakeholders at all levels on ESG matters. During 2021, we deepened our corporate and community ESG efforts, including expanding ESG oversight of our own operations and furthering our commitment to greater sustainability and climate change awareness.

For the fourth consecutive year, Nasdaq achieved its continued commitment to be carbon neutral across all business operations through the purchase of green power, carbon removal offsets, and renewable energy certificates. We were named to the Dow Jones Sustainability North America Index for the sixth consecutive year and have seen

positive progress on our ESG scores across multiple rating agencies. Nasdaq is also a signatory to the United Nations Global Compact and the United Nations Principles of Responsible Investment.

While our business operations account for a comparatively small environmental impact, we are able to focus environmental efforts on several key areas, including the way we use energy resources, manage our workspaces, and conduct business travel. Through these efforts, we seek to lessen the environmental impact of our organization by reducing atmospheric carbon emissions and managing water and waste associated with business operations. Our commitment to implement Science-Based targets as part of the Science-Based Targets Initiative further emphasizes our ambition to drive to a net-zero economy. For the first time, Nasdaq obtained a Platinum LEED certification for our New York Headquarters and we continue to look for opportunities to transition to green offices across the globe.

We also expanded our ESG services and solutions with new offerings for our clients, including:

- the Nasdaq ESG Advisory Program, which pairs companies with consultative ESG expertise to help them analyze, assess and enact ESG program best practices with the goals of attracting long-term capital and enhancing value;
- the Nasdaq OneReport platform, which helps clients streamline the data gathering process under various frameworks for sustainability reporting and to provide data to ratings agencies;
- the Nasdaq Sustainable Bond Network, which connects issuers and investors in sustainable, green and social bonds, and provides access to detailed information and impact data allowing investors to make more informed decisions;
- the Nasdaq ESG Data Hub, which connects investors with expert-led ESG data sets from leading providers across a wide spectrum of areas, including gender diversity, carbon emissions and climate risk, providing detailed and tangible intelligence on companies’ ESG profiles;
- the Nasdaq ESG Data Portal, which now includes ESG-related data from more than 630 companies;
- the Nasdaq ESG Footprint, a tool to help both institutional and retail investors understand the impact of their portfolios; and
- the acquisition of a majority stake in Puro.earth, a leading marketplace for carbon removal, which we believe will address the growing demand for carbon removal by corporations, as well as enable new carbon removal methodologies as technologies evolve.

In 2021, we also adopted a new Supplier Code of Ethics, which encourages our suppliers and vendors to adopt sustainability and environmental practices in line with our published Environmental Practices Statement. This code asks our suppliers to measure, report, and mitigate any potential negative climate change and biodiversity impacts associated with their operations, products and services including energy and water consumption, greenhouse gas emissions, waste, air and water pollution, nature loss and hazardous materials. Our policy asks suppliers to provide us with information to support our reporting and transparency commitments related to environmental sustainability and supply chain emissions. Additionally, the Supplier Code of Ethics expects suppliers to promote a diverse and inclusive workforce and encourages suppliers to engage diverse-owned business in their supply chain. Our Supplier Code of Ethics is available on Nasdaq's website.

During 2021, the SEC adopted Nasdaq's new listings rule for companies listed on our U.S. exchange to publicly disclose consistent, transparent diversity statistics regarding their board of directors and choose whether to meet recommended board diversity objectives or disclose their reasons for not doing so. The diversity rule is currently being challenged by two advocacy groups in the U.S. Court of Appeals for the Fifth Circuit.

Nasdaq also was included in the 2021 Bloomberg Gender-Equality Index in recognition for advancing equality across its global workforce, and earned a perfect score for the third consecutive year by the Human Rights Campaign Foundation's 2021 Corporate Equality Index regarding LGBTQ+ workplace equality.

For more information regarding our ESG efforts in 2021, 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:

- regulation of our registered national securities exchanges; and
- regulation of our U.S. broker-dealer and investment advisor subsidiaries.

National Securities Exchanges. SROs in the securities industry are an essential component of the regulatory scheme of the Exchange Act 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. 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 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 interested in listing 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.

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 the exchanges adopt rules and examine broker-dealers and require strict compliance with their rules and regulations. 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, 2021, each of our broker-dealers were in compliance with all of the 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 specifics covered by the agreement, including:

- agreements with FINRA covering the enforcement of common rules, the majority of which relate to the regulation of common members of our SROs and FINRA;
- joint industry agreements with FINRA covering responsibility for enforcement of insider trading rules;
- joint industry agreement with FINRA covering enforcement of rules related to cash equity sales practices and certain other non-market related rules; and
- joint industry agreement covering enforcement of rules related to options sales practices.

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 that was recently extended for a two-year term through October 2023. 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 May 2020, the SEC adopted an order to require changes to the governance of securities information processors. In June 2020, we and several other exchanges petitioned the U.S. Court of Appeals for the District of Columbia Circuit, or the Court of Appeals, to review the SEC's governance order. In June 2021, the Court of Appeals dismissed our petition as premature, but gave us leave to challenge the governance order after the SEC acted pursuant to the order to approve a national market system plan implementing it. Accordingly, we refiled our challenge in August 2021, and also asked the Court of Appeals to stay the operation of the new national market system plan. In October 2021, the Court of Appeals granted our stay request. This case is scheduled for oral argument on March 24, 2022.

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. The rule implementation schedule has not yet been finalized 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. In February 2021, we petitioned the U.S. Court of Appeals for the District of Columbia Circuit to review the SEC's rulemaking. This case is scheduled for oral argument on March 18, 2022.

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 new 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 interdisciplinary program to ensure compliance with Regulation SCI. Regulation SCI policies and procedures were created, internal policies and procedures were updated, and an information technology governance program was developed 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 also has 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.

In July 2016, the European Union's Market Abuse Regulation, which is intended to prevent market abuse, entered into force. MiFID II and MiFIR entered into force in January 2018 and primarily affect 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 indexes. The Benchmark Regulation applies in the European Union from early 2018. However, due to transitional clauses in the Benchmark Regulation, Nasdaq as a benchmark provider, did not need to be in compliance with the Benchmark Regulation until January 1, 2020 in relation to benchmarks provided by Nasdaq's European subsidiaries, or until January 1, 2024, 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.

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 in relation to 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 regarding the board of the exchange and its 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.

With respect to ongoing operations, 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 speedy, 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.

The regulatory environment in the other Nordic and Baltic countries in which a Nasdaq entity has a trading venue is broadly similar to the regulatory environment in Sweden. Since 2005, there has been cooperation between the supervisory authorities in Sweden, Iceland, Denmark and Finland, which looks 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. In 2019, the supervisory authority in Norway joined this cooperation.

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 (agreement on the EEA entered into between the EU and European Free Trade Association) the regulatory environment is broadly similar to what applies in EU member states. In addition, in January 2019 new legislation entered into force in Norway

mirroring the provisions of MiFID II and MIFIR. As a result, 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 to Stockholm. In addition, there are special 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 three years. We will be applying for permanent recognition within eighteen months of the end of this implementation period.

Human Capital Management

Nasdaq deepened its commitment to, and investment in, attracting, retaining, developing and motivating its employees during 2021, and while the COVID-19 pandemic has continued to create certain challenges for our employees, we have bolstered our human capital management efforts throughout the past year. The cultural foundation at Nasdaq is based on our core values: Act as an Owner, Play as a Team, Fuel Client Success, Lead with Integrity, Expand Your Expertise, and Drive Innovation. We believe these cultural values energize and align employees with our most important priorities, and encourage and reward high levels of performance, innovation and growth, while not promoting undue risk.

During 2021, we continued to bolster 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. Nasdaq held its first annual Purpose Week in 2021, a week-long internal series showcasing Nasdaq’s inclusive growth initiatives and leveraging Nasdaq’s unique position at the center of capital markets. The week featured online events, volunteer activities, expert discussions and business innovation challenges for the entire global Nasdaq workforce.

As of December 31, 2021, Nasdaq had 5,814 full and part-time employees. Our total headcount includes 776 employees from Verafin, which we acquired in February 2021.

ESG Oversight

The Nominating & ESG Committee has formal responsibility and oversight for 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 geographically diverse representatives from multiple business units.

COVID-19 and Employee Safety

As the COVID-19 pandemic continues around the world, affecting all of our offices, 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. This includes having the vast majority of our employees work from home, while implementing additional safety measures and precautions for employees continuing critical on-site work in certain of our offices or returning to the office. We currently expect to transition to a hybrid work environment during 2022 as we reopen our global offices and will continue to evaluate local conditions and regulations.

We also continued benefits for our employees that were introduced in 2020 as a result of COVID-19, and introduced additional new benefits this year in an effort to help our employees balance their work and personal commitments. These benefits include providing “flex days” for additional time away from the office without requiring the usage of vacation or personal leave days, additional family care resources and benefits, including back-up childcare and other caregiver support, subsidized distance-learning enrichment programs and free home workout programs through different wellness and fitness providers. We also added new programs to help employees coordinate care for chronically ill family members and to support employees whose family experienced the death of a loved one. Our managers participated in additional training programs to help them lead their teams through COVID-19 concerns and challenges.

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. We created a Talent Attraction Team focused on strategic marketing and branding to position Nasdaq as a top employer of choice for talent in our industry, helping to increase our pool of top candidates for open positions, particularly diverse candidates.

We continued to strengthen our diversity recruiting efforts to help us attract talent using innovative new techniques and channels, enabling us to successfully launch partnerships with diverse talent organizations, such as the National Society of Black Engineers, the Society of Women Engineers, Women in Technology, Grace Hopper and the Society of Hispanic Professional Engineers, improving brand awareness of Nasdaq and helping us to attract more diverse candidates in our recruiting campaigns.

During 2021, we launched a year-long campaign called “Your Career Journey” to engage employees and managers in sustained professional development, and established a core curriculum to customize curated development training for employees at each level of seniority. We created performance objectives for each our managers measuring them on managerial effectiveness, and the outcomes were included in each manager’s year-end performance evaluation. We further refined our onboarding and exit surveys to better understand why employees join, and leave, Nasdaq. Our internal employee engagement score, based on our biannual employee engagement surveys, increased year-over-year from 2020. Additionally, our peer-to-peer employee recognition program rewards employees and highlights recognized employees on our internal social media channels, further amplifying the recognition. Our workforce voluntary attrition rate during 2021 was 11.5%. This voluntary attrition rate is lower than averages in the financial services and technology sectors, as well as for all industries, based on a study for the U.S. for the period June 1, 2020 to June 1, 2021.

Our internship program welcomed 157 interns remotely to Nasdaq, and 64% of graduating interns were converted into full-time hires.

We have invested in professional development for our employees, including offering access to more than 18,000 professional development programs; providing tuition assistance to employees enrolled in degree-granting academic programs; holding internal career fairs and career development programs; establishing formal mentoring programs and providing one-on-one professional coaching opportunities. We also launched a new internal platform, the Talent Marketplace, to enable our employees to find short-term on-the-job development “gigs” throughout the company, as well as search for and apply for internal full-time job opportunities. This program provides greater exposure and professional development for our employees to learn about different organizations in the company and expand their professional network at Nasdaq, which we believe is a highly effective employee retention technique.

Finally, to reward our employees at various stages of their tenure with Nasdaq, we introduced a new anniversary recognition program that includes, depending on the work anniversary, Nasdaq-branded merchandise, charitable donations in the name of an employee, personalized messages from our Chief Executive Officer and recognition on our Nasdaq Tower in New York City.

Diversity, Equity and Inclusion

We have established three pillars to guide our diversity, equity and inclusion efforts with our employees: *Workforce*, to ensure our employee population is representative of the communities in which we operate; *Workplace*, to ensure a positive, equitable workplace experience for all employees of Nasdaq; and *Marketplace*, to positively influence our peers in the capital market space and to invest in our local communities in which we operate.

Nasdaq sponsors eleven employee-led internal affinity networks. These networks include more than 1,900 employee members, representing 39% of our employees, to support the diverse communities that comprise our workforce, including networks for our Black, Asian American, Hispanic, LGBTQ+, female, disabled, veteran, and parent/caregiver employees and those that support these employees. The networks provide both formal and informal development programs and guidance for their members, and benefit the entire Nasdaq workforce through educational events, guest speakers, and volunteering opportunities.

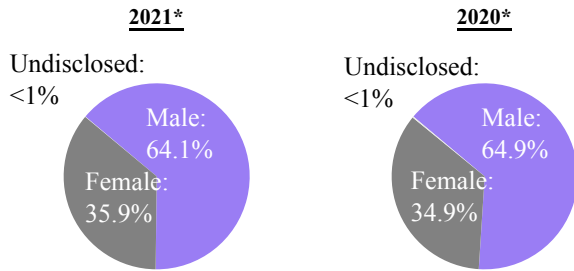
In order to monitor our diversity efforts on an ongoing basis, each business unit has a dashboard reflecting the diversity of their employee population and leaders can track diverse representation on a monthly basis, including hires, departures, and employee sentiment. During 2021, more than 80% of our global managers, and 100% of our executive team, participated in a “conscious inclusion” leadership development program that offered training and increased awareness on inclusion issues. We also added customized developmental programs for underrepresented talent, including executive mentoring and accelerated leadership development programs. In 2021, we launched a high-potential leadership program for our Black employees to hone their skills and increase advancement opportunities; 50% of participants in this program were promoted in 2021, while 100% of participants have remained with Nasdaq to date. During our annual executive succession planning exercise with our Board of Directors, we achieved a 34% increase in the diversity of our succession candidates (considering gender, race and LGBTQ+ status) due to a focus by our senior executives on identifying and cultivating talent deeper in their organizations. Additionally, as a signatory to the Parity Pledge, we fulfilled our commitment to interview female candidates for all externally advertised roles at the Vice President level and above.

Workplace Demographics

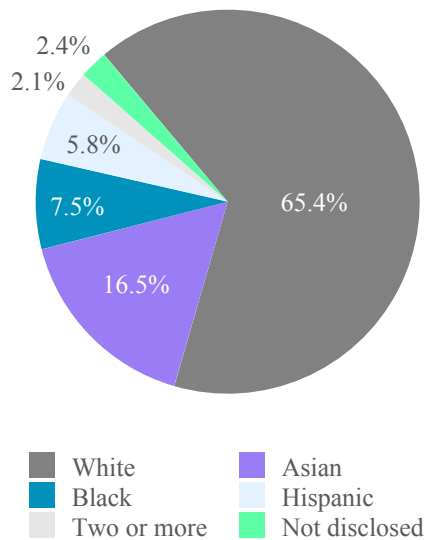
During 2021, we continued our progress to increase the diversity of our global workforce. Our global employee base of women grew from 35% to 36%, and in the United States, we increased our under-represented minority representation from 15% to 16%. In the United States, Nasdaq has increased representation of under-represented minorities by approximately 10% since 2019.

Gender and Ethnicity Performance Data as of December 31, 2021 and 2020

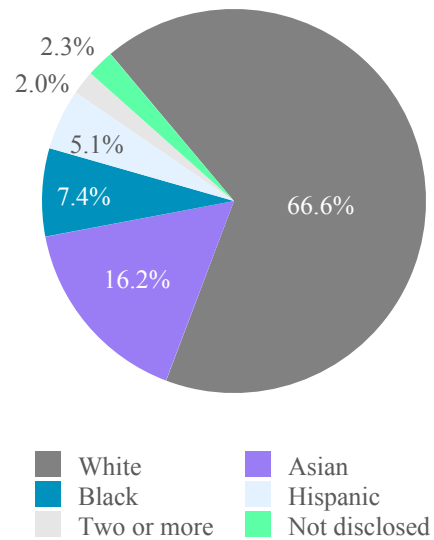
Gender:



Race and Ethnicity (U.S. only) in 2021*



Race and Ethnicity (U.S. only) in 2020*



* In the charts above, totals may not add up to 100% due to rounding and the omission of race and ethnicities that are less than 0.3%.

Additionally, in order to better understand our pay equity performance, we are currently conducting a global pay equity analysis, which is expected to be completed in the beginning of the second quarter of 2022. As a first step, we plan to review the conclusions internally and evaluate any potential gaps in pay equity.

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

Our talented employees are our greatest asset, and we offer competitive compensation to attract and retain the best employees. Our pay-for-performance compensation programs includes market-competitive base salaries, annual bonuses or sales commissions, and equity. 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.

Our Total Rewards program extends beyond compensation, offering a suite of programs, benefits, perquisites and resources to support employee priorities. In addition to cash and equity compensation, we also offer employee benefits such as health (medical, dental, vision and telehealth) insurance, fertility benefits, paid time off, paid parental leave, adoption assistance, an employee stock purchase plan, student loan repayment benefits, charitable contribution matching and a U.S. 401(k) Plan with company matching. Since the start of the pandemic, we have introduced additional benefits to support our employees, as described above under “*COVID-19 and Employee Safety.*” We also provide additional benefits to our international employees based on local regulations and practice to address market-specific needs.

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. While most of our volunteer efforts in 2021 continued to remain virtual due to the pandemic, we organized more than 100 employee volunteer events around the world.

As part of Nasdaq’s ongoing commitment to diversity, equity, inclusion and culture, we have continued our series, Amplifying Black Voices, which we initiated in 2020. This year, the program is a multimedia retrospective featuring works of art and photography documenting Black culture and life. These works are displayed on the Nasdaq MarketSite tower in Times Square throughout the year, enabling the entire community to view and celebrate the exhibits.

In September 2020, we launched the “Purpose Initiative,” which is designed to advance inclusive growth and prosperity, and we continued to expand this initiative throughout 2021. The Purpose Initiative comprises our philanthropic, community outreach, corporate sustainability, 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 2021, the Purpose Initiative held two company-wide roundtables, which explored topics such as advancing inclusive growth and prosperity, particularly for women of color, and investor and community engagement to increase market accessibility across race, ethnicity, gender and class. Nasdaq also held its first “Purpose Week” to further the initiative, which included six company-wide webinars, volunteer opportunities, an innovation challenge and other events involving and recognizing company employees.

The mission of the Nasdaq Foundation, which was relaunched in 2020, is focused on two primary goals: (i) reimagining investor engagement to equip under-represented communities with the financial knowledge to share in the wealth that markets create; and (ii) leveraging our investment in the Nasdaq Entrepreneurial Center alongside new strategic partnerships with organizations that can help build a deeper, data-led understanding of where the challenges are greatest, what existing efforts could be amplified, and how the Nasdaq Foundation can make new and distinctive contributions.

The Nasdaq Foundation provided six grants during 2021 to organizations that seek to fulfill that mission. These grants were awarded to, among others, Wall Street Bound, an organization to increase diversity on Wall Street; 1863 Ventures, a start-up accelerator fund assisting minority entrepreneurs throughout the growth lifecycle; and The Leave No Women Behind program, which seeks to advance female entrepreneurship in Utah by offering a suite of programs to provide female entrepreneurs with the knowledge to start or scale up a business.

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 <http://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

The ongoing COVID-19 pandemic could have an adverse effect on our business, financial condition, liquidity or results of operations.

We are closely monitoring the continuing impact of the COVID-19 pandemic on our industry and business in the United States and worldwide, including its effect on our customers, employees, vendors and other stakeholders. The COVID-19 pandemic has created significant volatility, uncertainty and economic disruption, which may adversely affect our business, financial condition, liquidity or results of operations.

Throughout the pandemic, we have shifted to having a majority of our staff work from home and have added additional network capacity and monitoring. However, such remote work may cause heightened cybersecurity and operational risks. Certain of our global offices have reopened on a limited basis, with applicable safety protocols in place, or expect to re-open subject to limitations during 2022. We could face disruption to our business or operations if a significant number of our employees or any of our key employees becomes ill due to the virus. Any disruption to our ability to deliver services to our clients could result in liability to our customers, regulatory fines, penalties or other sanctions, increased operational costs or harm to our reputation and brand. This, in turn, may have an adverse effect on our business, financial condition, liquidity or results of operations.

The reopening of our global offices has created and may continue to create additional risks and operational challenges and may require us to make additional investments in the design, implementation and enforcement of new workplace health and safety protocols. Even if we follow governmental guidance and what we believe to be best practices, our efforts to reopen our offices safely may not be successful and could expose our customers, employees, vendors and other stakeholders to health risks, and we could be exposed to associated liability. Furthermore, additional and/or extended governmental restrictions, new regulations or other changing conditions could cause us to temporarily re-close certain offices.

The extent to which the COVID-19 pandemic impacts our business, financial condition, liquidity or results of operations will depend on future developments, which are uncertain and cannot be predicted, including the scope and duration of the COVID-19 pandemic, the length of time of any commercial and travel limitations, the continued effectiveness of our remote work arrangements, actions taken by governmental authorities, regulators and other third parties in response to the pandemic, as well as other direct and indirect impacts on us, our exchanges, our customers, our vendors and other stakeholders.

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 (such as COVID-19) 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 is likely to 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, data, indexes and IR & ESG Services, a decline

in trading volumes or values and deterioration of the economic welfare of our listed companies.

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.

Investment Intelligence 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 indexes as well as trading in futures linked to Nasdaq indexes.

There may be less demand for our IR & ESG Services or Market Technology products if global economic conditions are 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.

A reduction in trading volumes or values, market share of trading, the number of our listed companies, or demand for Investment Intelligence, Market Technology or Corporate Platforms 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 Market Technology, Investment Intelligence and Corporate Platforms businesses 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. In addition, competitors recently have launched new exchanges in the U.S., including an exchange established by a group of 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. In addition, pricing in our Corporate Platforms, Investment Intelligence and Market Technology segments are subject to competitive pressures.

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. These consequences could result in service outages, lower trading volumes or values, financial losses, decreased customer satisfaction and regulatory sanctions. Our markets and the markets that rely on our technology have experienced systems failures and delays in the past and could experience future systems failures and delays.

