EDGAR pro
by EDGAR Online

NASDAQ, INC.

FORM 10-K
(Annual Report)

Filed 03/01/17 for the Period Ending 12/31/16

Address	ONE LIBERTY PLAZA
	NEW YORK, NY 10006
Telephone	2124018700
CIK	0001120193
Symbol	NDAQ
SIC Code	6200 - Security & Commodity Brokers, Dealers, Exchanges & Services
Industry	Financial & Commodity Market Operators
Sector	Financials
Fiscal Year	12/31

Powered By EDGAR Online
http://www.edgar-online.com
© Copyright 2017, EDGAR Online, Inc. All Rights Reserved.
Distribution and use of this document restricted under EDGAR Online, Inc. Terms of Use.

Table of Contents

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, 2016

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: 000-32651

Nasdaq, Inc.

(Exact name of registrant as specified in its charter)

Delaware **(State or Other Jurisdiction of Incorporation or Organization)**	**52-1165937** **(I.R.S. Employer Identification No.)**
One Liberty Plaza, New York, New York **(Address of Principal Executive Offices)**	**10006** **(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	**Name of each exchange on which registered**
Common Stock, $.01 par value per share	**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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐

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, 2016, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $7.4 billion (this amount represents approximately 114.8 million shares of Nasdaq, Inc.'s common stock based on the last reported sales price of $64.67 of the common stock on The Nasdaq Stock Market on such date).

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

Class	**Outstanding at February 22, 2017**
Common Stock, $.01 par value per share	166,747,494 shares

DOCUMENTS INCORPORATED BY REFERENCE

Document	**Parts Into Which Incorporated**
Certain portions of the Definitive Proxy Statement for the 2017 Annual Meeting of Stockholders	Part III

TABLE OF CONTENTS

		Page
Part I.		
Item 1.	Business	2
Item 1A.	Risk Factors	13
Item 1B.	Unresolved Staff Comments	24
Item 2.	Properties	25
Item 3.	Legal Proceedings	25
Item 4.	Mine Safety Disclosures	25
Part II.		
Item 5.	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	25
Item 6.	Selected Financial Data	28
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	29
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	54
Item 8.	Financial Statements and Supplementary Data	54
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
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 Accountant Fees and Services	58
Part IV.		
Item 15.	Exhibits, Financial Statement Schedules	58
Item 16.	Item 16. Form 10-K Summary	63

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 GMNI" refers to the options exchange operated by ISE Gemini, LLC.
- "Nasdaq ISE" refers to the options exchange operated by International Securities Exchange, LLC.
- "Nasdaq MCRY" refers to the options exchange operated by ISE Mercury, 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 operated by The NASDAQ Stock Market LLC.

* * * * * *

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

401(k) Plan: Voluntary Defined Contribution Savings Plan

2014 Credit Facility: $750 million senior unsecured revolving credit commitment which matures on November 25, 2019

2016 Credit Facility: $400 million senior unsecured term loan facility which matures on November 25, 2019

2018 Notes: $370 million aggregate principal amount of 5.25% senior unsecured notes due January 16, 2018

2020 Notes: $600 million aggregate principal amount of 5.55% senior unsecured notes due January 15, 2020

2021 Notes: €600 million aggregate principal amount of 3.875% senior unsecured notes due June 7, 2021

2023 Notes: €600 million aggregate principal amount of 1.75% senior unsecured notes due May 19, 2023

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

ASC: Accounting Standards Codification

ASU: Accounting Standards Update

ATS: Alternative Trading System

BWise: BWise Beheer B.V. and its subsidiaries

CCP: Central Counterparty

CFTC: U.S. Commodity Futures Trading Commission

DEA: Designated Examining Authority

DWA: Dorsey, Wright & Associates, LLC

EMIR: European Market Infrastructure Regulation

Equity Plan: Nasdaq Equity Incentive Plan

eSpeed: Certain assets and certain liabilities of the eSpeed business that were acquired or assumed from BGC Partners, Inc. and certain of its affiliates

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

ISE: U.S. Exchange Holdings, Inc. and its subsidiaries

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

NFX: Nasdaq Futures, Inc.

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 2017 Annual Meeting of Stockholders

PSU: Performance Share Unit

Regulation NMS: Regulation National Market System

Regulation SCI: Regulation Systems Compliance and Integrity

SEC: U.S. Securities and Exchange Commission

SecondMarket: SecondMarket Solutions, Inc.

SERP: Supplemental Executive Retirement Plan

SFSA: Swedish Financial Supervisory Authority

SMARTS: SMARTS Group Holdings Pty

S&P: Standard & Poor's

S&P 500: S&P 500 Stock Index

SRO: Self-regulatory Organization

SSMA: Swedish Securities Markets Act 2007:528

TR Corporate businesses: The Investor Relations, Public Relations and Multimedia Solutions businesses of Thomson Reuters

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

VAT: Value Added Tax

VSOE: Vendor Specific Objective Evidence of Fair Value

* * * * * *

The following is a non-exclusive list of registered trademarks, registered service marks, or trademarks or service marks of Nasdaq or its subsidiaries, in the United States and/or other countries or jurisdictions:

@TRADE®, ACES, AT-TRADE®, AGGREGATION, TRANSPARENCY, CONTROL®, AUTO WORKUP®, AXE®, BOARDVANTAGE, BWISE®, BWISE BUSINESS IN CONTROL®, BWISE RAPID DEPLOYMENT SOLUTION®, BX VENTURE MARKET®, E MARKET®, CANADIAN DIVIDEND ACHIEVERS®, CCBN®, CCN®, CCN NEWSNET DESIGN, CCNMATTHEWS®, CLICK XT®, CONDICO®, CYBER SECURITY®, D.A.L.I®, DATAXPRESS®, DEFENSE OF INTERNATIONAL MARKETS AND EXCHANGES SYMPOSIUM®, DIMES®, DIRECTORS DESK®, DIRECTORSDESK®, DIVIDEND ACHIEVERS®, DORSEY WRIGHT®, DREAM IT. DO IT.®, DWA®, DWA MATRIX®, DX®, EQQQ, E (design), E-SPEED®, E SPEED (device), ESPEED®, ESPEEDOMETER®, EXACTEQUITY®, EXIGO, FINQLOUD®, FINQLOUD REGULATORY RECORDS RETENTION® FIRST NORTH®, FONDSBØRSEN®, FTEN®, GENIUM®, GIDS®, GLOBE NEWSWIRE®, GO! POWERED BY MARKETWIRE®, HACK®, IGNITE YOUR AMBITION®, INET®, INVESTOR WORLD®, IPOWORLD®, ISE BIG DATA®, ISE MOBILE PAYMENTS® ISSUERWORLD®, ITCH®, KFXAKTIEINDEX®, LIQUIDITYXPRESS®, LONGITUDE®, MARKET INTELLIGENCE DESK®, MARKET LINQUIDITY,MARKET MECHANICS®, MARKETSITE®, MARKETWIRE BEYOND WORDS®, MARKETWIRE RESONATE®, MARKETWIRE®, MARKETWIRE GO! ®, MARKETWIRED RESONATE®, MARKETWIRED®, MW®, MW MARKET WIRED®, MW MARKETWIRED THE POWER OF INFLUENCE®, MY CCBN®, MYMEDIAINFO®, NASDAQ®, NASDAQ 100 INDEX®, NASDAQ - FINANCIAL®, NASDAQ BIOTECHNOLOGY INDEX®, NASDAQ CANADA®, NASDAQ CANADA COMPOSITE INDEX®, NASDAQ CANADA INDEX®, NASDAQ CAPITAL MARKET®, NASDAQ COMPOSITE®, NASDAQ COMPOSITE INDEX®, NASDAQ COMPUTER INDEX®, NASDAQ DIVIDEND ACHIEVERS®, NASDAQ DUBAI®, NASDAQ EUROPE®, NASDAQ EUROPE COMPOSITE INDEX®, NASDAQ FINANCIAL-100 INDEX®, NASDAQ FX®, NASDAQ GLOBAL MARKET®, NASDAQ GLOBAL SELECT MARKET®, NASDAQ INDUSTRIAL INDEX®, NASDAQ INTERACT®, NASDAQ INTERNET INDEX®, NASDAQ IQ FUND®,

NASDAQ JAPAN®, NASDAQ MARKET ANALYTIX®, NASDAQ MARKET CENTER®, NASDAQ MARKET FORCES®, NASDAQ MARKET VELOCITY®, NASDAQ MARKETSITE®, NASDAQ MAX®, NASDAQ MAX MARKET ANALYTIX®, NASDAQ NATIONAL MARKET®, NASDAQ OMX®, NASDAQ OMX ALPHA INDEXES®, NASDAQ OMX GREEN ECONOMY INDEX®, NASDAQ OMX NORDIC®, NASDAQ PRIVATE MARKET®, NASDAQ Q-50 INDEX®, NASDAQ TELECOMMUNICATIONS INDEX®, NASDAQ TOTALVIEW®, NASDAQ TRADER®, NASDAQ TRANSPORTATION INDEX®, NASDAQ US ALL MARKET®, NASDAQ VOLATILITY GUARD®, NASDAQ WORKSTATION®, NASDAQ WORKSTATION II®, NASDAQ WORLD®, NASDAQ-100®, NASDAQ-100 EUROPEANFUND®, NASDAQ-100 EUROPEAN TRACKER®, NASDAQ-100 EUROPEAN TRACKER FUND®, NASDAQ-100 INDEX®, NASDAQ-100 INDEX EUROPEAN TRACKER FUND®, NASDAQ-100 INDEX TRACKING STOCK®, NDX®, NEWS RELEASE EXPRESS®, NFX WORLD CURRENCY FUTURES®, NLX®, NOIS®, NORDIX®, OMX COPENHAGEN 20®, OMX HELSINKI 25®, OMX STIBOR FUTURE®, OMX STOCKHOLM 30®, OMXH25®, OMXS30®, OMXS3FUT®, OMX TECHNOLOGY®, ON THE WIRE®, OTW® , OVERUNDER®, PHILADELPHIA STOCK EXCHANGE®, PHLX®, PHLX XL®, PIXL®, PORTAL ALLIANCE®, PRECISE TRADE®, PRF®, Q THE NEXT GREAT THING®, QQQ®, QTARGET®, QVIEW®, R3®, RE-THINK®, RISKWAY®, RISKWRAPPER®, RISKXPOSURE®, RX®, S.A.X.E.S®, SECONDMARKET®, SECONDMARKET ECOSYSTEM®, SIDECAR®, SIGNALXPRESS®, SIGNALXPRESS SX®, SMARTS®, SMARTSONLINE®, STINA®, STRUCTURED LIQUIDITY PROGRAM®, THE NASDAQ STOCK MARKET®, THE STOCK MARKET FOR THE NEXT 100 YEARS®, TOTAL EQUITY SOLUTION®, TRADEGUARD®, TRADEXAMINER®, TRDS®, TX®, ULL®, ULTRA LOW LATENCY®, ULTRAFEED®, VX PROXY®, WIZER®, XDE®, XO DORSEY WRIGHT & ASSOCIATES®, ÖVERUNDER®

To the extent a name, logo or design does not appear on the above list, such lack of appearance does not constitute a waiver of any intellectual property rights that Nasdaq has established in its product or service names or logos, or in product configurations or designs, all of which rights are expressly reserved.

FINRA® and TRADE REPORTING FACILITY® are registered trademarks of FINRA.

All other trademarks and service marks used herein are the property of their respective owners.

* * * * * *

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, which includes best efforts underwritings; 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 best efforts underwritings, 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 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 “Item 1A. Risk Factors” 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. These disclosures will be included on Nasdaq’s website under “Investor Relations.”

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 identify forward-looking statements. These include, among others, statements relating to:

- *our 2017 outlook;*
- *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, order backlog and services;*
- *the impact of pricing changes;*
- *tax matters;*
- *the cost and availability of liquidity and capital; and*
- *any litigation, or any regulatory or government investigation or action, to which we are or could become a party.*

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, including the fact that such integration may be more difficult, time consuming or costly than expected, and our ability to realize synergies from business combinations and acquisitions;*
- *loss of significant trading and clearing volumes or values, fees, market share, listed companies, data products customers or other customers;*
- *our ability to keep up with rapid technological advances and adequately address cybersecurity risks;*
- *economic, political and market conditions and fluctuations, including 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;*
- *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.*

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, Inc. is a leading provider of trading, clearing, exchange technology, regulatory, securities listing, information and public company services. Our global offerings are diverse and include trading and clearing across multiple asset classes, trade management services, data products, financial indexes, capital formation solutions, corporate solutions, and market technology products and services. Our technology powers markets across the globe, supporting equity derivative trading, clearing and settlement, cash equity trading, fixed income trading and many other functions.

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 fully operational as an independent registered national securities exchange in 2007. In 2006, Nasdaq also reorganized its operations into a holding company structure.

In February 2008, Nasdaq and OMX AB combined their businesses. 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. In connection with this acquisition, we changed our corporate name to The NASDAQ OMX Group, Inc. We operated under this name until we rebranded our business as Nasdaq, Inc. in 2015.

Since 2008, in addition to growing organically, we have executed multiple acquisitions that have expanded our operations globally and increasingly diversified our product and service offerings. These acquisitions included, among others, the Philadelphia Stock Exchange, Inc. in 2008, SMARTS in 2010, eSpeed and the TR Corporate businesses in 2014 and ISE in 2016.

Products and Services

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Services, Information Services and Market Technology. In 2016, due to changes in our executive leadership and to better reflect how our chief operating decision maker views the businesses, we realigned our reportable segments to integrate the Corporate Solutions and Listing Services businesses into our new Corporate Services segment. Market Technology is now a separate reportable segment. Prior to this change, our Corporate Solutions and Market Technology businesses were part of our Technology Solutions segment. All prior period segment disclosures have been recast to reflect our change in reportable segments.

See Note 1, “Organization and Nature of Operations,” and Note 19, “Business Segments,” to the consolidated financial statements for additional financial information about our reportable segments and geographic data.

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC and Trade Management Services businesses. Our FICC business was formerly referred to as fixed income, currency and commodities trading and clearing, and our Trade Management Services business was formerly referred to as access and broker services.

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 some countries where we operate exchanges, we also provide broker services, clearing, settlement and central depository services. 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.

Equity Derivative Trading and Clearing

Following our acquisition of ISE, we now operate six electronic options exchanges in the U.S.: Nasdaq PHLX, The Nasdaq Options Market, Nasdaq BX Options, Nasdaq ISE, Nasdaq GMNI and Nasdaq MCRY. These exchanges facilitate the trading of equity options, ETF options, index options and foreign currency options. For the year ended December 31, 2016, our options exchanges had a combined matched market share of 31.6% in the U.S. equity options market, consisting of 16.0% at Nasdaq PHLX, 7.8% at The Nasdaq Options Market, 0.8% at Nasdaq BX Options, 5.8% at Nasdaq ISE, 1.1% at Nasdaq GMNI and 0.1% at Nasdaq MCRY. Together, our combined market share represented the largest share of the U.S. market for multiply-listed options on equities and ETFs. 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 pursue more complex trading strategies and often trade on the floor.

In Europe, Nasdaq offers trading in derivatives, such as stock options and futures, index options and futures and fixed-income options and futures. Nasdaq Clearing offers clearing services for fixed-income options and futures, stock options and futures, index options and futures, and interest rate swaps by serving as the CCP. Nasdaq Clearing also operates a clearing service for the resale and repurchase agreement market.

Cash Equity Trading

In the U.S., we operate three cash equity exchanges: The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX. The Nasdaq Stock

Market is the largest single venue of liquidity for trading U.S.-listed cash equities. For the year ended December 31, 2016, our cash equity exchanges had a combined matched market share of 17.4% in the U.S. cash equity market, consisting of 14.0% at The Nasdaq Stock Market, 2.4% at Nasdaq BX and 1.0% at Nasdaq PSX.

Our U.S. cash equity exchanges offer trading of both Nasdaq-listed and non-Nasdaq-listed securities. Market participants include market makers, broker-dealers, ATSs and registered securities exchanges.

In February 2016, we acquired Chi-X Canada ATS Limited, a leading alternative market in Canada for the trading of Canadian-listed securities. With this acquisition, which expanded Nasdaq's Cash Equity Trading business in North America, Nasdaq offers two lit markets and one dark market for the trading of Canadian-listed securities. Effective June 1, 2016, we changed the name of Chi-X Canada to Nasdaq CXC.

In Europe, Nasdaq operates exchanges in Stockholm (Sweden), Copenhagen (Denmark), Helsinki (Finland), and Reykjavik (Iceland). We also operate exchanges in Tallinn (Estonia), Riga (Latvia) and Vilnius (Lithuania). Nasdaq owns Nasdaq Tallinn and has a majority ownership in Nasdaq Vilnius and Nasdaq Riga. In addition, Nasdaq owns the central securities depositories in Estonia, Latvia and Lithuania.

Collectively, the Nasdaq Nordic and Nasdaq Baltic exchanges offer trading in cash equities and depository receipts, warrants, convertibles, rights, fund units and exchange traded funds. 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, Denmark and Iceland via the local central securities depositories.

FICC

Our FICC business includes the Nasdaq Fixed Income business, NFX and Nasdaq Commodities.

In early 2017, we announced a new fixed income strategy under new leadership. The repositioning, which is designed to enhance the customer experience, brings our U.S. and European fixed income products and services together under a single brand called Nasdaq Fixed Income.

The U.S. portion of Nasdaq Fixed Income includes the business formerly known as eSpeed, an electronic platform for trading U.S. Treasuries that we acquired in June 2013. The electronic trading platform provides real-time institutional trading of benchmark U.S. Treasury securities. Through this business, we provide trading access to the U.S. Treasury securities market with an array of trading instruments to meet various investment goals across the fixed income spectrum.

The European portion of Nasdaq Fixed Income provides a wide range of products and services, such as listing, trading, and clearing, for fixed income products in Sweden, Denmark, Finland and Iceland. Nasdaq Stockholm is the largest bond listing venue in the Nordics, with more than 8,300 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 for CCP clearing. Nasdaq Clearing acts as the counterparty to both the buyer and seller.

Nasdaq Commodities is the brand name for Nasdaq's worldwide suite of commodity-related products and services. Nasdaq Commodities' offerings include oil, power, natural gas and carbon emission markets, tanker and dry cargo freight, seafood derivatives, iron ore, electricity certificates and clearing services. The products are listed on two of Nasdaq's derivatives exchanges.

Nasdaq Oslo ASA, which is authorized by the Norwegian Ministry of Finance and supervised by the Norwegian Financial Supervisory Authority, is the commodity derivatives exchange for European products and freight. All trades with Nasdaq Oslo ASA are subject to clearing with Nasdaq Clearing, which is a CCP authorized under EMIR by the SFSA to conduct clearing operations.

We also operate NFX, our U.S. based energy derivatives market. NFX, which is a designated contract market authorized by the CFTC, offers cash-settled energy derivatives based on key energy benchmarks including oil, natural gas and U.S. power. All trades with NFX are subject to clearing with OCC.

Trade Management Services

We provide market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. Shifting connectivity from proprietary networks to third-party networks has significantly reduced technology and network costs and increased our systems' scalability while maintaining performance and reliability.

Our marketplaces may be accessed via a number of different protocols used for quoting, order entry, trade reporting, DROP functionality and connectivity to various data feeds. We also offer the Nasdaq Workstation, a browser-based, front-end interface that allows market participants to view data and enter orders, quotes and trade reports. In addition, we offer a variety of add-on compliance tools to help firms comply with regulatory requirements.

We provide co-location services to market participants, whereby firms may lease 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. Additionally, we offer a number of wireless connectivity routes between select data centers using millimeter wave and microwave technology. We also earn revenues from annual and monthly exchange membership and registration fees.

Our broker services operations offer technology and customized securities administration solutions to financial participants in the Nordic market. Broker services provides services through a registered securities company that is regulated by the SFSA. Services primarily consist of flexible

back-office systems, which allow customers to entirely or partly outsource their company's back-office functions.

We offer customer and account registration, business registration, clearing and settlement, corporate action handling for reconciliations and reporting to authorities. Available services also include direct settlement with the Nordic central securities depositories, real-time updating and communication via the Society for Worldwide Interbank Financial Telecommunication to deposit banks.

Corporate Services

Corporate Solutions

Our Corporate Solutions business serves corporate clients, including companies listed on our exchanges and private companies. We help organizations manage the two-way flow of information with their key constituents, including their board members and investors, and with clients and the public through our suite of advanced technology, analytics, and consultative services. In 2013, we acquired the TR Corporate businesses, which were integrated into our Corporate Solutions business.

We provide Corporate Solutions products and services in the following key areas:

- *Investor Relations* . We offer investor relations content, analytics, advisory services and communications tools, including investor relations webcasting, press release services, and websites. Our solutions make it easier for companies to interact and communicate with analysts and investors while meeting corporate governance and disclosure requirements. In early 2016, we launched Nasdaq IR Insight, our new investor relations platform.
- *Public Relations.* We offer solutions to help clients identify, reach, monitor and measure their public relations program. We provide traditional and social media contacts databases, backed by our internal research analysts. Our press release distribution network allows clients to reach global audiences cost-effectively. Our suite of technology solutions and expert analysts help clients monitor key news media for their brand, reputation, products, as well as industry competitors, and measure the success of their communications programs. In February 2016, we acquired Marketwired, a global newswire operator and press release distributor that is being integrated into this business.
- *Multimedia Solutions.* We offer a platform and services which enable our customers to produce webcasts for a wide range of applications, including investor relations, public relations, marketing and internal communications.
- *Governance.* We offer a secure collaboration platform for boards of directors or any team collaborating on confidential initiatives. Our solutions protect sensitive data and facilitate productive collaboration, so board members and teams can work faster and more effectively. In May 2016, we acquired Boardvantage, a leading provider of collaboration and meeting productivity tools for boards of directors and executive leadership teams. This acquisition is being integrated into our governance business.

We currently have approximately 18,000 Corporate Solutions clients.

Listing Services

We operate a variety of listing platforms around the world to provide multiple global capital raising solutions for private and 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 must meet minimum listing requirements, including specified financial and corporate governance criteria. Once listed, companies must meet continued listing standards. The Nasdaq Stock Market currently has three listing tiers: The Nasdaq Global Select Market, The Nasdaq Global Market and The Nasdaq Capital Market. All three market tiers maintain rigorous listing and corporate governance standards (both initial and ongoing).

As of December 31, 2016, a total of 2,897 companies listed securities on The Nasdaq Stock Market, with 1,443 listings on The Nasdaq Global Select Market, 783 on The Nasdaq Global Market and 671 on The Nasdaq Capital Market.

We aggressively pursue new listings from companies, including those undergoing IPOs as well as companies seeking to switch from alternative exchanges. In 2016, The Nasdaq Stock Market attracted 283 new listings, including 91 IPOs, 73% of U.S. IPOs in 2016. The new listings were comprised of the following:

Switches from the New York Stock Exchange LLC, or NYSE, and NYSE MKT LLC, or NYSE MKT	20
IPOs	91
Upgrades from OTC	37
ETPs and Other Listings	135
Total	283

The 20 NYSE- or NYSE MKT-listed companies that switched to The Nasdaq Stock Market, represented approximately $61 billion in market capitalization. Notable switches included IHS Markit Ltd., Imperva, Inc., OPKO Health, Inc. and Scripps Networks Interactive, Inc.

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, 2016, a total of 900 companies listed securities on our Nordic and Baltic exchanges and Nasdaq First North.

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 2016, a total of 88 new companies listed on our Nordic and

Baltic exchanges and Nasdaq First North. In addition, seven companies upgraded their listings from Nasdaq First North to the Nordic and Baltic exchanges.

Our Listing Services business also includes NPM, which provides services for private companies.

Information Services

Our Information Services segment includes our Data Products and our Index Licensing and Services businesses.

Data Products

Our Data Products business sells and distributes historical and real-time quote and trade information to market participants and data distributors. Our data products enhance transparency of the market activity within the exchanges that we operate and provide critical information to professional and nonprofessional 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 market participants and to data distributors, who in turn provide subscriptions for this information. Our systems enable distributors to gain access to our market depth, index values, mutual 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 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 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, Ultrafeed, a normalized high speed, consolidated data feed offering, and DWA's web-based advisor tools. We also provide options, futures, commodities, U.S. Treasury, indexes and mutual fund data.

Our Data Products business also includes revenues from U.S. tape plans. The Nasdaq Stock Market acts as the processor and administrator for the UTP Plan. The UTP Plan administrator sells 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, as permitted under the revenue sharing provision of the UTP Plan, the UTP Plan administrator distributes the tape revenues to the respective UTP Plan participants, including The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX, based on a formula required by Regulation NMS that takes into account both trading and quoting activity. In addition, much like Nasdaq-listed securities, all quotes and trades in NYSE- and NYSE MKT-listed securities are reported and disseminated in real-time, and as such, we share in the tape revenues for information on NYSE- and NYSE MKT-listed securities.

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.

In addition, the ISE options exchanges and Nasdaq CXC have data businesses that Information Services now manages and distributes.

Significant European data products include Nordic Equity TotalView, Nordic Derivative TotalView, and Nordic Fixed Income TotalView, Level 2, Analytics and Fixings.

Finally, 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 weightings and components data, corporate actions and a breadth of additional data.

Index Licensing and Services

Our Index Licensing and Services business is a leading index provider that develops and licenses Nasdaq branded indexes, associated derivatives and financial products. We also provide custom calculation services for third-party clients. 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, 2016, we had 298 ETPs licensed to Nasdaq's indexes which had over $124 billion of assets under management. Our flagship index, the Nasdaq-100 Index, includes the top 100 non-financial securities listed on The Nasdaq Stock Market.

We also operate the Nasdaq Global Index Family, which includes more than 40,000 indexes. The Nasdaq Global Index Family represents more than 98% of the global equity investable marketplace. The family consists of global securities broken down by market segment, region, country, size and sector. The Nasdaq Global Index Family covers 45 countries and approximately 9,000 securities.

DWA, a market leader in data analytics, passive indexing and smart beta strategies, adds to Nasdaq's robust index portfolio, bringing model-based strategies and analysis to support the financial advisor community, and further strengthens Nasdaq's position as a leading smart beta index provider in the U.S. As of December 31, 2016, there are $54 billion in assets under management in ETPs that track Nasdaq smart beta indexes.

Market Technology

Powering more than 85 marketplaces in 50 countries, our Market Technology business is a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers and corporate businesses. Our Market Technology business is the sales channel for our complete global offering to other marketplaces.

During 2016, we launched the Nasdaq Financial Framework to deliver to our Market Technology clients a single operational core that ties together Nasdaq's portfolio of technology offerings across the trade lifecycle. This portfolio includes technology solutions for trading, clearing, settlement, surveillance and information dissemination to markets with wide-ranging requirements, from the leading markets in the U.S., Europe and Asia to emerging markets in the Middle East, Latin America and Africa. Our marketplace solutions can handle a wide array of assets, including cash equities, equity derivatives, currencies, various interest-bearing securities, commodities and energy products.

Our trading and data solutions are utilized by exchanges, alternative-trading venues, banks and securities brokers with marketplace offerings of their own. In the post-trade stage, we offer integrated systems solutions for clearing (risk management) and settlement (settlement and delivery) of both cash equities and derivatives to clearing organizations around the world.

Nasdaq's market technology is utilized by, among others, ASX Limited, Bolsa de Valores de Colombia, Borsa Istanbul A.Ş., Borse Dubai Limited, Bursa Malaysia Berhad, Egyptian Exchange, Hong Kong Exchanges and Clearing Limited, Japan Exchange Group, Inc., NEX Group plc, SBI Japannext Co., Ltd., Singapore Exchange Ltd., SIX Swiss Exchange Ltd and Tokyo Commodity Exchange, Inc.

A central part of many projects is facility management and systems integration. Through our integration services, we can assume responsibility for projects involving 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 a turn-key information technology solution, as well as advisory services.

We also offer broker services through SMARTS. SMARTS is a managed service designed for brokers and other market participants to assist them in complying with market rules, regulations and internal market surveillance policies.

Finally, through BWise, we offer enterprise governance, risk management and compliance software and services to help companies track, measure and manage key organizational risks.

Competition

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, speed of execution, high levels of customer service, and efficient pricing. In both North America and Europe, our competitors include other exchange operators, operators of non-exchange (less-heavily regulated) trading systems and banks and brokerages that operate their own internal trading pools and platforms.

Examples of registered exchanges that compete with our options markets in the U.S. include: Bats BZX Exchange, Inc., or Bats BZX; Bats EDGX Exchange, Inc., or Bats EDGX; BOX Options Exchange LLC; Chicago Board Options Exchange, Incorporated, or CBOE; C2 Options Exchange, Incorporated; Miami International Securities Exchange; MIAX Pearl, LLC, or MIAX Pearl; NYSE Arca, Inc., or NYSE Arca; and NYSE MKT, which operates the NYSE Amex options business. Examples of registered exchanges competing with our cash equities markets in the U.S. include: Bats BYX Exchange, Inc., or Bats BYX; Bats BZX; Bats EDGA Exchange, Inc., or Bats EDGA; Bats EDGX; NYSE; NYSE Arca; NYSE MKT; and The Investors Exchange LLC. In addition to competition from these exchanges, we face competition from ATSs and other less-heavily regulated broker-owned systems, some of which are also known as "dark pools," and from other types of OTC trading.

Registered exchanges that compete with our cash equities markets in Europe include: BATS Trading Limited; Euronext N.V.; Deutsche Börse A.G.; and London Stock Exchange Group plc, or LSE. We also intensely compete with MTFs, such as that operated by Turquoise Global Holdings Limited. Examples of our competitors in the trading and clearing of options and futures on European equities include: the Eurex Group companies operated by Deutsche Börse A.G., or Eurex; ICE Futures Europe; and the MTF operated by Turquoise Global Holdings Limited. 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 over the next several years is expected to lead to further competitive pressure on our European trading business. MTFs are already attracting a significant share of electronically matched volume. With the regulatory environment likely to become more favorable to alternative trading venues, we expect such venues to compete aggressively for the trading of equity securities listed on our Nordic exchanges. Electronic trading systems pursuing block business will also remain active in Europe. In responding to

current and potential competition, we constantly review our pricing and product offerings.

Our FICC business also operates in an intensely competitive environment. Our trading platform for benchmark U.S. treasuries faces competition from both long-established and newly emerging electronic and voice brokerages, and the operating environment remains extremely challenging. Our European fixed income products and services are subject to relentless competitive pressure from OTC dealers as well as exchanges. Our suite of commodity-related products and services is in many cases designed to challenge the more established players.

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

Corporate Services

In our corporate solutions business, competition is varied and can be fragmented. In investor relations services, 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 public relations services includes large providers of traditional wire services, full-service providers, who offer wire distribution along with audience targeting, monitoring and analytics services, and a large number of regional and niche providers. In multimedia solutions and webhosting, competition is fragmented and includes firms that address enterprise buyers, offering them either managed or self-service capabilities. The competitive landscape for governance solutions varies by sector and geography. Most vendors in the market offer software-as-a-service solutions that are supported by a data center strategy. Many vendors offer specialized services that focus on a niche sector while the larger players in the market may offer additional services around corporate governance. Customers frequently seek single-source providers that are able to address a broad range of needs within a single platform.

Our listing services in both the U.S. and Europe are 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 an exchange. Our primary competitor for larger company stock share listings in the U.S. is NYSE. The Nasdaq Stock Market also competes with NYSE MKT for listing of shares of smaller companies. In addition, Bats BZX competes for ETP listings. The Nasdaq Stock Market also 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.

The listings 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, examples of competing European exchanges that frequently attract many listings from outside their respective home countries include LSE, Euronext N.V. and Deutsche Börse A.G. 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.

Information Services

Our Data Products 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 in both the U.S. and Europe is under competitive threat 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: Intercontinental Exchange, Inc., or ICE; Bats Global Markets, Inc., or BATS; S&P Global Inc.; 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 Licensing and Services 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.

Market Technology

The traditional model, where each exchange or exchange-related business developed its own technology internally, sometimes aided by consultants, 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.

There is a wide range of providers that compete with us in surveillance, as well as governance, risk and compliance solutions. In surveillance, standardization of products and budget pressures drive customers to focus on pricing. In governance, risk and compliance, our products must compete with solutions that are often part of larger suites, such as those related to information technology management or general business management.

Market conditions in this segment are evolving rapidly, which makes continuous investment and innovation a necessity.

Technology

Technology plays a key role in ensuring the growth, reliability and regulation of financial markets. We have established a technology risk program to consider the resiliency of critical systems. This program is focused on (i) identifying areas for improvement in systems and (ii) 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. In 2016, we expanded this program to include recently acquired companies.

Core Technology. The foundation for Nasdaq's core technology is INET. The INET technology is used across our U.S. and European markets. INET is also a key building block of our Market Technology offerings, Genium INET and X-stream INET. Genium INET and X-stream INET both combine innovative functionality with a modular approach to manage change and create new advantages for existing and new customers.

We continuously improve our core technology with a focus on improving capacity, reliability, resiliency and market integrity.

Data Centers . Nasdaq utilizes data center facilities in key global regions to support our markets, technology services, disaster recovery capabilities and operations centers. In 2016, we continued to migrate systems to our facility in Chicago as well as completed migration to a new data center in Sweden.

Blockchain Initiatives . During 2016, we continued to develop Nasdaq Linq, a solution based on blockchain-enabled technology, that may be used to expand and enhance issuers' equity management capabilities. We also are completing work on a proof of concept for proxy voting in Estonia and announced the incorporation of blockchain services into the new Nasdaq Financial Framework.

Intellectual Property

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 in the U.S. and in over 50 other countries worldwide.

To support our business objectives and benefit from our investments in research and development, we actively seek protection for our innovations by filing patent applications to protect inventions arising from investments in products, systems, software and services. We believe that our patents and patent applications 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.

Over time, we have accumulated a robust portfolio of issued patents in the U.S., Europe and in other parts of 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. Hence, no single patent is in itself essential to us as a whole or any of our principal business areas.

We also maintain copyright protection in our Nasdaq-branded materials.

Corporate Venture Practice

In 2017, Nasdaq expects to establish a corporate venture practice to invest primarily in financial technology companies. Nasdaq envisions that investments made through the venture practice will further our organic research and development efforts, and accelerate our path to commercial viability, in the same way previous investments have supported our blockchain and machine intelligence initiatives. Nasdaq expects that the capital invested will be modest and will not have a material impact on our consolidated financial statements or existing capital return or deployment priorities.

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 subsidiaries.

The rules and regulations that apply to our business are focused primarily on safeguarding the integrity of the securities markets and of market participants and investors generally. Accordingly, our board of directors, officers, and employees must give due regard to the preservation of the independence of the self-

regulatory function of each of our SROs and to their obligations to investors and the general public, and may not take any actions that would interfere with the effectuation of decisions by the boards of directors of any of our SROs relating to their regulatory functions, or that would interfere with the ability of any of our SROs to carry out their responsibilities under the Exchange Act. Although the rules and regulations that apply to our business are not focused on the protection of our stockholders, we believe that regulation improves the quality of exchanges and, therefore, our company. U.S. federal securities laws and the rules that govern our operations are subject to frequent change.

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 on the SROs many regulatory and operational responsibilities, including the day-to-day responsibilities for market and broker-dealer oversight. Before it may permit the registration of a national securities exchange as an SRO, the SEC must determine, among other things, that the exchange has a set of rules that is consistent with the requirements of the Exchange Act. 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 and six options markets in the U.S. We operate The Nasdaq Stock Market and The Nasdaq Options 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 GMNI and Nasdaq MCRY, each under their 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 or other interested parties at any time in connection with alleged regulatory violations. We also are subject to Section 17 of the Exchange Act, which imposes record-keeping requirements, including the requirement to make records available to the SEC for examination. 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.

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, following 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.

Pursuant to regulatory services agreements between FINRA and our SROs, FINRA provides certain regulatory services to our markets, including the regulation of trading activity and surveillance and investigative functions. Nevertheless, we have a direct regulatory role in conducting certain real-time market monitoring, certain equity surveillance not involving cross-market activity, most options surveillance, most rulemaking and some membership functions through our MarketWatch department. We refer suspicious trading behavior discovered by our regulatory staff to FINRA for further investigation. 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 the various state securities regulators. Nasdaq Execution Services, LLC, or Nasdaq Execution Services, currently operates as our routing broker for sending orders from Nasdaq's U.S. cash equity exchanges and three of our six options exchanges to other venues for execution. Execution Access LLC, or Execution Access, operates as the broker-dealer for our fixed income business, including Nasdaq Fixed Income's registered ATS for U.S. Treasuries. NPM Securities, LLC operates an ATS involving primary and secondary transactions in unregistered securities (i.e., securities not listed on a registered securities exchange and not registered under Section 12 of the Exchange Act), including acting as the buyer's and seller's agent to facilitate private placement transactions on the ATS. SMTX, LLC, or SMTX, also operates as a broker-dealer for NPM. Finally, Nasdaq Capital Markets Advisory LLC, or Nasdaq

Capital Markets Advisory, acts as a third-party advisor to privately-held or publicly-traded companies during IPOs and various other offerings.

Nasdaq Execution Services is registered as a broker-dealer with the SEC and in all 50 states, the District of Columbia and Puerto Rico. It is also a member of FINRA and most of the registered national securities exchanges in the U.S.

Execution Access is registered as a broker-dealer with the SEC and in 22 states and the U.S. Virgin Islands based on business requirements. Additionally, Execution Access is a FINRA member organization. Execution Access operates an SEC registered ATS, which is part of Nasdaq Fixed Income, to trade in U.S. Treasury securities. Execution Access is an introducing broker for trades matched on this ATS. The trades, once matched, are submitted to our fully disclosed clearing broker for clearance and settlement.

NPM Securities is registered as a broker-dealer with the SEC and in all 50 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands. Additionally, NPM Securities is a FINRA member organization. NPM Securities does not hold funds or securities. Funds may be delivered by the buyer to the issuer directly or wired into an escrow account, depending on the requirements of the offering. The issuer or its transfer agent (or other corporate recordkeeper) will provide the buyer with a stock certificate in either physical or book entry form.

SMTX is registered as a broker-dealer with the SEC and in 48 states and the District of Columbia based on business requirements. Additionally, SMTX is a FINRA member organization. NPM provides the technological tools and website hosting on a platform that issuers may use for administrative purposes, document execution, handling and storage, and to facilitate communications with participants of tender offers and merger and acquisition transactions. SMTX's role is to act as information agent with regard to onboarding potential participants, a depositary agent to receive tender of securities and transaction closing funds, and a paying agent to wire funds to participants at the closing.

Nasdaq Capital Markets Advisory is registered as a broker-dealer with the SEC and the State of New York based on business requirements. Additionally, Nasdaq Capital Markets Advisory is a FINRA member organization. Nasdaq Capital Markets Advisory acts as a third-party advisor to privately-held or publicly-traded companies during their initial public offerings, follow-on equity offerings, at-the-market equity offerings, private placement offerings and Regulation A equity offerings. Nasdaq Capital Markets Advisory's role is limited to providing a company, or an investment bank on behalf of a company, with reports, profiles and other pertinent advisory information. Nasdaq Capital Markets Advisory does not act as an underwriter, syndicate group member or placement agent for any company, select underwriters or syndicate group members, hold funds or securities, accept investor indications of interest, solicit investors or decide which investors receive securities on behalf of a company.

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. The SEC and SRO rules cover many aspects of a broker-dealer's business, including capital structure and withdrawals, sales methods, trade practices among broker-dealers, use and safekeeping of customers' funds and securities, record-keeping, the financing of customers' purchases, broker-dealer and employee registration and the conduct of directors, officers and employees. All broker-dealers have an SRO that is assigned by the SEC as the broker-dealer's DEA. The DEA is responsible for examining a broker-dealer for compliance with the SEC's financial responsibility rules. FINRA is the current DEA for Nasdaq Execution Services, Execution Access, NPM Securities, SMTX and Nasdaq Capital Markets Advisory.

As registered broker-dealer subsidiaries, Nasdaq Execution Services, Execution Access, NPM Securities, SMTX and Nasdaq Capital Markets Advisory 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 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.

As of December 31, 2016, Nasdaq Execution Services, Execution Access, NPM Securities, SMTX and Nasdaq Capital Markets Advisory 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, 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 our SROs and their members;
- 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 extended for a five-year term beginning in October 2015. The Nasdaq Stock Market also serves as the administrator for the UTP Plan. As the processor, The Nasdaq Stock Market performs and discharges regulatory functions and responsibilities that are necessary for the members of the UTP Plan to discharge the regulatory functions related to the operation of a national market system that have been delegated to them under the Exchange Act and Regulation NMS. To fulfill its obligations as the processor, The Nasdaq Stock Market has designed, implemented, maintained, and operated a data processing and communications system, hardware, and 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.

Regulation SCI. Effective as of November 2015, 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 inter-disciplinary program to ensure compliance with Regulation SCI. New Regulation SCI policies and procedures were created, internal policies and procedures were updated, and an information technology governance program was rolled out to ensure compliance.

Regulation of Registered Investment Advisor Subsidiary. Our subsidiary DWA is an investment advisor registered with the SEC under the Investment Advisors Act of 1940. In this capacity, DWA is subject to oversight and inspections by the SEC. Among other things, registered investment advisors like DWA 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. We also operate NFX, a designated contract market under the Commodity Exchange Act that is subject to regulatory oversight by the CFTC, an independent agency with the mandate to regulate commodity futures and options markets in the U.S. The National Futures Association provides regulatory services to NFX pursuant to a regulatory services agreement.

As a designated contract market, NFX is required to comply on an ongoing basis with 23 Core Principles set forth in Section 5(d) of the Commodity Exchange Act and with Part 38 of the CFTC's regulations. NFX is also subject to the requirements of Part 40 of the CFTC's regulations with respect to the adoption of new rules or rule amendments and the listing of new products. NFX is subject to CFTC rule enforcement reviews conducted by the CFTC's Division of Market Oversight. Rule enforcement reviews may examine a designated contract market's audit trail, trade practice surveillance, disciplinary and dispute resolution programs for compliance with the relevant Core Principles.

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 CXC and its three markets in Canada is performed by the Canadian Securities Administrators, an umbrella organization of Canada's provincial and territorial securities regulators. Operating in Ontario, Nasdaq CXC's lead regulator is the Ontario Securities Commission. As an approved

ATS, Nasdaq CXC is subject to the Marketplace Rules (National Instrument 21-101 and National Instrument 23-101), which include requirements for fair access, transparency of operations, systems and confidentiality of trading information. As an ATS, Nasdaq CXC is also a member of the Investment Industry Regulatory Organization of Canada and must comply with its dealer member rules. In December 2016, Nasdaq CXC also filed an application to operate as an exchange in Canada which is pending regulatory approval.

European Regulation

Regulation of our markets in the European Union and European Economic Area focuses on issues relating to financial services, listing and trading of securities, clearing and market abuse. In mid-2012, EMIR, a regulation relating to CCP services and OTC derivatives transactions, was adopted. As a consequence of EMIR, Nasdaq Clearing, like other European CCPs, applied to reauthorize its CCP operations. Nasdaq Clearing was the first European CCP to be authorized as EMIR-compliant when the SFSA approved its application as a CCP under EMIR in 2014.

MiFID II and MiFIR were adopted in 2014. These regulations will primarily affect our European trading businesses as they are implemented over the next few years. Many of the provisions of MiFID II and MiFIR will be implemented through technical standards drafted by the European Securities and Markets Authority and approved by the European Commission. Implementation is ongoing and both MiFID II and MiFIR will apply to the European Union member states by early 2018. In addition, in 2016, the European Union adopted legislation on governance and control of the production and use of benchmark indexes. The so-called Benchmark Regulation will apply in the European Union by early 2018. As the regulatory environment continues to change and related opportunities arise, we intend to continue product development, and ensure that the exchanges and clearinghouses that comprise Nasdaq Nordic and Nasdaq Baltic maintain favorable liquidity and offer efficient trading.

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations. 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 overseen by the SFSA and 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 us, acting through our surveillance division.

Nasdaq Stockholm's exchange activities are regulated primarily by the SSMA, 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 SFSA and the main supervisory authorities in Iceland, Norway, 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.

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 organized into two functions: one for the listing of instruments and surveillance of companies (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 each of the three Baltic exchanges. In Denmark and Finland, decisions to list new companies are made by the president of the exchange, a duty delegated by the board of each exchange.
If there is suspicion that a listed company or member has acted in breach of exchange regulations, the matter is dealt with by the market regulation division. Serious breaches are considered

by the respective disciplinary committee in Sweden and Finland. In Denmark, all matters are dealt with by the surveillance department. In Iceland, enforcement committees handle all breaches of exchange regulations, while disciplinary committees handle the determination of fines. Suspected insider trading is reported to the appropriate authorities in the respective country or countries.

Employees

As of December 31, 2016 , Nasdaq had 4,325 employees.

Nasdaq Website and Availability of SEC Filings

We file periodic reports, proxy statements and other information with the SEC. The public may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC (such as us). The address of that site is http://www.sec.gov.

Our website is www.business.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 Nasdaq's website and click on "Investor Relations," then under "Financial Information" 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 Relating to our Business

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 in both the U.S. and Europe, market volatility, changes in investment patterns and priorities, and other factors that are generally beyond our control. To the extent that global or national economic conditions weaken, 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 decline in trading volumes or values, deterioration of the economic welfare of our listed companies and a reduction in the demand for our products, including our data, index, corporate solutions and market technology products. 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.

Information Services revenues also 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, which could result in significant reductions in our professional user revenue. In addition, adverse market conditions may cause reductions in the number of non-professional investors with investments in the market and in ETP assets under management tracking Nasdaq indexes.

Finally, there may be less demand for our Corporate Solutions or Market Technology products if global economic conditions are weak.

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

Our industry is highly competitive.

We face intense competition from other exchanges and markets for market share of trading activity and listings. In addition, our Data Products, Index Licensing and Services, Corporate Solutions and Market Technology businesses face significant competition from other market participants. This competition includes both product and price competition. Increased competition may result in a decline in our share of trading activity, listings and demand for the products we offer, thereby adversely affecting our operating results.

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. In the last several decades, many marketplaces in both Europe and the U.S. have demutualized to provide greater flexibility for future growth. Marketplaces in both Europe and the U.S. have also merged to achieve greater economies of scale

and scope. The proposed mergers of the LSE with Deutsche Börse A.G. and of CBOE with BATS are two current examples of pending consolidation among marketplaces.

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

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

If we are unable to compete successfully in this environment, our business, financial condition and operating results will be adversely affected.

Price competition has affected and could continue to affect our business.

We face intense price competition in all areas of our business. In particular, the trading industry is characterized by intense 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, which could adversely impact operating results. We are also subject to potential price competition from new competitors and from new and existing competitors. 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 the future, our competitors may offer rebates for quotes and trades on their systems. In addition, pricing in our Corporate Services, Index Licensing and Services and Market Technology businesses is subject to competitive pressures. If we are unable to compete successfully in respect to the pricing of our services and products, our business, financial condition and operating results may 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 our systems cannot expand to cope with increased demand or otherwise fail to perform, we could experience unanticipated disruptions in service, slower response times and delays in the introduction of new products and services. These consequences could result in service outages, lower trading volumes or values, financial losses, decreased customer service and 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 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 and initiatives. 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 and in the rollout of our platforms. Although investments are carefully planned, there can be no assurance that the demand for such platforms will justify the related investments and that the future levels of transactions executed on these platforms will be sufficient to generate an acceptable return on such investments. If we fail to generate adequate revenue from planned system platforms, 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.

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, trading and

clearing volumes and values across our markets have fluctuated significantly depending on market conditions and other factors beyond our control. Current initiatives being considered by regulators and governments could have a material adverse effect on overall trading and clearing volumes or values. 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 continues to decrease relative to our competitors, our venues may be viewed as less attractive sources of liquidity. If growth in overall trading volume or value of these securities does not offset continued declines in our market share, or 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 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 could lower The Nasdaq Stock Market's share of tape pool revenues under the consolidated data plans, thereby reducing the revenues of our Data Products business.

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

Our systems and operations are vulnerable to damage or interruption from security breaches, hacking, data theft, denial of service attacks, human error, natural disasters, power loss, fire, sabotage, terrorism, computer viruses, intentional acts of vandalism and similar events. 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 or a natural disaster, 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. We also could incur significant expense in addressing any of these problems and in addressing related data security and privacy concerns.

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 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.

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

We must rationalize, coordinate and integrate the operations of our acquired businesses, including ISE, Nasdaq CXC, Marketwired and Boardvantage. 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 a deal partner for transition services, including billing 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 acquired businesses in parallel with similar businesses that we operated previously;
- 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.

For these reasons, we may not achieve the anticipated financial and strategic benefits from our acquisitions and 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 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 available borrowings under our revolving credit facility, 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 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.

Should we need to raise funds through issuing additional equity, our equity holders will suffer dilution. Should we need to raise funds through incurring additional debt, we may become subject to covenants even 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.

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.

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. While we have policies and procedures to identify, monitor and manage our risks and regulatory obligations, we cannot assure you 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 and markets for violations of applicable requirements.

For example, during 2016, the SFSA and the other Nordic financial supervisory authorities conducted investigations of cybersecurity processes at our Nordic exchanges and clearinghouse. In December 2016, we were issued a $6 million fine by the SFSA as a result of findings in connection with its investigation. The SFSA's conclusions related to governance issues rather than systems and platform security. We have appealed the SFSA's decision, including the amount of the fine.

In the future, we could be subject to SEC or other 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. 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 addition, 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.

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. The non-U.S. countries in which we currently operate or share ownership in regulated businesses include Canada, Sweden, Finland, Denmark, Iceland, Estonia, Lithuania, Latvia, Norway, Armenia, the Netherlands and the United Kingdom. In all the aforementioned countries, we have received authorization from the relevant authorities to conduct our regulated business activities. The authorities may revoke this authorization 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.

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 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 and technological oversight. The SEC, FINRA and the national securities exchanges have introduced several initiatives to ensure the oversight, integrity and resilience of markets.

In 2015, the SEC created an Equity Market Structure Advisory Committee to consider and opine on market structure issues relevant to Nasdaq's three U.S. equities markets. Within the past year, the Advisory Committee held three meetings and discussed a wide range of issues, including order routing, best execution, access fees and maker-taker pricing, market data fees, and securities information processors. The Advisory Committee has recommended that the SEC conduct an Access Fee Pilot that could limit the ability of Nasdaq's three cash equities exchanges to assess fees and could impact the overall revenue of these exchanges. Additionally, the SEC recently extended the announced sunset of this Advisory Committee from February 2017 to August 2017, and further extensions are possible. While these discussions may impact Nasdaq's

business in the future, it is too early to determine which, if any, of the Advisory Committee recommendations the Commission will propose, adopt and implement.

Future MiFID II and MiFIR rules could affect our operations in Europe. In addition, actions on any of the specific regulatory issues currently under review in the U.S. and Europe could have a material impact on our business.

While we support regulatory efforts to review and improve the structure, resilience and integrity of the markets, the adoption of these proposed regulatory changes and future reforms could impose significant costs and obligations on the operation of our exchanges and processor systems and have other impacts on our business.

Regulatory changes or future court rulings may have an adverse impact on our revenue from proprietary data products.

Regulatory and legal developments could reduce the amount of revenue that we earn from our proprietary data products. In the U.S., we generally are required to file with the SEC to establish or modify the fees that we charge for our data products. In recent years, certain industry groups have objected to the ability of exchanges to charge for certain data products. We have defeated two challenges in federal appeals court and an additional challenge at the administrative level within the SEC. However, the industry challengers have sought additional review of that administrative decision by the full SEC. That SEC review remains pending and, when resolved, it may be appealed to a federal court of appeals. If the results of the full SEC review and any subsequent appeal are detrimental to our U.S. exchanges' ability to charge for data products, there could be a negative impact on our revenues. We cannot predict whether, or in what form, any regulatory changes will be implemented, or their potential impact on our business. A determination by the SEC, for example, to link data fees to marginal costs, to take a more active role in the data rate-setting process, or to reduce the current levels of data fees could have an adverse effect on our Data Products revenues.

In Canada, all new marketplace fees and changes to existing fees, including trading and data fees, must be filed with and approved by the Ontario Securities Commission. In 2016, the Canadian Securities Administrators approved amendments that impose a fee cap for trading fees and the adoption of a Data Fees Methodology that restricts the total amount of fees that can be charged by all marketplaces to a reference level that is not yet defined. Until this reference is established, increases in market data fees will not be permitted. When a reference is established, all marketplaces will be subject to annual reviews of their market data fees tying market data revenues to market share.

Our European exchanges currently offer data products to customers on a non-discriminatory and reasonable commercial basis. It is expected that the future MiFID II rules will result in a definition of the term "reasonable commercial basis." There is a risk that the final wording of this definition may influence the fees for European data products adversely. In addition any future actions by the European Commission or European court decisions could affect our ability to offer data products in the same manner that we do today thereby causing an adverse effect on our Data Products revenues.

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

On August 22, 2013, we experienced an outage in the exclusive processor system we maintain and operate on behalf of all exchanges that trade Nasdaq-listed stocks that resulted in a market-wide trading halt lasting approximately three hours. Following this system outage, the SEC and others evaluated all infrastructure that is critical to the national market system, including the processor systems. Nasdaq, as technology provider to the UTP Operating Committee, proposed, received approval for, and implemented measures to enhance the resiliency of the existing processor system. Additionally, the UTP Operating Committee recently approved Nasdaq's proposal to transfer the processor technology from its current enhanced platform to Nasdaq's INET platform. The migration, which was completed in late 2016, further enhanced the resiliency of the processor systems. If, despite these improvement measures, 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, financial condition or operating results.

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. Although the market for listings over the past couple of years was strong, stagnation or decline in the number of new listings on The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges will impact our revenues. We recognize revenue from new listings on The Nasdaq Stock Market on a straight-line basis over an estimated six-year service period. As a result, a stagnant market for listings 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 Corporate Solutions 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.

Any reduction in our credit rating could increase the cost of our funding from the capital markets.

Our long-term 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 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 the financial services industry generally. There can be no assurance that we will maintain our current ratings. Our failure to maintain those ratings could 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 outstanding debt as the interest rate on the outstanding amounts under our credit facilities and most tranches of our senior notes fluctuates based on our credit ratings.

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, Corporate Solutions and Market Technology products, the accuracy of the quote and trade information provided by our Data Products business and the accuracy of calculations used by our Index Licensing and Services 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; and
- any misconduct, fraudulent activity or theft by our employees or other persons formerly or currently associated with us.

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 Data Products, Index Licensing and Services, Corporate Solutions or Market Technology businesses. This, in turn, may have a material adverse effect on our business, financial condition and operating results.

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, 2016, goodwill totaled approximately $6.0 billion and intangible assets, net of accumulated amortization, totaled approximately $2.1 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 and cost method investments, and property and equipment for 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, capital requirements 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.

As discussed in “Intangible Asset Impairment Charges,” of Note 5, “Goodwill and Acquired Intangible Assets,” to the consolidated financial statements, we recorded an indefinite-lived intangible asset impairment charge of $578 million in 2016 and $119 million in 2015. In addition, we recorded asset impairment charges of $49 million in 2014.

We may experience future events that may result in asset impairments. Future disruptions to our business, prolonged economic weakness 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.

For additional discussion of our goodwill, indefinite-lived intangible assets and other long-lived assets, including related impairment, see “Goodwill and Related Impairment,” “Indefinite-Lived Intangible Assets and Related Impairment,” and “Other Long-Lived Assets and Related Impairment,” of “Critical Accounting Policies and Estimates,” of Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Goodwill and Indefinite-Lived Intangible Assets,” and “Valuation of Other Long-Lived Assets,” of Note 2, “Summary of Significant Accounting Policies,” and Note 5, “Goodwill and Acquired Intangible Assets,” to the consolidated financial statements.

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

The financial services 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, war or other catastrophes;
- broad trends in industry and finance;
- changes in price levels and volatility in the stock markets;
- the level and volatility of interest rates;
- changes in government monetary or tax policy;
- 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. In particular, our U.S. business operations are heavily concentrated on the East Coast, and our European business operations are heavily concentrated in Stockholm. Any event that affects either of those geographic areas could potentially affect our ability to operate our businesses.

Additionally, since borrowings under our credit facilities bear interest at variable 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 will be 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 will be 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.

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

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

We clear or stand as riskless principal to 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 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 pro-actively 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 may not be sufficient.

In addition, one of our broker-dealer subsidiaries, Execution Access, has a clearing arrangement with Cantor Fitzgerald & Co., or Cantor Fitzgerald. As of December 31, 2016, we have contributed $20 million of clearing deposits to Cantor Fitzgerald in connection with this clearing arrangement. Some of the trading activity in Execution Access is cleared by Cantor Fitzgerald through the Fixed Income Clearing Corporation. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and settlement date of the individual transactions, which is one business day. All of Execution Access' obligations under the clearing arrangement with Cantor Fitzgerald are guaranteed by Nasdaq. Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk. Although we believe that the potential for us to be required to make payments under these arrangements is mitigated through the pledged collateral and our risk management policies, no guarantee can be provided that these arrangements will at all times 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.