Although we currently maintain and expect to maintain multiple computer facilities 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, 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. 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. Additionally, it is also possible that 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. In recent years, and particularly in 2020 and 2021 as the pandemic continued, 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 Market Data business.

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

Our systems and operations are vulnerable to damage or interruption from security breaches. Due to COVID-19, most of our workforce has, and may continue to, work from home the majority of each week, creating a broader and more distributed network footprint and increased reliance on the home networks of employees. 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 by human error or malicious activity and criminal organizations may seek to profit from stolen data. Computer 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 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, could damage our reputation and cause us to lose customers, experience lower trading volumes or values, incur significant liabilities or otherwise have a negative impact on our business, financial condition and operating results. Any system breach may go undetected for an extended period of time. As cybersecurity threats continue to increase in frequency and sophistication, and as the domestic and international regulatory and compliance structure related to information security, 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, which could adversely impact our business, 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, in December 2021, the Log4j security vulnerability was widely publicized. It did not have an impact to our business or operations, including our core market system environment. There can be no assurance we will be able to identify and mitigate every incident involving cybersecurity attacks, breaches or incidents.

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.

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, 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. In particular, we may have to incur costs to replace senior officers or other key employees who leave, and our ability to execute our business strategy could be impaired if we are unable to replace such persons 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.

In September 2018, a member of the Nasdaq Clearing commodities market defaulted due to an inability to post sufficient collateral to cover increased margin requirements for the positions of the relevant member. For further discussion of the default, see Note 15, "Clearing Operations," to the consolidated financial statements. There are no assurances that similar defaults will not occur again, which could result in losses. To the extent that our regulatory capital and risk management policies are not adequate to manage future financial and operational risks in our clearinghouse, we may experience adverse consequences to our operating results or ability to conduct our business.

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 the effects of COVID-19 on their business, 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. We further improved the systems' resiliency by adding the UTP SnapShot service. 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. Furthermore, a prolonged decrease in the number of listings could negatively impact the growth of our transactions revenues. Our IR & ESG Services business is also impacted by declines in the listings market or increases in acquisitions activity as there will 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. 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, 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 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, data storage and processing, data content, clearing and other services. Interruptions or delays in services from our third-party data center hosting facilities or cloud computing platform 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, 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, our clients may not be able to access our exchanges or certain of our cloud products or features, which could significantly impact our reputation, operations, business, and financial results.

For example, in 2022, we will begin to use AWS to migrate our North American markets to AWS in a phased approach, starting with Nasdaq MRX. AWS operates a platform that we use to provide services to our clients, and therefore we are vulnerable to Nasdaq-specific service outages on the AWS platform. If AWS does not deliver our system requirements on time, fails to provide maintenance and support to our specifications or the 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 experiences difficulties, materially changes its business relationship with us or is 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, 2021, goodwill totaled \$8.4 billion and intangible assets, net of accumulated amortization, totaled \$2.8 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 2021, 2020 and 2019.

We may experience future events that may result in asset impairments. Future disruptions to our business, prolonged economic weakness, due to COVID-19 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 have been significant factors in our growth. We have, 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. Many of the other potential purchasers of assets in our industry 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. We could face financial risks associated with incurring additional debt, particularly if the debt results in significant incremental leverage. 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.

Charges to earnings resulting from acquisition, integration and restructuring costs may materially adversely affect the market value of our common stock.

In accordance with U.S. GAAP, we account for the completion of our acquisitions using the acquisition method of accounting. We allocate the total estimated purchase price to net tangible and identifiable intangible assets based on

their fair values as of the date of completion of the acquisition and record the excess of the purchase price over those fair values as goodwill. Our financial results, including earnings per share, could be adversely affected by a number of financial adjustments including the following:

- we may incur additional amortization expense over the estimated useful lives of certain of the intangible assets acquired in connection with acquisitions during such estimated useful lives;
- we may have additional depreciation expense as a result of recording acquired tangible assets at fair value, in accordance with U.S. GAAP, as compared to book value as recorded;
- to the extent the value of goodwill or intangible assets becomes impaired, we may be required to incur material charges relating to the impairment of those assets;
- we may incur additional costs from integrating our acquisitions. The success of our acquisitions depends, in part, on our ability to integrate these businesses into our existing operations and realize anticipated cost savings, revenue synergies and growth opportunities; and
- we may incur restructuring costs in connection with the reorganization of any of our businesses.

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 ATSS that are not subject to the same SEC approval process 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 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 consolidated audit trail has resulted in significant additional expenditures, including to implement the new technology to meet any 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 that Nasdaq expects to be repaid at such time that the SEC approves the assessment of fees for the funding of the CAT. The SEC could determine not to approve the assessment of such fees in which case some or all of the promissory notes would not be repaid. In addition, the ongoing failure to

timely launch or properly operate such technology exposes Nasdaq and other exchanges to SEC fines. As of December 31, 2021, we have accrued approximately \$54 million as a receivable in connection with our portion of expenses related to the CAT implementation.

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. 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.

Furthermore, 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.

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.

With respect to our regulated businesses, our business model can be severely impacted by policy decisions. In May 2020, the SEC adopted a rule 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. If either or both of these rules are fully implemented, they may adversely affect our revenues. The timing for the implementation of these rules is currently unknown, and we believe they may take two or more years to fully implement. If the rules 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 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.

Some of our other liability risks arise under the laws and regulations relating to the tax, employment, intellectual property, anti-money laundering, technology export, foreign asset controls, foreign corrupt practices, employee labor and employment areas, including anti-discrimination and fair-pay laws and regulations.

Liability could also result from disputes over the terms of a trade, 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. As we intend to defend any such litigation actively, significant legal expenses could be incurred. Although we carry insurance that may limit our risk of damages in some cases, we still may sustain uncovered losses or losses in excess of available insurance that would affect our 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. The prime objective of such monitoring activities is to promote confidence in the exchanges among the general public and to ensure fair and orderly functioning markets. The monitoring functions within the Nasdaq Nordic and Nasdaq Baltic exchanges are the responsibility of the surveillance departments or other surveillance personnel. The surveillance departments or personnel are intended to strengthen the integrity of and confidence in these exchanges and to avoid conflicts of interest. 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 the handling of personal data and information may affect our services or result in increased costs, legal claims or fines against us.

Our business relies 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 collection, storage, handling, use, disclosure, transfer and security of personal data continue to evolve; 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 General Data Protection Regulation, or GDPR, and the California Consumer Privacy Act, or CCPA, can have application and effect beyond their territorial limits, and require companies to meet new requirements regarding the handling of personal data. In addition to directly applying to certain Nasdaq business activities, these laws impact many of our customers, which may affect their requirements and decisions related to services that we offer. Our efforts to comply with GDPR, CCPA and other 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. Furthermore, enforcement actions and investigations by regulatory authorities, as well as third party litigation, related to data security incidents and privacy violations continue to increase. 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.

Like other corporations, we are subject to taxes at the federal, state and local levels, as well as in non-U.S. jurisdictions. 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.

In addition, some of our subsidiaries are subject to tax in the jurisdictions in which they are organized or operate. 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 LIQUIDITY AND CAPITAL RESOURCES

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, 2021 was \$5.8 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 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 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. 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 issuing additional equity, our equity holders will suffer dilution. 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 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 and other financial and statistical information;
- 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, including the reliability of our transaction-based, IR & ESG Services and market technology products, the accuracy of the quote and trade information provided by our Market Data business and the accuracy of calculations used by our Indexes business for indexes and unit investment trusts;
- 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.

Although we monitor developments, including social media, for areas of potential risk to our brand and reputation, 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, and 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, as well as reduce the trading volumes or values on our exchanges or cause us to lose customers in our Market Data, Index, IR & ESG Services or Market Technology businesses. This, in turn, 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, logistical challenges due to the effects of COVID-19 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.

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 our services and products are offered. Moreover, changes in patent law, such as changes in the law regarding patentable subject matter, could also impact our ability to obtain patent protection for our innovations. There is also a risk that the scope of protection under our patents may not be sufficient in some cases, or that 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 paid upstream.

In addition, unremitted earnings of certain subsidiaries outside of the U.S. are used to finance our international operations and are considered to be indefinitely reinvested.

If our subsidiaries are unable to pay dividends and make other payments to us when needed, 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;
- 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;
- the perceived attractiveness of the U.S. or European capital markets; and
- inflation.

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. Even with a favorable outcome, 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 and financial results.

Climate change may have a long-term adverse impact on our business, and climate change 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 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 regulatory agencies impose comprehensive reporting obligations regarding climate change on public companies, there may be a decrease in new listings or an increase in de-listings 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, including certain emerging markets that are subject to greater political, economic and social uncertainties than developed countries.

Our businesses operate in various international markets, including but not limited to Northern Europe, the Baltics, the Middle East, 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 could adversely affect our operations and financial results. Some locations, such as Lithuania, India and the Philippines, 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 (such as COVID-19), 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 U.S. East Coast, 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 towards 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 is comprised of 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 quarterly 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 of directors may determine not to declare future dividends at all or to declare future dividends at a reduced amount. Accordingly, there can be no guarantee that we will pay future dividends to our stockholders.

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 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, particularly as we transition to a hybrid work environment as we reopen our global offices. 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

See "Legal and Regulatory Matters - Litigation," 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 Issuer Purchases of Equity Securities.

Market Information

Our common stock is listed on The Nasdaq Stock Market under the ticker symbol "NDAQ." As of February 14, 2022, we had approximately 214 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, 2021:

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 2021				
Share repurchase program	—	\$ —	—	\$ 984
Employee transactions	12,368	\$203.46	N/A	N/A
November 2021				
Share repurchase program	—	\$ —	—	\$ 984
ASR agreement	391,272	See below	391,272	\$ 984
Employee transactions	515	\$212.83	N/A	N/A
December 2021				
Share repurchase program	287,657	\$204.34	287,657	\$ 926
Employee transactions	46,854	\$210.24	N/A	N/A
Total Quarter Ended December 31, 2021				
Share repurchase program	<u>287,657</u>	<u>\$204.34</u>	<u>287,657</u>	<u>\$ 926</u>
ASR agreement	<u>391,272</u>	<u>See below</u>	<u>391,272</u>	<u>\$ 926</u>
Employee transactions	59,737	\$208.86	N/A	N/A

In the table above:

- 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 issued to employees.
- In July 2021, we entered into an ASR agreement to repurchase \$475 million of common stock. See “ASR Agreements,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion.

PERFORMANCE GRAPH

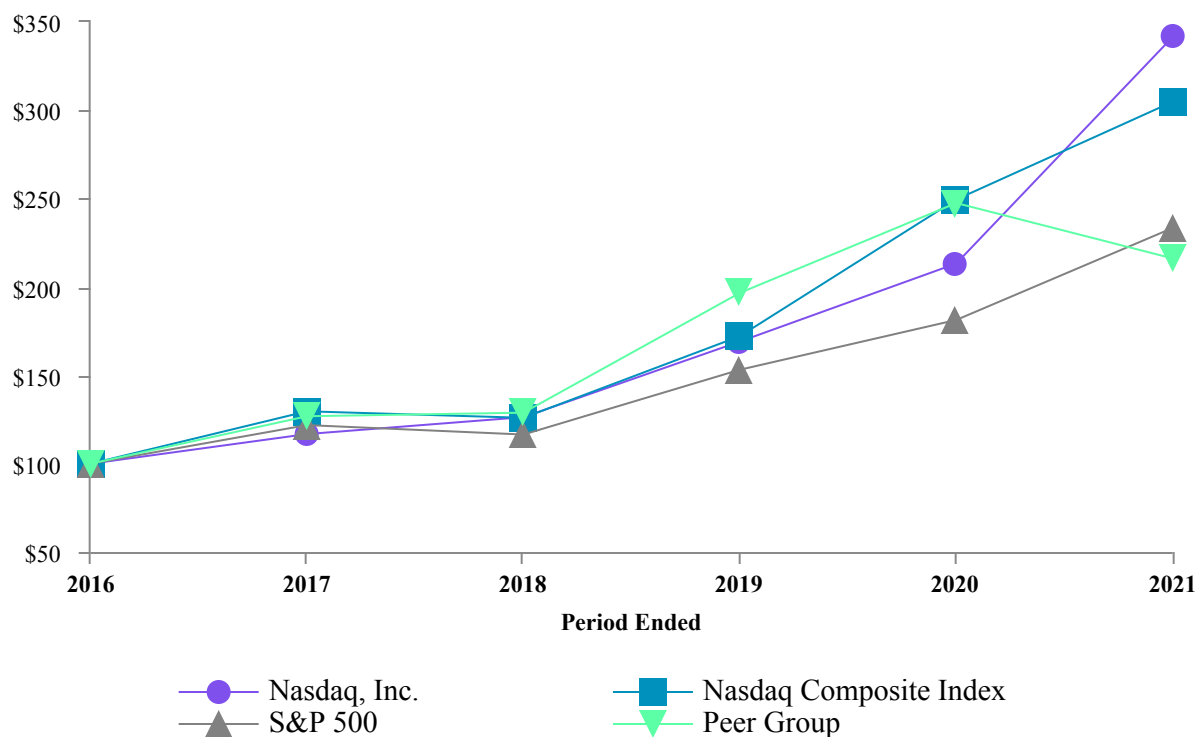
The following graph compares the total return of our common stock to the Nasdaq Composite Index, the S&P 500 and a peer group selected by us, shown below, for the past five years:

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	

The figures represented below assume an initial investment of \$100 in the common stock or index at the closing price on December 31, 2016 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 a Peer Group



* \$100 invested on 12/31/2016 in stock or index, including reinvestment of dividends.

	Fiscal Year Ended December 31,					
	2016	2017	2018	2019	2020	2021
Nasdaq, Inc.	\$ 100	\$ 117	\$ 126	\$ 169	\$ 213	\$ 342
Nasdaq Composite Index	100	130	126	172	250	305
S&P 500	100	122	116	153	181	233
Peer Group	100	127	129	197	248	216

Copyright© 2022 Standard & Poor's, a division of S&P Global. All rights reserved.

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 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.” Unless stated otherwise, the comparisons presented in this discussion and analysis refer to 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, 2021 and December 31, 2020. Discussion of fiscal year 2020 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, 2020 and December 31, 2019 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, 2020, which was previously filed with the SEC on February 23, 2021.

Business Segments

We manage, operate and provide our products and services in four business segments: Market Technology, Investment Intelligence, Corporate Platforms and Market Services. 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 four separate segments. See “Part I, Item 1. Business” for additional discussion on recent developments and highlights.

Financial Summary

The following table summarizes our financial performance for the year ended December 31, 2021 when compared to the same period in 2020 and for the year ended December 31, 2020 when compared to the same period in 2019. The comparability of our results of operations between reported periods is impacted by the acquisition of Verafin in February 2021 and the divestiture of our U.S. Fixed Income business, which was part of our FICC business within our Market Services segment in June 2021. See “2021 Divestiture,” and “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion. For a detailed discussion of our results of operations, see “Segment Operating Results” below.

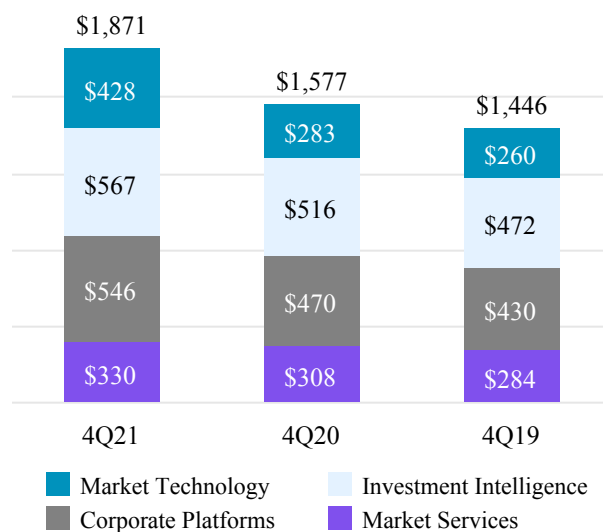
	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019

	(in millions, except per share amounts)				
Revenues less transaction-based expenses	\$ 3,420	\$ 2,903	\$ 2,535	17.8 %	14.5 %
Operating expenses	1,979	1,669	1,518	18.6 %	9.9 %
Operating income	1,441	1,234	1,017	16.8 %	21.3 %
Net income attributable to Nasdaq	\$ 1,187	\$ 933	\$ 774	27.2 %	20.5 %
Diluted earnings per share	\$ 7.05	\$ 5.59	\$ 4.63	26.1 %	20.7 %
Cash dividends declared per common share	\$ 2.11	\$ 1.94	\$ 1.85	8.8 %	4.9 %

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.”

Nasdaq's Operating Results

The following chart summarizes our ARR (in millions):

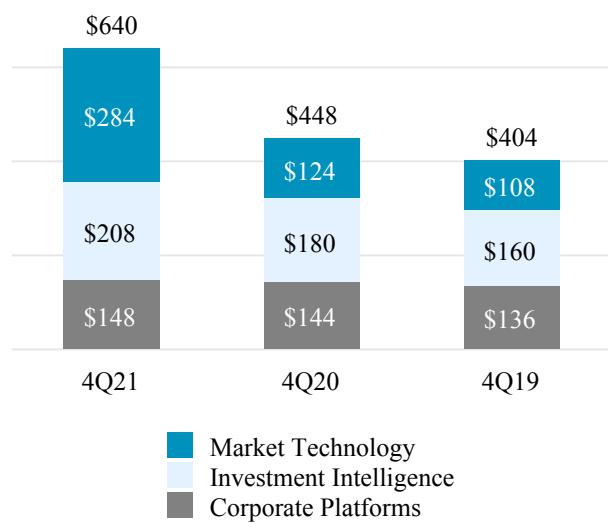


ARR for a given period is the annualized revenue derived from subscription contracts with a defined contract value. This excludes contracts that are not recurring, are one-time in nature, or where the contract value fluctuates based on defined metrics. ARR is currently one of our key performance metrics 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. 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:

- Active Market Technology support and SaaS subscription contracts.
- Proprietary market data and index data subscriptions as well as subscription contracts for eVestment, Solovis, NDW Research Platform, Nasdaq Fund Network and Nasdaq Data Link. It also includes guaranteed minimum on futures contracts within the Index business.
- U.S. and Nordic annual listing fees, IR and ESG products, including subscription contracts for IR Insight, board portals and OneReport, as well as IR advisory services.
- Trade Management Services business, excluding one-time service requests.

The following chart summarizes our quarterly annualized SaaS revenues for our Solutions Segments, which is comprised of Market Technology, Investment Intelligence and Corporate Platforms, for the fourth quarter of 2021, 2020 and 2019 (in millions):



Segment Operating Results

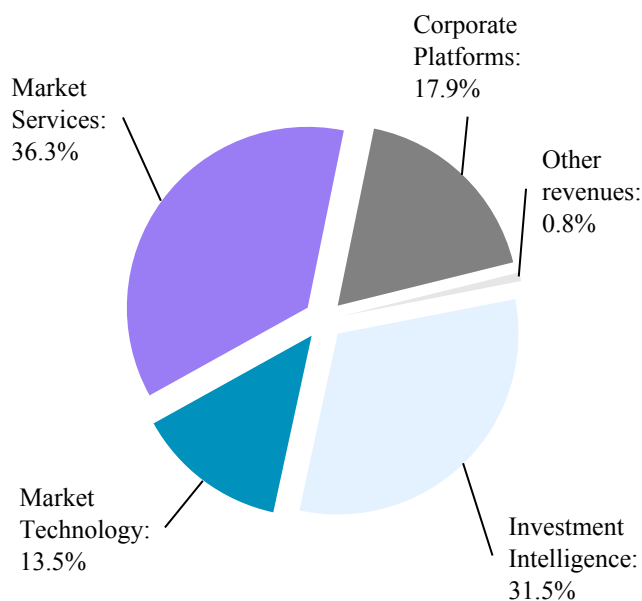
The following table presents our revenues by segment, transaction-based expenses for our Market Services segment and total revenues less transaction-based expenses:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
(in millions)					
Market Technology	\$ 463	\$ 357	\$ 338	29.7 %	5.6 %
Investment Intelligence	1,076	898	768	19.8 %	16.9 %
Corporate Platforms	613	521	490	17.7 %	6.3 %
Market Services	3,707	3,818	2,616	(2.9)%	45.9 %
Other revenues	27	31	46	(12.9)%	(32.6)%
Total revenues	5,886	5,625	4,258	4.6 %	32.1 %
Transaction rebates	(2,168)	(2,028)	(1,324)	6.9 %	53.2 %
Brokerage, clearance and exchange fees	(298)	(694)	(399)	(57.1)%	73.9 %
Total revenues less transaction-based expenses	\$ 3,420	\$ 2,903	\$ 2,535	17.8 %	14.5 %

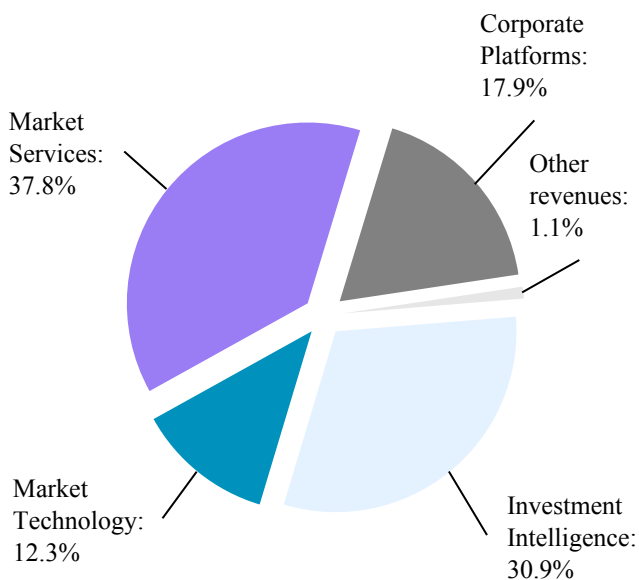
The following charts present our Market Technology, Investment Intelligence, Corporate Platforms and Market Services segments as a percentage of our total revenues, less transaction-based expenses, of \$3,420 million for the year ended December 31, 2021, \$2,903 million for the year ended December 31, 2020 and \$2,535 million for the year ended December 31, 2019.

Percentage of Revenues Less Transaction-based Expenses by Segment for the:

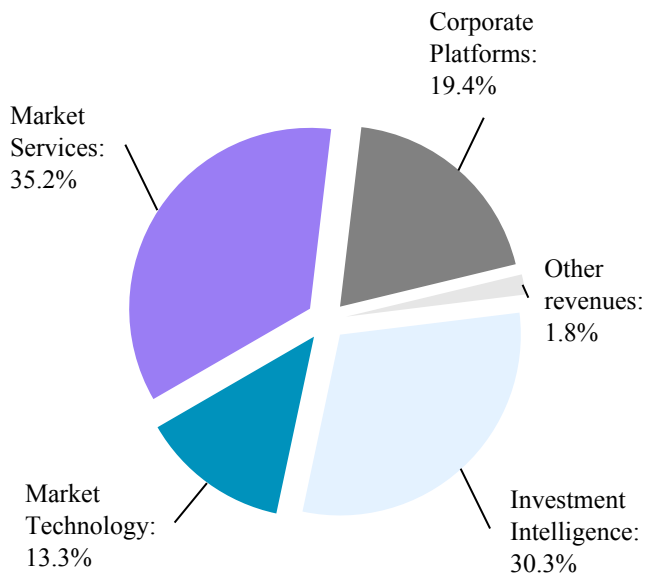
Year Ended December 31, 2021



Year Ended December 31, 2020



Year Ended December 31, 2019



MARKET TECHNOLOGY

The following tables present revenues and key drivers from our Market Technology segment:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Anti Financial Crime Technology	\$ 247	\$ 130	\$ 121	90.0 %	7.4 %
Marketplace Infrastructure Technology	216	227	217	(4.8)%	4.6 %
Total Market Technology	\$ 463	\$ 357	\$ 338	29.7 %	5.6 %

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Order intake	\$ 378	\$ 240	\$ 366
ARR	428	283	260
SaaS revenues	284	124	108

In the table above, order intake is the total contract value of orders signed during the period, excluding Verafin. ARR and SaaS revenues include Verafin.

Anti Financial Crime Technology Revenues

Anti-financial crime technology revenues increased in 2021 compared with 2020 primarily due to the inclusion of revenues from our acquisition of Verafin and continued growth in surveillance solutions.

Marketplace Infrastructure Technology Revenues

Marketplace infrastructure technology revenues decreased in 2021 compared with 2020 primarily due to lower professional services revenues reflecting both an elevated prior year comparison period as well as capacity constraints that pandemic-related logistical challenges imposed on installation and change request projects as well as the completion of a significant long-term contract, partially offset by an increase in SaaS revenues.

INVESTMENT INTELLIGENCE

The following tables present revenues and key drivers from our Investment Intelligence segment:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Market Data	\$ 414	\$ 399	\$ 387	3.8 %	3.1 %
Index	459	324	223	41.7 %	45.3 %
Analytics	203	175	158	16.0 %	10.8 %
Total Investment Intelligence	\$ 1,076	\$ 898	\$ 768	19.8 %	16.9 %

	Year Ended December 31,		
	2021	2020	2019
Number of licensed ETPs	362	339	332
ETP AUM tracking Nasdaq indexes (in billions)	\$ 424	\$ 359	\$ 233
Net appreciation (in billions)	\$ 83	\$ 80	\$ 48
Net impact of ETP sponsor switches (in billions)	\$ (92)	\$ —	\$ —
Net inflows in ETP AUM tracking Nasdaq indexes (in billions)	\$ 74	\$ 46	\$ 13
ARR (in millions)	\$ 567	\$ 516	\$ 472
SaaS revenues (in millions)	\$ 208	\$ 180	\$ 160

Market Data Revenues

Market data revenues increased in 2021 compared with 2020 primarily due to an increase in proprietary data revenues from new sales primarily outside the U.S., partially offset by lower U.S. shared tape plan revenues.

Index Revenues

Index revenues increased in 2021 compared with 2020 primarily due to higher licensing revenues from higher average AUM in ETPs linked to Nasdaq indexes and higher licensing revenues from futures trading linked to the Nasdaq-100 Index.

Analytics Revenues

Analytics revenues increased in 2021 compared with 2020 primarily due to the growth in our eVestment and Solovis products driven by new sales, strong retention, and higher average revenue per client from expanded offerings.

CORPORATE PLATFORMS

The following tables present revenues and key drivers from our Corporate Platforms segment:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Listing Services	\$ 387	\$ 307	\$ 290	26.1 %	5.9 %
IR & ESG Services	226	214	200	5.6 %	7.0 %
Total Corporate Platforms	\$ 613	\$ 521	\$ 490	17.7 %	6.3 %

	Year Ended December 31,		
	2021	2020	2019
<i>IPOs</i>			
The Nasdaq Stock Market	752	316	188
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	174	45	34
<i>Total new listings</i>			
The Nasdaq Stock Market	1,000	454	313
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	207	67	53
<i>Number of listed companies</i>			
The Nasdaq Stock Market	4,178	3,392	3,140
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	1,235	1,071	1,040
ARR (in millions)	\$ 546	\$ 470	\$ 430
SaaS revenues (in millions)	\$ 148	\$ 144	\$ 136

In the table above:

- The Nasdaq Stock Market new listings include IPOs, including issuers that switched from other listing venues and separately listed ETPs. For the years ended December 31, 2021, 2020 and 2019, IPOs included 433, 132 and 43 SPACs, respectively.
- Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic new listings include IPOs and represent companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North.
- Number of total listed companies on The Nasdaq Stock Market for the years ended December 31, 2021, 2020 and 2019 included 441, 412 and 412 ETPs, respectively.
- Number of total listed companies on the exchanges that comprise Nasdaq Nordic and Nasdaq Baltic represents companies listed on these exchanges and companies on the alternative markets of Nasdaq First North.

Listing Services Revenues

Listing services revenues increased in 2021 compared with 2020 primarily due to an increase in the overall number of listed companies.

IR & ESG Services Revenues

IR & ESG Services revenues increased in 2021 compared with 2020 primarily due to higher adoption of our investor relations intelligence products as well as new ESG solutions.

MARKET SERVICES

Equity Derivative Trading and Clearing Revenues

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

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Equity Derivative Trading and Clearing Revenues	\$1,469	\$1,258	\$ 816	16.8 %	54.2 %
Transaction-based expenses:					
Transaction rebates	(1,018)	(828)	(477)	22.9 %	73.6 %
Brokerage, clearance and exchange fees	(38)	(76)	(47)	(50.0) %	61.7 %
Equity derivative trading and clearing revenues less transaction-based expenses	\$ 413	\$ 354	\$ 292	16.7 %	21.2 %

In the table above, brokerage, clearance and exchange fees includes Section 31 fees of \$32 million in 2021, \$69 million in 2020 and \$43 million in 2019. Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded in transaction-based expenses.

	Year Ended December 31,		
	2021	2020	2019
<i>U.S. equity options</i>			
Total industry average daily volume (in millions)	37.2	27.7	17.5
Nasdaq PHLX matched market share	12.4%	12.7%	15.9%
The Nasdaq Options Market matched market share	8.1%	9.8%	8.8%
Nasdaq BX Options matched market share	1.4%	0.2%	0.2%
Nasdaq ISE Options matched market share	6.6%	7.8%	9.0%
Nasdaq GEMX Options matched market share	4.3%	5.6%	4.2%
Nasdaq MRX Options matched market share	1.6%	0.7%	0.2%
Total matched market share executed on Nasdaq's exchanges	34.4%	36.8%	38.3%
<i>Nasdaq Nordic and Nasdaq Baltic options and futures</i>			
Total average daily volume of options and futures contracts	287,182	320,204	366,289

In the table 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.

Equity derivative trading and clearing revenues and equity derivative trading and clearing revenues less transaction-based expenses increased in 2021 compared with 2020 primarily due to higher U.S. industry trading volumes, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges and a lower capture rate. Also partially offsetting the increase in equity derivative trading and clearing revenues was lower Section 31 pass-through fee revenue.

Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded as brokerage, clearance and exchange fees in the Consolidated Statements of Income. In the U.S., 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 of shares traded. Since the amount recorded in revenues is equal to the amount recorded as brokerage, clearance and exchange fees, there is no impact on our revenues less transaction-based expenses. Section 31 fees decreased in 2021 compared with 2020 due to lower average SEC fee rates, partially offset by higher dollar value traded on Nasdaq's exchanges.

Transaction rebates, in which we credit a portion of the per share execution charge to the market participant, increased in 2021 compared with 2020. The increase in 2021 was primarily due to higher U.S. industry trading volumes, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges and a lower rebate 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	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
(in millions)					
Cash Equity Trading Revenues	\$ 1,854	\$ 2,211	\$ 1,462	(16.1)%	51.2 %
Transaction-based expenses:					
Transaction rebates	(1,150)	(1,200)	(847)	(4.2)%	41.7 %
Brokerage, clearance and exchange fees	(260)	(618)	(352)	(57.9)%	75.6 %
Cash equity trading revenues less transaction-based expenses	\$ 444	\$ 393	\$ 263	13.0 %	49.4 %

In the table above, brokerage, clearance and exchange fees includes Section 31 fees of \$228 million in 2021, \$586 million in 2020 and \$337 million in 2019. Section 31 fees are recorded as cash equity trading revenues with a corresponding amount recorded in transaction-based expenses.

	Year Ended December 31,		
	2021	2020	2019
<i>Total U.S.-listed securities</i>			
Total industry average daily share volume (in billions)	11.4	10.9	7.0
Matched share volume (in billions)	491.9	508.3	348.1
The Nasdaq Stock Market matched market share	15.8%	16.8%	17.2%
Nasdaq BX matched market share	0.6%	0.9%	1.7%
Nasdaq PSX matched market share	0.7%	0.6%	0.7%
Total matched market share executed on Nasdaq's exchanges	17.1%	18.3%	19.6%
Market share reported to the FINRA/Nasdaq Trade Reporting Facility	34.9%	31.8%	29.8%
Total market share	52.0%	50.1%	49.4%
<i>Nasdaq Nordic and Nasdaq Baltic securities</i>			
Average daily number of equity trades executed on Nasdaq's exchanges	1,036,523	933,822	590,705
Total average daily value of shares traded (in billions)	\$ 6.4	\$ 5.6	\$ 4.5
Total market share executed on Nasdaq's exchanges	76.9%	78.1%	72.8%

In the table above, total market shares 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 2021 compared with 2020 primarily due to lower Section 31 pass-through fee revenue and lower overall U.S. matched market share executed on Nasdaq's exchanges, partially offset by higher U.S. industry trading volumes, higher U.S. gross capture rates, higher European value traded and a favorable impact from changes in foreign exchange rates.

Cash equity trading revenues less transaction-based expenses increased in 2021 compared with 2020 primarily due to higher U.S. net capture rates, higher U.S. industry trading volumes, higher European value traded and a favorable impact from changes in foreign exchange rates, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges.

Similar to equity derivative trading and clearing, in the U.S. we record Section 31 fees as cash equity trading revenues with a corresponding amount recorded as brokerage, clearance and exchange fees in the Consolidated Statements of Income. We are assessed these fees from the SEC and pass them through to our customers in the form of incremental fees. Since the amount recorded as revenues is equal to the amount recorded as brokerage, clearance and exchange fees, there is no impact on our revenues less transaction-based expenses. Section 31 fees decreased in 2021 compared with 2020 primarily due to lower average SEC fee rates.

Transaction rebates decreased 2021 compared with 2020. 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 overall U.S. matched market share executed on Nasdaq's exchanges and a lower rebate capture rate, partially offset by higher U.S. industry trading volumes.

FICC Revenues

The following table present revenues from our FICC business:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
(in millions)					
FICC Revenues	\$ 59	\$ 53	\$ 51	11.3 %	3.9 %

FICC revenues increased in 2021 compared with 2020 primarily due to higher European products revenues and a positive impact from foreign exchange rates.

Trade Management Services Revenues

The following tables present revenues and key drivers from our Trade Management Services business:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
(in millions)					
Trade Management Services Revenues	\$ 325	\$ 296	\$ 287	9.8 %	3.1 %

	Year Ended December 31,		
	2021	2020	2019
(in millions)			
ARR	\$ 330	\$ 308	\$ 284

Trade management services revenues increased in 2021 compared with 2020 primarily due to increased demand for connectivity and infrastructure services.

OTHER REVENUES

Other revenues include the revenues associated with our U.S. Fixed Income business, which was sold in June 2021. Prior to the sale date, these revenues were included in our Market Services and Investment Intelligence segments. See "2021 Divestiture," of Note 4, "Acquisitions and Divestiture," to the consolidated financial statements for further discussion of this divestiture. Additionally, 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 Corporate Platforms segment.

EXPENSES

Operating Expenses

The following tables present our operating expenses:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Compensation and benefits	\$ 938	\$ 786	\$ 707	19.3 %	11.2 %
Professional and contract services	144	137	127	5.1 %	7.9 %
Computer operations and data communications	186	151	133	23.2 %	13.5 %
Occupancy	109	107	97	1.9 %	10.3 %
General, administrative and other	85	142	125	(40.1)%	13.6 %
Marketing and advertising	57	39	39	46.2 %	— %
Depreciation and amortization	278	202	190	37.6 %	6.3 %
Regulatory	64	24	31	166.7 %	(22.6)%
Merger and strategic initiatives	87	33	30	163.6 %	10.0 %
Restructuring charges	31	48	39	(35.4)%	23.1 %
Total operating expenses	\$ 1,979	\$ 1,669	\$ 1,518	18.6 %	9.9 %

The increase in compensation and benefits expense in 2021 compared with 2020 was primarily driven by higher performance-linked compensation expense, our continued investment to drive growth, an increase in headcount as a result of our acquisition of Verafin and an unfavorable impact from foreign exchange rates.

Headcount increased to 5,814 employees as of December 31, 2021 from 4,830 as of December 31, 2020 primarily due to our recent acquisition of Verafin.

Professional and contract services expense increased in 2021 compared with 2020 primarily due to an increase in consulting costs.

Computer operations and data communications expense increased in 2021 compared with 2020 primarily due to our acquisition of Verafin and higher hardware and software maintenance costs due to increased cloud storage costs.

Occupancy expense increased in 2021 compared with 2020 due to our acquisition of Verafin and higher data center costs.

General, administrative and other expense decreased in 2021 compared with 2020 primarily due to charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts and social justice charities in 2020, and a reserve recorded for a loss on a Market Technology implementation project in 2020.

Marketing and advertising expense increased in 2021 compared with 2020 primarily due to an increase in marketing commitments primarily driven by the increase in new listings.

Depreciation and amortization expense increased in 2021 compared with 2020 primarily due to additional expense for acquired intangible assets related to our acquisition of Verafin.

Regulatory expense increased in 2021 compared with 2020 primarily due to a charge associated with an administrative fine issued by the SFSA. See “Nasdaq Commodities Clearing Default,” of Note 15, “Clearing Operations,” to the consolidated financial statements for further discussion of the SFSA administrative fine.

Merger and strategic initiatives expense increased in 2021 compared with 2020 primarily due to the acquisition of Verafin. 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 will vary based on the size and frequency of the activities described above.

See Note 20, “Restructuring Charges,” to the consolidated financial statements for further discussion of our 2019 restructuring plan and charges associated with this plan.

Non-operating Income and Expenses

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

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Interest income	\$ 1	\$ 4	\$ 10	(75.0) %	(60.0)%
Interest expense	(125)	(101)	(124)	23.8 %	(18.5)%
Net interest expense	(124)	(97)	(114)	27.8 %	(14.9)%
Net gain on divestiture of businesses	84	—	27	N/M	(100.0)%
Other income	81	5	5	1,520.0 %	— %
Net income from unconsolidated investees	52	70	84	(25.7) %	(16.7)%
Total non-operating income	\$ 93	\$ (22)	\$ 2	(522.7) %	(1,200.0)%

N/M Not meaningful.

Interest income decreased in 2021 compared with 2020 primarily due to a decrease in interest rates and lower average cash and cash equivalents balance.

The following table presents our interest expense:

	Year Ended December 31,			Percentage Change	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Interest expense on debt	\$ 115	\$ 93	\$ 115	23.7 %	(19.1)%
Accretion of debt issuance costs and debt discount	7	6	6	16.7 %	— %
Other fees	3	2	3	50.0 %	(33.3)%
Interest expense	<u>\$ 125</u>	<u>\$ 101</u>	<u>\$ 124</u>	23.8 %	(18.5)%

Interest expense increased in 2021 compared with 2020 primarily due to new issuances of senior notes in December 2020 and commercial paper issuances in the first quarter of 2021 to fund our acquisition of Verafin. See “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion of the acquisition of Verafin. See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion of our debt obligations.

The net gain on divestiture of businesses 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. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion.

Other income increased in 2021 compared with 2020 primarily due to gains from sales of strategic investments entered into through our corporate venture program.

Net income from unconsolidated investees decreased in the 2021 compared with 2020 primarily due to a decrease in income recognized from our equity method investment in OCC. 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	
	2021	2020	2019	2021 vs. 2020	2020 vs. 2019
	(in millions)				
Income tax provision	\$ 347	\$ 279	\$ 245	24.4 %	13.9 %
Effective tax rate	22.6 %	23.0 %	24.0 %		

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 have also provided non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share. 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. Non-GAAP net income attributable to Nasdaq for the periods presented below is calculated by adjusting for the following items:

- *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, the relative operating performance of the businesses between periods, and the earnings power of Nasdaq. Performance measures excluding intangible asset amortization expense therefore provide investors with a

- useful representation of our businesses' ongoing activity in each period.
- *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. Accordingly, we exclude these costs for purposes of calculating non-GAAP measures, which provide a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods.
 - *Restructuring charges:* We initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the re-alignment of certain business areas. See Note 20, "Restructuring Charges," to the consolidated financial statements for further discussion of our 2019 restructuring plan, which was completed in June 2021. Charges associated with this plan represented a fundamental shift in our strategy and technology as well as executive re-alignment and were excluded for purposes of calculating non-GAAP measures as they are not reflective of ongoing operating performance or comparisons in Nasdaq's performance between periods.
 - *Net income from unconsolidated investee:* See "Equity Method Investments," of Note 6, "Investments," to the consolidated financial statements for further discussion. Our income on our investment in OCC may vary significantly compared to prior periods due to the changes in OCC's capital management policy. Accordingly, we will exclude this income from current and prior periods for purposes of calculating non-GAAP measures which provide a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods.
 - *Other significant 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:
 - for the year ended December 31, 2021 a charge related to an administrative fine imposed by the SFSA associated with the default that occurred in 2018, see "Nasdaq Commodities Clearing Default," of Note 15, "Clearing Operations," to the consolidated financial statements for further discussion, and for the year ended December 31, 2020, the reversal of a \$6 million regulatory fine issued by the SFSA. Both charges have been included in regulatory expense in our Consolidated Statements of Income;
 - for the year ended December 31, 2020, a provision for notes receivable associated with the funding of technology development for the CAT included in general, administrative and other expense in our Consolidated Statements of Income;
 - for the years ended December 31, 2021 and 2020, a charge on extinguishment of debt which is included in general, administrative and other expense in our Consolidated Statements of Income;
 - for the year ended December 31, 2021, a net gain on divestiture of business, which represents our pre-tax net gain of \$84 million on the sale of our U.S. Fixed Income business;
 - for the year ended December 31, 2020, charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts, and social justice charities included in general, administrative and other expense in our Consolidated Statements of Income; and
 - for the year ended December 31, 2021 gains from strategic investments entered into through our corporate venture program included in other income in our Consolidated Statements of Income.
 - *Significant tax items:* The non-GAAP adjustment to the income tax provision for the years ended December 31, 2021 and 2020 includes the tax impact of each non-GAAP adjustment. In addition, for year ended December 31, 2021, the non-GAAP adjustment to the income tax provision includes return-to-provision adjustments and prior period tax benefits and for the year ended December 31, 2020, a tax benefit on compensation related deductions determined to be allowable and excess tax benefit related to employee share-based compensation to reflect the recognition of the income tax effects of share-based awards when awards vest or are settled. Beginning with the quarter ended March 31, 2021, such excess tax benefits are no longer included as a non-GAAP adjustment as they do not have a material impact on period over period comparison.

The following table presents 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,		
	2021	2020	2019
	(in millions, except per share amounts)		
U.S. GAAP net income attributable to Nasdaq	\$1,187	\$933	\$774
Non-GAAP adjustments:			
Amortization expense of acquired intangible assets	170	103	101
Merger and strategic initiatives expense	87	33	30
Restructuring charges	31	48	39
Net income from unconsolidated investee	(52)	(70)	(82)
Regulatory matters	33	(6)	—
Provision for notes receivable	—	6	20
Extinguishment of debt	33	36	11
Net gain on divestiture of businesses	(84)	—	(27)
Charitable donations	—	17	—
Other	(71)	14	17
Total non-GAAP adjustments	147	181	109
Adjustment to the income tax provision to reflect non-GAAP adjustments and other tax items	(61)	(77)	(43)
Excess tax benefits related to employee share-based compensation	—	(6)	(5)
Total non-GAAP tax adjustments	(61)	(83)	(48)
Total non-GAAP adjustments, net of tax	86	98	61
Non-GAAP net income attributable to Nasdaq	\$1,273	\$1,031	\$835
U.S. GAAP effective tax rate	22.6 %	23.0 %	24.0 %
Total adjustments from non-GAAP tax rate	1.7 %	3.0 %	2.0 %
Non-GAAP effective tax rate	24.3 %	26.0 %	26.0 %
Weighted-average common shares outstanding for diluted earnings per share	168.4	166.9	167.0
U.S. GAAP diluted earnings per share	\$7.05	\$5.59	\$4.63
Total adjustments from non-GAAP net income	0.51	0.59	0.37
Non-GAAP diluted earnings per share	\$7.56	\$6.18	\$5.00

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 our common stock and debt. Currently, our cost and availability of funding remain healthy.