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, 2016 was approximately $3.6 billion. We also may borrow up to an additional $749 million under our revolving credit facility.

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; and
- affect our ability to obtain additional financing in the future for refinancing indebtedness, acquisitions, working capital, capital expenditures or other purposes.

In addition, we must comply with the covenants in our credit facilities. Among other things, these covenants restrict our ability to grant liens, incur additional indebtedness, pay dividends, dispose of assets and conduct transactions with affiliates. 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. Our credit facilities allow us to pay cash dividends on our common stock as long as certain leverage ratios are maintained.

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, intellectual property, anti-money laundering, technology export, foreign asset controls and foreign corrupt practices areas. 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. Although our U.S. cash equity and options exchanges outsource a substantial portion of their market regulation functions to FINRA, we do 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 also monitor trading and compliance with listing standards. They monitor the listing of cash equities and other financial instruments. 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.

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 and others. The protective steps that we take may be inadequate to deter misappropriation of our proprietary information. 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 on our branded materials and pursue patent protection for software products, inventions and other processes developed by us. We also hold a number of patents, patent applications and licenses in the United States and other foreign jurisdictions. Effective trademark, copyright, patent and trade secret protection may not be available in every country in which we offer our services. 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.

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.

We rely on third parties for regulatory, data center, data storage, data content, clearing and other services. To the extent that any of our vendors or other third-party service providers experiences difficulties, 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.

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 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 subsidiaries outside of the U.S. are used to finance our international operations and are generally considered to be indefinitely reinvested. It is not our current intent to change this position. However, the majority of cash held outside the U.S. is available for repatriation, but under
current law, could subject us to additional U.S. income taxes,
less applicable foreign tax credits.

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.

Future acquisitions, investments, partnerships and joint ventures 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. Although we cannot predict our rate of growth as the result of acquisitions with complete accuracy, we believe that additional acquisitions and investments or entering into partnerships and joint ventures will be important to our growth 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 may finance future acquisitions 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, 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 agencies and increase the cash flow required for debt service. Any incremental debt incurred to finance an acquisition could also place significant constraints on the operation of our business.

Furthermore, any future acquisitions or investments in businesses or facilities could entail a number of additional risks, including:

- problems with effective integration of operations;
- the inability to maintain key pre-acquisition business relationships;
- increased operating costs;
- the diversion of our management team from other operations;
- problems with regulatory bodies;
- declines in the value of investments;
- exposure to unanticipated liabilities;
- difficulties in realizing projected efficiencies, synergies and cost savings; and
- changes in our credit rating and financing costs.

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 would in turn reduce our net income.

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 assure you 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 tax imposed on our subsidiaries.

Our non-U.S. business operates in various international markets, particularly emerging markets that are subject to greater political, economic and social uncertainties than developed countries.

The operations of our non-U.S. business are subject to the risk inherent in international operations, including but not limited to, risks with respect to operating in Iceland, the Baltics, the Middle East, Africa and Asia. Our expansion into lower cost locations, such as Lithuania, India and the Philippines, may increase operational risk. Some of these economies may be subject to greater political, economic and social uncertainties than countries with more developed institutional structures. Political, economic or social events or developments in one or more of these countries could adversely affect our operations and financial results.

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

We have operations in the U.S., the Nordic and Baltic countries, the U.K., Australia and many other foreign countries. We therefore have significant exposure to exchange rate movements between the Euro, Swedish Krona 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 or changes in local interest rates. These exchange rate differences will affect the translation of our non-U.S. results of operations 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 have methods to identify, monitor and manage our risks, including oversight of risk management by Nasdaq's Global Risk Steering Committee, which is comprised of employees and is responsible for regularly reviewing risks for materiality and referring significant risks to the board of directors or specific board committees. However, these methods may not be fully effective. Some of our risk management methods may depend upon evaluation of information regarding markets, customers or other matters. That information may not in all cases be accurate, complete, up-to-date or properly evaluated. If our methods are not effective or we are not successful in monitoring or evaluating the risks to which we are or may be exposed, our business, reputation, financial condition and operating results could be materially adversely affected.

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

In accordance with U.S. GAAP, we are accounting for the completion of our acquisitions using the acquisition method of accounting. We are allocating the total estimated purchase prices to net tangible assets, amortizable intangible assets and indefinite-lived intangible assets, and based on their fair values as of the date of completion of the acquisitions, recording 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 required by U.S. GAAP 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; and
- we may incur certain adjustments to reflect the financial condition and operating results under U.S. GAAP and U.S. dollars.

Risks Relating to an Investment in Our Common Stock

Decisions to declare future dividends on our common stock will be at the discretion of our board of directors based upon a review of relevant considerations. Accordingly, there can be no guarantee that we will pay future dividends to our stockholders.

Since 2013, our board of directors has declared 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 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 our U.S. exchanges include a rule prohibiting 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 our U.S. exchanges also require the SEC's approval of any business ventures with one of our 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.

The following is a description of our principal properties.

Location	Use	Size (approximate, in square feet)
Stockholm, Sweden	European headquarters	294,000
New York, New York	U.S. headquarters	113,000
Philadelphia, Pennsylvania	Location of Nasdaq PHLX	83,000
Philadelphia, Pennsylvania	General office space	74,000
New York, New York	General office space	64,000
Bengaluru, India	General office space	63,000
New York, New York	General office space	53,000
Vilnius, Lithuania	General office space	51,000
Rockville, Maryland	General office space	48,000
Manila, Philippines	General office space	36,000
London, England	General office space	31,000
Shelton, Connecticut	General office space	29,000
Sydney, Australia	General office space	29,000
Toronto, Canada	General office space	27,000
Philadelphia, Pennsylvania	General office space	26,000
New York, New York	Location of MarketSite	25,000

Outside the U.S, we also maintain leased locations in Belgium, China, Denmark, Estonia, Finland, France, Germany, Hong Kong, Iceland, Italy, Japan, Latvia, Netherlands, Norway, Singapore, South Korea, Spain, Turkey and the United Arab Emirates. In some countries, we maintain multiple locations.

Within the U.S., we also maintain leased locations in California, Colorado, Illinois, Massachusetts, Missouri, New Jersey, Oregon, Texas, Virginia and Washington, DC. In some states, we maintain multiple locations.

Generally, our properties are not earmarked for use by a particular segment. Instead, most of our properties are used by two or more segments. We believe the facilities we occupy are adequate for the purposes for which they are currently used and are well-maintained.

As of December 31, 2016, approximately 198,000 square feet of space in our facilities was available for sublease.

Item 3. Legal Proceedings.

For further discussion, see “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 has been listed on The Nasdaq Stock Market since February 10, 2005, under the ticker symbol “NDAQ.”

The following chart lists the quarterly high and low sales prices for shares of our common stock for fiscal years 2016 and 2015. These prices are between dealers and do not include retail markups, markdowns or other fees and commissions and may not represent actual transactions.

	High	Low
Fiscal 2016		
Fourth quarter	$ 68.94	$ 63.23
Third quarter	71.01	63.99
Second quarter	65.16	60.84
First quarter	66.09	54.73
Fiscal 2015		
Fourth quarter	$ 59.70	$ 52.39
Third quarter	53.81	47.42
Second quarter	51.88	47.58
First quarter	50.22	44.27

As of February 22, 2017 , we had approximately 319 holders of record of our common stock. As of February 22, 2017 , the closing price of our common stock was $71.24.

Cash Dividends on Common Stock

The following table shows quarterly cash dividends declared per common share on our outstanding common stock:

	December 31,	
	2016	2015
First quarter	$ 0.25	$ 0.15
Second quarter	0.32	0.25
Third quarter	0.32	0.25
Fourth quarter	0.32	0.25
Total	$ 1.21	$ 0.90

See “Cash Dividends on Common Stock,” of Note 13, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of the dividends.

Issuer Purchases of Equity Securities

Share Repurchase Program

See “Share Repurchase Program,” of Note 13, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program.

Employee Transactions

During the fiscal quarter ended December 31, 2016 , we purchased shares from employees in connection with the settlement of employee tax withholding obligations arising from the vesting of restricted stock and PSUs.

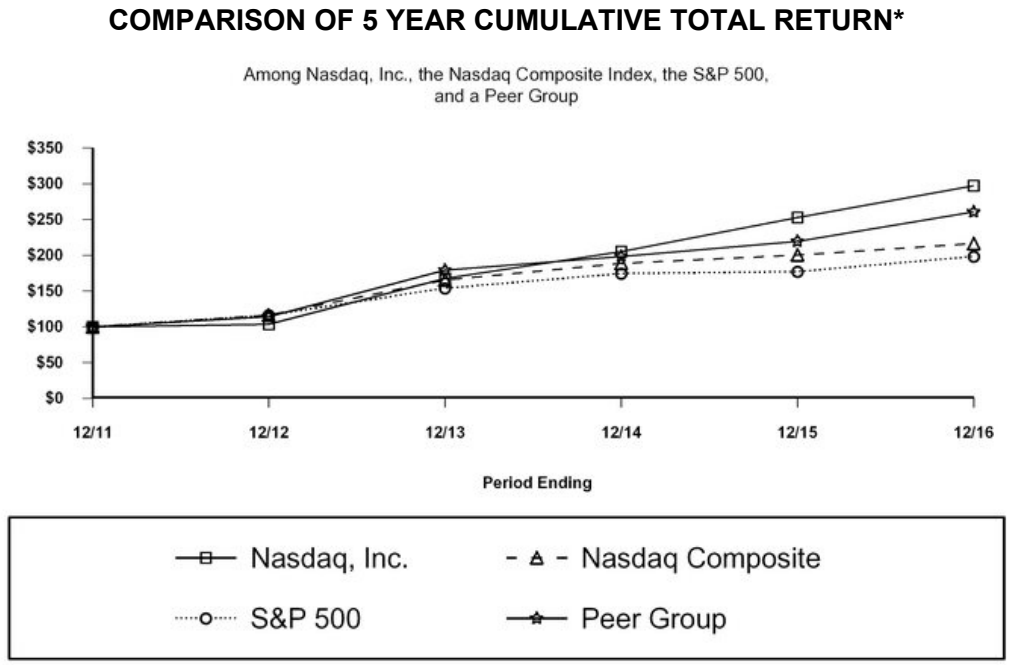
The table below represents repurchases made by or on behalf of us or any “affiliated purchaser” of our common stock during the fiscal quarter ended December 31, 2016 :

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 2016				
Share repurchase program	—	$ —	—	$ 429
Employee transactions	1,944	$ 67.15	N/A	N/A
November 2016				
Share repurchase program	—	$ —	—	$ —
Employee transactions	1,916	$ 65.32	N/A	N/A
December 2016				
Share repurchase program	—	$ —	—	$ —
Employee transactions	97,715	$ 67.76	N/A	N/A
Total Quarter Ended December 31, 2016				
Share repurchase program	—	$ —	—	$ 429
Employee transactions	101,575	$ 67.70	N/A	N/A

There were no shares of common stock repurchased under our share repurchase program during the quarter ended December 31, 2016.

PERFORMANCE GRAPH

The following graph compares the total return of our common stock to the Nasdaq Composite Stock Index, the S&P 500 and a selected peer group for the past five years. The peer group includes ASX Limited, CBOE, CME Group Inc., Deutsche Börse A.G., ICE, LSE, and TMX Group Limited. Information for the indices and the peer group is provided from December 31, 2011 through December 31, 2016 . The figures represented below assume an initial investment of $100 in the common stock or index at the closing price on December 31, 2011 and the reinvestment of all dividends.



*$100 invested on 12/31/11 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

	12/11	12/12	12/13	12/14	12/15	12/16
Nasdaq, Inc.	$ 100.00	$ 103.69	$ 167.76	$ 205.03	$ 253.02	$ 297.27
Nasdaq Composite	100.00	116.41	165.47	188.69	200.32	216.54
S&P 500	100.00	116.00	153.58	174.60	177.01	198.18
Peer Group	100.00	114.04	179.21	198.12	219.60	260.60

Copyright© 2017 Standard & Poor's, a division of S&P Global. All rights reserved.

Item 6. Selected Financial Data.

The following table sets forth selected financial data on a historical basis for Nasdaq. The following information should be read in conjunction with the consolidated financial statements and notes thereto of Nasdaq included elsewhere in this Form 10-K. We completed several acquisitions during the years ended December 31, 2016, 2015, 2013 and 2012 and included the financial results of such acquisitions in our consolidated financial statements from the respective acquisition dates.

Selected Financial Data

	Year Ended December 31,				
	2016	2015	2014	2013	2012
	(in millions, except share and per share amounts)				
Statements of Income Data:					
Total revenues	$ 3,705	$ 3,403	$ 3,500	$ 3,211	$ 3,120
Transaction-based expenses	(1,428)	(1,313)	(1,433)	(1,316)	(1,446)
Revenues less transaction-based expenses	2,277	2,090	2,067	1,895	1,674
Total operating expenses	1,438	1,370	1,313	1,207	984
Operating income	839	720	754	688	690
Net income attributable to Nasdaq	108	428	414	385	352
Per share information:					
Basic earnings per share	$ 0.65	$ 2.56	$ 2.45	$ 2.30	$ 2.09
Diluted earnings per share	$ 0.64	$ 2.50	$ 2.39	$ 2.25	$ 2.04
Cash dividends declared per common share	$ 1.21	$ 0.90	$ 0.58	$ 0.52	$ 0.39
Weighted-average common shares outstanding for earnings per share:					
Basic	165,182,290	167,285,450	168,926,733	166,932,103	168,254,653
Diluted	168,800,997	171,283,271	173,018,849	171,266,146	172,587,870

	December 31,				
	2016	2015	2014	2013	2012
	(in millions)				
Balance Sheets Data:					
Cash and cash equivalents and financial investments	$ 648	$ 502	$ 601	$ 587	$ 720
Total assets	14,150	11,861	12,071	12,563	9,122
Total long-term liabilities	4,638	3,332	3,297	3,579	2,895
Total Nasdaq stockholders' equity	5,430	5,609	5,794	6,184	5,209

Total assets increased $2.3 billion (with a corresponding increase in current liabilities) at December 31, 2016 as compared with December 31, 2015 primarily due to new regulatory rules in 2016 that require all collateral pledged by members of our Nasdaq Clearing business to be recorded on the balance sheet and an increase in goodwill associated with our 2016 acquisitions, partially offset by a pre-tax, non-cash intangible asset impairment charge of $578 million to write off the full value of a trade name. Total assets increased $3.4 billion (with a corresponding increase in current liabilities) at December 31, 2013 compared with December 31, 2012, primarily due to an increase in default funds and margin deposits, reflecting the implementation of our collateral management process for our Nasdaq Clearing business in 2013 and an increase in goodwill and intangible assets associated with the acquisitions of the TR Corporate businesses and eSpeed in 2013.

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."

Business Overview

We are a leading provider of trading, clearing, exchange technology, regulatory, securities listing, information and public company services. Our global offerings are diverse and include trading and clearing across multiple asset classes, trade management services, data products, financial indexes, capital formation solutions, corporate solutions, and market technology products and services. Our technology powers markets across the globe, supporting equity derivative trading, clearing and settlement, cash equity trading, fixed income trading and many other functions.

For further discussion of our business, see "Item 1. Business."

Business Environment

We serve listed companies, market participants and investors by providing derivative, commodities, cash equity, and fixed income markets, thereby facilitating economic growth and corporate entrepreneurship. We provide market technology to exchanges, clearing organizations and central securities depositories around the world. We also offer companies and other organizations access to innovative products, software solutions and services that increase transparency, mitigate risk, improve board efficiency and facilitate better corporate governance. In broad terms, our business performance is impacted by a number of drivers including macroeconomic events affecting the risk and return of financial assets, investor sentiment, government and private sector demands for capital, the regulatory environment for capital markets, changing technology, particularly in the financial services industry, and changes in investment patterns and priorities. Our future revenues and net income will continue to be influenced by a number of domestic and international economic trends including, among others:

- Trading volumes and values in equity derivative, cash equity and FICC, which are driven primarily by overall macroeconomic conditions;
- The number of companies seeking equity financing, which is affected by factors such as investor demand, the global economy, and availability of diverse sources of financing, as well as tax and regulatory policies;
- The demand for information about, or access to, our markets, which is dependent on the products we trade, our importance as a liquidity center, and the quality and pricing of our data and trade management services;
- The demand by companies and other organizations for the products sold by our Corporate Solutions business, which is largely driven by the overall state of the economy and the attractiveness of our offerings;
- The demand for licensed ETPs and other financial products based on our indexes as well as changes to the underlying assets associated with existing licensed financial products;
- The challenges created by the automation of market data consumption, including competition and the quickly evolving nature of the data business;
- The outlook of our technology customers for capital market activity;
- Continuing pressure in transaction fee pricing due to intense competition in the U.S. and Europe;
- Competition related to pricing, product features and service offerings;
- Regulatory changes relating to market structure or affecting certain types of instruments, transactions, pricing structures or capital market participants; and
- Technological advances and members' and customers' demand for speed, efficiency, and reliability.

Currently our business drivers are defined by investors and companies which have a wait and see posture about the pace of future global economic growth. The current consensus forecast for gross domestic product growth for the U.S. is 1.6% in 2016 and 2.3% in 2017 and the Eurozone is 1.6% in 2016 and 1.4% in 2017. Forecasts for both regions have been experiencing downward revisions over the last year as the outlook for growth deteriorates with significant downward revisions for the Eurozone following Brexit. Very recent forecasts for the U.S., however, have speculated that U.S. economic growth may be stronger than baseline forecasts depending on the fiscal priorities of the new administration. While we expect continued modest annual growth in many of our non-trading segments (Corporate Services, Information Services, and Market Technology), we recognize that there are a number of significant structural and political issues continuing to impact the global economy. Consequently, sustained instability could return at any time, resulting in an increased level of market volatility, oscillating trading volumes, and a more cautious outlook by the clients of our non-trading segments. Following elevated volatility levels in the second half of 2015, market volatility remained high in the first quarter of 2016 before declining into the second quarter. Volatility remained at a moderate level throughout the remainder of the year except for two spikes following the results of the Brexit vote and the U.S. presidential election.

Volatility and market uncertainty in 2016 led to the worst year for the number of U.S. IPO listings since 2012. Additional impacts on our business drivers include the international enactment and implementation of new legislative and regulatory initiatives, the evolution of market participants' trading and investment strategies, and the continued rapid progression and deployment of new technology in the financial

services industry. The business environment that influenced our financial performance for 2016 may be characterized as follows:

- Intense competition among U.S. exchanges and dealer-owned systems for cash equity trading volume and strong competition between MTFs and exchanges in Europe for cash equity trading volume;
- Globalization of exchanges, customers and competitors extending the competitive horizon beyond national markets;
- Headwinds in fund flows and market performance negatively impacted new business and assets under management of existing business in our Index Licensing and Services business during the first half of 2016. However, performance began to improve during the latter part of 2016, with assets under management ending the year higher versus 2015. In addition, we had solid growth in our Data Products business; and
- Market trends requiring continued investment in technology to meet customers' and regulators' demands as markets and participants adapt to a global financial industry, as increasing numbers of new companies are created, and as emerging countries show ongoing interest in developing their financial markets.

2017 Outlook

Our strategy continues to include identifying organic growth within our core business units and developing adjacent opportunities within our core businesses. In addition, our strategy includes identifying acquisitions that both, complement our strengths and extend our capabilities, and offer opportunities for revenue and expense synergies and increased shareholder value.

During 2017, we expect changes in both the competitive and regulatory environments. In the U.S., in 2016, The Investors Exchange LLC became a registered exchange, CBOE and BATS announced their intent to merge as did Deutsche Börse A.G. and LSE. In February 2017, Miami International Securities Exchange launched a second options exchange. We expect intense competition among U.S. equity and options marketplaces to continue and new entrants will be part of our competitive environment. While the willingness of new entrants to commence operations can be taken as a positive sign of good health in the trading industry, as these organizations implement their strategies, they have the potential to affect the competitive environment we face.

European regulators are currently moving forward on a number of new policies affecting the operation and infrastructure of the financial markets. The implementation of EMIR is changing the way we structure and operate the Nordic clearinghouse. MiFID II, as well as the new regulations in MiFIR, will change the way our trading business operates and will create both challenges in our existing businesses, as well as new opportunities for growth. Full implementation of these regulations may be delayed and consequently create an uncertain environment for our businesses.

The following discusses our 2017 outlook for each of our segments:

Market Services

Economic and political uncertainty continue to weigh on the global economy and the debate over future fiscal and monetary policy in the U.S. and Europe continues. We believe that our diversified businesses position us well to compete in an uncertain market environment. If increased levels of market volatility persist in 2017, many of the asset classes within our Market Services segment and our Data Products business will continue to benefit.

NFX continues to experience growth in its energy derivative products. We enter 2017 with a clear opportunity to increase the number of clients running on the NFX platform, and we continue to identify additional products to bring to market.

We expect global markets to continue to be marked by significant change in 2017, driven primarily by regulatory initiatives in the U.S. and Europe as recently adopted regulations and legislation continue to be implemented. These changes could result in the continued fragmentation of cash equity markets, and trading could continue to migrate from exchanges to OTC systems, particularly in the U.S. Conversely, trading in OTC derivatives could begin to move onto exchanges and other execution facilities.

Information Services

As we look toward the future, we continue to make progress to leverage emerging technologies to expand the ways we serve clients, with our launch of the trading and analytics product suite, which just begins to leverage machine intelligence in its logic.

We also continue to make strides in expanding our Index Licensing and Services business, in particular in our smart-beta products, which make up a strong portion of our growing assets under management total. An example of this was launching the first fixed income product leveraging the DWA relative strength methodology, in partnership with State Street Corporation.

Corporate Services

In 2016, our Corporate Solutions business launched Nasdaq IR Insight, our investor relations platform. During 2016, we made significant progress to enhance the client experience. In doing both of these, we created an architectural foundation for our next generation corporate solutions products going forward. In addition, we continued to invest in our Public Relations and Governance businesses through our acquisitions of Marketwired and Boardvantage.

Growth in our Corporate Services segment will depend on a positive economic outlook and a lower level of merger and acquisition transactions.

Volatility in the markets will have a negative impact on the pace of IPOs and consequently on the opportunities for revenue

growth in our Listing Services and Corporate Solutions businesses.

Market Technology

In 2016, we announced the Nasdaq Financial Framework, which is our new, modular architecture that will provide next generation capital markets capabilities, including the integration of blockchain technology across the issuance and settlement of securities, as well as cloud-enabled trading and clearing. We expect this next generation platform to contribute meaningfully to our order intake in 2017 and beyond.

In Summary

We believe that our future will continue to be determined by our ability to satisfy our customer's evolving needs and to allocate resources in strategic areas which will yield attractive returns.

Consistent with our long-term strategy, we will continue to leverage our technology strengths and offer new products that expand and strengthen our relationships with existing and new customers.

We believe that our continued focus on meeting our cost, revenue and technology objectives will enable us to benefit from any improving economic conditions in the future. We will continue to look for opportunities to further diversify our business with enhanced product offerings and/or acquisitions that are complementary to our existing businesses.

Business Segments

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Services, Information Services and Market Technology. In 2016, due to changes in our executive leadership and to better reflect how our chief operating decision maker views the businesses, we realigned our reportable segments to integrate the Corporate Solutions and Listing Services businesses into our new Corporate Services segment. Market Technology is now a separate reportable segment. Prior to this change, our Corporate Solutions and Market Technology businesses were part of our Technology Solutions segment. All prior period segment disclosures have been recast to reflect our change in reportable segments. 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 additional financial information about geographic data, as well as how management allocates resources, assesses performance and manages these businesses as four separate segments.

Sources of Revenues and Transaction-Based Expenses

See “Revenue Recognition and Transaction-Based Expenses,” of Note 2, “Summary of Significant Accounting Policies,” to the consolidated financial statements for further discussion of our sources of revenues and transaction-based expenses.

Nasdaq's Operating Results

Key Drivers

The following table includes key drivers for our Market Services, Corporate Services, Information Services and Market Technology segments. In evaluating the performance of our business, our senior management closely evaluates these key drivers.

	Year Ended December 31,		
	2016	2015	2014
Market Services			
Equity Derivative Trading and Clearing			
U.S. equity options			
Total industry average daily volume (in millions)	14.4	14.8	15.3
Nasdaq PHLX matched market share	16.0%	16.7%	16.0%
The Nasdaq Options Market matched market share	7.8%	7.7%	10.0%
Nasdaq BX Options matched market share	0.8%	0.8%	0.9%
Nasdaq ISE matched market share [1]	5.8%	—%	—%
Nasdaq GMNI matched market share [1]	1.1%	—%	—%
Nasdaq MCRY matched market share [1]	0.1%	—%	—%
Total matched market share executed on Nasdaq's exchanges	31.6%	25.2%	26.9%
Nasdaq Nordic and Nasdaq Baltic options and futures			
Total average daily volume of options and futures contracts [2]	376,730	380,725	358,141
Cash Equity Trading			
Total U.S.-listed securities			
Total industry average daily share volume (in billions)	7.35	6.91	6.41
Matched share volume (in billions)	321.6	327.7	326.0
Matched market share executed on The Nasdaq Stock Market	14.0%	15.8%	17.1%
Matched market share executed on Nasdaq BX	2.4%	2.0%	2.5%
Matched market share executed on Nasdaq PSX	1.0%	1.0%	0.6%
Total matched market share executed on Nasdaq's exchanges	17.4%	18.8%	20.2%
Market share reported to the FINRA/Nasdaq Trade Reporting Facility	33.1%	31.8%	30.3%
Total market share [3]	50.5%	50.6%	50.5%
Nasdaq Nordic and Nasdaq Baltic securities			
Average daily number of equity trades executed on Nasdaq's exchanges	472,428	437,285	351,772
Total average daily value of shares traded (in billions)	$ 5.0	$ 5.1	$ 4.8
Total market share executed on Nasdaq's exchanges	63.4%	68.5%	71.5%
FICC			
Fixed Income			
U.S. fixed income notional trading volume (in billions)	$ 21,504	$ 29,234	$ 37,594
Total average daily volume of Nasdaq Nordic and Nasdaq Baltic fixed income contracts	89,252	108,708	98,948
Nasdaq commodities			
Power contracts cleared (TWh) [4]	1,658	1,496	1,564
Corporate Services			
Initial public offerings			
The Nasdaq Stock Market	91	143	189
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	62	78	47
Total new listings			
The Nasdaq Stock Market [5]	283	274	327
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic [6]	88	91	72
Number of listed companies			
The Nasdaq Stock Market [7]	2,897	2,859	2,782
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic [8]	900	852	792
Information Services			
Number of licensed exchange traded products	298	222	166
ETP assets under management tracking Nasdaq indexes (in billions)	$ 124	$ 114	$ 99
Market Technology			
Order intake (in millions) [9]	$ 276	$ 271	$ 320
Total order value (in millions) [10]	$ 777	$ 788	$ 716

(1) For the year ended December 31, 2016, matched market share for Nasdaq ISE, Nasdaq GMNI, and Nasdaq MCRY is included since the closing of the ISE acquisition on June 30, 2016.
(2) Includes Finnish option contracts traded on EUREX Group.
(3) 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.
(4) Transactions executed on Nasdaq Commodities or OTC and reported for clearing to Nasdaq Commodities measured by Terawatt hours (TWh).
(5) New listings include IPOs, including those completed on a best efforts basis, issuers that switched from other listing venues, closed-end funds and separately listed ETPs.
(6) 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.
(7) Number of listed companies for The Nasdaq Stock Market at period end, including separately listed ETPs.
(8) Represents companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North at period end.
(9) Total contract value of orders signed during the period.
(10) Represents total contract value of signed orders that are yet to be recognized as revenue. Market technology deferred revenue, as discussed in Note 8, "Deferred Revenue," to the consolidated financial statements, represents consideration received that is yet to be recognized as revenue for these signed orders.

Financial Summary

The following table summarizes our financial performance for the year ended December 31, 2016 when compared with the same period in 2015, and for the year ended December 31, 2015 when compared with the same period in 2014. The comparability of our results of operations between reported periods is impacted by the acquisitions of Nasdaq CXC and Marketwired in February 2016, Boardvantage in May 2016, ISE in June 2016, and DWA in January 2015. See "2016 Acquisitions" and "2015 Acquisitions," of Note 4, "Acquisitions," to the consolidated financial statements for further discussion. For a detailed discussion of our results of operations, see "Segment Operating Results" below.

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions, except per share amounts)				
Revenues less transaction-based expenses	$ 2,277	$ 2,090	$ 2,067	8.9 %	1.1 %
Operating expenses	1,438	1,370	1,313	5.0 %	4.3 %
Operating income	839	720	754	16.5 %	(4.5)%
Interest expense	(135)	(111)	(117)	21.6 %	(5.1)%
Asset impairment charges	(578)	—	(49)	100.0 %	(100.0)%
Income before income taxes	136	630	594	(78.4)%	6.1 %
Income tax provision	28	203	181	(86.2)%	12.2 %
Net income attributable to Nasdaq	$ 108	$ 428	$ 414	(74.8)%	3.4 %
Diluted earnings per share	$ 0.64	$ 2.50	$ 2.39	(74.4)%	4.6 %
Cash dividends declared per common share	$ 1.21	$ 0.90	$ 0.58	34.4 %	55.2 %

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."

* * * * * *

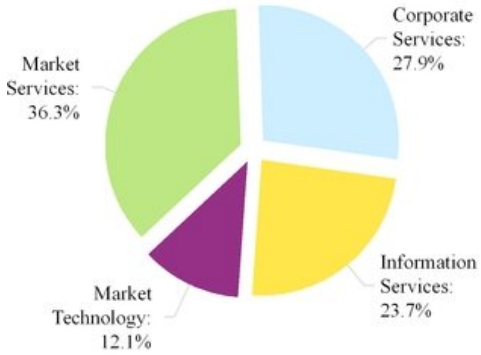
Segment Operating Results

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

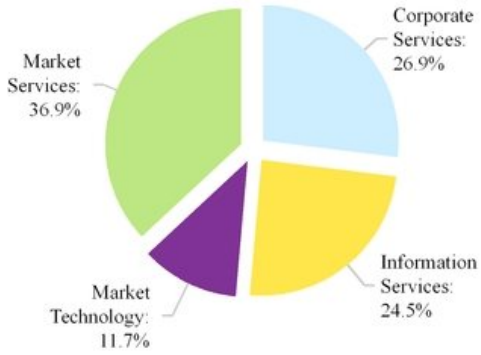
	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Market Services	$ 2,255	$ 2,084	$ 2,229	8.2%	(6.5)%
Transaction-based expenses	(1,428)	(1,313)	(1,433)	8.8%	(8.4)%
Market Services revenues less transaction-based expenses	827	771	796	7.3%	(3.1)%
Corporate Services	635	562	552	13.0%	1.8 %
Information Services	540	512	473	5.5%	8.2 %
Market Technology	275	245	246	12.2%	(0.4)%
Total revenues less transaction-based expenses	$ 2,277	$ 2,090	$ 2,067	8.9%	1.1 %

The following charts show our Market Services, Corporate Services, Information Services and Market Technology segments as a percentage of our total revenues less transaction-based expenses of $2,277 million in 2016, $2,090 million in 2015 and $2,067 million in 2014:

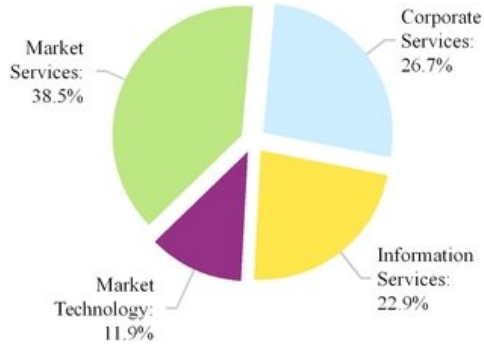
2016 Percentage of Revenues Less Transaction-based Expenses by Segment



2015 Percentage of Revenues Less Transaction-based Expenses by Segment



2014 Percentage of Revenues Less Transaction-based Expenses by Segment



MARKET SERVICES

The following table shows total revenues, transaction-based expenses, and total revenues less transaction-based expenses from our Market Services segment:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Market Services Revenues:					
Equity Derivative Trading and Clearing Revenues [1]	$ 541	$ 432	$ 525	25.2 %	(17.7)%
Transaction-based expenses:					
Transaction rebates	(288)	(223)	(285)	29.1 %	(21.8)%
Brokerage, clearance and exchange fees [1]	(25)	(21)	(32)	19.0 %	(34.4)%
Equity derivative trading and clearing revenues less transaction-based expenses	**228**	**188**	**208**	**21.3 %**	**(9.6)%**
Cash Equity Trading Revenues [2]	1,349	1,315	1,335	2.6 %	(1.5)%
Transaction-based expenses:					
Transaction rebates	(785)	(756)	(780)	3.8 %	(3.1)%
Brokerage, clearance and exchange fees [2]	(309)	(306)	(332)	1.0 %	(7.8)%
Cash equity trading revenues less transaction-based expenses	**255**	**253**	**223**	**0.8 %**	**13.5 %**
FICC Revenues	99	98	130	1.0 %	(24.6)%
Transaction-based expenses:					
Transaction rebates	(19)	(4)	—	375.0 %	100.0 %
Brokerage, clearance and exchange fees	(2)	(3)	(4)	(33.3)%	(25.0)%
FICC revenues less transaction-based expenses	**78**	**91**	**126**	**(14.3)%**	**(27.8)%**
Trade Management Services Revenues	**266**	**239**	**239**	**11.3 %**	**— %**
Total Market Services revenues less transaction-based expenses	**$ 827**	**$ 771**	**$ 796**	**7.3 %**	**(3.1)%**

[1] Includes Section 31 fees of $24 million in 2016, $19 million in 2015 and $28 million in 2014. Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded in transaction-based expenses.

[2] Includes Section 31 fees of $290 million in 2016, $282 million in 2015 and $306 million in 2014. Section 31 fees are recorded as cash equity trading revenues with a corresponding amount recorded in transaction-based expenses.

Equity Derivative Trading and Clearing Revenues

Equity derivative trading and clearing revenues and equity derivative trading and clearing revenues less transaction-based expenses increased in 2016 compared with 2015 and decreased in 2015 compared with 2014.

The increases in 2016 were primarily due to:

- the inclusion of revenues from our acquisition of ISE, partially offset by;
- lower U.S. industry trading volumes; and
- lower market share at Nasdaq PHLX.

The decreases in 2015 were primarily due to:

- a decline in overall market share at our three U.S. options exchanges;
- a decrease in U.S. industry trading volumes; and
- an unfavorable impact from foreign exchange of $10 million, partially offset by;
- an increase in trading volumes in European stock options and index futures products.

Further impacting the decrease in equity derivative trading and clearing revenues in 2015 was a decrease in the U.S. average revenue capture rate and a decline in Section 31 pass-through fee revenue. Further impacting the decrease in equity derivative trading and clearing revenues less transaction-based expenses in 2015 was a decrease in the U.S. average net capture rate.

Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded as transaction-based expenses. 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 transaction-based expenses, there is no impact on our revenues less transaction-based expenses. The increase in 2016 compared with 2015 was primarily due to the inclusion of Section 31 fees from our acquisition of ISE. The decrease in 2015 compared with 2014 was primarily due to lower rates and lower dollar value traded.

Transaction rebates, in which we credit a portion of the per share execution charge to the market participant, increased in 2016 compared with 2015 and decreased in 2015 compared with 2014.

The increase in 2016 was primarily due to:

- the inclusion of rebates associated with our acquisition of ISE, partially offset by;
- lower U.S. industry trading volumes; and
- lower market share at Nasdaq PHLX.

The decrease in 2015 was primarily due to a:

- decrease in the average rebate rate;
- decline in overall market share at our three U.S. options exchanges; and
- decrease in U.S. industry trading volumes.

Brokerage, clearance and exchange fees increased in 2016 compared with 2015 and decreased in 2015 compared with 2014. The increase in 2016 was primarily due to higher Section 31 pass-through fees due to the inclusion of Section 31 fees from our acquisition of ISE. The decrease in 2015 was primarily due to lower Section 31 pass-through fees and a decrease in routing costs due to a decline in volume routed.

Cash Equity Trading Revenues

Cash equity trading revenues and cash equity trading revenues less transaction-based expenses increased in 2016 compared with 2015. The increases in 2016 were primarily due to:

- the inclusion of revenues associated with our acquisition of Nasdaq CXC; and
- higher U.S. and European industry trading volumes, partially offset by a;
- decrease in our overall U.S. and European matched market share executed on Nasdaq's exchanges.

The increase in cash equity trading revenues less transaction-based expenses in 2016 was also unfavorably impacted by a decrease in the U.S. average net capture rate.

Cash equity trading revenues decreased in 2015 compared with 2014 primarily due to:

- a decrease in our overall U.S. matched market share executed on Nasdaq's exchanges;
- a decline in Section 31 pass-through fee revenue; and
- an unfavorable impact from foreign exchange of $18 million, partially offset by;
- higher U.S. and European industry trading volumes; and
- an increase in the U.S. average revenue capture rate.

Cash equity trading revenues less transaction-based expenses increased in 2015 compared with 2014 primarily due to:

- higher U.S. and European industry trading volumes; and
- an increase in the average net capture rate, partially offset by;
- a decrease in our overall U.S. matched market share executed on Nasdaq's exchanges; and
- an unfavorable impact from foreign exchange of $18 million.

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 transaction-based expenses. 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 transaction-based expenses, there is no impact on our revenues less transaction-based expenses. The increase in 2016 compared with 2015 was primarily due to higher dollar value traded on Nasdaq's exchanges and higher SEC fee rates. The decrease in 2015 compared with 2014 was primarily due to lower SEC fee rates, partially offset by higher dollar value traded on Nasdaq's exchanges.

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, we credit a portion of the per share execution charge to the market participant that takes the liquidity. These transaction rebates increased in 2016 compared with 2015 and decreased in 2015 compared with 2014.

The increase in 2016 was primarily due to:

- higher U.S. industry trading volumes; and
- the inclusion of rebates associated with our acquisition of Nasdaq CXC, partially offset by a;
- decrease in our overall U.S. matched market share executed on Nasdaq's exchanges.

The decrease in 2015 was primarily due to a:

- decrease in our overall U.S. matched market share executed on Nasdaq's exchanges; and a
- decline in the average rebate rate, partially offset by an;
- increase in U.S. industry trading volumes.

Brokerage, clearance and exchange fees increased in 2016 compared with 2015 and decreased in 2015 compared with 2014. The increase in 2016 was primarily due to an increase in Section 31 pass-through fees. The decrease in 2015 was primarily due to a decline in Section 31 pass-through fees.

FICC Revenues

FICC revenues increased slightly in 2016 compared with 2015 and decreased in 2015 compared with 2014. FICC revenues less transaction-based expenses decreased both in 2016 compared with 2015 and in 2015 compared with 2014. The decrease in FICC revenues less transaction-based expenses in 2016 was primarily due to the impact of NFX trading incentives and a decline in U.S. fixed income revenues, partially offset by higher commodities revenues. The decrease in FICC revenues and FICC revenues less transaction-based expenses in 2015 was primarily due to volume declines in U.S. fixed income products and European commodities products, a decrease related to a scheduled contract termination of a technology licensing customer, and an unfavorable impact from foreign exchange of $11 million, partially offset by lower trading incentives at Nasdaq NLX, our former London-based multilateral trading venue.

Trade Management Services Revenues

Trade management services revenues increased in 2016 compared with 2015 primarily due to an increase in customer demand for network connectivity and the inclusion of revenues from our acquisition of ISE. Trade management services revenues were flat in 2015 compared with 2014 as an increase in customer demand for network connectivity was offset by an unfavorable impact from foreign exchange of $8 million.

CORPORATE SERVICES

The following table shows revenues from our Corporate Services segment:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Corporate Services:					
Corporate Solutions	$ 363	$ 298	$ 314	21.8%	(5.1)%
Listing Services	272	264	238	3.0%	10.9 %
Total Corporate Services	$ 635	$ 562	$ 552	13.0%	1.8 %

Corporate Solutions Revenues

Corporate solutions revenues increased in 2016 compared with 2015 primarily due to the inclusion of revenues associated with the acquisitions of Marketwired and Boardvantage. See “Acquisition of Marketwired,” and “Acquisition of Boardvantage,” of Note 4, “Acquisitions,” to the consolidated financial statements for further discussion of the Marketwired and Boardvantage acquisitions. Corporate solutions revenues decreased in 2015 compared with 2014 primarily due to a decline in the demand for our investor relations products and an unfavorable impact from foreign exchange of $9 million.

Listing Services Revenues

Listing services revenues increased both in 2016 compared with 2015 and in 2015 compared with 2014. The increase in 2016 was primarily due to an increase in European revenues due to new company listings. The increase in 2015 was primarily due to an increase in U.S. listing services revenues, partially offset by a decrease in European listing services revenues. The increase in U.S. listing services revenues was primarily due to an increase in annual listing fees as a result of pricing actions and an increase in the number of listed companies. The decrease in European listing services revenues was primarily due to an unfavorable impact from foreign exchange of $12 million, partially offset by an increase in the number of listed companies and higher annual renewal fees.

INFORMATION SERVICES

The following table shows revenues from our Information Services segment:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Information Services:					
Data Products	$ 427	$ 399	$ 384	7.0%	3.9%
Index Licensing and Services	113	113	89	—%	27.0%
Total Information Services	$ 540	$ 512	$ 473	5.5%	8.2%

Data Products Revenues

Data products revenues increased both in 2016 compared with 2015 and in 2015 compared with 2014. The increase in 2016 was primarily due to growth in proprietary data products revenues, the inclusion of revenues associated with the acquisitions of ISE and Nasdaq CXC, and higher index data products revenues. The increase in 2015 was primarily due to the inclusion of revenues associated with the acquisition of DWA, higher revenues from shared tape revenue plans, and higher customer demand for U.S. proprietary data products, partially offset by an unfavorable impact from foreign exchange of $14 million.

Index Licensing and Services Revenues

Index licensing and services revenues were flat in 2016 compared with 2015 as an increase in revenues associated with the acquisition of ISE was offset by a decrease in average fees on ETPs tracking to Nasdaq indexes and a decrease in the value of underlying assets associated with non-ETP Nasdaq-licensed products.

Index licensing and services revenues increased in 2015 compared with 2014 due to an increase in the value of underlying assets associated with Nasdaq-licensed ETFs and other financial products due to product growth and newly executed product licenses. The increase in 2015 was also due to our acquisition of DWA.

See "Acquisition of ISE," "Acquisition of Nasdaq CXC," and "Acquisition of DWA," of Note 4, "Acquisitions," to the consolidated financial statements for further discussion of our ISE, Nasdaq CXC and DWA acquisitions.

MARKET TECHNOLOGY

The following table shows revenues from our Market Technology segment:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Market Technology	$ 275	$ 245	$ 246	12.2%	(0.4)%

Market Technology Revenues

The increase in 2016 was primarily due to an increase in revenues from software, licensing and support as well as surveillance products. The decrease in 2015 was primarily due to an unfavorable impact from foreign exchange of $17 million and lower software license and support revenues, partially offset by operational increases in software as a service revenues and change request revenues, reflecting increased customer demand.

Total Order Value

Total order value, which represents the total contract value of orders signed that are yet to be recognized as revenues, was $777 million as of December 31, 2016, $788 million as of December 31, 2015 and $716 million as of December 31, 2014. As of December 31, 2016, market technology deferred revenue of $185 million represents consideration received that is yet to be recognized as revenue for these signed orders. See Note 8, "Deferred Revenue," to the consolidated financial statements for further discussion. The recognition and timing of these revenues depends on many factors, including those that are not within our control. As such, the following table of market technology revenues to be recognized in the future represents our best estimate:

	Total Order Value
	(in millions)
Fiscal year ended:	
2017	$ 224
2018	181
2019	117
2020	107
2021	72
2022 and thereafter	76
Total	$ 777

* * * * * *

Expenses

Operating Expenses

The following table shows our operating expenses:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Compensation and benefits	$ 664	$ 590	$ 588	12.5 %	0.3 %
Professional and contract services	153	148	157	3.4 %	(5.7)%
Computer operations and data communications	111	107	92	3.7 %	16.3 %
Occupancy	86	85	110	1.2 %	(22.7)%
General, administrative and other	72	65	89	10.8 %	(27.0)%
Marketing and advertising	30	28	32	7.1 %	(12.5)%
Depreciation and amortization	170	138	137	23.2 %	0.7 %
Regulatory	35	27	27	29.6 %	— %
Merger and strategic initiatives	76	10	81	660.0 %	(87.7)%
Restructuring charges	41	172	—	(76.2)%	100 %
Total operating expenses	$ 1,438	$ 1,370	$ 1,313	5.0 %	4.3 %

The increase in compensation and benefits expense in 2016 was primarily due to overall higher compensation costs resulting from our 2016 acquisitions and accelerated expense due to the retirement of the company's former CEO for equity awards previously granted. Partially offsetting the 2016 increases was lower compensation expense reflecting lower performance incentives and a favorable impact from foreign exchange of $3 million. The increase in 2015 was primarily due to overall higher compensation costs associated with higher performance incentives and increased compensation costs resulting from our acquisition of DWA. Partially offsetting the 2015 increases was a favorable impact from foreign exchange of $38 million.

Headcount increased to 4,325 employees at December 31, 2016 from 3,824 at December 31, 2015. Headcount was 3,687 at December 31, 2014.

The increase in professional and contract services expense in 2016 was primarily associated with our 2016 acquisitions. The decrease in 2015 was primarily due to a favorable impact from foreign exchange of $8 million.

The increase in computer operations and data communications expense in 2016 was primarily due to higher hardware and license costs associated with our 2016 acquisitions. The increase in 2015 was primarily due to an increase in VAT, reflecting a charge for the reversal of previously recorded VAT receivables no longer deemed collectible of $12 million and higher software lease and maintenance costs, partially offset by a favorable impact from foreign exchange of $8 million.

The increase in occupancy expense in 2016 primarily reflects additional facility and rent costs associated with our 2016 acquisitions, partially offset by lower facility and rent costs as a result of our restructuring activities. The decrease in 2015 reflects lower facility and rent costs due to our restructuring activities and lower costs resulting from services no longer needed under the transition services agreement that was entered into in connection with our acquisition of the TR Corporate businesses. Also contributing to the decrease in 2015 was a favorable impact from foreign exchange of $5 million.

The increase in general, administrative and other expense in 2016 is primarily associated with our 2016 acquisitions. The decrease in 2015 was primarily due to a lower provision for bad debts due to better collection results, a favorable impact from foreign exchange of $5 million, and a loss on extinguishment of debt recorded in 2014.

Marketing and advertising expense increased in 2016 primarily due to an increase in advertising spend while the decrease in 2015 was primarily due to decreased advertising spend.

The increase in depreciation and amortization expense in 2016 was primarily due to additional amortization expense associated with software assets placed in service and acquired intangible assets, primarily related to our 2016 acquisitions. The increase in 2015 was primarily due to additional amortization expense associated with acquired intangible assets relating to the acquisition of DWA, as well as increased depreciation expense associated with assets and software placed in service. Partially offsetting these increases was a favorable impact from foreign exchange of $10 million.

Regulatory expense increased in 2016 due to investigations of cybersecurity processes at our Nordic exchanges and clearinghouse. In December 2016, we were issued a $6 million fine by the SFSA as a result of findings in connection with its investigation. The SFSA's conclusions related to governance issues rather than systems and platform security. We have appealed the SFSA's decision, including the amount of the fine.

Merger and strategic initiatives expense for 2016 was primarily related to our acquisitions of ISE, Boardvantage, Marketwired, and Nasdaq CXC. Merger and strategic initiatives expense for 2015 was primarily related to certain strategic initiatives and our acquisition of DWA. Merger and strategic initiatives expense for 2014 was primarily related to our acquisitions of the TR Corporate businesses and eSpeed and a charge of $23 million related to the reversal of a receivable under a tax sharing agreement with an unrelated party.

See Note 3, "Restructuring Charges," to the consolidated financial statements for a discussion of our restructuring charges recorded during 2016 and 2015.

* * * * * *

Non-operating Income and Expenses

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

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Interest income	$ 5	$ 4	$ 6	25.0 %	(33.3)%
Interest expense	(135)	(111)	(117)	21.6 %	(5.1)%
Net interest expense	(130)	(107)	(111)	21.5 %	(3.6)%
Asset impairment charges	(578)	—	(49)	100.0 %	(100.0)%
Other investment income	3	—	—	100.0 %	— %
Net income from unconsolidated investees	2	17	—	(88.2)%	100.0 %
Total non-operating expenses	$ (703)	$ (90)	$ (160)	681.1 %	(43.8)%

Interest Income

Interest income increased slightly in 2016 compared with 2015 and decreased in 2015 compared with 2014. The decrease in 2015 was primarily due to lower average cash and financial investments balances.

Interest Expense

The following table shows our interest expense:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Interest expense	$ 129	$ 106	$ 110	21.7%	(3.6)%
Accretion of debt issuance costs and debt discount	5	4	4	25.0%	— %
Other bank and investment-related fees	1	1	3	—%	(66.7)%
Total interest expense	$ 135	$ 111	$ 117	21.6%	(5.1)%

Interest expense increased in 2016 compared with 2015 primarily due to our 2016 debt issuances. Interest expense decreased in 2015 compared with 2014 primarily due to a favorable impact from foreign exchange of $6 million.

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

Asset Impairment Charges

The asset impairment charge of $578 million in 2016 related to a pre-tax, non-cash intangible asset impairment charge related to the full write-off of the eSpeed trade name due to a continued decline in the operating performance of the eSpeed business during 2016 and a rebranding of our Fixed Income business under a single brand called Nasdaq Fixed Income.

Asset impairment charges of $49 million in 2014 related to a $38 million non-cash intangible asset impairment charge associated with customer relationships and an $11 million non-cash asset impairment charge related to certain technology assets.

See “Intangible Asset Impairment Charges,” of Note 5, “Goodwill and Acquired Intangible Assets,” to the consolidated financial statements for further discussion of the intangible asset impairment charges in both 2016 and 2014.

Other Investment Income

Other investment income was $3 million in 2016 and primarily relates to dividend income received on a cost method investment.

Net Income from Unconsolidated Investees

Net income from unconsolidated investees was $2 million in 2016 and included income recognized from our equity method investments in OCC and EuroCCP N.V. , partially offset by the write-off of our equity method investment in The Order Machine. Net income from unconsolidated investees was $17 million in 2015 and primarily included income recognized from our equity method investment in OCC. We were not able to determine what our share of OCC’s income was for the year ended December 31, 2014 until the first quarter of 2015, when financial statements were made available to us. As a result, we recorded other income of $13 million in the first quarter of 2015 relating to our share of OCC’s income for the year ended December 31, 2014. See “Equity Method Investments,” of Note 6, “Investments,” to the consolidated financial statements for further discussion of our equity method investments.

Tax Matters

The following table shows our income tax provision and effective tax rates:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	($ in millions)				
Income tax provision	$ 28	$ 203	$ 181	(86.2)%	12.2%
Effective tax rate	20.6%	32.2%	30.5%	(11.6)%	1.7%

The lower effective tax rate in 2016 when compared with 2015 is primarily due to a shift in the geographic mix of earnings, largely driven by the write-off of the eSpeed trade name, partially offset by an unfavorable ruling from the Finnish Supreme Administrative Court. The higher effective tax rate in 2015 when compared with 2014 was primarily due to a decrease in unrecognized tax benefits in 2014.

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.

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.

Although no new U.S. tax legislation has been enacted, we are currently assessing the impact various tax reform proposals will have on our consolidated financial statements.

See Note 10, “Income Taxes,” to the consolidated financial statements for further discussion of our tax matters.

Non-GAAP Financial Measures

In addition to disclosing results determined in accordance with U.S. GAAP, we also have 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 results as the items described below do not reflect 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. Investors should not rely on any single financial measure when evaluating our business. 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.

In the first quarter of 2015, Nasdaq began excluding the amortization of acquired intangible assets when evaluating the performance of our businesses and its managers and when allocating resources amongst the businesses. Our non-GAAP and operating income metrics are used internally and by our investors to measure the ongoing operating performance of Nasdaq. Management's view of operating performance has not changed significantly from prior periods.

However, 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. In connection with this change to the calculation of our internal performance measures in the first quarter of 2015, we also aligned our external reporting with these same performance measures. Historical periods were restated to conform to the current presentation. Performance measures excluding intangible asset amortization therefore, provide investors with a more useful representation of our businesses' ongoing activity in each period.

Restructuring charges: Restructuring charges are associated with our 2015 restructuring plan to improve performance, cut costs and reduce spending and are primarily related to (i) the rebranding of our company name from The NASDAQ OMX Group, Inc. to Nasdaq, Inc., (ii) severance and other termination benefits, (iii) costs to vacate duplicate facilities, and (iv) asset impairment charges. We exclude these restructuring costs because these costs do not reflect future operating expenses and do not contribute to a meaningful evaluation of Nasdaq's ongoing operating performance or comparison of Nasdaq's performance between periods.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed a number of acquisitions in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses 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.

Asset impairment charges: Intangible assets that have indefinite lives are reviewed for impairment at least annually, or when indicators of impairment are present. In December *2* 016, we recorded a pre-tax, non-cash intangible asset impairment charge of $578 million related to the full write-off of the eSpeed trade name. The impairment charge was the result of a decline in operating performance and the rebranding of our Fixed Income business. In 2014, we recorded a non-cash asset impairment charge of $38 million related to an acquired intangible asset associated with customer relationships. The impairment resulted primarily from changes in forecasted revenues associated with the acquired customer list of our eSpeed business. In 2014, we also recorded a non-cash asset impairment charge related to certain technology assets of $11 million. We exclude these charges because they do not reflect future operating expenses and do not contribute to a meaningful evaluation of Nasdaq's ongoing operating performance or comparison of Nasdaq's performance between periods.

Other significant items: We have excluded certain other charges or gains that are the result of other non-comparable events to measure operating performance. For 2016, other significant items primarily included a regulatory fine received by our exchange in Stockholm and Nasdaq Clearing, accelerated expense due to the retirement of the company's former CEO

for equity awards previously granted, the release of a sublease loss reserve due to the early exit of a facility, and the impact of the write-off of an equity method investment, partially offset by a gain resulting from the sale of a percentage of a separate equity method investment. For 2015, other significant items included income from our equity investment in OCC where we were not able to determine what our share of OCC's income was for the year ended December 31, 2014 until the first quarter of 2015, when financial statements were made available to us. As a result, we recorded other income in the first quarter of 2015 relating to our share of OCC's income for the year ended December 31, 2014. For 2015, other significant adjustments also included the reversal of a VAT refund. For 2014, other significant items included extinguishment of debt, a sublease loss reserve and special legal expense. We believe the exclusion of such amounts allows management and investors to better understand the financial results of Nasdaq.

* * * * * *

The following table represents reconciliations between U.S. GAAP net income and diluted earnings per share and non-GAAP net income and diluted earnings per share:

	Year Ended December 31, 2016		Year Ended December 31, 2015		Year Ended December 31, 2014	
	Net Income	Diluted Earnings Per Share	Net Income	Diluted Earnings Per Share	Net Income	Diluted Earnings Per Share
	(in millions, except share and per share amounts)					
U.S. GAAP net income attributable to Nasdaq and diluted earnings per share	$ 108	$ 0.64	$ 428	$ 2.50	$ 414	$ 2.39
Non-GAAP adjustments:						
Amortization expense of acquired intangible assets	82	0.49	62	0.36	69	0.40
Restructuring charges	41	0.24	172	1.00	—	—
Merger and strategic initiatives	76	0.45	10	0.06	81	0.47
Asset impairment charges	578	3.42	—	—	49	0.28
Regulatory matter	6	0.04	—	—	—	—
Executive compensation	12	0.07	—	—	—	—
Income from OCC equity investment	—	—	(13)	(0.08)	—	—
Reversal VAT refund	—	—	12	0.07	—	—
Extinguishment of debt	—	—	—	—	11	0.07
Sublease loss reserve	(1)	(0.01)	—	—	11	0.07
Special legal expense	—	—	—	—	2	0.01
Other	6	0.04	—	—	3	—
Adjustment to the income tax provision to reflect non-GAAP adjustments [1]	(287)	(1.70)	(90)	(0.52)	(98)	(0.56)
Total non-GAAP adjustments, net of tax	513	3.04	153	0.89	128	0.74
Non-GAAP net income attributable to Nasdaq and diluted earnings per share	$ 621	$ 3.68	$ 581	$ 3.39	$ 542	$ 3.13
Weighted-average common shares outstanding for diluted earnings per share		168,800,997		171,283,271		173,018,849

(1) We determine the tax effect of each item based on the tax rules in the respective jurisdiction where the transaction occurred. Also included in this adjustment for the year ended December 31, 2016 is $27 million in tax expense associated with an unfavorable decision from the Finnish Supreme Administrative Court on a tax position. For the year ended December 31, 2014 this amount includes $23 million associated with the recognition of a previously unrecognized tax benefit.