As of December 31, 2021, our sources and uses of cash were not materially impacted by COVID-19 and we have not identified any liquidity deficiencies as a result of the ongoing impact of the COVID-19 pandemic.

We will continue to closely monitor and manage our liquidity and capital resources. In addition, 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.

In the near term, we expect that our operations and the availability under our revolving credit facility and commercial paper program will provide sufficient cash to fund our operating expenses, capital expenditures, debt repayments, any share repurchases, and any dividends.

In April 2021, we filed a universal shelf registration statement on Form S-3ASR (Automatic Shelf Registration) with the SEC to have the ability to sell various types of securities including debt securities, common stock, preferred stock, depository receipts, warrants, subscription rights, purchase contracts and purchase units. The specific terms of any securities to be sold will be described in supplemental filings with the SEC. The registration statement will expire in April 2024.

In July 2021, we issued the 2033 Notes and primarily used the net proceeds from the sale of the 2033 Notes to redeem the 2023 Notes. See “2033 Notes,” and “Early Extinguishment of 2023 Notes,” of Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion.

The value of various assets and liabilities, including cash and cash equivalents, receivables, accounts payable and accrued expenses, the current portion of long-term debt, and commercial paper, can fluctuate from month to month. Working capital (calculated as current assets less current liabilities) was \$(449) million as of December 31, 2021, compared with \$2,736 million as of December 31, 2020, a decrease of \$3,185 million. The decrease was primarily due to a decrease in cash and cash equivalents, mainly due to the utilization of cash to partially fund the acquisition of Verafin, increases in short-term debt and deferred revenue, partially offset by a decrease in Section 31 fees payable and an increase in other current assets.

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;
- volatility or disruption in the public debt and equity markets; and
- the impact of the COVID-19 pandemic on our business.

The following sections discuss the effects of changes in our financial assets, debt obligations, regulatory capital requirements, and cash flows on our liquidity and capital resources.

Financial Assets

The following table summarizes our financial assets:

	December 31, 2021	December 31, 2020
	(in millions)	
Cash and cash equivalents	\$ 393	\$ 2,745
Financial investments	208	195
Total financial assets	\$ 601	\$ 2,940

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, 2021, our cash and cash equivalents of \$393 million were primarily invested in bank deposits and money market funds. In the long-term, we may use both internally generated funds and external sources to satisfy our debt obligations and other long-term liabilities. Cash and cash equivalents as of December 31, 2021 decreased \$2,352 million from December 31, 2020, primarily due to:

- our acquisition of Verafin, net of cash and cash equivalents acquired;
- repayment of borrowings under our credit commitment and debt obligations;
- the ASR agreement;
- other repurchases of our common stock;
- cash dividends paid on our common stock;
- purchases of property and equipment;

- other investing activities;
- payments related to employee shares withheld for taxes;
- payment of debt extinguishment cost, partially offset by;
- net cash provided by operating activities;
- proceeds from issuances of long-term debt, net of issuance costs and utilization of credit commitment;
- proceeds from commercial paper, net; and
- proceeds from divestiture of businesses, net of cash divested.

See “Cash Flow Analysis” below for further discussion.

Repatriation of Cash

Our cash and cash equivalents held outside of the U.S. in various foreign subsidiaries totaled \$266 million as of December 31, 2021 and \$237 million as of December 31, 2020. The remaining balance held in the U.S. totaled \$127 million as of December 31, 2021 and \$2,508 million as of December 31, 2020.

Unremitted earnings of certain subsidiaries outside of the U.S. are used to finance our international operations and are considered to be indefinitely reinvested.

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.

ASR Agreements

See “ASR Agreements,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our ASR agreements.

Cash Dividends on Common Stock

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

	2021	2020
First quarter	\$ 0.49	\$ 0.47
Second quarter	0.54	0.49
Third quarter	0.54	0.49
Fourth quarter	0.54	0.49
Total	\$ 2.11	\$ 1.94

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

Financial Investments

Our financial investments totaled \$208 million as of December 31, 2021 and \$195 million as of December 31, 2020. Of these securities, \$162 million as of December 31, 2021 and \$175 million as of December 31, 2020 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.

Debt Obligations

The following table summarizes our debt obligations by contractual maturity:

	<u>Maturity Date</u>	<u>December 31,</u> <u>2021</u>	<u>December 31,</u> <u>2020</u>
		(in millions)	
Short-term debt - commercial paper	Weighted-average maturity of 29 days	\$ 420	\$ —
2022 Notes	December 2022	598	597
Total short-term debt		<u>\$ 1,018</u>	<u>\$ 597</u>
Long-term debt - senior unsecured notes:			
2023 Notes	May 2023	\$ —	\$ 730
2024 Notes	June 2024	499	498
2020 Credit Facility	December 2025	(4)	(4)
2026 Notes	June 2026	498	497
2029 Notes	March 2029	676	726
2030 Notes	February 2030	676	726
2031 Notes	January 2031	643	643
2033 Notes	July 2033	694	—
2040 Notes	December 2040	644	643
2050 Notes	April 2050	486	485
Total long-term debt		<u>\$ 4,812</u>	<u>\$ 4,944</u>
Total debt obligations		<u>\$ 5,830</u>	<u>\$ 5,541</u>

In the table above, the 2022 Notes were reclassified to short-term debt as of December 31, 2021.

In addition to the \$1.25 billion 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 credit facilities, which are available in multiple currencies, totaled \$212 million as of December 31, 2021 and \$232 million as of December 31, 2020 in available liquidity, none of which was utilized.

As of December 31, 2021, 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.

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, 2021, our required regulatory capital of \$138 million was 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, 2021, the combined required minimum net capital totaled \$1 million and the combined excess capital totaled \$21 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, 2021, our required regulatory capital of \$35 million was primarily invested in European government debt securities 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, 2021, other required regulatory capital was \$8 million and was primarily included in restricted cash in the Consolidated Balance Sheets.

Cash Flow Analysis

The following table summarizes the changes in cash flows:

	Year Ended December 31,		
	2021	2020	2019
Net cash provided by (used in):	(in millions)		
Operating activities	\$ 1,083	\$ 1,252	\$ 963
Investing activities	(2,653)	(122)	(414)
Financing activities	1,418	1,910	(2,472)
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	(331)	353	(188)
Net increase (decrease) in cash and cash equivalents and restricted cash and cash equivalents	(483)	3,393	(2,111)
Cash and cash equivalents, restricted cash and cash equivalents at beginning of period	5,979	2,586	4,697
Cash and cash equivalents, restricted cash and cash equivalents at end of period	\$ 5,496	\$ 5,979	\$ 2,586
Reconciliation of Cash, Cash Equivalents and Restricted Cash and Cash Equivalents			
Cash and cash equivalents	\$ 393	\$ 2,745	\$ 332
Restricted cash and cash equivalents	29	37	30
Restricted cash and cash equivalents (default funds and margin deposits)	5,074	3,197	2,224
Total	\$ 5,496	\$ 5,979	\$ 2,586

We have adjusted prior period presentation of opening and ending amounts of cash, cash equivalents, and restricted cash and cash equivalents in our consolidated statements of cash flows to include restricted cash and cash equivalents related to the default funds and margin deposits. See Note 2, “Summary of Significant Accounting Policies,” to the consolidated financial statements for further discussion of this adjustment.

Net Cash Provided by Operating Activities

Net cash provided by operating activities primarily consists of net income adjusted for certain non-cash items such as: depreciation and amortization expense of property and equipment; amortization expense of acquired finite-lived intangible assets; expense associated with share-based compensation; deferred income taxes; debt extinguishment costs; net gain on divestiture of a business, and net income from unconsolidated investees.

Net cash provided by operating activities is also impacted by the effects of changes in operating assets and liabilities such as: 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 timing of collections from customers and payments to the SEC.

Net cash provided by operating activities decreased \$169 million for the year ended December 31, 2021 compared with 2020. The decrease was primarily driven by a cash payment of an acquisition-related tax obligation on behalf of Verafin of \$221 million and a cash payment of \$102 million, the release of which is subject to certain employment-related conditions over three years following the closing of the acquisition of Verafin, partially offset by higher net income. The remaining change was primarily due to other fluctuations in our working capital.

Net Cash Used in Investing Activities

Net cash used in investing activities for the year ended December 31, 2021 primarily related to \$2,430 million of cash used for the acquisition of Verafin, net of cash and cash equivalents acquired of \$221 million, which was utilized to satisfy an acquisition-related tax obligation on behalf of Verafin, \$163 million of purchases of property and equipment, a net decrease in investments related to default funds and margin deposits \$132 million, \$31 million of net purchases of securities and other investing activities of \$87 million, partially offset by proceeds from divestiture of businesses, net of cash divested \$190 million.

Net cash used in investing activities for the year ended December 31, 2020 primarily related to \$157 million of cash used for acquisitions, net of cash and cash equivalents acquired and \$188 million of purchases of property and equipment, partially offset by \$119 million of proceeds from the net sales of securities and a net increase in investments related to default funds and margin deposits of \$109 million.

Net Cash Provided by (Used in) Financing Activities

Net cash provided by financing activities for the year ended December 31, 2021 primarily related to a net increase in default funds and margin deposits of \$2,330 million, proceeds of \$826 million from the issuances of long-term debt and utilization of credit commitment and \$420 million of proceeds from issuances of commercial paper, net, partially offset by repayment of borrowings under our credit commitment and debt obligations of \$804 million, \$475 million of repurchases of common stock pursuant to the ASR agreement, \$468 million in other repurchases of common stock, \$350 million of dividend payments to our shareholders and a \$33 million payment for debt extinguishment costs.

Net cash provided by financing activities for the year ended December 31, 2020 primarily related to \$3,807 million of proceeds from issuances of long-term debt and the utilization of our credit commitment and a net increase in default funds and margin deposits \$527 million, partially offset by \$1,468 million in repayments of borrowings under our credit commitment and debt obligations, \$222 million in repurchases of common stock, \$391 million of net repayments of commercial paper, \$320 million of dividend payments to our shareholders and a \$36 million payment for debt extinguishment costs.

See Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion of our acquisitions and divestiture.

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

See “ASR Agreements,” “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 ASR agreement, share repurchase program and cash dividends paid on our common stock.

Contractual Obligations and Contingent Commitments

Nasdaq has contractual obligations to make future payments under debt obligations by contract maturity, operating lease payments, and other obligations. The following table summarizes material cash requirements for known contractual and other obligations as of December 31, 2021, and the estimated timing thereof.

(in millions)	Payments Due by Period				
	Total	<1 year	1-3 years	3-5 years	5+ years
Debt obligation by contractual maturity	\$7,125	\$1,131	\$ 705	\$ 664	\$4,625
Operating lease obligations	697	65	137	111	384
Purchase obligations	477	64	106	90	217
Total	<u>\$8,299</u>	<u>\$1,260</u>	<u>\$ 948</u>	<u>\$ 865</u>	<u>\$5,226</u>

In the table above:

- Debt obligations by contractual maturity include both principal and interest obligations. As of December 31, 2021, an interest rate of 2.4% was used to compute the amount of the contractual obligations for interest on the 2020 Credit Facility. All other debt obligations were primarily calculated on a 365-day basis at the contractual fixed rate multiplied by the aggregate principal amount as of December 31, 2021. 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, 2021. 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. The balance as of December 31, 2021 is primarily comprised of our multi-year AWS partnership contract, which replaces our previous shorter term contracts, including those with no minimum spend commitment, and is not expected to increase our overall spend footprint with AWS over the life of the contract, based on projected growth and expansion of our existing AWS-based solutions.

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;
 - Routing brokerage activities;
 - Legal and regulatory matters; and
 - Tax audits.

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, 2021, 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, 2021, the fair value of this portfolio would have declined by \$5 million.

Debt Obligations

As of December 31, 2021, the majority 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 amounts outstanding from the sale of commercial paper, which have variable interest rates and any borrowings under our 2020 Credit Facility, as the interest rate on this facility has a variable interest rate. As of December 31, 2021, we had principal amounts outstanding of \$420 million of commercial paper and no amounts outstanding under our 2020 Credit Facility. A hypothetical 100 basis points increase in interest rates on our outstanding commercial paper would increase annual interest expense by approximately \$4 million based on borrowings as of December 31, 2021.

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, 2021 and 2020 are presented in the following tables:

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
(in millions, except currency rate)					
Year Ended December 31, 2021					
Average foreign currency rate to the U.S. dollar	1.183	0.117	#	N/A	N/A
Percentage of revenues less transaction-based expenses	7.1 %	6.2 %	4.9 %	81.8 %	100.0 %
Percentage of operating income	10.4 %	(4.6)%	(9.1)%	103.3 %	100.0 %
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	\$(24)	\$ (21)	\$ (17)	\$ —	\$ (62)
Impact of a 10% adverse currency fluctuation on operating income	\$(15)	\$ (7)	\$ (13)	\$ —	\$ (35)
Year Ended December 31, 2020					
Average foreign currency rate to the U.S. dollar	1.1398	0.1086	#	N/A	N/A
Percentage of revenues less transaction-based expenses	7.7 %	6.6 %	4.7 %	81.0 %	100.0 %
Percentage of operating income	10.7 %	(4.6)%	(4.9)%	98.8 %	100.0 %
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	\$(22)	\$ (19)	\$ (14)	\$ —	\$ (55)
Impact of a 10% adverse currency fluctuation on operating income	\$(13)	\$ (6)	\$ (6)	\$ —	\$ (25)

Represents multiple foreign currency rates.

N/A Not applicable.

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, 2021 is presented in the following table:

	Net Assets	Impact of a 10% Adverse Currency Fluctuation
	(in millions)	
Swedish Krona	\$ 3,369	\$ 337
British Pound	181	18
Norwegian Krone	168	17
Canadian Dollar	171	17
Australian Dollar	117	12
Euro	54	5

In the table above, Swedish Krona includes goodwill of \$2,484 million and intangible assets, net of \$589 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

Market Technology Revenues

Within our market infrastructure technology business, 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 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, the complexity of work performed, and logistical challenges due to the effects of COVID-19. 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.

Goodwill, Indefinite-Lived Intangible Assets and Related Impairment

Assets acquired and liabilities assumed in connection with our acquisitions are recorded at their estimated fair values. 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. We perform our goodwill impairment test at the reporting unit level for our five reporting units: Market Services segment, the two businesses comprising the Corporate Platforms segment: Listing Services and IR & ESG Services, the Investment Intelligence segment, and the Market Technology segment. 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 exceed 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, incorporating 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 at the time of our 2021 annual impairment test:

	October 1, 2021 (in millions)
Market Technology	\$ 2,176
Investment Intelligence	2,457
Corporate Platforms	470
Market Services	3,407
	<u>\$ 8,510</u>

In 2021 and 2020, we have 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 2021 or 2020. In 2019, we performed a qualitative assessment and no impairment was recorded.

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, equity method investments, equity securities, 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. 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 as an additional factor. For equity securities, when assessing investments in private companies for impairment, we consider such factors as, among others, 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. 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.

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. There were no material finite-lived impairment charges in 2020 and 2019.

We recorded pre-tax, non-cash property and equipment asset impairment charges of \$4 million in 2021, \$14 million in 2020 and \$26 million in 2019. The asset impairment charges in 2020 and 2019 primarily related to capitalized software that was retired and are included in restructuring charges in the Consolidated Statements of Income for 2021, 2020 and 2019. See Note 20, "Restructuring Charges," to the consolidated financial statements for a discussion of our 2019 restructuring plan.

No material impairments were recorded to reduce the carrying value of our other long-lived assets during 2021, 2020 or 2019.

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 revenue and expense. 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.

Recent Accounting Pronouncements Not Yet Adopted

We have considered all recent accounting pronouncements and have concluded that no accounting pronouncements that have not yet been adopted would have a material impact on our financial position or results of operations. See "Recent Accounting Pronouncements," of Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements for further discussion of recently adopted and recently issued accounting pronouncements that are applicable to Nasdaq.

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, 2021 and 2020, Consolidated Statements of Income for the years ended December 31, 2021, 2020 and 2019, Consolidated Statements of Comprehensive Income for the years ended December 31, 2021, 2020 and 2019, Consolidated Statements of Changes in Stockholders’ Equity for the years ended December 31, 2021, 2020 and 2019, Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020 and 2019 and notes to our consolidated financial statements, together with a report thereon of Ernst & Young LLP, dated February 23, 2022, are attached hereto as pages F-1 through F-46 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 President and 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. Based upon that evaluation, Nasdaq’s President and 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. There have been 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, 2021 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, 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, 2021, 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. Based on its assessment, our management believes that, as of December 31, 2021, 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, 2021, 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, 2021, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2021 and 2020, the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2021, and the related notes and our report dated February 23, 2022 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 23, 2022

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information about Nasdaq's directors, as required by Item 401 of Regulation S-K, is incorporated by reference from the discussion under the caption "Director Nominees-Proposal 1: Election of Directors" 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 "Our Ethical Culture" 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-Proposal 1: Election of Directors" and "Director Nominees-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 Nominees-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. 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, 2021, 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, 2021.

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	268,817	\$ 66.68	13,767,883
Equity compensation plans not approved by stockholders	—	—	—
Total	268,817	\$ 66.68	13,767,883

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, 2021, we also had 2,280,198 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 9,535,851 shares of common stock that may be awarded pursuant to the Equity Plan and 4,232,032 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-Proposal 1: Election of Directors" 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 “Audit & Risk Committee Matters-Annual Evaluation and 2022 Selection of the Independent Auditor” in the Proxy Statement.

PART IV

Item 15. Exhibits, 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	Purchase Agreement, dated as of April 1, 2013, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), BGC Partners, Inc., BGC Holdings, L.P., BGC Partners, L.P., and, solely for purposes of certain sections thereof, Cantor Fitzgerald, L.P. (incorporated herein by reference to Exhibit 2.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2013 filed on August 8, 2013).	3.1.1
2.2	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).†	3.1.2
2.3	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).	3.1.3
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).	3.2
		4.1
		4.2
		4.2.1
		4.3
		4.3.1
		4.4

4.5	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).	4.14	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).
4.6	First Supplemental Indenture, dated as of June 7, 2013, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Wells Fargo Bank, National Association, as Trustee, Deutsche Bank AG, London Branch, as paying agent, and Deutsche Bank Luxembourg S.A., as registrar and transfer agent (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on June 10, 2013).	4.15	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).
4.7	Second Supplemental Indenture, dated as of May 29, 2014, among 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 May 30, 2014).	4.16	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 by reference to Exhibit 4.2 to the Company's 8-A filed on July 30, 2021).
4.8	Third Supplemental Indenture, dated as of May 20, 2016, 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 the Current Report on Form 8-K filed on May 23, 2016).	4.17	Registration Rights Agreement, dated as of June 28, 2013, by and among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), BGC Partners, Inc., BGC Holdings, L.P. and BGC Partners, L.P. (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on July 1, 2013).
4.9	Fifth Supplemental Indenture, dated as of September 22, 2017, among Nasdaq, 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 September 22, 2017).	4.18	Description of Securities.
4.10	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).	10.1	Amended and Restated Board Compensation Policy, effective on June 16, 2021 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2021 filed on August 4, 2021).*
4.11	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).	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).*
4.12	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).	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).*
4.13	Ninth 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 4.2 to the Current Report on Form 8-K filed on December 21, 2020).	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, 2021 filed on August 4, 2021).*
		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, 2021 filed on August 4, 2021).*
		10.7	Form of Nasdaq One-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, 2019 filed on August 5, 2019).*

10.8	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, 2021 filed on August 4, 2021).*	10.17	Retirement Agreement and General Release of Claims by and between Nasdaq, Inc. and Michael Ptasznik, dated October 21, 2020 (incorporated herein by reference to Exhibit 10.15 to the Annual Report on Form 10-K for the year ended December 31, 2020 filed on February 23, 2021).*
10.9	Form of Nasdaq Continuing Obligations Agreement.	10.18	Employment Agreement by and between Nasdaq, Inc. and Bradley J. Peterson, dated October 1, 2020 (incorporated herein by reference to Exhibit 10.17 to the Annual Report on Form 10-K for the year ended December 31, 2020 filed on February 23, 2021).*
10.10	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).*	10.19	Employment Offer Letter, dated as of April 30, 2019, between Nasdaq, Inc. and Lauren B. Dillard (incorporated herein by reference to Exhibit 10.6 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 filed on August 5, 2019).*
10.10.1	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).*	10.20	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).*
10.11	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).*	10.21	Nasdaq Change in Control Severance Plan for Executive Vice Presidents and Senior Vice Presidents, effective November 26, 2013 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on November 29, 2013).*
10.12	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 14, 2016 and effective as of January 1, 2017 (incorporated herein by reference to Exhibit 10.10 to the Annual Report on Form 10-K for the year ended December 31, 2016 filed on March 1, 2017).*	10.22	Credit Agreement, dated as of December 21, 2020, among Nasdaq, Inc., the various lenders from time to time party thereto and, Bank of America, N.A., as administrative agent and issuing bank (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on December 21, 2020).
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).*	10.23	LIBOR Transition Amendment, dated as of October 19, 2021 by and among Nasdaq, Inc. and Bank of America, N.A., as administrative agent.
10.14	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 19, 2021 and effective as of January 1, 2022.*	10.24	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).
10.15	Nonqualified Stock Option Award Certificate to Adena T. Friedman from Nasdaq, Inc. in connection with grant made on January 3, 2022.*	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).
10.16	Employment Offer Letter, dated as of May 10, 2016, between Nasdaq, Inc. and Michael Ptasznik (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 filed on May 10, 2017).*	21.1	List of all subsidiaries.
		23.1	Consent of Ernst & Young LLP.
		24.1	Powers of Attorney.
		31.1	Certification of President and 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.
101	The following materials from the Nasdaq, Inc. Annual Report on Form 10-K for the year ended December 31, 2021, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2021 and December 31, 2020; (ii) Consolidated Statements of Income for the years ended December 31, 2021, 2020 and 2019 (iii) Consolidated Statements of Comprehensive Income for the years ended December 31, 2021, 2020 and 2019; (iv) Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2021, 2020 and 2019; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020 and 2019; and (vi) notes to consolidated financial statements.
104	Cover Page Interactive Data File, formatted in iXBRL and contained in Exhibit 101.