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. See Note 9, "Debt Obligations," to the consolidated financial statements for further discussion of our debt obligations. Currently, our cost and availability of funding remain healthy.

As part of the purchase price consideration of a prior acquisition, Nasdaq has contingent future obligations to issue 992,247 shares of Nasdaq common stock annually which approximated certain tax benefits associated with the transaction of $484 million. Such contingent future issuances of Nasdaq common stock will be paid ratably through 2027 if Nasdaq's total gross revenues equal or exceed $25 million in each such year. The contingent future issuances of Nasdaq common stock are subject to anti-dilution protections and acceleration upon certain events.

In May 2016, Nasdaq issued the 2023 Notes and in June 2016, Nasdaq issued the 2026 Notes. We used the majority of the net proceeds from the 2023 Notes of $664 million and the 2026 Notes of $495 million to fund the acquisition of ISE and related expenses. See "3.85% Senior Unsecured Notes," and "1.75% Senior Unsecured Notes," of Note 9, "Debt Obligations," and "Acquisition of ISE," of Note 4, "Acquisitions," to the consolidated financial statements for further discussion.

In March 2016, Nasdaq entered into the 2016 Credit Facility which provides for a $400 million senior unsecured term loan facility. In March 2016, loans in an aggregate principal amount of $400 million were drawn under the 2016 Credit Facility and the net proceeds of $399 million were used to partially repay amounts outstanding under the revolving credit commitment of the 2014 Credit Facility. As of December 31, 2016, the balance of $399 million reflects the aggregate principal amount, less the unamortized debt issuance costs. See "2016 Credit Facility," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.

Our 2014 Credit Facility consists of a $750 million revolving credit commitment (with sublimits for non-dollar borrowings, swingline borrowings and letters of credit). As of December 31, 2016, availability under the revolving credit commitment was $749 million. See "2014 Credit Facility," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.

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

Various assets and liabilities, including cash and cash equivalents, receivables, accounts payable and accrued expenses, can fluctuate from month to month. Working capital (calculated as current assets less current liabilities) was $478 million at December 31, 2016, compared with $340 million at December 31, 2015, an increase of $138 million. Current asset balance changes increased working capital by $1,300 million, with increases in default funds and margin deposits, receivables, net, cash and cash equivalents, financial investments, at fair value, and other current assets, partially offset by a decrease in restricted cash. Current liability balance changes decreased working capital by $1,162 million, due to increases in default funds and margin deposits, accrued personnel costs, deferred revenue, accounts payable and accrued expenses, and Section 31 fees payable to the SEC, partially offset by a decrease in other current liabilities.

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 our 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;
- increases in interest rates under our credit facilities;
- credit rating downgrades, which could limit our access to additional debt;
- a decrease in the market price of our common stock; and
- volatility in the public debt and equity markets.

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

Financial Assets

The following table summarizes our financial assets:

	December 31, 2016	December 31, 2015
	(in millions)	
Cash and cash equivalents	$ 403	$ 301
Restricted cash	15	56
Financial investments, at fair value	245	201
Total financial assets	$ 663	$ 558

Cash and Cash Equivalents and Restricted Cash

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, 2016, our cash and cash equivalents of $403 million were primarily invested in bank deposits, money market funds and commercial paper. 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, 2016 increased $102 million from December 31, 2015 primarily due to net cash provided by operating and financing activities, partially offset by net cash used in investing activities. See "Cash Flow Analysis" below for further discussion.

As of December 31, 2016 and December 31, 2015, restricted cash is restricted from withdrawal due to a contractual requirement or not available for general use. Restricted cash was $15 million as of December 31, 2016 and $56 million as of December 31, 2015, a decrease of $41 million . The decrease is primarily due to lower restricted cash due to a decline in customer funds held in connection with privately negotiated securities transactions. Restricted cash is classified as restricted cash in the Consolidated Balance Sheets.

Repatriation of Cash

Our cash and cash equivalents held outside of the U.S. in various foreign subsidiaries totaled $102 million as of December 31, 2016 and $105 million as of December 31, 2015. The remaining balance held in the U.S. totaled $301 million as of December 31, 2016 and $196 million as of December 31, 2015.

Unremitted earnings of subsidiaries outside of the U.S. are used to finance our international operations and are generally considered to be indefinitely reinvested. It is not our current intent to change this position. However, the majority of cash held outside the U.S. is available for repatriation, but under current law, could subject us to additional U.S. income taxes, less applicable foreign tax credits.

Share Repurchase Program

See "Share Repurchase Program," of Note 13, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of our share repurchase program.

Cash Dividends on Common Stock

The following table shows quarterly cash dividends declared per common share on our outstanding common stock:

	Year Ended December 31,	
	2016	2015
First quarter	$ 0.25	$ 0.15
Second quarter	0.32	0.25
Third quarter	0.32	0.25
Fourth quarter	0.32	0.25
Total	$ 1.21	$ 0.90

See "Cash Dividends on Common Stock," of Note 13, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of the dividends.

Financial Investments, at Fair Value

Our financial investments, at fair value totaled $245 million as of December 31, 2016 and $201 million as of December 31, 2015 and are primarily comprised of trading securities, mainly highly rated European government debt securities. Of these securities, $172 million as of December 31, 2016 and $166 million as of December 31, 2015 are assets utilized to meet regulatory capital requirements, primarily for our clearing operations at Nasdaq Clearing. See Note 6, "Investments," to the consolidated financial statements for further discussion of our trading investment securities.

* * * * * *

Debt Obligations

The following table summarizes our debt obligations by contractual maturity:

	Maturity Date	December 31, 2016	December 31, 2015
		(in millions)	
5.25% senior unsecured notes	January 2018	$ 369	$ 368
$750 million revolving credit commitment	November 2019	—	258
$400 million senior unsecured term loan facility	November 2019	399	—
5.55% senior unsecured notes	January 2020	598	597
3.875% senior unsecured notes	June 2021	625	646
1.75% senior unsecured notes	May 2023	622	—
4.25% senior unsecured notes	June 2024	495	495
3.85% senior unsecured notes	June 2026	495	—
Total long-term debt obligations		$ 3,603	$ 2,364

In addition to the $750 million revolving credit commitment and $400 million term loan facility, we also have other credit facilities related to our Nasdaq Clearing operations in order to provide further liquidity. Credit facilities, which are available in multiple currencies, totaled $170 million at December 31, 2016 and $202 million December 31, 2015 , in available liquidity, none of which was utilized.

At December 31, 2016, 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.

Clearing and Broker-Dealer Net 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. At December 31, 2016, our required regulatory capital of $172 million is primarily comprised of highly rated European government debt securities that are included in financial investments, at fair value in the Consolidated Balance Sheets.

Broker-Dealer Net Capital Requirements

Our operating broker-dealer subsidiaries, Nasdaq Execution Services, Execution Access, NPM Securities, SMTX, 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. The following table summarizes the net capital requirements for our broker-dealer subsidiaries as of December 31, 2016:

Broker-Dealer Subsidiaries	Total Net Capital	Required Minimum Net Capital	Excess Capital
		(in millions)	
Nasdaq Execution Services	$ 10.2	$ 0.3	$ 9.9
Execution Access	44.0	0.5	43.5
NPM Securities	0.3	—	0.3
SMTX	1.2	0.3	0.9
Nasdaq Capital Markets Advisory	0.6	0.3	0.3

Other Capital Requirements

Nasdaq Execution Services

Nasdaq Execution Services also is required to maintain a $2 million minimum level of net capital under our clearing arrangement with OCC.

Nasdaq CXC

As a member of the Investment Industry Regulatory Organization of Canada, Nasdaq CXC must comply with its dealer member rules which are intended to ensure general financial soundness and liquidity. Under these rules, Nasdaq CXC is required to comply with minimum net capital requirements. At December 31, 2016, Nasdaq CXC was required to maintain minimum net capital of $0.2 million and had total net capital of approximately $5.8 million, or $5.6 million in excess of the minimum amount required.

Cash Flow Analysis

The following table summarizes the changes in cash flows:

	Year Ended December 31,			Percentage Change	
	2016	2015	2014	2016 vs. 2015	2015 vs. 2014
	(in millions)				
Net cash provided by (used in):					
Operating activities	$ 722	$ 682	$ 632	5.9 %	7.9 %
Investing activities	(1,657)	(435)	(155)	280.9 %	180.6 %
Financing activities	1,002	(355)	(460)	(382.3)%	(22.8)%
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(6)	(11)	(23)	(45.5)%	(52.2)%
Net increase (decrease) in cash and cash equivalents and restricted cash	61	(119)	(6)	(151.3)%	1,883.3 %
Cash and cash equivalents and restricted cash at beginning of period	357	476	482	(25.0)%	(1.2)%
Cash and cash equivalents and restricted cash at end of period	$ 418	$ 357	$ 476	17.1 %	(25.0)%

Net Cash Provided by Operating Activities

Net cash provided by operating activities increased $40 million in 2016 compared with 2015 and increased $50 million in 2015 compared with 2014. The increases were primarily due to additional cash flows from our acquisitions completed during 2016 and 2015 and higher cash flows from our Listing Services business primarily due to an increase in annual renewal fees, partially offset by an increase in cash payments related to merger and strategic initiatives expense associated with our 2016 and 2015 acquisitions.

Net Cash Used in Investing Activities

Net cash used in investing activities increased $1,222 million in 2016 compared with 2015 and increased $280 million in 2015 compared with 2014 primarily due to an increase in cash paid for acquisitions, net of cash and cash equivalents acquired of $1,460 million in 2016 and $226 million in 2015.

Net Cash Provided by (Used in) Financing Activities

Net cash provided by financing activities for the year ended December 31, 2016 primarily consisted of net proceeds of $2,456 million, of which $1,159 million related to the issuances of our 2023 Notes and 2026 Notes to fund our acquisition of ISE, $399 million related to net proceeds from our 2016 Credit Facility and $898 million related to proceeds from utilization of the revolving credit commitment under our 2014 Credit Facility to partially fund our acquisitions of Boardvantage, Marketwired and Nasdaq CXC, and other general corporate purposes. These proceeds were partially offset by the repayment of $1,156 million on the revolving credit commitment under our 2014 Credit Facility. We also used $200 million of cash to pay cash dividends on our common stock and $100 million of cash to repurchase our common stock.

Net cash used in financing activities for the year ended December 31, 2015 primarily consisted of $377 million of cash used to repurchase our common stock, the repayment of $369 million on the revolving credit commitment of our 2014 Credit Facility, and $149 million related to cash dividends paid on our common stock, partially offset by $506 million from the partial utilization of the revolving credit commitment under our 2014 Credit Facility to partially fund our acquisition of DWA and other general corporate purposes.

See “2016 Acquisitions,” and “2015 Acquisitions,” of Note 4, “Acquisitions,” to the consolidated financial statements for further discussion of our acquisitions.

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

See “Share Repurchase Program,” and “Cash Dividends on Common Stock,” of Note 13, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our 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, minimum rental commitments under non-cancelable operating leases, net and other obligations. The following table shows these contractual obligations as of December 31, 2016 :

	Payments Due by Period				
Contractual Obligations	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
			(in millions)		
Debt obligations by contract maturity [1]	$ 4,351	$ 139	$ 1,019	$ 1,400	$ 1,793
Minimum rental commitments under non-cancelable operating leases, net [2]	412	73	134	97	108
Other obligations [3]	32	32	—	—	—
Total	$ 4,795	$ 244	$ 1,153	$ 1,497	$ 1,901

(1) Our debt obligations include both principal and interest obligations. At December 31, 2016 , an interest rate of 2.84% was used to compute the amount of the contractual obligations for interest on the 2016 Credit Facility. All other debt obligations were primarily calculated on a 360-day basis at the contractual fixed rate multiplied by the aggregate principal amount at December 31, 2016 . See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion.

(2) We lease some of our office space under non-cancelable operating leases with third parties and sublease office space to third parties. Some of our leases contain renewal options and escalation clauses based on increases in property taxes and building operating costs.

(3) Other obligations primarily consist of potential future escrow agreement payments related to prior acquisitions as well as other service agreement payments.

* * * * * *

No n-Cash Contingent Consideration

As part of the purchase price consideration of a prior acquisition, we have 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 will be paid ratably through 2027 if Nasdaq’s total gross revenues equal or exceed $25 million in each such year. The contingent future issuances of Nasdaq common stock are subject to anti-dilution protections and acceleration upon certain events.

Off-Balance Sheet Arrangements

For discussion of off-balance sheet arrangements see:

- Note 16, “Clearing Operations,” to the consolidated financial statements for further discussion of our non-cash default fund contributions and margin deposits received for clearing operations;
- Note 17, “Leases,” to the consolidated financial statements for further discussion of our lease commitments; and
- Note 18, “Commitments, Contingencies and Guarantees,” to the consolidated financial statements for further discussion of:
  - Guarantees issued and credit facilities available;
  - Lease commitments;
  - Other guarantees;
  - Non-cash contingent consideration;
  - Escrow agreements;
  - Routing brokerage activities;
  - Litigation; and
  - Tax audits.

Quantitative and Qualitative Disclosures About Market Risk

Market risk represents the potential for losses that may result from changes in the market value of a financial instrument due to changes in market conditions. 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, 2016 , our investment portfolio was primarily comprised of trading securities, mainly highly rated European government debt securities, which pay a fixed rate of interest. These securities are subject to interest rate risk and will decrease in value if market interest rates increase. If market interest rates were to increase immediately and uniformly by 100 basis points from levels as of December 31, 2016 , the fair value of this portfolio would have declined by $6 million.

Debt Obligations

As of December 31, 2016 , substantially all of our debt obligations are fixed-rate obligations. 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 borrowings under our 2016 Credit Facility and the 2014 Credit Facility, as these facilities have variable interest rates. As of December 31, 2016 , there were no outstanding borrowings under our 2014 Credit Facility. The principal amount outstanding under the 2016 Credit Facility was $400 million. A hypothetical 100 basis points increase in interest rates on the 2016 Credit Facility would increase interest expense by approximately $4 million based on borrowings as of December 31, 2016 .

* * * * * *

Foreign Currency Exchange Rate Risk

As a leading global exchange group, we are subject to foreign currency transaction risk. Our primary exposure to foreign currency denominated revenues less transaction-based expenses and operating income for the years ended December 31, 2016 and 2015 is presented in the following tables:

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)				
Year Ended December 31, 2016					
Average foreign currency rate to the U.S. dollar	1.1064	0.1168	#	N/A	N/A
Percentage of revenues less transaction-based expenses	10.0%	8.5%	5.9 %	75.6%	100.0%
Percentage of operating income	16.5%	5.2%	(8.3)%	86.6%	100.0%
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$ (23)	$ (19)	$ (14)	$ —	$ (56)
Impact of a 10% adverse currency fluctuation on operating income	$ (14)	$ (4)	$ (7)	$ —	$ (25)

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)				
Year Ended December 31, 2015					
Average foreign currency rate to the U.S. dollar	1.1097	0.1186	#	N/A	N/A
Percentage of revenues less transaction-based expenses	10.4%	8.5 %	4.4 %	76.7%	100.0%
Percentage of operating income [(1)]	20.3%	(18.3)%	(8.1)%	106.1%	100.0%
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$ (22)	$ (18)	$ (9)	$ —	$ (49)
Impact of a 10% adverse currency fluctuation on operating income	$ (15)	$ (13)	$ (6)	$ —	$ (34)

Represents multiple foreign currency rates.
N/A Not applicable.
(1) The 2015 percentage of operating income in Swedish Krona was impacted by restructuring charges recorded during 2015 as a majority of these charges were recorded in currencies other than the U.S. dollar, primarily the Swedish Krona. See Note 3, “Restructuring Charges,” to the consolidated financial statements for further discussion.

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. Fluctuations in currency exchange rates may create volatility in our results of operations as we are required to translate the balance sheets and operational results of these foreign currency denominated subsidiaries into U.S. dollars for consolidated reporting. The translation of foreign subsidiaries’ non-U.S. dollar balance sheets into U.S. dollars

for consolidated reporting results in a cumulative translation adjustment which is 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, 2016 is presented in the following table:

	Net Assets	Impact of a 10% Adverse Currency Fluctuation
	(in millions)	
Swedish Krona [1]	$ 3,111	$ (311)
Norwegian Krone	188	(19)
Canadian Dollar	181	(18)
British Pound	118	(12)
Euro	102	(10)
Australian Dollar	81	(8)

[1] Includes goodwill of $2,400 million and intangible assets, net of $586 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 rigorously evaluating the counterparties with which we make investments and execute agreements. The financial investment portfolio 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.

Execution Access is an introducing broker which operates the trading platform for our Nasdaq Fixed Income business to trade in U.S. Treasury securities. Execution Access has a clearing arrangement with Cantor Fitzgerald. As of December 31, 2016, we have contributed $20 million of clearing deposits to Cantor Fitzgerald in connection with this clearing arrangement. These deposits are recorded in other current assets in our Consolidated Balance Sheets. Some of the trading activity in Execution Access is cleared by Cantor Fitzgerald through the Fixed Income Clearing Corporation. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and settlement date of the individual transactions, which is one business day. All of Execution Access' obligations under the clearing arrangement with Cantor Fitzgerald are guaranteed by Nasdaq. Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk.

We are exposed to credit risk through our clearing operations with Nasdaq Clearing. See Note 16, "Clearing Operations," to the consolidated financial statements for further discussion.

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. Our potential exposure to credit losses on these transactions is represented by the receivable balances in our Consolidated Balance Sheets. On an ongoing basis, we review and evaluate changes in the status of our counterparties' creditworthiness. Credit losses such as those described above could adversely affect our consolidated financial position and results of operations.

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

Corporate Services Revenues

Listing Services Revenues

Listing services revenues primarily include annual renewal fees, initial listing fees, and listing of additional shares fees. Annual renewal fees do not require any judgments or assumptions by management as these amounts are recognized ratably over the following 12-month period. However, listing of additional shares fees and initial listing fees are recognized on a straight-line basis over estimated service periods, which are four and six years, respectively, based on our historical listing experience and projected future listing duration. Unamortized balances are recorded as deferred revenue in the Consolidated Balance Sheets.

Goodwill and Related Impairment

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. For purposes of performing our goodwill impairment test, our five reporting units are the Market Services segment, the two businesses comprising the Corporate Services segment: Corporate Solutions and Listing Services, the Information Services segment, and the Market Technology segment. We test for impairment during the fourth quarter of our fiscal year using carrying amounts as of October 1. In conducting the 2016 annual impairment test for goodwill, we first performed a qualitative assessment to determine whether it was more likely than not that the fair value of a reporting unit was less than the carrying amount as a basis for determining whether it was necessary to perform the two-step quantitative goodwill impairment test described in FASB ASC Topic 350, "Intangibles–Goodwill and Other," or ASC Topic 350. The more-likely-than-not threshold is defined as having a likelihood of more than 50 percent. If, after assessing the totality of events or circumstances, we determine that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, then the two-step quantitative test for goodwill impairment is performed for the appropriate reporting units. Otherwise, we conclude that no impairment is indicated and the two-step quantitative test for goodwill impairment is not performed.

In conducting the qualitative assessment, we analyzed actual and projected growth trends for each reporting unit, as well as historical performance versus plan and the results of prior quantitative tests performed. Additionally, each reporting unit assesses critical areas that may impact their business, including macroeconomic conditions and the related impact, market related exposures, competitive changes, new or discontinued products, changes in key personnel, and other potential risks to their projected financial results.

If required, the quantitative goodwill impairment test consists of two steps performed at the reporting unit level.

- The first step compares the estimated fair value of each reporting unit to its corresponding carrying amount, including goodwill. The fair value of each reporting unit is estimated using a combination of 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. If the reporting unit's estimated fair value exceeds its estimated carrying amount, goodwill is not impaired.
- If the first step results in the carrying amount exceeding the fair value of the reporting unit, then a second step must be completed in order to determine the amount of goodwill impairment that should be recorded, if any. In the second step, the implied fair value of the reporting unit's goodwill is determined by allocating the reporting unit's fair value to all of its assets and liabilities other than goodwill in a manner similar to a purchase price allocation. The implied fair value of the goodwill that results from the application of this second step is then compared to the carrying amount of the goodwill and an impairment charge is recorded for any difference.

For our annual test of goodwill impairment in 2016, we considered the results of prior quantitative tests performed on our reporting units and also considered future financial projections, current market conditions, and any changes in the carrying amount of the reporting units.

The following table presents the balances of goodwill for our reportable segments at the time of our 2016 annual impairment:

	October 1, 2016
	(in millions)
Market Services	$ 3,485
Corporate Services	690
Information Services	1,863
Market Technology	168
	$ 6,206

We utilized the qualitative screen for our Market Services, Listing Services, Information Services and Market Technology reporting units, as the excesses of their fair values over their respective carrying amounts at the time of the last quantitative test were significant. The last quantitative tests were in 2013 for the Listing Services, Information Services and Market Technology reporting units and in 2015 for the Market Services reporting unit. In conducting the qualitative assessment, we evaluated the performance of each of these reporting units since the last quantitative test, as well as future financial projections to determine if there were any changes in the key inputs used to determine the fair values of each reporting unit. We also considered the qualitative factors in ASC Topic 350, as well as other relevant events and circumstances. Based on the results of the qualitative assessment for each reporting unit, we concluded based on a preponderance of positive indicators and the weight of such indicators that the fair values of our Market Services, Listing Services, Information Services and Market Technology reporting units are more likely than not greater than their respective carrying amounts and as a result, quantitative analyses were not needed. Therefore, no further testing of goodwill for impairment was performed for these reporting units for the year ended December 31, 2016.

Although the fair value of our Corporate Solutions reporting unit also exceeded its carrying amount by more than 10.0% in our 2015 and 2014 annual goodwill impairment tests, since the excess of fair value over the carrying amount has historically been less than our other reporting units, we bypassed the qualitative assessment for this reporting unit. We performed step one of the quantitative goodwill impairment test for this reporting unit and determined that the fair value of our Corporate Solutions reporting unit exceeded its carrying amount by more than 10.0%. As a result, no goodwill impairment was recorded. The fair value of our Corporate Solutions reporting unit was determined using a combination of two equally weighted valuation methods, a market approach and an income approach. The market approach estimates fair value by applying revenues, earnings and cash flow multiples to the Corporate Solutions reporting unit's operating performance. The multiples are derived from comparable publicly-traded companies with similar operating and investment characteristics to the Corporate Solutions reporting unit. The market approach requires management's judgment to determine several valuation inputs, including the selection of comparable companies and control premium.

The control premium is based on recent transactions in the marketplace. Under the income approach, we estimated future cash flows of our Corporate Solutions reporting unit based on internally generated forecasts of future financial performance. We determined a long-term growth rate for the terminal year period based on historical and expected inflation rates as well as management's estimate of the long-term growth of the business. We then discounted the projected cash flows using the appropriate weighted average cost of capital for the Corporate Solutions reporting unit.

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 generated by our Corporate Solutions reporting unit or other key inputs are negatively revised in the future, the estimated fair value of the Corporate Solutions reporting unit 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.

Indefinite-Lived Intangible Assets and Related Impairment

Intangible assets deemed to have indefinite useful lives are not amortized but instead are tested for impairment at least annually and more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount. The fair value of indefinite-lived intangible assets is primarily determined on the basis of estimated discounted value, using the relief from royalty approach or excess earnings approach for trade names and the Greenfield Approach for exchange and clearing registrations and licenses, both of which incorporate assumptions regarding future revenue projections and discount rates. Similar to goodwill impairment testing, we test for impairment of indefinite-lived intangible assets during the fourth quarter of our fiscal year using carrying amounts as of October 1. In conducting the 2016 annual impairment test for indefinite-lived intangible assets, we first performed a qualitative assessment to determine whether it was more likely than not that the fair value of an indefinite-lived intangible asset was less than the carrying amount as a basis for determining whether it was necessary to perform the quantitative impairment test described in ASC Topic 350. The more-likely-than-not threshold is defined as having a likelihood of more than 50 percent. If, after assessing the totality of events or circumstances, we determine that it is more likely than not that the fair value of an indefinite-lived intangible asset is less than its carrying amount, then the quantitative test for indefinite-lived intangible assets impairment is performed for the appropriate intangible assets. If the carrying amount of the indefinite-lived intangible asset exceeds its fair value, an impairment charge is recorded for the difference.

As discussed in "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," to the consolidated financial statements, we recorded the following pre-tax, non-cash indefinite-lived asset impairment charges during 2016 and 2015:

- December 2016: $578 million to write off the full value of the eSpeed trade name; and
- March 2015: $119 million - in connection with our global rebranding initiative, we decided to change our company name from The NASDAQ OMX Group, Inc. to Nasdaq, Inc., which became effective in the third quarter of 2015. In connection with this action, we decided to discontinue the use of the OMX trade name, and therefore wrote off the full value of the trade name.

These charges did not impact the company's consolidated cash flows, liquidity, or capital resources. The write off of the eSpeed trade name is recorded in asset impairment charges in the Consolidated Statements of Income for 2016 and the write off of the OMX trade name is recorded in restructuring charges in the Consolidated Statements of Income for 2015.

There were no other impairments of indefinite-lived intangible assets for the years ended December 31, 2016, 2015 and 2014.

Other Long-Lived Assets and Related Impairment

We review our other long-lived assets, such as finite-lived intangible assets, equity and cost method investments, as well as 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. We evaluate our equity and cost 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. 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.

Among our finite-lived intangible assets, we performed an undiscounted cash flow analysis to test whether the eSpeed customer relationship intangible asset was recoverable as we concluded that indicators of impairment were present in the current year as discussed in "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," to the consolidated financial statements. As of December 31, 2016, the eSpeed customer relationship intangible asset had a remaining net book value of $57 million. The results of the recoverability test indicated that the estimated future undiscounted cash flows exceeded the carrying amount of the asset by a significant amount. Therefore, no impairment charge was recorded in 2016. We will continue to monitor potential triggering events. Any changes in these factors could result in further testing for recoverability, and, if it is determined that the carrying amount of the asset is not recoverable, an impairment of the asset would then be recorded.

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. As of December 31, 2016, the estimated fair value of our investment in The Order Machine was less than the carrying amount and management considered the decline in value to be other-than-temporary. As a result, we recorded a non-cash impairment charge of $7 million in December 2016 to write off the full value of the investment. This charge is recorded in net income from unconsolidated investees in the Consolidated Statements of Income. No other impairments of equity method investments were recorded in 2016, 2015 or 2014.

During 2014, we recorded intangible asset impairment charges of $38 million. See "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," for further discussion of impairment charges recorded on our finite-lived intangible assets.

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. Interest and/or penalties related to income tax matters are recognized in income tax expense.

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

See "Recently Adopted Accounting Pronouncements," and "Recently Issued 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, 2016 and 2015, Consolidated Statements of Income for the years ended December 31, 2016 , 2015 and 2014 , Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2016 , 2015 and 2014 , Consolidated Statements of Changes in Equity for the years ended December 31, 2016 , 2015 and 2014 , Consolidated Statements of Cash Flows for the years ended December 31, 2016 , 2015 and 2014 and notes to our consolidated financial statements, together with a report thereon of Ernst & Young LLP, dated March 1, 2017 , are attached hereto as pages F-1 through F-46 and incorporated by reference herein.

* * * * * *

Summarized Quarterly Financial Data (Unaudited)

	1st Qtr 2016	2nd Qtr 2016	3rd Qtr 2016	4th Qtr 2016
	(in millions, except per share amounts)			
Total revenues	$ 905	$ 897	$ 929	$ 973
Transaction-based expenses	(371)	(338)	(344)	(374)
Revenues less transaction-based expenses	534	559	585	599
Total operating expenses	315	385	352	386
Operating income	219	174	233	213
Net income (loss) attributable to Nasdaq	$ 132	$ 70	$ 131	$ (224)
Basic earnings (loss) per share	$ 0.80	$ 0.42	$ 0.79	$ (1.35)
Diluted earnings (loss) per share	$ 0.78	$ 0.42	$ 0.77	$ (1.35)
Cash dividends declared per common share	$ 0.57	$ —	$ 0.32	$ 0.32

	1st Qtr 2015	2nd Qtr 2015	3rd Qtr 2015	4th Qtr 2015
	(in millions, except per share amounts)			
Total revenues	$ 858	$ 807	$ 871	$ 865
Transaction-based expenses	(351)	(289)	(342)	(329)
Revenues less transaction-based expenses	507	518	529	536
Total operating expenses	480	301	298	290
Operating income	27	217	231	246
Net income attributable to Nasdaq	$ 9	$ 133	$ 138	$ 148
Basic earnings per share	$ 0.05	$ 0.79	$ 0.83	$ 0.90
Diluted earnings per share	$ 0.05	$ 0.77	$ 0.80	$ 0.88
Cash dividends declared per common share	$ 0.15	$ 0.25	$ 0.25	$ 0.25

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

None.

Item 9A. Controls and Procedures.

(a). ***Disclosure controls and procedures.*** Nasdaq's management, with the participation of Nasdaq's President and Chief Executive Officer, and Executive Vice President, Corporate Strategy 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, Corporate Strategy and Chief Financial Officer, have concluded that, as of the end of such period, Nasdaq's disclosure controls and procedures are effective.

(b). ***Internal control over financial reporting*** . On June 30, 2016, we acquired ISE. Management has considered this transaction material to the results of operations, cash flows and financial position from the date of the acquisition through December 31, 2016, and believes that the internal controls and procedures of this acquisition have a material effect on internal control over financial reporting. In accordance with SEC guidance, management has elected to exclude ISE from its December 31, 2016 assessment of and report on internal control over financial reporting. We are currently in the process of incorporating the internal controls and procedures of ISE into the internal control over financial reporting for our assessment of and report on internal control over financial reporting for December 31, 2017. There have been no other 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, 2016 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, 2016, 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, 2016, our internal control over financial reporting is effective.

Management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include, in accordance with SEC guidance, the internal controls of ISE which is included in the 2016 consolidated financial statements and in 2016 reflects total assets constituting 9% of consolidated total assets, which includes 14% of goodwill and intangible assets, net and 3% of the total revenues less transaction-based expenses, of consolidated results.

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

The Board of Directors and Stockholders of Nasdaq, Inc.

We have audited Nasdaq, Inc.'s internal control over financial reporting as of December 31, 2016, 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). Nasdaq, Inc.'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 conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). 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.

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.

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of U.S. Exchange Holdings, Inc., which is included in the 2016 consolidated financial statements of Nasdaq, Inc. and constituted 9% of consolidated total assets as of December 31, 2016, which includes 14% of goodwill and intangible assets, net and 3% of the total revenues less transaction-based expenses for the year then ended. Our audit of internal control over financial reporting of Nasdaq, Inc. also did not include an evaluation of the internal control over financial reporting of U.S. Exchange Holdings, Inc.

In our opinion, Nasdaq, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Nasdaq, Inc. as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income (loss), changes in equity, and cash flows for each of the three years in the period ended December 31, 2016 of Nasdaq, Inc. and our report dated March 1, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

New York, New York
March 1, 2017

Item 9B. Other Information.

None.

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 "Proposal I: 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 "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 "Section 16(a) Beneficial Ownership Reporting Compliance" 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 "Corporate Governance" in the Proxy Statement. Information about Nasdaq's nomination procedures, audit committee and audit 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 captions "Proposal I: Election of Directors" and "Board Committees" in the Proxy Statement.

Item 11. Executive Compensation.

Information about Nasdaq's director and executive compensation, as required by Items 402, 407(e)(4) and 407(e)(5) of Regulation S-K, is incorporated by reference from the discussion under the captions "Director Compensation," "Compensation Discussion and Analysis," "Management Compensation Committee Report," "Management Compensation Committee Interlocks and Insider Participation" and "Executive Compensation Tables" 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 caption "Security Ownership of Certain Beneficial Owners and Management" in the Proxy Statement.

Equity Compensation Plan Information

Nasdaq's Equity Plan provides for the issuance of our equity securities to our officers and other employees, directors and consultants. In addition, most employees of Nasdaq and its subsidiaries are eligible to participate in the ESPP, at 85.0% of the fair market value of our common stock on the price calculation date. The Equity Plan and the ESPP have been approved previously 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, 2016 .

Plan Category	Number of shares to be issued upon exercise of outstanding options, warrants and rights(a) [1]	Weighted-average exercise price of outstanding options, warrants and rights(b)	Number of shares remaining available for future issuance under equity compensation plans (excluding shares reflected in column(a))(c)
Equity compensation plans approved by stockholders	1,406,371	$ 22.32	9,013,446 [2]
Equity compensation plans not approved by stockholders	—	$ —	
Total	1,406,371	$ 22.32	9,013,446 [2]

[1] The amounts in this column include only the number of shares to be issued upon exercise of outstanding options, warrants and rights. At December 31, 2016 , we also had 4,254,012 shares to be issued upon vesting of outstanding restricted stock and PSUs.

[2] This amount includes 6,688,702 shares of common stock that may be awarded pursuant to the Equity Plan and 2,324,744 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 caption "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 caption "Proposal I: 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 caption "Annual Evaluation and Selection of Independent Auditors" 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 Index

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).
2.2	Stock Purchase Agreement, dated as of March 9, 2016, by and among Deutsche Börse AG and Eurex Frankfurt AG and Nasdaq, Inc. (incorporated herein by reference to the Current Report on Form 8-K filed on March 15, 2016).
3.1	Amended and Restated Certificate of Incorporation of Nasdaq (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.1	Certificate of Elimination of Nasdaq's Series A Convertible Preferred Stock (incorporated herein by reference to Exhibit 3.1.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.2	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on November 19, 2014).
3.1.3	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on September 8, 2015).
3.2	Nasdaq's By-Laws (incorporated herein by reference to Exhibit 3.2 to the Current Report on Form 8-K filed on November 21, 2016).
4.1	Form of Common Stock certificate (incorporated herein by reference to Exhibit 4.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
4.2	Stockholders' Agreement, dated as of February 27, 2008, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on March 3, 2008).
4.2.1	First Amendment to Stockholders' Agreement, dated as of February 19, 2009, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 4.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).

4.3	Registration Rights Agreement, dated as of February 27, 2008, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on March 3, 2008).
4.3.1	First Amendment to Registration Rights Agreement, dated as of February 19, 2009, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 4.11.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.4	Indenture, dated as of January 15, 2010, between Nasdaq (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 January 19, 2010).
4.5	First Supplemental Indenture, dated as of January 15, 2010, among Nasdaq (f/k/a The NASDAQ OMX Group, 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 January 19, 2010).
4.6	Second Supplemental Indenture, dated as of December 21, 2010, among Nasdaq (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 December 21, 2010).
4.7	Stockholders' Agreement, dated as of December 16, 2010, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Investor AB (incorporated herein by reference to Exhibit 4.12 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).
4.8	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).
4.9	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).
4.10	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).
4.11	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).
4.12	Fourth Supplemental Indenture, dated as of June 7, 2016, among Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to the Current Report on Form 8-K filed on June 7, 2016).
4.13	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).
10.1	Amended and Restated Board Compensation Policy, amended and restated on November 14, 2016.*
10.2	Nasdaq Executive Corporate Incentive Plan, effective as of January 1, 2015 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 11, 2015).*

10.3	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).*
10.4	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, 2016 filed on August 3, 2016).*
10.5	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, 2016 filed on August 3, 2016).*
10.6	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, 2016 filed on August 3, 2016).*
10.7	Form of Nasdaq Three-Year Performance Share Unit Agreement (incorporated herein by reference to Exhibit 10.5 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2016 filed on August 3, 2016).*
10.8	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).*
10.8.1	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).*
10.9	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).*
10.10	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 14, 2016 and effective as of January 1, 2017.*
10.11	Employment Agreement between Nasdaq and Robert Greifeld, effective as of February 22, 2012 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on February 28, 2012).*
10.11.1	Memorandum of Understanding between Nasdaq and Robert Greifeld, dated as of December 11, 2012 (incorporated herein by reference to Exhibit 10.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 21, 2013).*
10.11.2	Amendment to the Employment Agreement between Nasdaq and Robert Greifeld, entered into and effective as of November 14, 2016.*
10.12	Nonqualified Stock Option Agreement between Nasdaq and Robert Greifeld reflecting June 30, 2009 grant (incorporated herein by reference to Exhibit 10.11 to the Annual Report on Form 10-K for the year ended December 31, 2009 filed on February 18, 2010).*
10.13	Employment Agreement between Nasdaq and Hans-Ole Jochumsen, made and entered into and effective on August 5, 2014 (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2014 filed on November 5, 2014).*
10.13.1	Amendment One to the Employment Agreement between Nasdaq, Nasdaq International Ltd and Hans-Ole Jochumsen, entered into and effective as of January 1, 2017.*
10.14	Employment Agreement between Nasdaq and Edward Knight, effective as of December 29, 2000 (incorporated herein by reference to Exhibit 10.14 to the Annual Report on Form 10-K for the year ended December 31, 2002 filed on March 31, 2003).*

10.14.1	First Amendment to Employment Agreement between Nasdaq and Edward Knight, effective February 1, 2002 (incorporated herein by reference to Exhibit 10.14.1 to the Annual Report on Form 10-K for the year ended December 31, 2002 filed on March 31, 2003).*
10.14.2	Second Amendment to Employment Agreement between Nasdaq and Edward Knight, effective as of December 31, 2008 (incorporated herein by reference to Exhibit 10.13.2 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.14.3	Third Amendment to Employment Agreement between Nasdaq and Edward Knight, effective as of February 22, 2012 (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on February 28, 2012).*
10.14.4	Fourth Amendment to Employment Agreement between Nasdaq and Edward Knight, entered into and effective as of October 24, 2016.*
10.15	Employment Agreement between Nasdaq and Bradley J. Peterson, dated August 1, 2016 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 filed on November 8, 2016).*
10.16	General Release and Retirement Agreement between Nasdaq and Lee Shavel, effective January 26, 2016 (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 filed on May 5, 2016).*
10.17	General Release and Retirement Agreement between Nasdaq and Ronald Hassen, dated September 15, 2016.*
10.18	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).*
10.19	Credit Agreement, dated as of November 24, 2014, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Bank of America, N.A., JPMorgan Chase Bank, N.A. and Wells Fargo Bank, National Association, as Swingline Lenders, the other Lenders 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 1, 2014).
10.19.1	Amendment No. 1, dated as of September 28, 2015, to the Credit Agreement among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), the lenders party thereto and Bank of America, N.A., as Administrative Agent, a Swingline Lender and Issuing Bank (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
10.20	Credit Agreement, dated March 17, 2016, among Nasdaq, Inc., the various lenders party thereto and Bank of America, N.A., as Administrative Agent (incorporated herein by reference to the Current Report on Form 8-K filed on March 22, 2016).
11	Statement regarding computation of per share earnings (incorporated herein by reference from Note 14 to the consolidated financial statements under Part II, Item 8 of this Form 10-K).
12.1	Computation of Ratio of Earnings to Fixed Charges.
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, Corporate Strategy 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.INS	XBRL Instance Document.**
101.SCH	XBRL Taxonomy Extension Schema.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase.
101.DEF	Taxonomy Extension Definition Linkbase.
101.LAB	XBRL Taxonomy Extension Label Linkbase.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase.

_____

* Management contract or compensatory plan or arrangement.

** The following materials from the Nasdaq, Inc. Annual Report on Form 10-K for the year ended December 31, 2016, formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2016 and December 31, 2015; (ii) Consolidated Statements of Income for the years ended December 31, 2016, 2015 and 2014; (iii) Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2016, 2015 and 2014; (iv) Consolidated Statements of Changes in Equity for the years ended December 31, 2016, 2015 and 2014; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014; and (vi) notes to consolidated financial statements.

(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 March 1, 2017 .

Nasdaq, Inc.

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

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 March 1, 2017 .

Name	Title
/s/ Adena T. Friedman **Adena T. Friedman**	President and Chief Executive Officer and Director (Principal Executive Officer)
/s/ Michael Ptasznik **Michael Ptasznik**	Executive Vice President, Corporate Strategy and Chief Financial Officer (Principal Financial Officer)
/s/ Ann M. Dennison **Ann M. Dennison**	Senior Vice President and Controller (Principal Accounting Officer)
* **Robert Greifeld**	Chairman of the Board
* **Charlene T. Begley**	Director
* **Steven D. Black**	Director
* **Börje E. Ekholm**	Director
* **Glenn H. Hutchins**	Director
* **Essa Kazim**	Director
* **Thomas A. Kloet**	Director
* **Ellyn A. McColgan**	Director
* **Michael R. Splinter**	Director
* **Lars R. Wedenborn**	Director

* Pursuant to Power of Attorney

By: /s/ Edward S. Knight

Edward S. Knight

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	F- 2
Consolidated Balance Sheets	F- 3
Consolidated Statements of Income	F- 4
Consolidated Statements of Comprehensive Income (Loss)	F- 5
Consolidated Statements of Changes in Equity	F- 6
Consolidated Statements of Cash Flows	F- 7
Notes to Consolidated Financial Statements	F- 8

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of Nasdaq, Inc.

We have audited the accompanying consolidated balance sheets of Nasdaq, Inc. (the "Company") as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income (loss), changes in equity and cash flows for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Nasdaq, Inc. at December 31, 2016 and 2015, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2016, 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), Nasdaq, Inc.'s internal control over financial reporting as of December 31, 2016, 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 March 1, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

New York, New York
March 1, 2017

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

	December 31, 2016	December 31, 2015
Assets		
Current assets:		
Cash and cash equivalents	$ 403	$ 301
Restricted cash	15	56
Financial investments, at fair value	245	201
Receivables, net	429	316
Default funds and margin deposits	3,301	2,228
Other current assets	167	158
Total current assets	4,560	3,260
Property and equipment, net	362	323
Deferred tax assets	717	643
Goodwill	6,027	5,395
Intangible assets, net	2,094	1,959
Other non-current assets	390	281
Total assets	$ 14,150	$ 11,861
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	$ 175	$ 158
Section 31 fees payable to SEC	108	98
Accrued personnel costs	207	171
Deferred revenue	162	127
Other current liabilities	129	138
Default funds and margin deposits	3,301	2,228
Total current liabilities	4,082	2,920
Debt obligations	3,603	2,364
Deferred tax liabilities	720	626
Non-current deferred revenue	171	200
Other non-current liabilities	144	142
Total liabilities	8,720	6,252
Commitments and contingencies		
Equity		
Nasdaq stockholders' equity:		
Common stock, $0.01 par value, 300,000,000 shares authorized, shares issued: 170,501,186 at December 31, 2016 and 167,241,734 at December 31, 2015; shares outstanding: 166,579,468 at December 31, 2016 and 164,324,270 at December 31, 2015	2	2
Additional paid-in capital	3,104	3,011
Common stock in treasury, at cost: 3,921,718 shares at December 31, 2016 and 2,917,464 shares at December 31, 2015	(176)	(111)
Accumulated other comprehensive loss	(979)	(864)
Retained earnings	3,479	3,571
Total Nasdaq stockholders' equity	5,430	5,609
Total liabilities and equity	$ 14,150	$ 11,861

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2016	2015	2014
Revenues:			
Market Services	$ 2,255	$ 2,084	$ 2,229
Corporate Services	635	562	552
Information Services	540	512	473
Market Technology	275	245	246
Total revenues	3,705	3,403	3,500
Transaction-based expenses:			
Transaction rebates	(1,092)	(983)	(1,065)
Brokerage, clearance and exchange fees	(336)	(330)	(368)
Revenues less transaction-based expenses	2,277	2,090	2,067
Operating expenses:			
Compensation and benefits	664	590	588
Professional and contract services	153	148	157
Computer operations and data communications	111	107	92
Occupancy	86	85	110
General, administrative and other	72	65	89
Marketing and advertising	30	28	32
Depreciation and amortization	170	138	137
Regulatory	35	27	27
Merger and strategic initiatives	76	10	81
Restructuring charges	41	172	—
Total operating expenses	1,438	1,370	1,313
Operating income	839	720	754
Interest income	5	4	6
Interest expense	(135)	(111)	(117)
Asset impairment charges	(578)	—	(49)
Other investment income	3	—	—
Net income from unconsolidated investees	2	17	—
Income before income taxes	136	630	594
Income tax provision	28	203	181
Net income	108	427	413
Net loss attributable to noncontrolling interests	—	1	1
Net income attributable to Nasdaq	$ 108	$ 428	$ 414
Per share information:			
Basic earnings per share	$ 0.65	$ 2.56	$ 2.45
Diluted earnings per share	$ 0.64	$ 2.50	$ 2.39
Cash dividends declared per common share	$ 1.21	$ 0.90	$ 0.58

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2016	2015	2014
Net income	$ 108	$ 427	$ 413
Other comprehensive income (loss):			
Foreign currency translation losses:			
Net foreign currency translation losses	(183)	(283)	(733)
Income tax benefit	68	100	127
Total	(115)	(183)	(606)
Employee benefit plan gains (losses):			
Employee benefit plan adjustment gains (losses)	—	2	(15)
Income tax benefit (expense)	—	(1)	6
Total	—	1	(9)
Total other comprehensive loss, net of tax	(115)	(182)	(615)
Comprehensive income (loss)	(7)	245	(202)
Comprehensive loss attributable to noncontrolling interests	—	1	1
Comprehensive income (loss) attributable to Nasdaq	$ (7)	$ 246	$ (201)

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Changes in Equity
(in millions, except share amounts)

	Number of Common Shares Outstanding	Common Stock at Par Value	Additional Paid-in Capital	Common Stock In Treasury, at Cost	Accumulated Other Comprehensive Loss	Retained Earnings	Non- controlling Interests	Total
Balance at December 31, 2013	169,357,084	$ 2	$ 4,278	$ (1,005)	$ (67)	$ 2,976	$ —	$ 6,184
Net income (loss)	—	—	—	—	—	414	(1)	413
Foreign currency translation, net of tax of $127	—	—	—	—	(606)	—	—	(606)
Employee benefit plan adjustments, net of tax of $6	—	—	—	—	(9)	—	—	(9)
Cash dividends declared per common share	—	—	—	—	—	(98)	—	(98)
Share repurchase program	(4,592,194)	—	—	(178)	—	—	—	(178)
Amortization and vesting of restricted stock and PSUs	1,972,573	—	57	—	—	—	—	57
Stock options amortization and exercises, net	1,578,050	—	33	—	—	—	—	33
Other issuances of common stock, net	(512,497)	—	24	(28)				(4)
Retirement of common stock held in treasury	—	—	(1,170)	1,170	—	—	—	—
Sale of subsidiary shares to noncontrolling interests and other adjustments	—	—	—	—	—	—	2	2
Issuance of Nasdaq common stock related to a prior acquisition	992,247	—	—	—	—	—	—	—
Balance at December 31, 2014	168,795,263	$ 2	$ 3,222	$ (41)	$ (682)	$ 3,292	$ 1	$ 5,794
Net income (loss)	—	—	—	—	—	$ 428	$ (1)	427
Foreign currency translation, net of tax of $100	—	—	—	—	(183)	—	—	(183)
Employee benefit plan adjustments, net of tax of $1	—	—	—	—	1	—	—	1
Cash dividends declared per common share	—	—	—	—	—	(149)	—	(149)
Share repurchase program	(7,191,685)	—	(340)	(37)	—	—	—	(377)
Amortization and vesting of restricted stock and PSUs	1,455,380	—	64	—	—	—	—	64
Stock options amortization and exercises, net	682,054	—	18	—	—	—	—	18
Other issuances of common stock, net	(408,989)	—	59	(33)	—	—		26
Purchase of subsidiary shares to noncontrolling interests and other adjustments	—	—	(12)	—	—	—	—	(12)
Issuance of Nasdaq common stock related to a prior acquisition	992,247	—	—	—	—	—	—	—
Balance at December 31, 2015	164,324,270	$ 2	$ 3,011	$ (111)	$ (864)	$ 3,571	$ —	$ 5,609
Net income	—	—	—	—	—	108	—	108
Foreign currency translation, net of tax of $68	—	—	—	—	(115)	—	—	(115)
Cash dividends declared per common share	—	—	—	—	—	(200)	—	(200)
Share repurchase program	(1,547,778)	—	(100)	—	—	—	—	(100)
Amortization and vesting of restricted stock and PSUs	2,361,699	—	82	—	—	—	—	82
Stock options amortization and exercises, net	1,219,820	—	41	—	—	—	—	41
Other issuances of common stock, net	(770,790)	—	70	(65)	—	—	—	5
Issuance of Nasdaq common stock related to a prior acquisition	992,247	—	—	—	—	—	—	—
Balance at December 31, 2016	166,579,468	$ 2	$ 3,104	$ (176)	$ (979)	$ 3,479	$ —	$ 5,430

See accompanying notes to consolidated financial statements.

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

	Year Ended December 31,		
	2016	2015	2014
Cash flows from operating activities:			
Net income	$ 108	$ 427	$ 413
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	170	138	137
Share-based compensation	86	68	62
Excess tax benefits related to share-based payments	(54)	(45)	(15)
Deferred income taxes	(136)	(14)	(6)
Non-cash restructuring charges	8	136	—
Non-cash merger and strategic initiatives	—	—	20
Asset impairment charges	578	—	49
Net income from unconsolidated investees	(2)	(17)	—
Other reconciling items included in net income	9	7	28
Net change in operating assets and liabilities, net of effects of acquisitions:			
Receivables, net	(24)	55	(16)
Other assets	(18)	(41)	(84)
Accounts payable and accrued expenses	5	(38)	(40)
Section 31 fees payable to SEC	5	(26)	42
Accrued personnel costs	27	33	(4)
Deferred revenue	(15)	(49)	64
Other liabilities	(25)	48	(18)
Net cash provided by operating activities	722	682	632
Cash flows from investing activities:			
Purchases of trading securities	(443)	(346)	(283)
Proceeds from sales and redemptions of trading securities	392	319	281
Purchases of available-for-sale investment securities	(25)	(38)	(20)
Proceeds from maturities of available-for-sale investment securities	19	29	17
Capital contribution in equity method investment	—	(30)	—
Acquisition of businesses, net of cash and cash equivalents acquired	(1,460)	(226)	—
Purchases of property and equipment	(134)	(133)	(140)
Other investment activities	(6)	(10)	(10)
Net cash used in investing activities	(1,657)	(435)	(155)
Cash flows from financing activities:			
Payments of debt obligations	(1,156)	(369)	(970)
Proceeds from utilization of credit commitment	898	506	241
Proceeds from issuances of senior unsecured notes and term loan facility	1,558	—	494
Cash paid for repurchase of common stock	(100)	(377)	(178)
Cash dividends	(200)	(149)	(98)
Proceeds received from employee stock activity	54	29	40
Payments related to employee shares withheld for taxes	(65)	(34)	(31)
Excess tax benefits related to share-based payments	54	45	15
Proceeds (disbursements) of customer funds	(38)	13	25
Other financing activities	(3)	(19)	2
Net cash provided by (used in) financing activities	1,002	(355)	(460)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(6)	(11)	(23)
Net increase (decrease) in cash and cash equivalents and restricted cash	61	(119)	(6)
Cash and cash equivalents and restricted cash at beginning of period	357	476	482
Cash and cash equivalents and restricted cash at end of period	$ 418	$ 357	$ 476
Supplemental Disclosure Cash Flow Information			
Cash paid for:			
Interest	$ 119	$ 103	$ 114
Income taxes, net of refund	$ 191	$ 202	$ 190
Non-cash investing activities:			
Cost method investment	$ —	$ —	$ 75

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.

Notes to Consolidated Financial Statements

1. Organization and Nature of Operations

Nasdaq, Inc. is a leading provider of trading, clearing, exchange technology, regulatory, securities listing, information and public company services. Our global offerings are diverse and include trading and clearing across multiple asset classes, trade management services, data products, financial indexes, capital formation solutions, corporate solutions, and market technology products and services. Our technology powers markets across the globe, supporting equity derivative trading, clearing and settlement, cash equity trading, fixed income trading and many other functions.

In 2016, due to changes in our executive leadership and to better reflect how our chief operating decision maker views the businesses, we realigned our reportable segments to integrate the Corporate Solutions and Listing Services businesses into our new Corporate Services segment. Market Technology is now a separate reportable segment. Prior to this change, our Corporate Solutions and Market Technology businesses were part of our Technology Solutions segment. All prior period segment disclosures have been recast to reflect our change in reportable segments.

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

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC, and Trade Management Services businesses. Our FICC business was formerly referred to as fixed income, currency and commodities trading and clearing, and our Trade Management Services business was formerly referred to as access and broker services. 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 some countries where we operate exchanges, we also provide broker services, clearing, settlement and central depository services. 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.

Through our acquisition of ISE, we now operate six electronic options exchanges and three cash equity exchanges in the U.S. See “Acquisition of ISE,” of Note 4, “Acquisitions,” for further discussion of the ISE acquisition. The Nasdaq Stock Market, the largest of our cash equities exchanges, is the largest single venue of liquidity for trading U.S.-listed cash equities. We also operate an electronic platform for trading of U.S. Treasuries and NFX, a U.S. based energy derivatives market which offers cash settled energy derivatives based on key energy benchmarks including oil, natural gas and U.S. power.

Through our acquisition of Chi-X Canada, in February 2016, we also operate three Canadian markets for the trading of Canadian-listed securities. Effective June 1, 2016, we changed the name of Chi-X Canada to Nasdaq CXC. See “Acquisition of Nasdaq CXC,” of Note 4, “Acquisitions,” for further discussion of this acquisition.

In Europe, we operate exchanges in Stockholm (Sweden), Copenhagen (Denmark), Helsinki (Finland), and Reykjavik (Iceland), as well as the clearing operations of Nasdaq Clearing. We also operate exchanges in Tallinn (Estonia), Riga (Latvia) and Vilnius (Lithuania) as Nasdaq Baltic. Collectively, Nasdaq Nordic and Nasdaq Baltic offer trading in cash equities and depository receipts, warrants, convertibles, rights, fund units and exchange traded funds as well as trading and clearing of derivatives and clearing of resale and repurchase agreements.

Nasdaq Commodities is the brand name for Nasdaq’s worldwide suite of commodity-related products and services. Nasdaq Commodities’ offerings include oil, power, natural gas and carbon emission markets, tanker and dry cargo freight, seafood derivatives, iron ore, electricity certificates and clearing services. The products are listed on two of Nasdaq’s derivatives exchanges, Nasdaq Oslo ASA and NFX.

Through our Trade Management Services business, we provide market participants with a wide variety of alternatives for connecting to and accessing our markets via a number of different protocols used for quoting, order entry, trade reporting, DROP functionality and connectivity to various data feeds. We also provide co-location services to market participants, whereby firms may lease cabinet space and power to house their own equipment and servers within our data centers. Our broker services operations offer technology and customized securities administration solutions to financial participants in the Nordic market.

Corporate Services

Our Corporate Services segment includes our Corporate Solutions and Listing Services businesses.

Our Corporate Solutions business serves corporate clients, including companies listed on our exchanges and private companies. We help organizations manage the two-way flow of information with their key constituents, including their board members and investors, and with clients and the public through our suite of advanced technology, analytics, and consultative services. Our Corporate Solutions business primarily offers products to serve the following key areas: investor relations, public relations, governance and multimedia solutions. We currently have approximately 18,000 Corporate Solutions clients.

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 private and 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. Our Listing Services business also includes NPM, which provides services for private companies.

As of December 31, 2016 , The Nasdaq Stock Market was home to 2,897 listed companies with a combined market capitalization of approximately $8.9 trillion , and in Europe, the Nasdaq Nordic and Nasdaq Baltic exchanges, together with Nasdaq First North, were home to 900 listed companies with a combined market capitalization of approximately $1.2 trillion .

Information Services

Our Information Services segment includes our Data Products and our Index Licensing and Services businesses. Our Data Products business sells and distributes historical and real-time quote and trade information to market participants and data distributors. Our data products enhance transparency of the market activity within the exchanges that we operate and provide critical information to professional and non-professional investors globally.

Our Index Licensing and Services business develops and licenses Nasdaq branded indexes, associated derivatives, and financial products and also provides custom calculation services for third-party clients. As of December 31, 2016 , we had 298 ETPs licensed to Nasdaq's indexes which had over $124 billion of assets under management.

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 and corporate businesses. Our Market Technology business is the sales channel for our complete global offering to other marketplaces.

Market Technology provides technology solutions for trading, clearing, settlement, surveillance and information dissemination to markets with wide-ranging requirements, from the leading markets in the U.S., Europe and Asia to emerging markets in the Middle East, Latin America, and Africa. Our marketplace solutions can handle a wide array of assets, including cash equities, equity derivatives, currencies, various interest-bearing securities, commodities and energy products, and are currently powering more than 85 marketplaces in 50 countries. Market Technology also provides market surveillance services to broker-dealer firms worldwide, as well as enterprise governance, risk management and compliance software solutions.

For further discussion of our business, see "Item 1. Business."

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. The financial statements 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.