* 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 23, 2022.

Nasdaq, Inc.
(Registrant)

By: /s/ Adena T. Friedman
Name: **Adena T. Friedman**
Title: **President and Chief Executive Officer**
Date: February 23, 2022

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 23, 2022.

By: /s/ Adena T. Friedman
Name: **Adena T. Friedman**
Title: **President and Chief Executive Officer;
Director**

By: /s/ Ann M. Dennison
Name: **Ann M. Dennison**
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: **Chairman of the Board**

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: **John D. Rainey**
Title: **Director**

By: *
Name: **Toni Townes-Whitley**
Title: **Director**

By: *
Name: **Jacob Wallenberg**
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 (PCAOB ID 42)	F-2
Consolidated Balance Sheets	F-5
Consolidated Statements of Income	F-6
Consolidated Statements of Comprehensive Income	F-7
Consolidated Statements of Changes in Stockholders' Equity	F-8
Consolidated Statements of Cash Flows	F-9
Notes to Consolidated Financial Statements	F-10

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, 2021 and 2020, 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, 2021, 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, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 23, 2022 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 Matters

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

Market Technology Revenue Recognition

Description of the Matter

As described in Notes 2, 3 and 8 to the consolidated financial statements, the Company enters into long-term market technology contracts with customers to develop customized technology solutions, license the right to use software, and provide support and other services which results in these contracts containing multiple performance obligations. The Company recorded market technology deferred revenue of \$117 million as of December 31, 2021 and recognized \$463 million in revenue for the year then ended. Of the market technology revenue recognized, \$216 million relates to marketplace infrastructure technology, where the Company allocates the contract transaction price to each performance obligation using their best estimate of the standalone selling price of each distinct good or service in the respective market technology contract. In instances where standalone selling price is not directly observable, such as when a product or service is not sold separately, the Company determines the standalone selling price predominantly through an expected cost plus a margin approach. The Company recognizes revenue over time using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying the performance obligation.

Auditing the Company's calculation of the standalone selling price and timing of revenue recognition was complex and involved a high degree of subjective auditor judgment because of the significant management judgment required to develop the estimates. The standalone selling price is based on an estimate of total project costs, ongoing monitoring of completion of performance obligations and establishing margins for goods or services where a standalone selling price is not directly observable.

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 timing and measurement of revenue recognition. For example, we tested controls over the allocation of contract transaction price to performance obligations, including management's review of the estimated margin used when applying the cost plus an estimated margin to determine the standalone selling price. We also evaluated the design and tested the operating effectiveness of controls over the completeness and accuracy of the data utilized to measure the estimate and recognize the revenue in the appropriate period.

We performed substantive audit procedures that included, among other things, evaluating the significant assumptions and the accuracy and completeness of the underlying data used in management's calculation. Specifically, we inspected certain customer contracts, including contract modifications, and tested management's determination of the standalone selling price and its allocation to performance obligations in accordance with the cost plus a margin approach, including comparing the margin assumptions to actual margins earned on completed contracts. We also tested the accuracy of the revenue recognized in the current period by inspecting reports relating to the hours recorded on a project. We evaluated the adequacy of the Company's disclosures in Notes 2, 3 and 8 to the consolidated financial statements related to market technology revenue recognition.

Accounting for Acquisition of Verafin

***Description
of the
Matter***

As described in Note 4 to the consolidated financial statements the Company completed its acquisition of Verafin, accounted for as a business combination, for an aggregate purchase price of \$2.75 billion. The transaction resulted in \$1.88 billion of goodwill and \$815 million of intangible assets being recorded. Intangible assets were comprised of customer relationships of \$532 million, developed technology of \$246 million, and a trade name of \$37 million. Auditing the Company's accounting for its acquisition of Verafin was complex due primarily to the significant estimation in the Company's determination of the fair value of the customer relationships and developed technology intangible assets, both of which were valued using the income approach. The significant assumptions used in estimating the value of the intangible assets included the discount rate for customer relationships and the royalty rate for the developed technology.

***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 Verafin acquisition. For example, we tested controls over the estimation process supporting the recognition and measurement of the customer relationships and developed technology intangible assets, which included testing controls over management's review of assumptions used in the valuation models.

To test the estimated fair value of the customer relationships and developed technology intangible assets, 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 methodologies used by the Company, the discount rate applied in valuing the customer relationships, and the royalty rate utilized in the developed technology fair value estimates. We performed sensitivity analyses over the selected discount rate and royalty rate to evaluate the impact that movements in those assumptions would have on the fair value of the customer relationships and developed technology intangible assets.

/s/ Ernst & Young LLP

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

New York, New York
February 23, 2022

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

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	\$ 393	\$ 2,745
Restricted cash and cash equivalents	29	37
Default funds and margin deposits (including restricted cash and cash equivalents of \$5,074 and \$3,197, respectively)	5,911	3,942
Financial investments	208	195
Receivables, net	588	566
Other current assets	294	175
Total current assets	7,423	7,660
Property and equipment, net	509	475
Goodwill	8,433	6,850
Intangible assets, net	2,813	2,255
Operating lease assets	366	381
Other non-current assets	571	358
Total assets	<u>\$ 20,115</u>	<u>\$ 17,979</u>
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	\$ 185	\$ 175
Section 31 fees payable to SEC	62	224
Accrued personnel costs	252	227
Deferred revenue	329	235
Other current liabilities	115	121
Default funds and margin deposits	5,911	3,942
Short-term debt	1,018	—
Total current liabilities	7,872	4,924
Long-term debt	4,812	5,541
Deferred tax liabilities, net	406	502
Operating lease liabilities	386	389
Other non-current liabilities	234	187
Total liabilities	<u>13,710</u>	<u>11,543</u>
Commitments and contingencies		
Equity		
Nasdaq stockholders' equity:		
Common stock, \$0.01 par value, 300,000,000 shares authorized, shares issued: 173,418,939 at December 31, 2021 and 171,278,761 at December 31, 2020; shares outstanding: 166,679,635 at December 31, 2021 and 164,933,678 at December 31, 2020	2	2
Additional paid-in capital	1,952	2,547
Common stock in treasury, at cost: 6,739,304 shares at December 31, 2021 and 6,345,083 shares at December 31, 2020	(437)	(376)
Accumulated other comprehensive loss	(1,587)	(1,368)
Retained earnings	6,465	5,628
Total Nasdaq stockholders' equity	6,395	6,433
Noncontrolling interests	10	3
Total equity	6,405	6,436
Total liabilities and equity	<u>\$ 20,115</u>	<u>\$ 17,979</u>

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2021	2020	2019
Revenues:			
Market Technology	\$ 463	\$ 357	\$ 338
Investment Intelligence	1,076	898	\$ 768
Corporate Platforms	613	521	\$ 490
Market Services	3,707	3,818	\$ 2,616
Other revenues	27	31	46
Total revenues	5,886	5,625	4,258
Transaction-based expenses:			
Transaction rebates	(2,168)	(2,028)	(1,324)
Brokerage, clearance and exchange fees	(298)	(694)	(399)
Revenues less transaction-based expenses	3,420	2,903	2,535
Operating expenses:			
Compensation and benefits	938	786	707
Professional and contract services	144	137	127
Computer operations and data communications	186	151	133
Occupancy	109	107	97
General, administrative and other	85	142	125
Marketing and advertising	57	39	39
Depreciation and amortization	278	202	190
Regulatory	64	24	31
Merger and strategic initiatives	87	33	30
Restructuring charges	31	48	39
Total operating expenses	1,979	1,669	1,518
Operating income	1,441	1,234	1,017
Interest income	1	4	10
Interest expense	(125)	(101)	(124)
Net gain on divestiture of businesses	84	—	27
Other income	81	5	5
Net income from unconsolidated investees	52	70	84
Income before income taxes	1,534	1,212	1,019
Income tax provision	347	279	245
Net income attributable to Nasdaq	\$ 1,187	\$ 933	\$ 774
Per share information:			
Basic earnings per share	\$ 7.15	\$ 5.67	\$ 4.69
Diluted earnings per share	\$ 7.05	\$ 5.59	\$ 4.63
Cash dividends declared per common share	\$ 2.11	\$ 1.94	\$ 1.85

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2021	2020	2019
Net income	\$ 1,187	\$ 933	\$ 774
Other comprehensive income (loss):			
Foreign currency translation gains (losses)	(176)	269	(122)
Income tax benefit (expense) ⁽¹⁾	(42)	49	(31)
Foreign currency translation, net	(218)	318	(153)
Employee benefit plan adjustment losses	(1)	—	(4)
Employee benefit plan income tax benefit	—	—	1
Employee benefit plan, net	(1)	—	(3)
Total other comprehensive income (loss), net of tax	(219)	318	(156)
Comprehensive income attributable to Nasdaq	<u>\$ 968</u>	<u>\$ 1,251</u>	<u>\$ 618</u>

⁽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,					
	2021		2020		2019	
	Shares	\$	Shares	\$	Shares	\$
Common stock	165	2	165	2	165	2
Additional paid-in capital						
Beginning balance		2,547		2,632		2,716
Share repurchase program	(3)	(468)	(2)	(222)	(2)	(200)
ASR agreement ⁽¹⁾	(2)	(475)	—	—	—	—
Share-based compensation	1	90	1	87	1	79
Stock option exercises, net	—	1	—	2	—	2
Other issuances of common stock, net ⁽²⁾	6	257	1	48	1	35
Ending balance		1,952		2,547		2,632
Common stock in treasury, at cost						
Beginning balance		(376)		(336)		(297)
Other employee stock activity	—	(61)	—	(40)	—	(39)
Ending balance		(437)		(376)		(336)
Accumulated other comprehensive loss						
Beginning balance		(1,368)		(1,686)		(1,530)
Other comprehensive income (loss)		(219)		318		(156)
Ending balance		(1,587)		(1,368)		(1,686)
Retained earnings						
Beginning balance		5,628		5,027		4,558
Impact of adoption of ASU 2016-13		—		(12)		—
Net income		1,187		933		774
Cash dividends declared per common share		(350)		(320)		(305)
Ending balance		6,465		5,628		5,027
Total Nasdaq stockholders' equity		6,395		6,433		5,639
Noncontrolling interests						
Beginning balance		3		—		—
Net activity related to noncontrolling interests		7		3		—
Ending balance		10		3		—
Total Equity		167	\$ 6,405	165	\$ 6,436	165
						\$ 5,639

⁽¹⁾ See “ASR Agreements,” of Note 12, “Nasdaq Stockholders’ Equity,” for further discussion.

⁽²⁾ For the year ended December 31, 2021 primarily relates to the tax impact of shares accelerated and issued upon the sale of our U.S. Fixed Income business. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” for further discussion.

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2021	2020	2019
Cash flows from operating activities:			
Net income	\$ 1,187	\$ 933	\$ 774
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	278	202	190
Share-based compensation	90	87	79
Deferred income taxes	94	41	35
Extinguishment of debt	33	36	11
Net gain on divestiture of businesses	(84)	—	(27)
Net income from unconsolidated investees	(52)	(70)	(84)
Other reconciling items included in net income	6	32	33
Net change in operating assets and liabilities, net of effects of acquisitions:			
Receivables, net	(6)	(167)	(42)
Other assets	(140)	26	(173)
Accounts payable and accrued expenses	(17)	5	(49)
Section 31 fees payable to SEC	(162)	92	23
Accrued personnel costs	28	32	(9)
Deferred revenue	106	15	(15)
Other liabilities ⁽¹⁾	(278)	(12)	217
Net cash provided by operating activities	1,083	1,252	963
Cash flows from investing activities:			
Purchases of securities	(316)	(283)	(579)
Proceeds from sales and redemptions of securities	285	402	543
Proceeds from divestiture of businesses, net of cash divested	190	—	132
Proceeds from sale of investment securities	—	22	11
Acquisition of businesses, net of cash and cash equivalents acquired	(2,430)	(157)	(206)
Purchases of property and equipment	(163)	(188)	(127)
Investments related to default funds and margin deposits, net ⁽²⁾	(132)	109	(174)
Other investing activities	(87)	(27)	(14)
Net cash used in investing activities	(2,653)	(122)	(414)
Cash flows from financing activities:			
Proceeds from (repayments of) commercial paper, net	420	(391)	116
Repayments of borrowings under our credit commitment and debt obligations	(804)	(1,468)	(1,215)
Payment of debt extinguishment cost	(33)	(36)	(11)
Proceeds from issuances of debt, net of issuance costs and utilization of credit commitment	826	3,807	680
Repurchases of common stock	(468)	(222)	(200)
ASR agreement	(475)	—	—
Dividends paid	(350)	(320)	(305)
Proceeds received from employee stock activity and other issuances	26	50	37
Payments related to employee shares withheld for taxes	(61)	(40)	(39)
Default funds and margin deposits	2,330	527	(1,535)
Other financing activities	7	3	—
Net cash provided by (used in) financing activities	1,418	1,910	(2,472)
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	(331)	353	(188)
Net increase (decrease) in cash and cash equivalents and restricted cash and cash equivalents	(483)	3,393	(2,111)
Cash and cash equivalents, restricted cash and cash equivalents at beginning of period	5,979	2,586	4,697
Cash and cash equivalents, restricted cash and cash equivalents at end of period	<u>\$ 5,496</u>	<u>\$ 5,979</u>	<u>\$ 2,586</u>
Reconciliation of Cash, Cash Equivalents and Restricted Cash and Cash Equivalents			
Cash and cash equivalents	\$ 393	\$ 2,745	\$ 332
Restricted cash and cash equivalents	29	37	30
Restricted cash and cash equivalents (default funds and margin deposits)	5,074	3,197	2,224
Total	<u>\$ 5,496</u>	<u>\$ 5,979</u>	<u>\$ 2,586</u>
Supplemental Disclosure Cash Flow Information			
Cash paid for: Interest	\$ 118	\$ 97	\$ 120
Income taxes, net of refund ⁽¹⁾	\$ 501	\$ 290	\$ 205

⁽¹⁾ Includes payment of an acquired tax liability in 2021 related to the Verafin acquisition. See "2021 Acquisition," of Note 4, "Acquisitions and Divestiture," for further discussion.

⁽²⁾ 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.

Nasdaq, Inc.

Notes to Consolidated Financial Statements

1. ORGANIZATION AND NATURE OF OPERATIONS

Nasdaq is a global technology company serving the capital markets and other industries. Our diverse offerings of data, analytics, software and services enable clients to optimize and execute their business vision with confidence.

We manage, operate and provide our products and services in four business segments: Market Technology, Investment Intelligence, Corporate Platforms, and Market Services.

For further discussion of our businesses, see “Products and Services,” of “Item 1. Business.”

Market Technology

Our Market Technology segment 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 solutions are utilized by leading markets in the U.S., Europe and Asia as well as emerging markets in the Middle East, Latin America, and Africa. The Market Technology segment includes our Anti Financial Crime Technology business and our Marketplace Infrastructure Technology business.

Our Anti Financial Crime Technology business includes Nasdaq Trade Surveillance, a SaaS solution designed for brokers and other market participants to assist them in complying with market rules, regulations and internal market surveillance policies. The Nasdaq Automated Investigator is our cloud-deployed anti-money laundering offering with an automated investigator tool for retail banks. In February 2021, we completed the acquisition of Verafin, a SaaS technology provider of anti-financial crime management solutions that offers a cloud-based platform to help detect, investigate, and report money laundering and financial fraud. See “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture,” for further discussion.

Our Marketplace Infrastructure Technology business powers over 130 market infrastructure operators and new market clients in more than 55 countries and handles 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, and non-capital markets customers, including those in insurance liabilities securitization, cryptocurrencies and sports wagering.

Investment Intelligence

Our Investment Intelligence segment includes our Market Data, Index and Analytics businesses.

Our Market Data business sells and distributes historical and real-time market data to the sell-side, the institutional investing community, retail online brokers, proprietary trading shops, other venues, internet portals and data distributors. Our market data products can enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally. Additionally, our Nasdaq Cloud Data Service provided on our Data Link data dissemination platform provides a flexible and efficient method of delivery for real-time exchange data and other financial information.

Our Index business develops and licenses Nasdaq-branded indexes and financial products. We also license cash-settled options, futures and options on futures on our indexes. As of December 31, 2021, 362 ETPs listed on 25 exchanges in over 20 countries tracked a Nasdaq index and accounted for \$424 billion in AUM.

Our Analytics business provides asset managers, investment consultants and institutional asset owners with investment insights and workflow solutions. The eVestment platform provides asset owners and allocators with analytics to make data-driven investment decisions, enables asset managers to position institutional products worldwide and provides liquidity solutions for private funds. Together with Solovis, a cloud-based multi-asset portfolio management provider, we offer a suite of cloud-based solutions that help institutional investors and consultants conduct pre-investment due diligence, and monitor their portfolios post-investment. During 2021, we launched Data Fabric, a managed data solution utilizing our Nasdaq Data Link to help investment management firms scale their data infrastructure with enhanced quality, governance and integrity.

Corporate Platforms

Our Corporate Platforms segment includes our Listing Services and IR & ESG Services businesses. These businesses deliver critical capital market and ESG solutions across the lifecycle of public and private companies.

Our Listing Services business includes our U.S. and European Listing Services businesses. We operate 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. In July 2021, we contributed our NPM business, which was included in our Listing Services business, to a standalone, independent company, of which we

own the largest minority interest, together with a consortium of third party financial institutions. The NPM business provides liquidity solutions for private companies to enable employees, investors, and companies to execute transactions.

As of December 31, 2021, there were 4,178 total listings on The Nasdaq Stock Market, including 441 ETPs. The combined market capitalization was approximately \$28.2 trillion. In Europe, the Nasdaq Nordic and Nasdaq Baltic exchanges, together with Nasdaq First North, were home to 1,235 listed companies with a combined market capitalization of approximately \$2.6 trillion.

We continue to grow our U.S. Corporate Bond exchange for the listing of corporate bonds. This exchange operates pursuant to The Nasdaq Stock Market exchange license and is powered by the NFF. As of December 31, 2021, 107 corporate bonds were listed on the Corporate Bond exchange. We also continue to develop the Nasdaq Sustainable Bond Network, a platform for increased transparency in the global sustainable bond markets.

Our IR & ESG Services business includes our Investor Relations Intelligence and Governance Solutions businesses, 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, various non-profit organizations to hospitals and health care 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 consultative services. In December 2021, we acquired QDiligence, a provider of software that facilitates digital director and officer questionnaires and self-evaluations for boards of directors and corporate secretaries.

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC and Trade Management Services businesses. 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 broker services, clearing, settlement and central depository services. In January 2020, we commenced an orderly wind-down of our Nordic broker services operations business. We expect this wind-down to continue through the second quarter of 2022. In June 2021, we sold our U.S. Fixed Income business which included an electronic platform for trading of U.S. Treasuries. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” for further discussion. Also in June 2021, we completed the acquisition of a majority stake in Puro.earth, a Finnish-based leading marketplace for carbon removal.

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.

During the fourth quarter of 2021, we adjusted the presentation of cash and cash equivalents held within default funds and margin deposits on the consolidated statement of cash flows from operating activities, to present them as restricted cash and cash equivalents with the associated changes being included within cash flows from investing and financing activities. These balances cannot be used to satisfy the Company’s operating or other liabilities. See Note 15, “Clearing Operations,” for further discussion of the default funds and margin deposits.

Prior period amounts have also been adjusted to conform to current period presentation. This immaterial adjustment had no impact on our previously reported consolidated balance sheets, consolidated statements of income, or consolidated statements of comprehensive income.

The tables below present a summary of the 2020 and 2019 Statements of Cash Flows as reported and as adjusted:

	Year Ended December 31, 2020		
	As Reported	Adjustment	Adjusted
	(in millions)		
Net cash provided by operating activities	\$ 1,252	\$ —	\$ 1,252
Net cash used in investing activities	(231)	109	(122)
Net cash provided by (used in) financing activities	1,383	527	1,910
Effect of exchange rate changes on cash, cash equivalents, restricted cash and cash equivalents	16	337	353
Net increase (decrease) in cash, cash equivalents, restricted cash and cash equivalents	2,420	973	3,393
Cash, cash equivalents, restricted cash and cash equivalents at beginning of period	362	2,224	2,586
Cash, cash equivalents, restricted cash and cash equivalents at end of period	\$ 2,782	\$ 3,197	\$ 5,979
Reconciliation of Cash, Cash Equivalents and Restricted Cash and Cash Equivalents			
Cash and cash equivalents	\$ 2,745	\$ —	\$ 2,745
Restricted cash and cash equivalents	37	—	37
Restricted cash and cash equivalents (Default funds and margin deposits)	—	3,197	3,197
Total	\$ 2,782	\$ 3,197	\$ 5,979

	Year Ended December 31, 2019		
	As Reported	Adjustment	Adjusted
	(in millions)		
Net cash provided by operating activities	\$ 963	\$ —	\$ 963
Net cash used in investing activities	(240)	(174)	(414)
Net cash provided by (used in) financing activities	(937)	(1,535)	(2,472)
Effect of exchange rate changes on cash, cash equivalents, restricted cash and cash equivalents	(10)	(178)	(188)
Net increase (decrease) in cash, cash equivalents, restricted cash and cash equivalents	(224)	(1,887)	(2,111)
Cash, cash equivalents, restricted cash and cash equivalents at beginning of period	586	4,111	4,697
Cash, cash equivalents, restricted cash and cash equivalents at end of period	\$ 362	\$ 2,224	\$ 2,586
Reconciliation of Cash, Cash Equivalents and Restricted Cash and Cash Equivalents			
Cash and cash equivalents	\$ 332	\$ —	\$ 332
Restricted cash and cash equivalents	30	—	30
Restricted cash and cash equivalents (Default funds and margin deposits)	—	2,224	2,224
Total	\$ 362	\$ 2,224	\$ 2,586

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.

Nasdaq has considered the impact of COVID-19 on the assumptions and estimates used in evaluating our assets and liabilities, including but not limited to our goodwill, intangible assets, equity method investments, equity securities and allowance for losses on accounts receivable. We determined that there was no material adverse impact on our results of operations and financial position for the year ended December 31, 2021. These estimates may change as new events occur and additional information is obtained. Actual results could differ from these estimates under different assumptions or conditions.

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 \$109 million as of December 31, 2021 and \$2,509 million as of December 31, 2020. Cash equivalents are carried at cost plus accrued interest, which approximates fair value due to the short maturities of these investments. The decrease in cash equivalents in 2021 was primarily due to the use of net proceeds of \$1.9 billion from issuances of long-term debt in the fourth quarter of 2020 to acquire Verafin in February 2021. See "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture," for further discussion.

Restricted Cash

Restricted cash and cash equivalents, which was \$29 million as of December 31, 2021 and \$37 million as of December 31, 2020, 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, 2021 and 2020, restricted cash and cash equivalents primarily includes funds held 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 member firms, market data distributors, listed companies, investor relations intelligence, governance and market technology customers. 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 \$17 million as of December 31, 2021, \$21 million as of December 31, 2020 and \$9 million as of December 31, 2019. The change in the balance in 2021 was immaterial.

In 2020 we adopted ASU 2016-13, which changed the impairment model for certain financial instruments. We recorded a \$12 million non-cash cumulative effect adjustment to retained earnings on our opening Consolidated Balance Sheets as of January 1, 2020 as a result of the adoption of this new standard.

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, 2021, 2020 and 2019, 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 2021, 2020 or 2019.

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, 2021 and 2020, 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 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, and 2033 Notes into U.S. dollars is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. See "2029 Notes," "2030 Notes," and "2033 Notes," 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, 2 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. 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, 2021, these leases have varying lease terms with remaining maturities ranging from 1 month to 15 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. 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 exceed 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, 2021, 2020 and 2019. 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.

We recorded pre-tax, non-cash finite-lived intangible assets impairment charges of \$14 million in 2021 and property and equipment asset impairment charges of \$4 million in 2020 and \$24 million in 2019.

Revenue Recognition and Transaction-Based Expenses

Revenue From Contracts With Customers

Our revenue recognition policies under ASU 2014-09, “Revenue from Contracts with Customers (Topic 606),” are described in the following paragraphs.

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 is net of an allowance for credit losses of \$17 million as of December 31, 2021 and \$21 million as of December 31, 2020. The changes in the balance between periods were immaterial. We do not have obligations for warranties, returns or refunds to customers.

For the majority of our contracts with customers there is no 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.” Deferred revenue primarily represents our contract liabilities related to our fees for annual and initial listings, market technology, IR & ESG services and investment intelligence contracts. Deferred revenue is the only significant contract asset or liability as of December 31, 2021. 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.

Revenue Recognition

Our primary revenue contract classifications are described below. Although we may discuss additional revenue details in our “Management's Discussion and Analysis of Financial Condition and Results of Operations,” the categories below best represent those that depict similar economic characteristics of the nature, amount, timing and uncertainty of our revenues and cash flows.

Market Technology

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

In our market infrastructure technology business, 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.

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.

Investment Intelligence

Market Data

Market data revenues are earned from U.S. and European proprietary market data products. In the U.S., we also earn revenues from U.S. shared tape plans.

We earn revenues primarily based on the number of data subscribers and distributors of our data. Market data revenues are subscription-based and are recognized on a monthly basis.

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. Revenues are presented on a net basis as we are acting as an agent in this arrangement.

Market Data Revenue Sharing

The most significant component of market data revenues recorded on a net basis is the UTP Plan revenue sharing in the U.S. All indicators of principal versus agent reporting under U.S. GAAP have been considered in analyzing the appropriate presentation of the revenue sharing. However, the following are the primary indicators of net reporting:

- We are the administrator for the 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 is comprised of 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.

The exchanges that comprise Nasdaq Nordic and Nasdaq Baltic do not have any material market data revenue sharing agreements.

Index

We develop and license Nasdaq branded indexes and financial products. We also provide index data products and custom calculation services for third-party clients. Revenues primarily include license fees from these branded indexes and financial products in the U.S. and abroad. We primarily have two types of license agreements: transaction-based licenses and asset-based licenses. Transaction-based licenses are 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. Asset-based licenses are also 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.

Analytics

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.

Corporate Platforms

Listing Services

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 IR & ESG services (when a company qualifies to receive these services 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 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.

IR & ESG Services

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

IR & ESG Services 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.

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.

The majority of our FICC trading and clearing customers are charged transaction fees, as discussed above, which are primarily based on volume of traded and cleared contracts.

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. cash equity trading, 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.

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. We also offer broker services to financial participants in the Nordic market primarily offering back office technology solutions. Revenues from broker services are based on a fixed basic fee for licensing, maintenance and support and development, and an incremental fee depending on the number of transactions. Broker services revenues are generally billed and recognized monthly. As previously disclosed, in January 2020, we commenced an orderly wind-down of this broker services business. We expect this wind-down to continue through the second quarter of 2022.

Other Revenues

For the years ended December 31, 2021, 2020 and 2019, other revenues include the revenues associated with our U.S. Fixed Income business, which was sold in June 2021. Prior to the sale date, these revenues were included in our Market Services and Investment Intelligence segments. See "2021 Divestiture," of Note 4, "Acquisitions and Divestiture," to the consolidated financial statements for further discussion of this divestiture. Additionally, other revenues include revenues 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 included in our Corporate Platforms segment. For the year ended December 31, 2019, other revenues also include the revenues from the B Wise enterprise governance, risk and compliance software platform, which was sold in March 2019. Prior to the sale date, these revenues were included in our IR & ESG Services business within our Corporate Platforms segment and were both subscription and transaction-based revenues.

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. As of December 31, 2021, all planned integrations have been completed.

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. See Note 21, "Subsequent Events," for further discussion.

Recent Accounting Developments

In October 2021, the FASB issued ASU 2021-08, "Business Combinations (Topic 805) - Accounting for Contract Assets and Contract Liabilities from Contracts with Customers." The ASU requires an acquirer in a business combination to recognize and measure contract assets and contract liabilities from acquired contracts using the revenue recognition guidance under Topic 606 in order to align the recognition of a contract liability with the definition of a performance obligation. This approach differs from the current requirement to measure contract assets and contract liabilities acquired in a business combination at fair value. This ASU is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. Early adoption is permitted. We adopted this standard on January 1, 2022 on a prospective basis.

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, 2021, 2020 and 2019:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Market Technology			
Anti Financial Crime Technology	\$ 247	\$ 130	\$ 121
Marketplace Infrastructure Technology	216	227	217
Investment Intelligence			
Market data	414	399	387
Index	459	324	223
Analytics	203	175	158
Corporate Platforms			
Listing services	387	307	290
IR & ESG Services	226	214	200
Market Services			
Transaction-based trading and clearing, net	916	800	606
Trade management services	325	296	287
Other revenues	27	31	46
Revenues less transaction-based expenses	\$3,420	\$2,903	\$2,535

Substantially all revenues from the Market Technology, Investment Intelligence and Corporate Platforms segments were recognized over time for the years ended December 31, 2021, 2020, and 2019. For the years ended December 31, 2021, 2020 and 2019 approximately 70.8%, 69.8% and 64.4%, respectively, of Market Services revenues were recognized at a point in time and 29.2%, 30.2% and 35.6%, 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 \$17 million as of December 31, 2021 and \$21 million as of December 31, 2020. The changes in the balance between periods were immaterial. 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 listings 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, 2021. 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 Market Technology, Analytics, annual and initial listings, and IR & ESG Services contracts. See Note 8, “Deferred Revenue,” for our discussion on deferred revenue balances, activity, and expected timing of recognition.

We do not have a material amount of revenue 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 our initial listings the transaction price allocated to remaining performance obligations is included in deferred revenue. For our market technology, Analytics, and IR & ESG 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, 2021:

	Market Technology	Analytics	IR & ESG Services	Total
	(in millions)			
2022	\$ 506	\$ 63	\$ 57	\$ 626
2023	337	38	30	405
2024	178	15	8	201
2025	106	4	1	111
2026	68	3	—	71
2027+	92	2	—	94
Total	<u>\$ 1,287</u>	<u>\$ 125</u>	<u>\$ 96</u>	<u>\$ 1,508</u>

4. ACQUISITIONS AND DIVESTITURE

We completed the following divestiture and acquisitions in 2021 and 2020. Financial results of each transaction are included in our consolidated financial statements from the date of each acquisition.

2021 Divestiture

In June 2021, we sold our U.S. Fixed Income business, which was part of our FICC business within our Market Services segment, to Tradeweb Markets Inc. We recognized a pre-tax gain on the sale of \$84 million, net of disposal costs. The pre-tax gain is included in net gain on divestiture of businesses in the Consolidated Statements of Income.

As part of the purchase price consideration related to this business when it was acquired in 2013, we agreed to future annual issuances of 992,247 shares of Nasdaq common stock, which approximated certain tax benefits associated with the transaction. Such contingent future issuances of Nasdaq common stock were to be issued annually through 2027 if Nasdaq’s total gross revenues equaled or exceeded \$25 million in each such year. The contingent future issuances of Nasdaq common stock were subject to anti-dilution protections and acceleration upon certain events.

Upon the consummation of the sale of our U.S. Fixed Income business, the aggregate number of Nasdaq shares remaining under the contingent obligation described above were reduced (pursuant to the discounting adjustment provisions set forth in the original purchase agreement for Nasdaq’s acquisition of the business) and accelerated, resulting in an issuance of approximately 6.2 million shares of Nasdaq common stock to an assignee of the entity that sold this business to us in 2013.

Nasdaq intends to use the proceeds from the sale, available tax benefits and working and clearing capital of this business, as well as other sources of cash, to repurchase shares of Nasdaq common stock to reduce the impact on earnings per share dilution from the sale.

To facilitate these repurchases, the board of directors authorized an increase to the share repurchase program. See “Share Repurchase Program,” of Note 12, “Nasdaq Stockholders’ Equity,” for further discussion.

2021 Acquisition

Acquisition of Verafin

In February 2021, we completed the acquisition of Verafin, a SaaS technology provider of anti-financial crime management solutions that provides a cloud-based platform to help detect, investigate, and report money laundering and financial fraud, for an aggregate purchase price of \$2.75 billion, subject to certain adjustments. The \$2.75 billion purchase price includes a cash payment of \$102 million, reflected in cash from operating activities in our Consolidated Statements of Cash Flows, the release of which is subject to certain employment-related conditions over three years following the closing of the transaction. This payment was recorded as a prepaid expense and is recorded in other current and non-current assets in our Consolidated Balance Sheets and will be amortized to merger and strategic initiatives expense on a straight-line basis over a three-year period. Verafin is part of our Market Technology segment.

Nasdaq used the net proceeds from our offering of senior notes in December 2020, commercial paper issuances, and cash on hand to fund this acquisition. See “Commercial Paper Program,” and “Senior Unsecured Notes Due 2022, 2031 and 2040,” of Note 9, “Debt Obligations,” for further discussion.

As of December 31, 2021, the allocation of purchase price includes the effect of a \$9 million measurement period adjustment recorded during the second quarter. This adjustment resulted in an increase to both total net liabilities acquired and goodwill. Additional adjustments to the provisional values may result before the end of the measurement period, a period not to exceed 12 months from the acquisition date. These adjustments, which may include tax and other estimates will be recorded in the reporting period in which the adjustment amounts are determined. Changes to amounts recorded as assets and liabilities may result in a corresponding adjustment to goodwill.

	(in millions)
Goodwill	\$ 1,882
Acquired Intangible Assets	815
Total Net Liabilities Acquired	(46)
Purchase Consideration	<u>\$ 2,651</u>

Intangible Assets

The following table presents the details of acquired intangible assets for Verafin at the date of acquisition. Acquired intangible assets with finite lives are amortized using the straight-line method.

	Customer Relationships	Technology	Trade Name	Total Acquired Intangible Assets
Intangible asset value (in millions)	\$ 532	\$ 246	\$ 37	\$ 815
Discount rate used	7.5 %	7.5 %	7.5 %	
Estimated average useful life	22 years	7 years	20 years	

Customer Relationships

Customer relationships represent the non-contractual and 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.

For our acquisition of Verafin, 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 20 years.

Estimated Useful Life

We estimate the useful life based on the historical behavior of the customers and a parallel analysis of the customers using the excess earnings method.

Technology

As part of our acquisition of Verafin, we acquired developed technology.

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 rates used reflect 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.”

Estimated Useful Life

We have estimated the useful life of the Verafin technology to be 7 years.

Trade Name

As part of our acquisition of Verafin, we acquired a trade name. The trade name is recognized in the industry and carries a reputation for quality. As such, the reputation and positive recognition embodied in the trade name is a valuable asset to Nasdaq.

Methodology

The Verafin trade name was 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.”

Estimated Useful Life

We have estimated the useful life of the Verafin trade name to be 20 years and our intention is to continue to use it in the branding of products.

2020 Acquisition

Acquisition of Solovis

In March 2020, we acquired Solovis, a provider of multi-asset class portfolio management, analytics and reporting tools across public and private markets. Solovis is part of our Investment Intelligence segment.

Pro Forma Results and Acquisition-Related Costs

The consolidated financial statements for the years ended December 31, 2021, 2020 and 2019 include the financial results of the above acquisitions from the dates of these acquisitions. Pro forma financial results have not been presented since these acquisitions both individually and in the aggregate were not material to our financial results.

Acquisition-related costs for the transactions described above 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, 2021:

	(in millions)
<u>Market Technology</u>	
Balance at December 31, 2020	\$ 309
Goodwill acquired	1,873
Other adjustments	(11)
Balance at December 31, 2021	<u>\$ 2,171</u>
<u>Investment Intelligence</u>	
Balance at December 31, 2020	\$ 2,541
Divestiture of business	(23)
Other adjustments	(90)
Balance at December 31, 2021	<u>\$ 2,428</u>
<u>Corporate Platforms</u>	
Balance at December 31, 2020	\$ 481
Other adjustments	(12)
Balance at December 31, 2021	<u>\$ 469</u>
<u>Market Services</u>	
Balance at December 31, 2020	\$ 3,519
Goodwill acquired	15
Divestiture of business	(37)
Other adjustments	(132)
Balance at December 31, 2021	<u>\$ 3,365</u>
<u>Total</u>	
Balance at December 31, 2020	\$ 6,850
Goodwill acquired	1,888
Divestiture of business	(60)
Other adjustments	(245)
Balance at December 31, 2021	<u>\$ 8,433</u>

In the table above:

- Divestiture of business relates to the sale of our U.S. Fixed Income business. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” for further discussion. In addition to revenues earned through Market Services, our U.S. Fixed Income business also earned fees from market data, which are included in our Investment Intelligence segment. Therefore, a portion of the goodwill was allocated to this segment.
- Other adjustments includes foreign currency translation adjustment. For Market Technology, it also includes a measurement period adjustment related to our acquisition of Verafin. See “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture,” for further discussion.

As of December 31, 2021, the amount of goodwill, primarily relating to our acquisition of Verafin, that is expected to be deductible for tax purposes in future periods is \$1.8 billion.

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, 2021, 2020 and 2019; 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, 2021	December 31, 2020
Finite-Lived Intangible Assets	(in millions)	
Gross Amount		
Technology	\$ 295	\$ 76
Customer relationships	2,050	1,599
Trade names and other	60	18
Foreign currency translation adjustment	(143)	(104)
Total gross amount	\$ 2,262	\$ 1,589
Accumulated Amortization		
Technology	\$ (54)	\$ (24)
Customer relationships	(711)	(648)
Trade names and other	(11)	(6)
Foreign currency translation adjustment	81	58
Total accumulated amortization	\$ (695)	\$ (620)
Net Amount		
Technology	\$ 241	\$ 52
Customer relationships	1,339	951
Trade names and other	49	12
Foreign currency translation adjustment	(62)	(46)
Total definite-lived intangible assets	\$ 1,567	\$ 969
Indefinite-Lived Intangible Assets		
Exchange and clearing registrations	\$ 1,257	\$ 1,257
Trade names	121	121
Licenses	52	52
Foreign currency translation adjustment	(184)	(144)
Total indefinite-lived intangible assets	\$ 1,246	\$ 1,286
Total intangible assets, net	\$ 2,813	\$ 2,255

The change in the gross and net amounts for technology, customer relationships and trade names and other finite-lived intangible assets as of December 31, 2021 compared with December 31, 2020 is primarily related to our acquisition of Verafin. The change in the gross and net amounts for customer relationships as of December 31, 2021 compared with December 31, 2020 is also related to the divestiture of our U.S. Fixed Income business. See “2021 Acquisition,” and “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” for further discussion of these transactions. There was no impairment of indefinite-lived intangible assets for the years ended December 31, 2021, 2020 and 2019. 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. There were no material finite-lived impairment charges in 2020 and 2019.

The following table presents our amortization expense for acquired finite-lived intangible assets:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Amortization expense	\$ 170	\$ 103	\$ 101

The increase in amortization expense for the year ended December 31, 2021 compared with the same periods in 2020 and 2019 was primarily due to additional amortization expense for acquired intangible assets related to our acquisition of Verafin. These amounts are included in depreciation and amortization expense in the Consolidated Statements of Income.

The table below presents the estimated future amortization expense (excluding the impact of foreign currency translation adjustments of \$62 million as of December 31, 2021) of acquired finite-lived intangible assets as of December 31, 2021:

	(in millions)
2022	\$ 161
2023	157
2024	152
2025	149
2026	146
2027+	864
Total	\$ 1,629

6. INVESTMENTS

The following table presents the details of our investments:

	December 31, 2021	December 31, 2020
	(in millions)	
Financial investments	\$ 208	\$ 195
Equity method investments	\$ 363	\$ 216
Equity securities	\$ 67	\$ 60

Financial Investments

Financial investments are comprised of trading securities, primarily highly rated European government debt securities, of which \$162 million as of December 31, 2021 and \$175 million as of December 31, 2020, 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, 2021 and 2020, 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 end December 31, 2021 and 2020.

Net income recognized from our equity interest in the earnings and losses of these equity method investments, primarily OCC, was \$52 million for the year ended December 31, 2021, \$70 million for the year ended December 31, 2020 and \$84 million for the year ended December 31, 2019. For the year ended December 31, 2021, lower equity interest in the earnings of OCC as compared to 2020 and 2019 is primarily driven by a reduction, in 2021, in the clearing fee rates that OCC charged its customers.

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 primarily 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 year ended December 31, 2021, 2020 and 2019. As of December 31, 2021 and December 31, 2020, our equity securities primarily represent various strategic investments made through our corporate venture program as well as investments acquired through various acquisitions.

7. PROPERTY AND EQUIPMENT, NET

The following table presents our major categories of property and equipment, net:

	Year Ended December 31,	
	2021	2020
	(in millions)	
Data processing equipment and software	\$ 735	\$ 732
Furniture, equipment and leasehold improvements	288	300
Total property and equipment	1,023	1,032
Less: accumulated depreciation and amortization and impairment charges	(514)	(557)
Total property and equipment, net	\$ 509	\$ 475

Depreciation and amortization expense for property and equipment was \$108 million for the year ended December 31, 2021, \$99 million for the year ended December 31, 2020, and \$89 million for the year ended December 31, 2019. 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 \$4 million in 2021, \$14 million in 2020 and \$26 million in 2019. These charges are included in restructuring charges in the Consolidated Statements of Income. See Note 20, "Restructuring Charges," for a discussion of our 2019 restructuring plan. There were no other material impairments of property and equipment recorded in 2021, 2020 or 2019.

As of December 31, 2021 and 2020, 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, 2021 are reflected in the following table:

	Balance at December 31, 2020	Additions	Revenue Recognized	Adjustments	Balance at December 31, 2021
	(in millions)				
Market Technology	\$ 53	\$ 113	\$ (46)	\$ (3)	\$ 117
Investment Intelligence	97	104	(95)	—	106
Corporate Platforms:					
Initial Listing	91	97	(41)	(2)	145
Annual Listings	2	3	(2)	(1)	2
IR & ESG Services	46	52	(41)	—	57
Other	17	15	(9)	(2)	21
Total	\$ 306	\$ 384	\$ (234)	\$ (8)	\$ 448

In the preceding table:

- Additions primarily reflect deferred revenue billed in the current period, net of recognition. Market Technology additions include deferred revenue acquired as part of the acquisition of Verafin.
- 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 non-U.S. listing of additional shares fees. Listing of additional shares fees are included in our Listing Services business.