Subsequent Events

We have evaluated subsequent events through the issuance date of this Annual Report on Form 10-K. See Note 20, "Subsequent Events," for further discussion.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts and the disclosure of contingent amounts in the consolidated financial statements and accompanying notes. Actual results could differ from those estimates.

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.

Deferred taxes are not provided on cumulative translation adjustments where we expect earnings of a foreign subsidiary to be indefinitely reinvested. The income tax effect of currency translation adjustments related to foreign subsidiaries that are not considered indefinitely reinvested is recorded as a component of deferred taxes with an offset to accumulated other

comprehensive loss within stockholders' equity in the Consolidated Balance Sheets.

Cash and Cash Equivalents

Cash and cash equivalents include cash in banks and all non-restricted 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 $251 million as of December 31, 2016 and $157 million as of December 31, 2015 . Cash equivalents are carried at cost plus accrued interest, which approximates fair value due to the short maturities of these investments.

Restricted Cash

Current restricted cash, which was $15 million as of December 31, 2016 and $56 million as of December 31, 2015 , is restricted from withdrawal due to a contractual requirement or not available for general use and is classified as restricted cash in the Consolidated Balance Sheets. As of December 31, 2016 , current restricted cash primarily includes restricted cash held for our trading and clearing businesses. As of December 31, 2015 , current restricted cash primarily included restricted cash related to customer funds held in connection with privately negotiated securities transactions.

Financial Investments

Financial investments, at fair value are primarily comprised of trading securities, mainly highly rated European government debt securities. Trading securities are bought principally to meet regulatory capital requirements for Nasdaq Clearing's operations and are generally sold in the near term. Changes in fair value of trading securities are included in dividend and investment income. Financial investments that are classified as available-for-sale investment securities are carried at fair value with unrealized gains and losses, net of tax, reported in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. Realized gains and losses on these securities are included in earnings upon disposition of the securities using the specific identification method. In addition, realized losses are recognized when management determines that a decline in value is other than temporary, which requires judgment regarding the amount and timing of recovery. For financial investments that are classified as available-for-sale securities, we also consider the extent to which cost exceeds fair value, the duration of that difference, management's judgment about the issuer's current and prospective financial condition, as well as our intent and ability to hold the security until recovery of the unrealized losses.

Fair value of both trading and available-for-sale investment securities 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.

Receivables, net

Our receivables are concentrated with our member firms, market data distributors, listed companies, corporate solutions and market technology customers. Receivables are shown net of a reserve for uncollectible accounts. The reserve for bad debts is maintained at a level that management believes to be sufficient to absorb estimated losses in the accounts receivable portfolio. The reserve is increased by the provision for bad debts which is charged against operating results and decreased by the amount of charge-offs, net of recoveries. The provision for bad debts is included in general, administrative and other expense in the Consolidated Statements of Income. The amount charged against operating results is based on several factors including, but not limited to, a continuous assessment of the collectability of each account, the length of time a receivable is past due and our historical experience with the particular customer. In circumstances where a specific customer's inability to meet its financial obligations is known (i.e., bankruptcy filings), we record a specific provision for bad debts against amounts due to reduce the receivable to the amount we reasonably believe will be collected. Due to changing economic, business and market conditions, we review the reserve for bad debts monthly and make changes to the reserve 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 reserve netted against receivables in the Consolidated Balance Sheets was $13 million as of December 31, 2016 , $14 million as of 2015 and $16 million as of December 31, 2014 . The changes in the balance between periods was immaterial.

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.

Derivative Financial Instruments and Hedging Activities

Non-Designated Derivatives

We use derivatives as economic hedges that are not designed as accounting hedges or do not qualify for hedge accounting treatment. For such derivative financial instruments, changes in fair value are reported in current period earnings.

We use foreign exchange forward contracts to manage foreign currency exposure of intercompany loans. 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 impact recognized on the intercompany loans.

As of December 31, 2016 and 2015 , 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 2021 and 2023 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 2021 and 2023 Notes into U.S. dollars is recorded within accumulated other comprehensive loss in the Consolidated Balance Sheets. See "3.875% Senior Unsecured Notes," and "1.75% Senior Unsecured Notes," of Note 9, "Debt Obligations," for further discussion.

Property and Equipment, net

Property and equipment, including leasehold improvements, are carried at cost less 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.

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 3 to 5 years. Amortization of these costs is included in depreciation and amortization expense in the Consolidated Statements of Income.

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.

See Note 7, "Property and Equipment, net," 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 assessed for impairment annually in the fourth quarter of our fiscal year using carrying amounts as of October 1, or more frequently if conditions exist that indicate that the asset 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. When assessing goodwill for impairment, first, qualitative factors are assessed to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If the results of the qualitative assessment are not conclusive, a quantitative goodwill test is performed. The quantitative goodwill test consists of two steps:

- The first step compares the fair value of each reporting unit with its carrying amount, including goodwill. If the reporting unit's fair value exceeds its carrying amount, goodwill is not impaired.
- If the fair value of a reporting unit is less than its carrying amount, the second step of the goodwill test is performed to measure the amount of impairment, if any. An impairment is equal to the excess of the carrying amount of goodwill over its fair value.

We also evaluate indefinite-lived intangible assets for impairment annually in the fourth quarter of our fiscal year using carrying amounts as of October 1, or more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount. Such evaluation includes determining the fair value of the asset and comparing the fair value of the asset with its carrying amount . If the fair value of the indefinite-lived intangible asset is less than its carrying amount , an impairment charge is recognized in an amount equal to the difference.

For indefinite-lived intangible assets impairment testing, we also have the option to first perform a qualitative assessment to determine whether it is more likely than not that the fair value of an indefinite-lived intangible asset is less than the carrying amount. If, after assessing the totality of events or circumstances, we determine that it is more likely than not that the fair value of an indefinite-lived intangible asset is less than its carrying amount, then we must perform additional testing of the asset. Otherwise, we conclude that no impairment is indicated and further testing is not performed.

There was no impairment of goodwill for the years ended December 31, 2016 , 2015 and 2014 . As discussed in "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," we recorded pre-tax, non-cash indefinite-lived intangible asset impairment charges of $578 million in 2016 and $119 million in 2015. There was no other impairment of indefinite-lived intangible assets for the years ended December 31, 2016 , 2015 and 2014 . Disruptions to our

business and events, such as economic weakness or unexpected significant declines in the operating results of any of our reporting units or businesses, may result in goodwill or indefinite-lived intangible asset impairment charges in the future.

Valuation of 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. 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 "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," for further discussion of impairment charges recorded on our finite-lived intangible assets.

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 and 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 pro-rata share of earnings or losses each 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 the financial statements as an impairment. See "Equity Method Investments," of Note 6, "Investments," for further discussion of an other-than-temporary charge recorded on an equity method investment.

Cost Method Investments

In general, the cost method of accounting is used when we own less than 20% of the outstanding voting stock of a company which does not have a readily determinable fair value and when we are not able to exercise significant influence over the operating and financial policies of a company. Under the cost method of accounting, investments are carried at cost and are adjusted only for other-than-temporary declines in fair value, certain distributions, and additional investments. We evaluate our cost method investments for other-than-temporary declines in value by considering a variety of factors such as the earnings capacity of the investment.

Revenue Recognition and Transaction-Based Expenses

Market Services Revenues

Market services revenues include equity derivative trading and clearing revenues, cash equity trading revenues, FICC revenues, and trade management services revenues.

Equity Derivative Trading and Clearing and Cash Equity Trading Revenues

Equity Derivative Trading and Clearing Revenues

In our equity derivative markets, we earn trading and clearing revenues which are variable. In the U.S., trading revenues are based on traded volumes, and recognized when executed. The principal types of equity derivative contracts traded are equity options, ETF options, index options and foreign currency options. In the U.S., we record execution revenues from transactions on a gross basis as revenues and record related expenses as transaction-based expenses, as we have certain risk associated with trade execution. See "Equity Derivative Trading and Clearing and Cash Equity Trading Transaction-Based Expenses" below for further discussion.

In Europe, equity derivative trading and clearing revenues are based on the volume and value of traded and cleared contracts, and recognized when executed or when contracts are cleared. The principal types of equity derivative contracts traded and cleared are stock options and futures and index options and futures.

Cash Equity Trading Revenues

U.S. cash equity trading revenues are variable, based on individual customer share volumes, and recognized as transactions occur. We charge transaction fees for executing cash equity trades in Nasdaq-listed and other listed securities on our U.S. cash equity exchanges, as well as on orders that are routed to other market venues for execution. Similar to U.S. equity derivative trading and clearing, we record cash equity trading revenues from transactions on a gross basis as revenues and record related expenses as transaction-based expenses, as we have certain risk associated with trade execution. For further discussion see "Equity Derivative Trading and Clearing and Cash Equity Trading Transaction-Based Expenses" below.

In our European cash equity markets, we charge transaction fees for executing trades on the exchanges that comprise Nasdaq Nordic and Nasdaq Baltic. These transaction fees are charged per executed order and as per value traded.

Equity Derivative Trading and Clearing and Cash Equity Trading Transaction-Based Expenses

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 Nasdaq 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. We record these credits as transaction rebates that are included in

transaction-based expense 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 the 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.

The exchanges that comprise Nasdaq Nordic and Nasdaq Baltic do not have any revenue sharing agreements or transaction-based expenses, such as transaction rebates and brokerage, clearance and exchange fees.

FICC Revenues

Fixed income trading revenues are primarily earned from trading of U.S. Treasury securities and other fixed income products. Customer contracts may be on a fixed or variable rate basis. Revenues from customer contracts with a fixed rate basis are recognized ratably over the contract period. Revenues from customer contracts with a variable rate basis are based upon individual customer share volume and are recognized as revenues as the transaction occurs. Commodities trading and clearing revenues are primarily earned from trading and clearing of energy, emission allowance, freight, seafood and other commodity products. Trading and clearing revenues are based on the volume and value of traded and cleared contracts, and recognized when executed or when contracts are cleared. In addition, Nasdaq Commodities members are billed an annual fee which is recognized ratably over the following 12-month period.

We also generate clearing revenues for OTC traded derivatives, interest rate swaps, and resale and repurchase agreements. These clearing revenues are based on the value and length of the contract and are recognized when cleared. In connection with our collateral management process in our Nasdaq Clearing operations, we recognize interest income on cash contributions that we manage when earned.

Trade Management Services Revenues

Access Services

We generate revenues by providing market participants with several alternatives for connecting to and accessing our markets for a fee. The type of connectivity is determined by the level of functionality a customer needs. As a result, access services revenues vary depending on the type of connection provided to customers. We provide co-location services to market participants, whereby firms may lease 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. Additionally, we offer a number of wireless connectivity routes between select data centers using millimeter wave and microwave technology. We also earn revenues from annual and monthly exchange membership and registration fees. Revenues for providing access to our markets, co-location services and 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 12-month period.

Broker Services

Our broker services operations offer technology and customized securities administration solutions to financial participants in the Nordic market. The primary services offered are flexible back-office systems, which allow customers to entirely or partly outsource their company's back-office functions. Revenues from broker services are based on a fixed basic fee for administration or licensing, maintenance and operations, and a variable portion that depends on the number of transactions completed. Broker services revenues are recognized on a continuous basis as services are rendered.

Corporate Services Revenues

Corporate services revenues include corporate solutions revenues and listing services revenues.

Corporate Solutions Revenues

Corporate solutions revenues primarily include subscription and transaction-based income from our investor relations, public relations, governance and multimedia solutions products. Subscription-based revenues earned are recognized ratably over the contract period, generally one to two years in length. As part of the subscription agreements, customers can also be charged usage fees based upon actual usage of the services provided. Revenues from usage fees and other services are recognized when earned. Revenues from transaction-based services, such as webcasting and wire distribution, are recorded as the services are provided and delivered.

Listing Services Revenues

Listing services revenues primarily include annual renewal fees, initial listing fees and listing of additional shares fees.

Annual Renewal Fees

In the U.S., annual renewal fees are charged based on the number of outstanding shares of companies listed in the U.S. at the end of the prior year and are recognized ratably over the following 12-month period. 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 12-month basis.

Initial Listing Fees

Initial listing fees are generally based on the number of shares that a company initially lists and are recognized on a straight-line basis over estimated service periods of six years, based on our historical listing experience and projected future listing duration.

Listing of Additional Shares Fees

Listing of additional shares fees are paid by listed companies in connection with corporate actions involving the issuance of new shares to be listed, such as stock splits and sales of additional securities. These fees are recognized on a straight-line basis over estimated service periods of four years, based on our historical listing experience and projected future listing duration.

Listing of additional share fees are expected to decline and will be phased out by January 2018 as a result of the implementation of our new fee program for our U.S. markets. See "All-Inclusive Annual Listing Fee Program" below for further discussion.

All-Inclusive Annual Listing Fee Program

Nasdaq announced an all-inclusive annual listing fee program for companies listed in the U.S. which became effective in 2015. Under this program, listed companies pay an annual fee which includes all listing-related activities, including listing of additional shares. All listed companies will be subject to the all-inclusive program beginning in January 2018, but can elect to opt-in to this program prior to January 2018. These revenues will be recognized ratably over the following 12-month period.

Information Services Revenues

Information services revenues include data products revenues and index licensing and services revenues.

Data Products Revenues

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

We collect, process and create information from our exchanges and earn revenues as a distributor of our own data, as well as select, third-party content. We provide varying levels of quote and trade information to market participants and to data distributors, who in turn sell subscriptions for this information. We earn revenues primarily based on the number of data subscribers and distributors of our data. Data products revenues are subscription-based and are recognized on a monthly basis net of amounts due under revenue sharing arrangements with market participants.

We also generate revenues from our Nasdaq indexes that consist of Global Index Data Services, which delivers real-time index values throughout the trading day, and Global Index Watch/Global Index File Delivery Service, which delivers weightings and components data, corporate actions and a breadth of additional data. We earn revenues primarily based on the number of data subscribers and distributors of our data. These revenues, which are subscription based, are recognized on a monthly basis.

Revenues from U.S. tape plans include eligible UTP Plan revenues that are shared among UTP Plan participants and are presented on a net basis. The Nasdaq Stock Market acts as the processor and administrator for the UTP Plan. The UTP Plan administrator sells 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, as permitted under the revenue sharing provision of the UTP Plan, the UTP Plan administrator distributes the tape revenues to the respective UTP Plan participants, including The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX, based on a formula required by Regulation NMS that takes into account both trading and quoting activity. In addition, much like Nasdaq-listed securities, all quotes and trades in NYSE- and NYSE MKT-listed securities are reported and disseminated in real-time, and as such, we share in the tape revenues for information on NYSE- and NYSE MKT-listed securities. Revenues from net U.S. tape plans are recognized on a monthly basis.

Data Products Revenue Sharing

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

- Primary Obligor: We are the administrator for the UTP Plan, in addition to being a participant in the UTP Plan. In our unique role as administrator, we facilitate the collection and dissemination of revenues on behalf of the UTP 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.
- Risk of Loss/Credit Risk: Risk of loss on the revenue is shared equally among plan participants according to the UTP Plan.

- Price Latitude: The operating committee of the UTP Plan, which is comprised of representatives from each of the participants, including us solely in our capacity as a UTP 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 UTP Plan, subject to SEC approval.

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

Index Licensing and Services Revenues

We develop and license Nasdaq branded indexes, associated derivatives and financial products as part of our Global Index Family. We also provide custom calculation services for third-party clients. Revenues primarily include license fees from these branded indexes, associated derivatives 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 long-term 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. Asset-based licenses are also generally long-term agreements. Customers are charged based on a percentage of assets under management for licensed products, per the agreement, on a monthly or quarterly basis. These revenues are recognized over the term of the license agreement.

Market Technology Revenues

Market Technology provides technology solutions for trading, clearing, settlement, surveillance and information dissemination, as well as enterprise governance, risk management and compliance software solutions. Revenues primarily consist of software, license and support revenues, change request and advisory revenues, and software as a service revenues.

For most solutions, we enter into multiple-element sales arrangements to develop technology solutions, license the right to use software, and provide post-contract support and other services to our customers. In order to recognize revenues associated with each individual element of a multiple-element sales arrangement separately, we are required to establish the existence of VSOE of fair value for each element. When VSOE for individual elements of an arrangement cannot be established, revenue is generally deferred and recognized over either the final element of the arrangement or the entire term of the arrangement for which the services will be delivered.

We enter into agreements to modify the system solutions sold by Nasdaq after delivery has occurred. These revenues are recognized when earned.

In addition, we enter into revolving subscription agreements which allow customers to connect to our servers to access certain services. These revenues are recognized ratably over the subscription term.

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 employee stock options, restricted stock, and PSUs. 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. See Note 14, “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 11, “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 stock options, restricted stock, and PSUs. The fair value of stock options are estimated using the Black-Scholes option-pricing

model. 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.

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.

We present excess tax benefits related to share-based payments, if any, as financing activities in the Consolidated Statements of Cash Flows.

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 12, “Share-Based Compensation,” for further discussion of our share-based compensation plans.

Leases

We expense rent from non-cancellable operating leases, net of sublease income, on a straight line basis, based on future minimum lease payments. The net costs are included in occupancy expense in the Consolidated Statements of Income. See Note 17, “Leases,” for further discussion.

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 15, “Fair Value of Financial Instruments,” for further discussion.

Income Taxes

We use the asset and liability method to determine income taxes on all transactions recorded in the consolidated financial statements. 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.

See Note 10, “Income Taxes,” for further discussion.

Recently Adopted Accounting Pronouncements

Accounting Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
Statement of Cash Flows In November 2016, the FASB issued ASU 2016-18, "Restricted Cash."	This ASU requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, restricted cash and restricted cash equivalents. Therefore, restricted cash and restricted cash equivalents would be included when reconciling the beginning-of-period and end-of-period total amounts of cash flow shown on the statement of cash flows. As a result, transfers between cash and cash equivalents and restricted cash and cash equivalents will no longer be presented in the statement of cash flows.	January 1, 2018 with early adoption permitted.	In the fourth quarter of 2016, we early adopted ASU 2016-18 and reclassified changes in restricted cash from cash flow provided by operating activities to the total change in beginning-of-period and end-of-period total amounts shown on the Consolidated Statements of Cash Flows for the years ended December 31, 2015 and 2014. This new standard is a change in cash flow statement presentation only.
Statement of Cash Flows In August 2016, the FASB issued ASU 2016-15, "Classification of Certain Cash Receipts and Cash Payments."	This ASU addresses how certain cash receipts and cash payments are presented and classified in the statement of cash flows with the objective of reducing existing diversity in practice with respect to these items. These items include debt prepayments or debt extinguishment costs, payments of contingent consideration after a business combination, and distributions from equity method investees, among others.	January 1, 2018, with early adoption permitted.	In the fourth quarter of 2016, we early adopted ASU 2016-15 and reclassified payments for contingent considerations made in 2015 and 2014 from cash flows from investing activities to cash flows from financing activities on the Consolidated Statements of Cash Flows for the years ended December 31, 2015 and 2014. This new standard is a change in cash flow statement presentation only.
Income Taxes In November 2015, the FASB issued ASU 2015-17, "Balance Sheet Classification of Deferred Taxes."	This ASU eliminates the current requirement to present deferred tax liabilities and assets as current and non-current in a classified balance sheet. Instead, Nasdaq is required to classify all deferred tax liabilities and assets as non-current.	In the first quarter of 2016, we elected to early adopt this guidance retrospectively for all periods presented in the Consolidated Balance Sheets.	The adoption of this guidance resulted in the reclassification of current deferred tax assets of $24 million to non-current deferred tax assets and current deferred tax liabilities of $24 million to non-current deferred tax liabilities for the year ended December 31, 2015. This new standard is a change in balance sheet presentation only.
Business Combinations In September 2015, the FASB issued ASU 2015-16, "Simplifying the Accounting for Measurement-Period Adjustments."	This ASU eliminates the requirement that an acquirer in a business combination account for measurement-period adjustments retrospectively. This guidance requires the acquirer to recognize adjustments to provisional amounts identified during the measurement period in the reporting period in which the adjustment amounts are determined. In addition, the amendments in this guidance require an entity to present separately on the face of the income statement or disclose in the notes the portion of the amount recorded in current-period earnings by line item that would have been recorded in previous reporting periods if the adjustment to the provisional amounts had been recognized as of the acquisition date.	We adopted this new standard on January 1, 2016.	None.

Recently Issued Accounting Pronouncements

Accounting Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
Financial Instruments - Credit Losses In June 2016, the FASB issued ASU 2016-13, "Measurement of Credit Losses on Financial Instruments."	This ASU changes the impairment model for certain financial instruments. The new model is a forward looking expected loss model and will apply to financial assets subject to credit losses and measured at amortized cost and certain off-balance sheet credit exposures. This includes loans, held-to-maturity debt securities, loan commitments, financial guarantees and net investments in leases, as well as trade receivables. For available-for-sale debt securities with unrealized losses, credit losses will be measured in a manner similar to today, except that the losses will be recognized as allowances rather than reductions in the amortized cost of the securities.	January 1, 2020, with early adoption as of January 1, 2019 permitted.	We are currently assessing the impact that this standard will have on our consolidated financial statements.
Compensation - Stock Compensation In March 2016, the FASB issued ASU 2016-09, "Improvements to Employee Share-Based Payment Accounting."	This ASU involves several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. This new guidance will require all income tax effects of awards to be recognized as income tax expense or benefit in the income statement when the awards vest or are settled, as opposed to additional paid-in-capital where it is currently recorded. This guidance will impact the calculation of our total diluted share count for the earnings per share calculation, as calculated under the treasury stock method. It also will allow an employer to repurchase more of an employee's shares than it can today for tax withholding purposes without triggering liability accounting. All tax-related cash flows resulting from share-based payments are to be reported as operating activities on the statement of cash flows. In regards to forfeitures, Nasdaq can make a policy election to either estimate the number of awards that are expected to vest or account for forfeitures as they occur.	January 1, 2017, with early adoption permitted.	The impact of ASU 2016-09 could be material to our results of operations in future periods depending upon factors such as future earnings and stock price.
Leases In February 2016, the FASB issued ASU 2016-02, "Leases."	Under this ASU, at the commencement date, lessees will be required to recognize a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis; and a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term. This guidance is not applicable for leases with a term of 12 months or less. Lessor accounting is largely unchanged.	January 1, 2019, with early adoption permitted.	We are currently assessing the impact that this standard will have on our consolidated financial statements.
Financial Instruments - Overall In January 2016, the FASB issued ASU 2016-01, "Recognition and Measurement of Financial Assets and Financial Liabilities."	This ASU requires that most equity investments be measured at fair value, with subsequent changes in fair value recognized in net income. Under this new guidance, Nasdaq will no longer be able to recognize unrealized holding gains and losses on equity securities classified today as available-for-sale in accumulated other comprehensive income within stockholders' equity. This new standard does not change the guidance for classifying and measuring investments in debt securities and loans. This new guidance also impacts financial liabilities accounted for under the fair value option and affects the presentation and disclosure requirements for financial assets and liabilities.	January 1, 2018. Early adoption is not permitted.	We do not anticipate a material impact on our consolidated financial statements at the time of adoption of this new standard.

Accounting Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
Revenue From Contracts With Customers In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," which supersedes the revenue recognition guidance in Accounting Standards Codification, "Revenue Recognition."	The new revenue recognition standard sets forth a five-step revenue recognition model to determine when and how revenue is recognized. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration it expects to receive in exchange for those goods or services. The standard also requires more detailed disclosures. The standard provides alternative methods of initial adoption.	January 1, 2018, with early adoption permitted.	We are currently assessing the materiality of the impact to our consolidated financial statements, and have not yet selected a transition approach. We have determined that our Market Technology business will be the most significantly impacted business primarily due to conforming with new guidance on performance obligations. We are still assessing the impact, if any, to our other businesses.

3. Restructuring Charges

2015 Restructuring Plan

During the first quarter of 2015, we performed a comprehensive review of our processes, businesses and systems in a company-wide effort to improve performance, cut costs, and reduce spending. In June 2016, we completed our 2015 restructuring plan and recognized total net pre-tax charges of $213 million for the period March 2015 through June 2016. Through this initiative, we expect to generate annualized savings of $36 million . Restructuring charges are recorded on restructuring plans that have been committed to by management and are, in part, based upon management's best estimates of future events. Changes to the estimates may require future adjustments to the restructuring reserve.

The following table presents a summary of the 2015 restructuring plan charges in the Consolidated Statements of Income for the years ended December 31, 2016 and 2015 :

	Year ended December 31,	
	2016	2015
	(in millions)	
Rebranding of trade name	$ —	$ 119
Severance	22	25
Facilities-related	1	—
Asset impairments	8	18
Other	10	10
Total restructuring charges	$ 41	$ 172

Rebranding of Trade Name

In connection with our global rebranding initiative, we decided to change our company name from The NASDAQ OMX Group, Inc. to Nasdaq, Inc., which became effective in the third quarter of 2015. In connection with this action, we decided to discontinue the use of the OMX trade name and recorded a pre-tax, non-cash impairment charge of $119 million in March 2015 to write off the full value of the trade name. The impairment charge did not impact the company's consolidated cash flows, liquidity, or capital resources.

Severance

Severance, which includes other termination benefits and other associated costs in the table above, related to workforce reductions of 201 positions across our organization for the year ended December 31, 2016 and 230 positions for the year ended December 31, 2015 . In addition to reducing our workforce, we have relocated certain functions to lower cost locations and expect to continue hiring in these lower cost locations to support the business.

Facilities-related

The facilities-related charge in the table above for the year ended December 31, 2016 primarily pertained to the consolidation of leased facilities. For the year ended December 31, 2015, facility-related costs were $10 million and pertained to the consolidation of leased facilities. These costs were offset by a credit of $10 million which pertained to the release of a previously recorded sublease loss reserve for part of the space we lease in New York, New York. In June 2015, a s part of our real estate reorganization plans, management decided to occupy this space. Based on management's decision, we released the sublease loss reserve recorded for this space.

Asset Impairments

Asset impairment charges of $8 million for the year ended December 31, 2016 and $18 million for the year ended December 31, 2015 primarily related to fixed assets and capitalized software that were retired during the respective period.

Restructuring Reserve

The following table presents the changes in the restructuring reserve for the year ended December 31, 2016 :

	Balance at January 1, 2016	Expense Incurred	Cash Payments	Balance at December 31, 2016
	(in millions)			
Severance	$ 12	$ 22	$ (17)	$ 17

As of December 31, 2016 , the majority of the restructuring reserve is included in other current liabilities in the Consolidated Balance Sheets and will be paid in 2017.

4. Acquisitions

We completed the following acquisitions in 2016 , 2015 and 2014 . Financial results of each transaction are included in our Consolidated Statements of Income from the date of each acquisition.

2016 Acquisitions

	Purchase Consideration	Total Net Assets (Liabilities) Acquired	Total Net Deferred Tax Liability	Acquired Intangible Assets	Goodwill
			(in millions)		
ISE	$ 1,070	$ 83	$ (185)	$ 623	$ 549
Boardvantage	242	28	(45)	111	148
Marketwired	111	(1)	(5)	31	86
Nasdaq CXC	116	6	(20)	76	54

The amounts in the table above represent the allocation of purchase price as of December 31, 2016. The preliminary allocations of the purchase price are subject to revision during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date. Adjustments to the provisional values, which may include tax and other estimates, during the measurement period 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.

See “Intangible Assets” below for further discussion of intangible assets acquired through our 2016 acquisitions.

Acquisition of ISE

On June 30, 2016, we acquired ISE for $1,070 million . We acquired net assets, at fair value, totaling $83 million and recorded a net deferred tax liability of $185 million , comprised of a deferred tax liability of $266 million and a deferred tax asset of $81 million , related to differences in the U.S. GAAP and tax basis of our investment in ISE. ISE is part of our Market Services, Information Services and Market Technology segments.

In May 2016, we issued the 2023 Notes and in June 2016, we issued the 2026 Notes to fund this acquisition. See “1.75% Senior Unsecured Notes,” and “3.85% Senior Unsecured Notes,” of Note 9, “Debt Obligations,” for further discussion.

Acquisition of Boardvantage

In May 2016, we acquired Boardvantage for $242 million ($197 million in cash paid plus $45 million in working capital adjustments, which primarily includes cash acquired). We acquired net assets, at fair value, totaling $28 million and recorded a net deferred tax liability of $45 million , comprised of a deferred tax liability of $46 million and a deferred tax asset of $1 million , related to differences in the U.S. GAAP and tax basis of our investment in Boardvantage. This acquisition expanded our Corporate Solutions governance business within our Corporate Services segment.

Nasdaq borrowed $197 million under the revolving credit commitment of the 2014 Credit Facility to fund this acquisition.