As of December 31, 2021, we estimate that our deferred revenue will be recognized in the following years:

Fiscal year ended:	2022	2023	2024	2025	2026	2027+	Total
	(in millions)						
Market Technology	\$ 109	\$ 6	\$ 1	\$ 1	\$ —	\$ —	\$ 117
Investment Intelligence	104	2	—	—	—	—	106
Corporate Platforms:							
Initial Listings	49	35	26	17	14	4	145
Annual Listings	2	—	—	—	—	—	2
IR & ESG Services	56	1	—	—	—	—	57
Other	9	7	4	1	—	—	21
Total	\$ 329	\$ 51	\$ 31	\$ 19	\$ 14	\$ 4	\$ 448

In the above table, the timing of recognition of our deferred market technology revenues is primarily dependent upon the completion of customization and any significant modifications made pursuant to existing market technology contracts. As such, as it relates to market technology revenues, the timing represents our best estimate.

9. DEBT OBLIGATIONS

The following table presents the changes in the carrying amount of our debt obligations during the year ended December 31, 2021:

	December 31, 2020	Additions	Payments, Foreign Currency Translation and Accretion	December 31, 2021
	(in millions)			
Short-term debt - commercial paper	\$ —	\$ 4,079	\$ (3,659)	\$ 420
2022 Notes	597	—	1	598
Total short-term debt	\$ 597	\$ 4,079	\$ (3,658)	\$ 1,018
Long-term debt - senior unsecured notes:				
2024 Notes	\$ 498	\$ —	\$ 1	\$ 499
2023 Notes	730	—	(730)	—
2026 Notes	497	—	1	498
2029 Notes	726	—	(50)	676
2030 Notes	726	—	(50)	676
2050 Notes	485	—	1	486
2031 Notes	643	—	—	643
2040 Notes	643	—	1	644
2033 Notes	—	726	(32)	694
2020 Credit Facility	(4)	100	(100)	(4)
Total long-term debt	\$ 4,944	\$ 826	\$ (958)	\$ 4,812
Total debt obligations	\$ 5,541	\$ 4,905	\$ (4,616)	\$ 5,830

In the table above, the 2022 Notes were reclassified to short-term debt as of December 31, 2021.

Commercial Paper Program

Our U.S. dollar commercial paper program is supported by our 2020 Credit Facility which provides liquidity support for the repayment of commercial paper issued through this program. See “2020 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.

In February 2021, we issued \$475 million of commercial paper to partially fund the acquisition of Verafin. For further discussion of the acquisition of Verafin, see “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture.”

In July 2021, we issued commercial paper to partially fund our ASR agreement. See “ASR Agreements,” of Note 12, “Nasdaq Stockholders' Equity.”

As of December 31, 2021, commercial paper notes in the table above reflect the aggregate principal amount outstanding, less the unamortized discount which is being accreted through interest expense over the life of the applicable notes. The original maturities of these notes range from 31 days to 66 days and the weighted-average maturity is 29 days. The weighted-average effective interest rate is 0.34% per annum.

Senior Unsecured Notes

Our 2022 and 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, 2021, the amounts in the table above reflect the aggregate principal amount, less the unamortized debt discount and the unamortized debt issuance costs which are being accreted through interest expense over the life of the applicable notes. For our Euro denominated notes, the “Payments, Foreign Currency Translation and Accretion” column also includes 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.

2024 Notes

In May 2014, Nasdaq issued the 2024 Notes, which pay interest semiannually at a rate of 4.25% per annum until June 1, 2024. Such interest rate may vary with Nasdaq’s debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 6.25%.

Early Extinguishment of 2023 Notes

Nasdaq issued the 2023 Notes in May 2016, which paid interest annually at a rate of 1.75% per annum. In August 2021, we primarily used the net proceeds from the 2033 Notes to repay in full and redeem our 2023 Notes. For further discussion see “2033 Notes” below. In connection with the early extinguishment of the 2023 Notes, we recorded a pre-tax charge of \$33 million, which primarily includes a make-whole redemption price premium. This charge is included in general, administrative and other expense in the Consolidated Statements of Income for the year ended December 31, 2021.

2026 Notes

In June 2016, Nasdaq issued the 2026 Notes, which pay interest semi-annually at a rate of 3.85% per annum until June 30, 2026. Such interest rate may vary with Nasdaq’s debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 5.85%.

2029 Notes

In April 2019, Nasdaq issued the 2029 Notes, which pay interest annually at a rate of 1.75% per annum until March 28, 2029. Such interest rate may vary with Nasdaq’s debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 3.75%.

The 2029 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. The decrease in the carrying amount of \$50 million noted in the “Payments, Foreign Currency Translation and Accretion” column in the table above primarily reflects the remeasurement of the 2029 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within Nasdaq's stockholders’ equity in the Consolidated Balance Sheets as of December 31, 2021.

2030 Notes

In February 2020, Nasdaq issued the 2030 Notes. The 2030 Notes pay interest annually in arrears, which began on February 13, 2021.

The 2030 Notes were 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. The decrease in the carrying amount of \$50 million noted in the “Payments, Foreign Currency Translation and Accretion” column in the table above primarily reflects the remeasurement of the 2030 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within Nasdaq's stockholders’ equity in the Consolidated Balance Sheets as of December 31, 2021.

2050 Notes

In April 2020, Nasdaq issued the 2050 Notes. The 2050 Notes pay interest semi-annually in arrears, which began on October 28, 2020. The interest rate of 3.25% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 5.25%.

Senior Unsecured Notes Due 2022, 2031 and 2040

In December 2020, Nasdaq issued the 2022, 2031 and 2040 Notes. The net proceeds were used to partially fund the acquisition of Verafin. For further discussion of the acquisition of Verafin, see “2021 Acquisition,” of Note 4, “Acquisitions and Divestiture.”

2022 Notes

The 2022 Notes pay interest semi-annually in arrears, which began on June 21, 2021. The interest rate of 0.445% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 2.445%.

2031 Notes

The 2031 Notes pay interest semi-annually in arrears, which began on January 15, 2021. The interest rate of 1.650% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 3.65%.

2040 Notes

The 2040 Notes pay interest semi-annually in arrears, which began on June 21, 2021. The interest rate of 2.500% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 4.50%.

2033 Notes

In July 2021, Nasdaq issued €615 million aggregate principal amount of 0.900% senior notes due in 2033, which pay interest annually in arrears, beginning on July 30, 2022. The net proceeds from the 2033 Notes were approximately \$726 million after deducting the underwriting discount and expenses of the offering. We primarily used the net proceeds from the 2033 Notes to redeem all of the 2023 Notes. For further discussion of the 2023 Notes, see "Early Extinguishment of 2023 Notes" above.

The 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. The decrease in the carrying amount of \$32 million noted in the "Payments, Foreign Currency Translation and Accretion" column in the table above primarily reflects the remeasurement of the 2033 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within Nasdaq stockholders' equity in the Consolidated Balance Sheets as of December 31, 2021.

Credit Facilities

2020 Credit Facility

In December 2020, Nasdaq entered into the 2020 Credit Facility, which replaced a former credit facility and consists of a \$1.25 billion five-year revolving credit facility (with sublimits for non-dollar borrowings, swingline borrowings and letters of credit). Nasdaq intends to use funds available under the 2020 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 2020 Credit Facility at any time in whole or in part, without penalty.

As of December 31, 2021, no amounts were outstanding on the 2020 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. Of the \$1.25 billion that is available for borrowing, \$420 million provides liquidity support for the commercial paper program. As such, as of December 31, 2021, the total remaining amount available under the 2020 Credit Facility was \$830 million, excluding the amounts that support the commercial paper program. See "Commercial Paper Program" above for further discussion of our commercial paper program.

Under our 2020 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 LIBOR (or a successor rate to LIBOR), the base rate (as defined in the credit 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 0.125% to 0.350%, 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 year ended December 31, 2021 and 2020.

The 2020 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 2020 Credit Facility includes an option for Nasdaq to increase the available aggregate amount by up to \$625 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 \$212 million as of December 31, 2021 and \$232 million as of December 31, 2020 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, 2021 and 2020.

These facilities include customary affirmative and negative operating covenants and events of default.

Debt Covenants

As of December 31, 2021, 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 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 included in compensation and benefits expense in the Consolidated Statements of Income was \$14 million for the year ended December 31, 2021, \$14 million for the year ended December 31, 2020 and \$13 million for the year ended December 31, 2019.

Pension and Supplemental Executive Retirement Plans

We maintain non-contributory, defined-benefit pension plans, non-qualified SERPs for certain senior executives and other post-retirement benefit plans for eligible employees in the U.S., collectively referred to as the Nasdaq Benefit Plans. Our pension plans and SERPs are frozen. Future service and salary for all participants do not count toward an accrual of benefits under the pension plans 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. The total expense for these plans is included in compensation and benefits expense in the Consolidated Statements of Income and was \$26 million for the year ended December 31, 2021, \$23 million for the year ended December 31, 2020 and \$20 million for the year ended December 31, 2019.

Nasdaq recognizes the funded status of the Nasdaq Benefit Plans, measured as the difference between the fair value of the plan assets and the benefit obligation, in the Consolidated Balance Sheets. The fair value of our U.S. defined-benefit pension plans' assets was \$111 million as of December 31, 2021 and the benefit obligation was \$112 million as of December 31, 2021. As a result, the U.S. defined-benefit pension plans are underfunded by \$1 million as of December 31, 2021. The fair value of our U.S. defined-benefit pension plans' assets was \$119 million as of December 31, 2020 and the benefit obligation was \$118 million as of December 31, 2020. As a result, the U.S. defined-benefit pension plans were fully funded as of December 31, 2020. During 2021 and 2020, we did not make any contributions to our U.S. defined-benefit pension plans. For our SERP and other post-retirement benefit plans, the net underfunded liability was \$34 million as of December 31, 2021 and \$30 million as of December 31, 2020. The underfunded liability for the above plans is included in accrued personnel costs and other non-current liabilities in the Consolidated Balance Sheets. The

plan assets of the Nasdaq Benefit Plans are invested per target allocations adopted by Nasdaq's Pension and 401(k) Committee and are primarily invested in collective fund investments that have underlying investments in fixed income securities. The collective fund investments are valued at net asset value which is a practical expedient to estimate fair value.

Accumulated Other Comprehensive Loss

As of December 31, 2021, accumulated other comprehensive loss for the Nasdaq Benefit Plans was \$26 million reflecting an unrecognized net loss of \$33 million, partially offset by an income tax benefit of \$7 million, primarily due to our pension plans.

Estimated Future Benefit Payments

We expect to make the following benefit payments to participants in the next ten fiscal years under the Nasdaq Benefit Plans:

Fiscal Year Ended:	Pension	SERP	Post-retirement	Total
	(in millions)			
2022	\$ 8	\$ 6	\$ —	\$ 14
2023	7	2	—	9
2024	8	2	—	10
2025	8	2	—	10
2026	10	2	—	12
2027 through 2031	38	8	2	48
	<u>\$ 79</u>	<u>\$ 22</u>	<u>\$ 2</u>	<u>\$ 103</u>

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.

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, 2021, 2020 and 2019, which is included in compensation and benefits expense in the Consolidated Statements of Income:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Share-based compensation expense before income taxes	\$ 90	\$ 87	\$ 79
Income tax benefit	(24)	(23)	(21)
Share-based compensation expense after income taxes	<u>\$ 66</u>	<u>\$ 64</u>	<u>\$ 58</u>

Common Shares Available Under Our Equity Plan

As of December 31, 2021, we had approximately 9.5 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 33.3% on the first anniversary of the grant date, 33.3% on the second anniversary of the grant date, and 33.3% on the third anniversary of the grant date. Restricted stock awards granted to employees at or above the manager level generally vest 33.3% on the second anniversary of the grant date, 33.3% on the third anniversary of the grant date, and 33.3% on the fourth anniversary of the grant date.

Summary of Restricted Stock Activity

The following table summarizes our restricted stock activity for the years ended December 31, 2021, 2020 and 2019:

	Restricted Stock	
	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2018	1,583,375	\$ 68.62
Granted	605,033	85.03
Vested	(548,588)	61.45
Forfeited	(153,064)	73.99
Unvested at December 31, 2019	1,486,756	\$ 77.38
Granted	743,300	89.93
Vested	(499,357)	72.95
Forfeited	(91,648)	81.17
Unvested at December 31, 2020	1,639,051	\$ 84.21
Granted	507,745	151.56
Vested	(541,603)	83.34
Forfeited	(138,853)	102.11
Unvested at December 31, 2021	1,466,340	\$ 106.16

As of December 31, 2021, \$81 million of total unrecognized compensation cost related to restricted stock is expected to be recognized over a weighted-average period of 1.8 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. While the performance periods are complete for all PSUs granted under the one-year performance-based program, some shares underlying these PSUs have not vested.

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 is 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 market conditions, with a three-year cumulative performance period that vest at the end of the performance period. 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. 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 2019 with a three-year performance period exceeded the applicable performance parameters. As a result, an additional 289,307 units above the original target were granted in the first quarter of 2022 and were fully vested upon issuance.

The following weighted-average assumptions were used to determine the weighted-average fair values of the PSU awards granted under the three-year PSU program for the years ended December 31, 2021 and 2020:

	Year Ended December 31,	
	2021	2020
Weighted-average risk free interest rate	0.33 %	0.27 %
Expected volatility	30.30 %	27.40 %
Weighted-average grant date share price	\$ 155.63	\$ 92.34
Weighted-average fair value at grant date	\$ 218.24	\$ 111.50

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, 2021, 2020 and 2019:

	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, 2018	314,231	\$ 74.01	837,750	\$ 96.57
Granted	179,599	83.56	397,553	96.55
Vested	(147,984)	70.64	(431,751)	93.25
Forfeited	(28,595)	75.43	(6,101)	103.29
Unvested at December 31, 2019	317,251	\$ 80.87	797,451	\$ 98.31
Granted	26,780	84.17	320,328	107.42
Vested	(138,423)	78.09	(300,767)	81.57
Forfeited	(36,060)	82.41	(7,023)	98.26
Unvested at December 31, 2020	169,548	\$ 83.33	809,989	\$108.12
Granted	—	—	360,569	175.98
Vested	(99,764)	82.99	(392,727)	116.86
Forfeited	(20,050)	83.29	(13,707)	142.29
Unvested at December 31, 2021	49,734	\$ 84.03	764,124	\$135.04

In the table above, the granted amount includes additional awards granted based on overachievement of performance parameters as well as target awards.

As of December 31, 2021, \$1 million of total unrecognized compensation cost related to the one-year PSU program is expected to be recognized over a weighted-average period of 1.0 year. For the three-year PSU program, \$43 million of total unrecognized compensation cost is expected to be recognized over a weighted-average period of 1.4 years.

Stock Options

A summary of stock option activity for the years ended December 31, 2021, 2020 and 2019 is as follows:

	Number of Stock Options	Weighted- Average Exercise Price
Outstanding at December 31, 2018	448,966	\$ 49.25
Exercised	(69,699)	20.84
Forfeited	(165)	25.28
Outstanding at December 31, 2019	379,102	\$ 54.32
Exercised	(85,195)	23.91
Forfeited	(554)	20.94
Outstanding and exercisable at December 31, 2020	293,353	\$ 63.22
Exercised	(24,409)	25.28
Forfeited	(127)	25.28
Outstanding and exercisable at December 31, 2021	268,817	\$ 66.68

The net cash proceeds from the exercise of 24,409 stock options for the year ended December 31, 2021 was \$1 million. The net cash proceeds from the exercise of 85,195 stock options for the year ended December 31, 2020 was \$2 million. The net cash proceeds from the exercise of 69,699 stock options for the year ended December 31, 2019 was \$2 million.

As of December 31, 2021, the aggregate pre-tax intrinsic value of the outstanding and exercisable stock options in the above table was \$39 million and represents the difference between our closing stock price on December 31, 2021 of \$210.01 and the exercise price, times the number of shares, which would have been received by the option holders had the option holders exercised their stock options on that date. This amount can change based on the fair market value of our common stock. As of December 31, 2021, the weighted-average remaining contractual term of the outstanding and exercisable stock options included in the above table was 5.0 years.

The total pre-tax intrinsic value of stock options exercised was \$3 million for the year ended December 31, 2021, \$9 million for the year ended December 31, 2020 and \$6 million for the year ended December 31, 2019.

ESPP

We have an ESPP under which approximately 4.2 million shares of our common stock were available for future issuance as of December 31, 2021. 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. The following table summarizes employee activity and expense associated with the ESPP for the years ended December 31, 2021, 2020 and 2019:

	Year Ended December 31,		
	2021	2020	2019
Number of shares purchased by employees	201,758	221,123	229,172
Weighted-average price of shares purchased	\$ 124.24	\$ 95.79	\$ 73.79
Compensation expense (in millions)	\$ 7	\$ 5	\$ 4

12. NASDAQ STOCKHOLDERS' EQUITY

Common Stock

As of December 31, 2021, 300,000,000 shares of our common stock were authorized, 173,418,939 shares were issued and 166,679,635 shares were outstanding. As of December 31, 2020, 300,000,000 shares of our common stock were authorized, 171,278,761 shares were issued and 164,933,678 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 6,739,304 shares of common stock in treasury as of December 31, 2021 and 6,345,083 shares as of December 31, 2020, 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

As discussed in “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” on June 16, 2021, our board of directors authorized an increase to our share repurchase program to an aggregate authorized amount of \$1.5 billion. As of December 31, 2021, the remaining aggregate authorized amount under the existing share repurchase program was \$926 million.

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, excluding the repurchases done through our ASR agreement described below, reported based on settlement date, for the year ended December 31, 2021:

	Year Ended December 31, 2021
Number of shares of common stock repurchased	2,911,208
Average price paid per share	\$ 160.87
Total purchase price (in millions)	\$ 468

In the table above, the number of shares of common stock repurchased excludes an aggregate of 394,221 shares withheld upon the vesting of restricted stock and PSUs for the year ended December 31, 2021.

As discussed above in “Common Stock in Treasury, at Cost,” shares repurchased under our share repurchase program are currently retired and cancelled.

ASR Agreements

In July 2021, we entered into an ASR agreement to repurchase \$475 million of common stock. We received a total delivery of 2,431,212 shares of common stock and completed the ASR program during the fourth quarter of 2021. The ASR agreement was entered into pursuant to our \$1.5 billion share repurchase authorization as discussed in "Share Repurchase Program," above.

On January 26, 2022 we announced that we entered into an ASR agreement to repurchase \$325 million of common stock and received an initial delivery of 1,533,923 shares of common stock. The final number of shares to be repurchased will be based on the volume-weighted average price of the Company’s common stock during the term of the ASR agreement, less a discount and subject to adjustments pursuant to the terms of the ASR agreement. The final settlement of the ASR agreement is expected to be completed in the first quarter of 2022. At settlement, our counterparty may be required to deliver additional shares of common stock to us, or, under certain circumstances, we may be required to deliver shares of our common stock or may elect to make a cash payment to our counterparty.

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, 2021 and December 31, 2020, no shares of preferred stock were issued or outstanding.

Cash Dividends on Common Stock

During 2021, our board of directors declared and paid the following cash dividends:

Declaration Date	Dividend Per Common Share	Record Date	Total Amount Paid	Payment Date
			(in millions)	
January 27, 2021	\$ 0.49	March 12, 2021	\$ 81	March 26, 2021
April 21, 2021	0.54	June 11, 2021	89	June 25, 2021
July 21, 2021	0.54	September 10, 2021	90	September 24, 2021
October 20, 2021	0.54	December 3, 2021	90	December 17, 2021
			<u>\$ 350</u>	

The total amount paid of \$350 million was recorded in retained earnings within Nasdaq's stockholders' equity in the Consolidated Balance Sheets at December 31, 2021.

In January 2022, the board of directors approved a regular quarterly cash dividend of \$0.54 per share on our outstanding common stock. The dividend is payable on March 25, 2022 to shareholders of record at the close of business on March 11, 2022. The estimated amount of this dividend is \$90 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 stockholders 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,		
	2021	2020	2019
(in millions, except share and per share amounts)			
Numerator:			
Net income attributable to common shareholders	\$ 1,187	\$ 933	\$ 774
Denominator:			
Weighted-average common shares outstanding for basic earnings per share	165,899,459	164,415,191	164,931,628
Weighted-average effect of dilutive securities:			
Employee equity awards	2,463,063	2,135,532	1,679,922
Contingent issuance of common stock	—	353,218	358,611
Weighted-average common shares outstanding for diluted earnings per share	168,362,522	166,903,941	166,970,161
Basic and diluted earnings per share:			
Basic earnings per share	\$ 7.15	\$ 5.67	\$ 4.69
Diluted earnings per share	\$ 7.05	\$ 5.59	\$ 4.63

In the tables 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.
- For the years ended December 31, 2020 and 2019, the contingent issuance of common stock was related to a contingent obligation associated with a business we sold in June 2021. See “2021 Divestiture,” of Note 4, “Acquisitions and Divestiture,” for further discussion.

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, 2021, 2020 and 2019.

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, 2021 and December 31, 2020.

	December 31, 2021			
	Total	Level 1	Level 2	Level 3
(in millions)				
European government debt securities	\$ 144	\$ 144	\$ —	\$ —
Corporate debt securities	20	—	20	—
State owned enterprises and municipal securities	11	—	11	—
Swedish mortgage bonds	21	—	21	—
Time deposits	12	—	12	—
Total assets at fair value	<u>\$ 208</u>	<u>\$ 144</u>	<u>\$ 64</u>	<u>\$ —</u>
December 31, 2020				
	Total	Level 1	Level 2	Level 3
(in millions)				
European government debt securities	\$ 156	\$ 156	\$ —	\$ —
Corporate debt securities	2	—	2	—
State owned enterprises and municipal securities	15	—	15	—
Swedish mortgage bonds	22	—	22	—
Total assets at fair value	<u>\$ 195</u>	<u>\$ 156</u>	<u>\$ 39</u>	<u>\$ —</u>

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.

Our investment in OCC is 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, 2021, 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 2020 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. As of December 31, 2021, we had no outstanding borrowings under our 2020 Credit Facility. We are also exposed to changes in interest rates as a result of the amounts outstanding from the sale of commercial paper under our commercial paper program. The fair value of our debt obligations utilizing discounted cash flow analyses for our floating rate debt, and prevailing market rates for our fixed rate debt was \$5.9 billion as of both December 31, 2021 and 2020. The discounted cash flow analyses are based on borrowing rates currently available to us for debt with similar terms and maturities. The fair value of our commercial paper as of December 31, 2021 approximated the carrying value since the rates of interest on this short-term debt approximated market rates. 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, 2021 and December 31, 2020, 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.

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. As of September 1, 2021, the mutualized default fund has been eliminated and the default fund structure is fully segregated. 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.

Nasdaq Commodities Clearing Default

In September 2018, a member of the Nasdaq Clearing commodities market defaulted due to the inability to post sufficient collateral to cover increased margin requirements for the positions of the relevant member, which had experienced losses due to sharp adverse movements in the Nordic - German power market spread. Nasdaq Clearing followed default procedures and offset the future market risk on the defaulting member’s positions.

Immediately following the event, Nasdaq Clearing launched a comprehensive enhancement program to strengthen the resilience and robustness of the clearinghouse.

In December 2018, the SFSA initiated a review of Nasdaq Clearing. In January 2021, the SFSA issued a warning combined with an administrative fine of approximately \$33 million (SEK 300 million) to Nasdaq Clearing based on its review. Nasdaq Clearing appealed the SFSA's decision to the Administrative Court. In December 2021, the court rejected Nasdaq Clearing's appeal and upheld the decision of the SFSA. In January 2022, Nasdaq Clearing appealed this decision to the Administrative Court of Appeal. While we continue to firmly believe in the merit of our appeal, due to the recent decision by the Administrative Court, we have determined it is appropriate to record an accrual for the full amount of the administrative fine issued by the SFSA. The charge is included in regulatory expense in our Consolidated Statements of Income for the year ended December 31, 2021.

Default Fund Contributions and Margin Deposits

As of December 31, 2021, clearing member default fund contributions and margin deposits were as follows:

	December 31, 2021		
	Cash Contributions	Non-Cash Contributions	Total Contributions
	(in millions)		
Default fund contributions	\$ 771	\$ 109	\$ 880
Margin deposits	5,140	6,614	11,754
Total	\$ 5,911	\$ 6,723	\$ 12,634

Of the total default fund contributions of \$880 million, Nasdaq Clearing can utilize \$804 million as capital resources in the event of a counterparty default. The remaining balance of \$76 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 1 year or less, reverse repurchase agreements and multilateral development bank debt securities. Investments in reverse repurchase agreements range in maturity from 4 days to 14 days and are secured with highly rated government securities. 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 \$5,911 million as of December 31, 2021 and \$3,942 million as of December 31, 2020, in accordance with its investment policy as follows:

	December 31, 2021	December 31, 2020
	(in millions)	
Demand deposits	\$ 3,061	\$ 2,086
Central bank certificates	2,013	1,111
Restricted cash and cash equivalents	\$ 5,074	\$ 3,197
European government debt securities	414	470
Reverse repurchase agreements	152	180
Multilateral development bank debt securities	271	95
Investments	\$ 837	\$ 745
Total	\$ 5,911	\$ 3,942

In the table above the change from December 31, 2020 to December 31, 2021 includes currency translation adjustments of \$321 million for restricted cash and cash equivalents and \$40 million for investments.

For the years ended December 31, 2021, 2020 and 2019 investments related to default funds and margin deposits, net includes purchases of investment securities of \$(41,098) million, \$(54,046) million and \$(38,203) million, respectively, and proceeds from sales and redemptions of investment securities of \$40,966 million, \$54,155 million and \$38,029 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, 2021, Nasdaq Clearing committed capital totaling \$138 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 is comprised of 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, 2021.

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 230.0% 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 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 \$44 million as of December 31, 2021;
- 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 \$24 million as of December 31, 2021.

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.

In addition to the capital held to withstand counterparty defaults described above, Nasdaq Clearing also has committed capital of \$70 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, 2021	
	(in millions)	
Commodity and seafood options, futures and forwards	\$	282
Fixed-income options and futures		291
Stock options and futures		147
Index options and futures		80
Total	\$	800

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, 2021 and 2020:

	December 31, 2021	December 31, 2020
Commodity and seafood options, futures and forwards	536,252	672,219
Fixed-income options and futures	23,140,918	21,299,713
Stock options and futures	20,308,811	19,757,733
Index options and futures	37,860,187	51,371,391
Total	81,846,168	93,101,056

In the table above, the total volume in cleared power related to commodity contracts was 813 Terawatt hours (TWh) and 956 TWh for the years ended December 31, 2021 and 2020, respectively.

Resale and Repurchase Agreements Contracts Outstanding and Cleared

The outstanding contract value of resale and repurchase agreements was \$139 million and \$253 million as of December 31, 2021 and 2020, respectively. The total number of resale and repurchase agreements contracts cleared was 6,070,414 and 4,832,504 for the years ended December 31, 2021 and 2020, respectively.

16. LEASES

We have operating leases which are primarily real estate leases predominantly for our U.S. and European headquarters 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, 2021	December 31, 2020
(in millions)			
Assets:			
Operating lease assets	Operating lease assets	\$ 366	\$ 381
Liabilities:			
Current lease liabilities	Other current liabilities	\$ 37	\$ 46
Non-current lease liabilities	Operating lease liabilities	386	389
Total lease liabilities		<u>\$ 423</u>	<u>\$ 435</u>

The following table summarizes Nasdaq's lease cost:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Operating lease cost	\$ 85	\$ 85	\$ 79
Variable lease cost	28	26	23
Sublease income	(4)	(4)	(5)
Total lease cost	<u>\$ 109</u>	<u>\$ 107</u>	<u>\$ 97</u>

In the table above, operating lease costs include short-term lease cost, which was immaterial.

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, 2021
	(in millions)
2022	\$ 52
2023	57
2024	52
2025	39
2026	36
2027+	293
Total lease payments	529
Less: interest	(106)
Present value of lease liabilities	<u>\$ 423</u>

In the table above, interest is calculated using the interest rate for each lease. Present value of lease liabilities include the current portion of \$37 million.

Total lease payments in the table above exclude \$168 million of legally binding minimum lease payments for a ten year lease signed but not yet commenced.

The following table provides information related to Nasdaq's lease term and discount rate:

	December 31, 2021
Weighted-average remaining lease term (in years)	<u>11.4</u>
Weighted-average discount rate	<u>3.8 %</u>

The following table provides supplemental cash flow information related to Nasdaq's operating leases:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Cash paid for amounts included in the measurement of operating lease liabilities	<u>\$ 77</u>	<u>\$ 77</u>	<u>\$ 78</u>
Lease assets obtained in exchange for new operating lease liabilities	<u>\$ 45</u>	<u>\$ 100</u>	<u>\$ 26</u>

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,		
	2021	2020	2019
	(in millions)		
Domestic	\$ 1,299	\$ 898	\$ 691
Foreign	235	314	328
Income before income tax provision	<u>\$ 1,534</u>	<u>\$ 1,212</u>	<u>\$ 1,019</u>

Income Tax Provision

The income tax provision consists of the following amounts:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Current income taxes provision:			
Federal	\$ 144	\$ 114	\$ 120
State	45	50	40
Foreign	64	74	50
Total current income taxes provision	253	238	210
Deferred income taxes provision (benefit):			
Federal	82	37	27
State	22	6	7
Foreign	(10)	(2)	1
Total deferred income taxes provision	94	41	35
Total income tax provision	<u>\$ 347</u>	<u>\$ 279</u>	<u>\$ 245</u>

We have determined that undistributed earnings of certain non-U.S. subsidiaries will be reinvested for an indefinite period of time. We have both the intent and ability to indefinitely reinvest these earnings. As of December 31, 2021, the cumulative amount of undistributed earnings in these subsidiaries is \$286 million. Given our intent and ability to reinvest these earnings for an indefinite period of time, we have not accrued a deferred tax liability on these earnings. A determination of an unrecognized deferred tax liability related to these earnings is not practicable.

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, 2021, 2020 and 2019 is as follows:

	Year Ended December 31,		
	2021	2020	2019
Federal income tax provision at the statutory rate	21.0 %	21.0 %	21.0 %
State income tax provision, net of federal effect	3.9 %	4.2 %	4.1 %
Excess tax benefits related to employee share-based compensation	(1.3)%	(0.6)%	(0.5)%
Non-U.S. subsidiary earnings	0.3 %	0.5 %	1.0 %
Tax credits and deductions	(0.3)%	(0.2)%	(0.2)%
Change in unrecognized tax benefits	0.6 %	(0.6)%	(0.1)%
Other, net	(1.6)%	(1.3)%	(1.3)%
Actual income tax provision	<u>22.6 %</u>	<u>23.0 %</u>	<u>24.0 %</u>

The majority of the decrease in our effective tax rate in 2021 compared to 2020 was due to a tax benefit related to federal, state and local provision to return adjustments, which is included in “Other, net” in the table above. The majority of the decrease in our effective tax rate in 2020 compared to 2019 was the result of favorable audit settlements and remeasurement of our deferred inventory, which is included in “Other, net” in the table above.

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,	
	2021	2020
	(in millions)	
Deferred tax assets:		
Deferred revenues	\$ 12	\$ 8
U.S. federal net operating loss	—	3
Foreign net operating loss	4	4
State net operating loss	1	2
Compensation and benefits	28	28
Federal benefit of uncertain tax positions	6	5
Operating lease liabilities	99	97
Unrealized losses	2	54
Other	34	39
Gross deferred tax assets	186	240
Less: valuation allowance	(4)	(3)
Total deferred tax assets, net of valuation allowance	<u>\$ 182</u>	<u>\$ 237</u>
Deferred tax liabilities:		
Amortization of software development costs and depreciation	\$ (65)	\$ (55)
Amortization of acquired intangible assets and goodwill	(322)	(499)
Investments	(99)	(77)
Operating lease assets	(84)	(86)
Other	(16)	(19)
Gross deferred tax liabilities	<u>\$(586)</u>	<u>\$(736)</u>
Net deferred tax liabilities	<u>\$(404)</u>	<u>\$(499)</u>
Reported as:		
Non-current deferred tax assets	\$ 2	\$ 3
Deferred tax liabilities, net	(406)	(502)
Net deferred tax liabilities	<u>\$(404)</u>	<u>\$(499)</u>

In the table above, non-current deferred tax assets are included in other non-current assets in the Consolidated Balance Sheets.

As of December 31, 2021 and 2020, we recognized a valuation allowance of \$4 million and \$3 million, respectively, 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 NOLs in U.S. state and local and non-U.S. jurisdictions with the following expiration dates:

Jurisdiction	December 31, 2021	Expiration Date
	(in millions)	
Foreign NOL	\$ 4	No expiration
State NOL	1	2025-2036

Unrecognized Tax Benefits

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Beginning balance	\$ 42	\$ 48	\$ 52
Additions as a result of tax positions taken in prior periods	16	9	10
Additions as a result of tax positions taken in the current period	11	2	1
Reductions related to settlements with taxing authorities	(6)	(6)	(10)
Reductions as a result of lapses of the applicable statute of limitations	(6)	(11)	(5)
Ending balance	<u>\$ 57</u>	<u>\$ 42</u>	<u>\$ 48</u>

We had \$57 million of unrecognized tax benefits as of December 31, 2021, \$42 million as of December 31, 2020, and \$48 million as of December 31, 2019 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 a \$2 million tax benefit for both the years ended December 31, 2021 and 2020, and a tax provision of \$3 million for 2019. Accrued interest and penalties, net of tax effect were \$4 million as of December 31, 2021 and \$8 million as of December 31, 2020.

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 for the years 2018 through 2020 is subject to examination by the Internal Revenue Service. Several state tax returns are currently under examination by the respective tax authorities for the years 2012 through 2019. Non-U.S. tax returns are subject to examination by the respective tax authorities for the years 2015 through 2020. 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 \$5 million as of December 31, 2021 and December 31, 2020. 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 \$212 million as of December 31, 2021 and \$232 million as of December 31, 2020 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

Litigation

As previously disclosed, we are named as one of many defendants in *City of Providence v. BATS Global Markets, Inc., et al.*, 14 Civ. 2811 (S.D.N.Y.), which was filed on April 18, 2014 in the United States District Court for the Southern District of New York. The district court appointed lead counsel, who filed an amended complaint on September 2, 2014. The amended complaint names as defendants seven national exchanges, as well as Barclays PLC, which operated a private ATS. On behalf of a putative class of securities traders, the plaintiffs allege that the defendants engaged in a scheme to manipulate the markets through high-frequency trading; the amended complaint asserts claims against us under Section 10(b) of the Exchange Act and Rule 10b-5, as well as under Section 6(b) of the Exchange Act. The plaintiffs seek injunctive and monetary relief of an unspecified amount. We filed a motion to dismiss the amended complaint on November 3, 2014. In response, the plaintiffs filed a second amended complaint on November 24, 2014, which names the same defendants and alleges essentially the same violations. We then filed a motion to dismiss the second amended complaint on January 23, 2015. On August 26, 2015, the district court entered an order dismissing the second amended complaint in its entirety. The plaintiffs appealed the judgment of dismissal to the United States Court of Appeals for the Second Circuit (although opting not to appeal the dismissal with respect to Barclays PLC or the dismissal of claims under Section 6(b) of the Exchange Act). On December 19, 2017, the Second Circuit issued an opinion vacating the district court's judgment of dismissal and remanding to the district court for further proceedings. On May 18, 2018, the exchanges filed a motion to dismiss the amended complaint, raising issues not addressed in the proceedings to date. On May 28, 2019, the district court denied the exchanges' renewed motion to dismiss, leading the parties to commence the discovery process. Discovery, focused on issues of whether the case can be certified as a class action and whether the plaintiffs' claims are precluded by federal securities regulation, ended on April 26, 2021, and potentially dispositive motions regarding these issues were filed on May 28, 2021. Given the preliminary nature of the proceedings, we are unable to estimate what, if any, liability may result from this litigation. However, we believe that the claims are without merit and will continue to litigate vigorously.

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.

OFAC has been conducting an inquiry into the Armenian Stock Exchange matter described above and in our prior filings since 2016, and during the first quarter of 2021, we were advised that OFAC is considering a civil monetary penalty in connection with that matter. We are currently in discussions with OFAC.

While we believe our decision to voluntarily self-report this issue and our continued cooperation with OFAC, along with the permit we received from OFAC in connection with our transactions involving the Armenian Stock Exchange, will be mitigating factors with respect to the matter, any monetary fines or restrictions may nonetheless be material to our financial results in the period in which they are imposed. We cannot currently predict when our discussions with OFAC will conclude or the amount of any potential penalties imposed. Accordingly, we are unable to reasonably estimate any potential loss or range of loss and we have not accrued for a loss contingency.

Nasdaq Commodities Clearing Default

In December 2021, we recorded a charge related to an administrative fine issued by the SFSA associated with the default which occurred in 2018. The charge is included in regulatory expense in our Consolidated Statements of Income for the year ended December 31, 2021. See "Nasdaq Commodities Clearing Default," of Note 15, "Clearing Operations," for further information.

Other Matters

Except as disclosed above and in 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.

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

We manage, operate and provide our products and services in four business segments: Market Technology, Investment Intelligence, Corporate Platforms and Market Services. See Note 1, “Organization and Nature of Operations,” for further discussion of our reportable segments.

Our management allocates resources, assesses performance and manages these businesses as four 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, 2021, 2020 and 2019:

	Year Ended December 31,		
	2021	2020	2019
Market Technology			
	(in millions)		
Total revenues	\$ 463	\$ 357	\$ 338
Depreciation and amortization	111	33	30
Operating income	46	32	54
Purchase of property and equipment	48	43	40
Investment Intelligence			
Total revenues	1,076	898	768
Depreciation and amortization	62	57	52
Operating income	694	572	480
Purchase of property and equipment	44	52	30
Corporate Platforms			
Total revenues	613	521	490
Depreciation and amortization	31	34	34
Operating income	247	187	177
Purchase of property and equipment	30	30	27
Market Services			
Total revenues	3,707	3,818	2,616
Transaction-based expenses	(2,466)	(2,722)	(1,723)
Revenues less transaction-based expenses	1,241	1,096	893
Depreciation and amortization	73	76	72
Operating income	800	685	508
Purchase of property and equipment	41	63	30
Corporate Items			
Total revenues	27	31	46
Depreciation and amortization	1	2	2
Operating income (loss)	(346)	(242)	(202)
Consolidated			
Total revenues	\$ 5,886	\$ 5,625	\$ 4,258
Transaction-based expenses	(2,466)	(2,722)	(1,723)
Revenues less transaction-based expenses	\$ 3,420	\$ 2,903	\$ 2,535
Depreciation and amortization	\$ 278	\$ 202	\$ 190
Operating income	\$ 1,441	\$ 1,234	\$ 1,017
Purchase of property and equipment	\$ 163	\$ 188	\$ 127

Certain 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. 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. Management does not consider intangible asset amortization expense 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 intangible asset amortization expense provide management with a useful representation of our segments' ongoing activity in each period.
- *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. Management does not consider merger and strategic initiatives expense 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 merger and strategic initiatives expense provide management with a useful representation of our segments' ongoing activity in each period.
- *Restructuring charges:* We initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the re-alignment of certain business areas. See Note 20, "Restructuring Charges," for further discussion of our 2019 restructuring plan. We believe performance measures excluding restructuring charges provide management with a useful representation of our segments' ongoing activity in each period.
- *Revenues and expenses - divested/contributed businesses:* 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 Investment Intelligence results. See "2021 Divestiture," of Note 4, "Acquisitions and Divestiture," for further discussion of this divestiture. Also included are 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 Corporate Platforms results. For 2019, we have included in corporate items the revenues and expenses of the BWISE business which was part of the IR & ESG Services business within our Corporate Platforms segment as BWISE was sold in March 2019.
- *Other significant 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 significant items include:
 - for the year ended December 31, 2021 a charge related to an administrative fine imposed by the SFSA associated with the default that occurred in 2018, see "Nasdaq Commodities Clearing Default," of Note 15, "Clearing Operations," for further discussion, and for the year ended December 31, 2020 the reversal of a regulatory fine issued by the SFSA. Both charges have been included in regulatory expense in the Consolidated Statements of Income;
 - for the year ended December 31, 2020, a provision for notes receivable associated with the funding of technology development for the consolidated audit trail;
 - for the years ended December 31, 2021 and 2020, a charge on extinguishment of debt;
 - for the year ended December 31, 2020, charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts, and social justice charities; and
 - for the years ended December 31, 2020, certain litigation costs which are recorded in professional and contract services expense in the Consolidated Statements of Income.

The above charges are recorded in general, administrative and other expense, unless otherwise noted, in our Consolidated Statements of Income.

The following table summarizes our Corporate Items:

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Revenues - divested/contributed businesses	\$ 27	\$ 31	\$ 46
Expenses:			
Amortization expense of acquired intangible assets	170	103	101
Merger and strategic initiatives expense	87	33	30
Restructuring charges	31	48	39
Regulatory matters	33	(6)	—
Provision for notes receivable	—	6	20
Extinguishment of debt	33	36	11
Charitable donations	—	17	—
Expenses - divested/contributed businesses	10	18	25
Other	9	18	22
Total expenses	373	273	248
Operating loss	<u>\$ (346)</u>	<u>\$ (242)</u>	<u>\$ (202)</u>

For further discussion of our segments' results, see "Segment Operating Results," of "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 2021, 2020 and 2019. 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
	(in millions)	
2021:		
United States	\$ 4,822	\$ 325
All other countries	1,064	184
Total	<u>\$ 5,886</u>	<u>\$ 509</u>
2020:		
United States	\$ 4,662	\$ 311
All other countries	963	164
Total	<u>\$ 5,625</u>	<u>\$ 475</u>
2019:		
United States	\$ 3,405	\$ 250
All other countries	853	134
Total	<u>\$ 4,258</u>	<u>\$ 384</u>

Our 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 2021, 2020 and 2019.

20. RESTRUCTURING CHARGES

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 re-alignment of certain business areas. In connection with these restructuring efforts, we retired certain elements of our marketplace infrastructure and technology product offerings as we implement NFF and other technologies internally and externally. This represented a fundamental shift in our strategy and technology as well as executive re-alignment. 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 2019 restructuring plan charges in the Consolidated Statements of Income for the years ended December 31, 2021, 2020 and 2019 which primarily consisted of consulting services, asset impairment charges primarily related to capitalized software that was retired, and accelerated depreciation expense on certain assets as a result of a decrease in their useful life.

	Year Ended December 31,		
	2021	2020	2019
	(in millions)		
Asset impairment charges and accelerated depreciation expense	\$ 4	\$ 14	\$ 26
Consulting services	19	22	2
Contract terminations	—	3	2
Severance and employee-related costs	1	3	8
Other	7	6	1
Total restructuring charges	<u>\$ 31</u>	<u>\$ 48</u>	<u>\$ 39</u>

21. Subsequent Event

In January 2022, we entered into an ASR agreement to repurchase \$325 million of common stock. Refer to "ASR Agreements," of Note 12, "Nasdaq Stockholders' Equity," for further discussion.