Acquisition of Marketwired

In February 2016, we acquired Marketwired for $111 million ($109 million in cash paid plus $2 million in working capital adjustments). We acquired net liabilities, at fair value, totaling $1 million and recorded a deferred tax liability of $10 million related to differences in the U.S. GAAP and tax basis of our investment in Marketwired. In the second quarter of 2016, we recorded a measurement period adjustment of $5 million to the estimated fair value of deferred tax liabilities to reflect a revised assessment following the receipt of new information. The adjustment resulted in a decrease to both deferred tax liabilities recorded and goodwill. The adjustment did not result in an impact to our Consolidated Statements of Income. Marketwired is part of our Corporate Solutions business within our Corporate Services segment.

Nasdaq borrowed $109 million under the revolving credit commitment of the 2014 Credit Facility to fund this acquisition.

Acquisition of Nasdaq CXC

In February 2016, we acquired Nasdaq CXC for $116 million ($115 million in cash paid plus $1 million in working capital adjustments). We acquired net assets, at fair value, totaling $6 million and recorded a deferred tax liability of $20 million related to differences in the U.S. GAAP and tax basis of our investment in Nasdaq CXC. Nasdaq CXC is part of our Market Services segment and our Data Products business within our Information Services segment.

Nasdaq used cash on hand and borrowed $55 million under the revolving credit commitment of the 2014 Credit Facility to fund this acquisition.

* * * * * *

2015 Acquisitions

We completed the following acquisitions in 2015. Financial results are included in our Consolidated Statements of Income from the date of each acquisition.

	Purchase Consideration	Total Net Assets Acquired	Total Net Deferred Tax Liability	Acquired Intangible Assets	Goodwill
			(in millions)		
DWA	$ 226	$ 8	$ (34)	$ 141	$ 111

We finalized the allocation of the purchase price for DWA in January 2016. There were no adjustments to the provisional values for this acquisition during the 12 month measurement period.

Acquisition of DWA

On January 30, 2015, we completed the acquisition of DWA for $226 million ($225 million cash paid plus $1 million in working capital adjustments). We acquired net assets, at fair value, totaling $8 million and recorded a deferred tax liability of $34 million related to differences in the U.S. GAAP and tax basis of our investment in DWA. DWA is part of our Data Products and Index Licensing and Services businesses within our Information Services segment.

Nasdaq used cash on hand and borrowed $100 million under the revolving credit commitment of the 2014 Credit Facility to fund this acquisition.

See “Intangible Assets” below for further discussion of intangible assets acquired in the DWA acquisition.

Acquisition of Full Ownership of NPM and Acquisition of SecondMarket

In October 2015, we acquired full ownership of NPM following the acquisition of the minority stake that was previously held by a third party. In addition, through NPM, we acquired SecondMarket. The purchase of the additional ownership interest in NPM and the acquisition of SecondMarket were purchased for an immaterial amount. NPM and SecondMarket are part of our Listing Services business within our Corporate Services segment.

2014 Acquisition

In March 2014, we completed the acquisition of the remaining 28.0% ownership interest in BWise that was previously held by a third party. BWise is part of our Market Technology segment.

Intangible Assets

The following table presents the details of acquired intangible assets in our 2016 and 2015 acquisitions. All acquired intangible assets with finite lives are amortized using the straight-line method.

	2016				2015
	ISE	Boardvantage	Marketwired	Nasdaq CXC	DWA
	($ in millions)				
Intangible Assets					
Exchange registrations	$ 467	$ —	$ —	$ —	$ —
Discount rate used	8.6%	—	—	—	—
Estimated average remaining useful life	Indefinite	—	—	—	—
Customer relationships	$ 148	$ 103	$ 29	$ 76	$ 29
Discount rate used	9.1%	15.5%	16.4%	10.3%	17.5%
Estimated average remaining useful life	13 years	14 years	6 years	17 years	15 years
Trade name	$ 8	$ 2	$ 2	$ —	$ 108
Discount rate used	8.6%	15.0%	15.8%	—	17.0%
Estimated average remaining useful life	Indefinite	1 year	2 years	—	Indefinite
Technology	$ —	$ 6	$ —	$ —	$ 4
Discount rate used	—	15.5%	—	—	17.0%
Estimated average remaining useful life	—	5 years	—	—	5 years
Total intangible assets	**$ 623**	**$ 111**	**$ 31**	**$ 76**	**$ 141**

Exchange Registrations

As part of our acquisition of ISE we acquired exchange registrations. The exchange registrations represent licenses that provide ISE with the ability to operate its option exchanges. Nasdaq views these intangible assets as a perpetual license to operate the exchanges so long as ISE meets its regulatory requirements. Nasdaq selected a variation of the income approach called the Greenfield Approach to value the exchange registrations. The Greenfield Approach refers to a discounted cash flow analysis that assumes the buyer is building the exchange from a start-up business to a normalized level of operations as of the acquisition date. This discounted cash flow model considers the required resources and eventual returns from the build-out of operational exchanges and the acquisition of customers, once the exchange registrations are obtained. The advantage of this approach is that it reflects the actual expectations that will arise from an investment in the registrations and it directly values the registrations. The Greenfield Approach relies on assumptions regarding projected revenues, margins, capital expenditures, depreciation, and working capital during the two year pre-trade phase, the 10 year ramp-up period, as well as the terminal period.

In developing a discount rate for the exchange registrations, we estimated a weighted average cost of capital for the overall business and we employed this rate when discounting the cash flows. The resulting discounted cash flows were then tax-effected at the applicable statutory rate.

Customer Relationships

As part of our acquisitions of ISE, Boardvantage, Marketwired, Nasdaq CXC, and DWA, we acquired customer relationships.

Customer relationships represent the non-contractual and contractual relationships with customers.

Methodology

For our acquisitions of ISE, Boardvantage, Marketwired and Nasdaq CXC, 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.

The DWA customer relationships were valued individually for each of DWA's businesses using the income approach, specifically the with-and-without method. The with-and-without method is commonly used when the cash flows of a business can be estimated with and without the asset in place. The premise associated with this valuation technique is that the value of an asset is represented by the differences in the subject business' cash flows under scenarios where (a) the asset is present and is used in operations (with); and (b) the asset is absent and not used in operations (without). Cash flow differentials are then discounted to present value to arrive at an estimate of fair value for the asset.

We estimated that without current customer relationships, it would take approximately 3 - 6 years, depending on the business, for the customer base to grow to 100.0% of current projected revenues. We also made estimates related to compensation levels and other expenses such as sales and marketing that would be incurred as the business was ramped up through the year in which the customer base would be expected to reach the level that currently exists.

Discount rate

The discount rates used reflect 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 employed this rate when discounting the cash flows. The resulting discounted cash flows were then tax-effected at the applicable statutory rate.

For our acquisitions of Marketwired, Nasdaq CXC and DWA, a discounted tax amortization benefit was added to the fair value of the assets under the assumption that the customer relationships would be amortized for tax purposes over a period of 15 years .

Estimated Useful Life

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

Trade Name

The DWA trade name is recognized in the industry and carries a reputation for quality. As such, DWA's reputation and positive recognition embodied in the trade name is a valuable asset to Nasdaq. The trade name was considered the primary asset acquired in this transaction. In valuing the acquired trade name, we used the income approach, specifically the 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.

The discount rate used reflects the amount of risk associated with the hypothetical cash flows generated by the DWA trade name in the future. In developing a discount rate for the trade name, we estimated a weighted average cost of capital for the overall business and we employed this rate when discounting the cash flows. The resulting discounted cash flows were then tax-effected at the applicable statutory rate, and a discounted tax amortization benefit was added to the fair value of the asset under the assumption that the trade name would be amortized for tax purposes over a period of 15 years.

We estimated the useful life of the trade name to be indefinite. The useful life was based on several factors including the number of years the name has been in service, its popularity within the industry, and our intention to continue its use in the branding of products.

Pro Forma Results and Acquisition-related Costs

The consolidated financial statements for the years ended December 31, 2016 , 2015 and 2014 include the financial results of the above 2016 , 2015 and 2014 acquisitions from the date of each acquisition. Pro forma financial results for the acquisitions completed in 2016 , 2015 and 2014 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, 2016 :

	Market Services	Corporate Services	Information Services	Market Technology	Total
			(in millions)		
Balance at December 31, 2015	$ 2,941	$ 467	$ 1,823	$ 164	$ 5,395
Goodwill acquired	549	234	54	—	837
Foreign currency translation adjustment	(100)	(27)	(71)	(7)	(205)
Balance at December 31, 2016	$ 3,390	$ 674	$ 1,806	$ 157	$ 6,027

The goodwill acquired for Market Services and Information Services shown above relates to our acquisitions of ISE and Nasdaq CXC, and the goodwill acquired for Corporate Services shown above relates to our acquisitions of Boardvantage and Marketwired. See "2016 Acquisitions," of Note 4, "Acquisitions," for further discussion.

As of December 31, 2016 , the amount of goodwill that is expected to be deductible for tax purposes in future periods is $879 million , of which $561 million is related to our acquisition of eSpeed, $237 million is related to our acquisition of the TR Corporate businesses, and $81 million is related to other acquisitions.

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, 2016 and 2015 ; however, events such as economic weakness or unexpected significant declines in operating results of a reporting unit 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, 2016				December 31, 2015			
	Gross Amount	Accumulated Amortization	Net Amount	Weighted-Average Useful Life (in Years)	Gross Amount	Accumulated Amortization	Net Amount	Weighted-Average Useful Life (in Years)
	(in millions)				(in millions)			
Finite-Lived Intangible Assets								
Technology	$ 38	$ (24)	$ 14	5	$ 39	$ (23)	$ 16	5
Customer relationships	1,394	(464)	930	18	1,038	(387)	651	20
Other	7	(6)	1	6	5	(4)	1	9
Foreign currency translation adjustment	(160)	58	(102)		(138)	43	(95)	
Total finite-lived intangible assets	$ 1,279	$ (436)	$ 843		$ 944	$ (371)	$ 573	
Indefinite-Lived Intangible Assets								
Exchange and clearing registrations	$ 1,257	$ —	$ 1,257		$ 790	$ —	$ 790	
Trade names	130	—	130		700	—	700	
Licenses	52	—	52		51	—	51	
Foreign currency translation adjustment	(188)	—	(188)		(155)	—	(155)	
Total indefinite-lived intangible assets	$ 1,251	$ —	$ 1,251		$ 1,386	$ —	$ 1,386	
Total intangible assets	$ 2,530	$ (436)	$ 2,094		$ 2,330	$ (371)	$ 1,959	

Amortization expense for acquired finite-lived intangible assets was $82 million for the year ended December 31, 2016 , $62 million for the year ended December 31, 2015 and $69 million for the year ended December 31, 2014 . The increase in amortization expense in 2016 compared with 2015 was primarily due to additional acquired intangible assets in 2016. The decrease in amortization expense in 2015 compared with 2014 was primarily due to lower amortization expense on certain intangible assets that were impaired in 2015 as discussed below, partially offset by amortization expense on identifiable finite-lived intangible assets acquired in connection with the acquisition of DWA.

The estimated future amortization expense (excluding the impact of foreign currency translation adjustments of $102 million as of December 31, 2016) of acquired finite-lived intangible assets as of December 31, 2016 is as follows:

	(in millions)
2017	$ 94
2018	90
2019	76
2020	75
2021	74
2022 and thereafter	536
Total	$ 945

Intangible Asset Impairment Charges

We recorded the pre-tax, non-cash intangible asset impairment charges described below during 2016, 2015 and 2014.

During 2016, the eSpeed business continued to operate in a challenging environment and, as a result, experienced a decline in operating performance. In October 2016, a new head of FICC joined Nasdaq and, in late November and December 2016, the management team conducted an extensive business review of the eSpeed business. Based upon this review, management changed the strategic direction of our Fixed Income business and will more closely integrate the U.S. and European Fixed Income businesses under a single brand called Nasdaq Fixed Income. As part of this effort, we decided to no longer utilize the eSpeed trade name. In connection with these triggering events, following board approval in January 2017, we recorded a pre-tax, non-cash intangible asset impairment charge of $578 million to write off the full value of the eSpeed trade name as we no longer attribute any material value to the trade name. This charge is recorded in asset impairment charges in the Consolidated Statements of Income for 2016.

In 2015 , in connection with our global rebranding initiative, we decided to change our company name from The NASDAQ OMX Group, Inc. to Nasdaq, Inc., which became effective in the third quarter of 2015. In connection with this action, we decided to discontinue the use of the OMX trade name and recorded a pre-tax, non-cash impairment charge of $119 million because we no longer attribute any material value to the trade name. This charge is recorded in restructuring charges in the Consolidated Statements of Income for 2015 .

In 2014 , we recorded a non-cash intangible asset impairment charge totaling $38 million related to an acquired intangible asset associated with customer relationships. The impairment resulted primarily from changes in the forecasted revenues associated with the acquired customer list of our eSpeed business. The fair value of customer relationships of $71 million was determined using the income approach, specifically the with-and-without method. This charge is recorded in asset impairment charges in the Consolidated Statements of Income for 2014 .

These intangible asset impairment charges did not impact the company's consolidated cash flows, liquidity, or capital resources and related primarily to our Market Services segment. However, for segment reporting purposes, these charges were allocated to corporate items based on the decision that these charges should not be used to evaluate the segment's operating performance.

Significant judgments and unobservable inputs categorized as Level III in the fair value hierarchy are inherent in impairment tests performed and include assumptions about the amount and timing of expected future cash flows, growth rates and the determination of appropriate discount rates. We believe that the assumptions used in our impairment tests are reasonable, but variations in any of the assumptions may result in different calculations of fair value.

6. Investments

The following table presents the details of our investments:

	December 31,	
	2016	2015
	(in millions)	
Trading securities	$ 228	$ 189
Available-for-sale investment securities	17	12
Equity method investments	124	72
Cost method investments	144	132

Trading Securities

Trading securities, which are included in financial investments, at fair value in the Consolidated Balance Sheets, are primarily comprised of highly rated European government debt securities, of which $172 million as of December 31, 2016 and $166 million as of December 31, 2015 , are assets utilized to meet regulatory capital requirements primarily for our clearing operations at Nasdaq Clearing.

Available-for-Sale Investment Securities

Available-for-sale investment securities, which are included in financial investments, at fair value in the Consolidated Balance Sheets, are primarily comprised of short-term commercial paper. As of December 31, 2016 and December 31, 2015 , the cumulative unrealized gains and losses on these securities were immaterial.

Equity Method Investments

As of December 31, 2016, our equity method investments primarily included equity interests in OCC and EuroCCP N.V. As of December 31, 2015 , our equity method investments primarily included equity interests in OCC, EuroCCP N.V. and The Order Machine.

The carrying amounts of our equity method investments are included in other non-current assets in the Consolidated Balance Sheets. The increase in 2016 compared with 2015 was primarily due to the inclusion of an additional 20.0% ownership interest in OCC, which we acquired in connection with our acquisition of ISE on June 30, 2016, bringing our total ownership interest in OCC to 40.0% as of December 31, 2016 . The increase in 2016 was partially offset by the write-off of our equity method investment in The Order Machine as discussed below.

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. As of December 31, 2016, the estimated fair value of our investment in The Order Machine was less than the carrying value and management considered the decline in value to be other-than-temporary. As a result, we recorded a non-cash impairment charge of $7 million to write off the full value of the investment. This charge is recorded in net income from unconsolidated investees in the Consolidated Statements of Income for 2016. No other

impairments of equity method investments were recorded in 2016, 2015 or 2014.

Net income recognized from our equity interest in the earnings and losses of these equity method investments was $2 million for the year ended December 31, 2016 , $17 million for the year ended December 31, 2015 and immaterial for the year ended December 31, 2014 . The change in year ended December 31, 2016 compared with the same period in 2015 is primarily due to income recognized from our equity method investment in OCC, partially offset by the write-off of our equity method investment in The Order Machine. The change in year ended December 31, 2015 compared with the same period in 2014 is primarily due to income recognized from our equity method investment in OCC. We were not able to determine what our share of OCC's income was for the year ended December 31, 2014 until the first quarter of 2015, when OCC's financial statements were made available to us. As a result, we recorded other income of $13 million in March 2015 relating to our share of OCC's income for the year ended December 31, 2014 . This income is included in net income from unconsolidated investees in the Consolidated Statements of Income for 2015.

Capital Contribution to OCC

In March 2015, in connection with being designated systemically important by the Financial Stability Oversight Council, OCC implemented a capital plan under which the options exchanges that are OCC's stockholders made new capital contributions to OCC, committed to make further capital contributions in the future under certain specified circumstances, and received certain commitments from OCC with respect to future dividend payments and related matters. Under the OCC capital plan, OCC's existing exchange stockholders, including Nasdaq and ISE, each contributed a pro-rata share of $150 million in new equity capital. Nasdaq's and ISE's capital contributions were each $30 million . OCC's exchange stockholders also committed to provide, as may become necessary from time to time, additional replenishment capital on a pro-rata basis if certain capital thresholds are triggered. For its part, OCC adopted specific policies with respect to fees, customer refunds and stockholder dividends, which envision an annual dividend payment to its stockholders equal to the portion of OCC's after-tax income that exceeds OCC's capital requirements after payment of refunds to OCC's clearing members (with such customer refunds generally to constitute 50% of the portion of OCC's pre-tax income that exceeds OCC's capital requirements). After the SEC staff approved the OCC capital plan and the stockholders made their capital contributions, the plan's further effectiveness was suspended under the applicable SEC rules because certain parties petitioned the full Commission to reconsider the capital plan's approval. This stay was lifted by the SEC in September 2015, allowing OCC to implement the plan and in February 2016, the SEC issued an order approving the OCC capital plan as previously implemented and dismissed the petitions challenging that plan. The petitioners filed for a stay of the SEC's order, which would have blocked OCC from paying a dividend under the OCC capital plan. The Court of Appeals denied the requested stay, permitting OCC to pay a dividend which Nasdaq received in February 2016. The petitioners also appealed the SEC's order to the Federal Court of Appeals for the District of Columbia Circuit, and the appeal is pending.

Cost Method Investments

The carrying amount of our cost method investments is included in other non-current assets in the Consolidated Balance Sheets. As of December 31, 2016 and 2015 , our cost method investments primarily represented our 5% ownership interest in Borsa Istanbul, and our 5% ownership interest in LCH.Clearnet Group Limited.

The Borsa Istanbul shares, which were issued to us in the first quarter of 2014, are part of the consideration received under a market technology agreement. This investment has a cost basis of $75 million which is guaranteed to us via a put option negotiated as part of the market technology agreement.

7. Property and Equipment, net

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

	Year Ended December 31,	
	2016	2015
	(in millions)	
Data processing equipment and software	$ 665	$ 576
Furniture, equipment and leasehold improvements	254	254
Total property and equipment	919	830
Less: accumulated depreciation and amortization	(557)	(507)
Total property and equipment, net	$ 362	$ 323

Depreciation and amortization expense for property and equipment was $88 million for the year ended December 31, 2016 , $76 million for the year ended December 31, 2015 and $68 million for the year ended December 31, 2014 . The increase in depreciation and amortization expense in 2016 compared with 2015 and in 2015 compared with 2014 was primarily due to additional expense associated with assets and software placed in service. These amounts are included in depreciation and amortization expense in the Consolidated Statements of Income.

We recorded asset impairment charges of $8 million for the year ended December 31, 2016 and $18 million for the year ended December 31, 2015 , primarily related to fixed assets and capitalized software that were retired and included in restructuring charges in the Consolidated Statements of Income during the respective period. For the year ended December 31, 2014 , we recorded asset impairment charges of $11 million primarily related to certain technology assets. These charges are included in asset impairment charges in the Consolidated Statements of Income for 2014 .

As of December 31, 2016 and 2015 , 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 years ended December 31, 2016 and 2015 are reflected in the following table:

	Initial Listing Revenues	Listing of Additional Shares Revenues	Annual Renewal and Other Revenues	Market Technology Revenues	Total
			(in millions)		
Balance at January 1, 2016	$ 59	$ 53	$ 28	$ 187	$ 327
Additions	13	12	606	233	864
Amortization	(18)	(28)	(576)	(227)	(849)
Translation adjustment	—	—	(1)	(8)	(9)
Balance at December 31, 2016	$ 54	$ 37	$ 57	$ 185	$ 333
Balance at January 1, 2015	$ 54	$ 78	$ 52	$ 208	$ 392
Additions	21	10	403	192	626
Amortization	(16)	(35)	(424)	(199)	(674)
Translation adjustment	—	—	(3)	(14)	(17)
Balance at December 31, 2015	$ 59	$ 53	$ 28	$ 187	$ 327

The additions and amortization for initial listing revenues, listing of additional shares revenues and annual renewal and other revenues primarily reflect revenues from our Listing Services business within our Corporate Services segment.

For our market technology contracts, total revenues, as well as costs incurred, are deferred until significant modifications are completed and delivered. Once delivered, deferred revenue and the related deferred costs are recognized over the post-contract support period. For these market technology contracts, we have included the deferral of costs in other current assets and other non-current assets in the Consolidated Balance Sheets.

At December 31, 2016 , we estimate that our deferred revenue, which is primarily corporate services and market technology revenues, will be recognized in the following years:

	Initial Listing Revenues	Listing of Additional Shares Revenues	Annual Renewal and Other Revenues	Market Technology Revenues	Total
			(in millions)		
Fiscal year ended:					
2017	$ 16	$ 21	$ 57	$ 70	$ 164
2018	14	11	—	36	61
2019	11	4	—	33	48
2020	8	1	—	30	39
2021	4	—	—	9	13
2022 and thereafter	1	—	—	7	8
	$ 54	$ 37	$ 57	$ 185	$ 333

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, 2016 :

	December 31, 2015	Additions	Payments, Accretion and Other	December 31, 2016
		(in millions)		
5.55% senior unsecured notes due January 15, 2020	$ 597	$ —	$ 1	$ 598
5.25% senior unsecured notes due January 16, 2018	368	—	1	369
3.875% senior unsecured notes due June 7, 2021	646	—	(21)	625
4.25% senior unsecured notes due June 1, 2024	495	—	—	495
1.75% senior unsecured notes due May 19, 2023	—	664	(42)	622
3.85% senior unsecured notes due June 30, 2026	—	495	—	495
$400 million senior unsecured term loan facility due November 25, 2019 (average interest rate of 2.00% for the period March 17, 2016 through December 31, 2016)	—	399	—	399
$750 million revolving credit commitment due November 25, 2019 (average interest rate of 1.63% for the period January 1, 2016 through December 31, 2016)	258	898	(1,156)	—
Total long-term debt obligations	$ 2,364	$ 2,456	$ (1,217)	$ 3,603

Senior Unsecured Notes

Our senior unsecured notes were all 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, 2016, 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. Our senior unsecured notes are general unsecured obligations of ours and rank equally with all of our existing and future unsubordinated obligations and they 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.

With the exception of the 2020 Notes, upon a change of control triggering event (as defined in the various note indentures), 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.

5.55% Senior Unsecured Notes

In January 2010, Nasdaq issued the 2020 Notes. The 2020 Notes pay interest semiannually at a rate of 5.55% per annum until January 15, 2020 .

5.25% Senior Unsecured Notes

In December 2010, Nasdaq issued the 2018 Notes. The 2018 Notes pay interest semiannually at a rate of 5.25% per annum until January 16, 2018 and such rate may vary with Nasdaq's debt rating up to a rate not to exceed 7.25% .

3.875% Senior Unsecured Notes

In June 2013, Nasdaq issued the 2021 Notes. The 2021 Notes pay interest annually at a rate of 3.875% per annum until June 7, 2021 and such rate may vary with Nasdaq's debt rating up to a rate not to exceed 5.875% .

The 2021 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 $21 million noted in the "Payments, Accretion and Other" column in the table above primarily reflects the translation of the 2021 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets for the year ended December 31, 2016 .

4.25% Senior Unsecured Notes

In May 2014, Nasdaq issued the 2024 Notes. The 2024 Notes pay interest semiannually at a rate of 4.25% per annum until June 1, 2024 and such rate may vary with Nasdaq's debt rating up to a rate not to exceed 6.25% .

1.75% Senior Unsecured Notes

In May 2016, Nasdaq issued the 2023 Notes. We used the net proceeds from the 2023 Notes and the 2026 Notes to fund our acquisition of ISE. See "Acquisition of ISE," of Note 4, "Acquisitions," for further discussion of the ISE acquisition.

The 2023 Notes pay interest annually at a rate of 1.75% per annum until May 19, 2023 and such rate may vary with Nasdaq's debt rating up to a rate not to exceed 3.75% .

The 2023 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign

exchange rate risk associated with certain investments in these subsidiaries. The decrease in the carrying amount of $42 million noted in the "Payments, Accretion and Other" column in the table above reflects the translation of the 2023 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets as of December 31, 2016.

3.85% Senior Unsecured Notes

In June 2016, Nasdaq issued the 2026 Notes. We used the net proceeds from the 2023 Notes and the 2026 Notes to fund our acquisition of ISE. See "Acquisition of ISE," of Note 4, "Acquisitions," for further discussion of the ISE acquisition.

The 2026 Notes pay interest semiannually at a rate of 3.85% per annum until June 30, 2026 and such rate may vary with Nasdaq's debt rating up to a rate not to exceed 5.85% .

Credit Facilities

As of December 31, 2016 , the amounts in the table above reflect the aggregate principal amount, less the unamortized debt issuance costs which are being accreted through interest expense over the life of the applicable credit facility. Nasdaq is permitted to repay borrowings under our credit facilities at any time in whole or in part, without penalty. We are also required to repay loans outstanding under our credit facilities with net cash proceeds from sales of property and assets of Nasdaq and its subsidiaries (excluding inventory sales and other sales in the ordinary course of business) and casualty and condemnation proceeds, in each case subject to specified exceptions and thresholds.

Our credit facilities contain financial and operating covenants. Financial covenants include a minimum interest expense coverage ratio and a maximum leverage ratio. Operating covenants include, among other things, limitations on Nasdaq's ability to incur additional indebtedness, grant liens on assets, enter into affiliate transactions, dispose of assets and pay dividends. Our credit facilities allow us to pay cash dividends on our common stock. The facilities also contain customary affirmative covenants, including access to financial statements, notice of defaults and certain other material events, maintenance of business and insurance, and events of default, including cross-defaults to our material indebtedness.

2016 Credit Facility

In March 2016, Nasdaq entered into the 2016 Credit Facility. In March 2016, loans in an aggregate principal amount of $400 million were drawn under the 2016 Credit Facility and the net proceeds were used to partially repay amounts outstanding under the revolving credit commitment of the 2014 Credit Facility as discussed below.

Loans under the 2016 Credit Facility pay interest monthly at a variable interest rate based on either the LIBOR or the base rate (or other applicable rate with respect to non-dollar borrowings), plus an applicable margin that varies with Nasdaq's debt rating. Under the 2016 Credit Facility, we are required to make quarterly principal payments beginning in March 2018 equal to 2.50% of the aggregate original principal amounts borrowed with the remaining amounts due at maturity.

2014 Credit Facility

In November 2014, Nasdaq entered into the 2014 Credit Facility. The 2014 Credit Facility consists of a $750 million revolving credit commitment (with sublimits for non-dollar borrowings, swingline borrowings and letters of credit). At various points during 2016 , we borrowed under the revolving credit commitment of the 2014 Credit Facility. Total borrowings for the year were $898 million of which $361 million was used to partially fund our acquisitions of Nasdaq CXC, Marketwired and Boardvantage, and $537 million was used for general corporate purposes. We used the net proceeds from our 2016 Credit Facility and cash on hand to repay $1,156 million under the revolving credit commitment of the 2014 Credit Facility. See "2016 Acquisitions," of Note 4, "Acquisitions," for further discussion of the Nasdaq CXC, Marketwired and Boardvantage acquisitions.

The loans under the 2014 Credit Facility have a variable interest rate based on either the LIBOR or 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.

Other Credit Facilities

In addition to the revolving credit commitment under our 2014 Credit Facility discussed above, we have credit facilities related to our Nasdaq Clearing operations in order to provide further liquidity. Credit facilities, which are available in multiple currencies, totaled $170 million at December 31, 2016 and $202 million at December 31, 2015 in available liquidity, none of which was utilized.

Debt Covenants

At December 31, 2016 , we were in compliance with the covenants of all of our debt obligations.

10. Income Taxes

The income tax provision consists of the following amounts:

	Year Ended December 31,		
	2016	2015	2014
	(in millions)		
Current income taxes:			
Federal	$ 37	$ 139	$ 123
State	21	42	36
Foreign	106	36	28
Total current income taxes	164	217	187
Deferred income taxes:			
Federal	(97)	(18)	(13)
State	(35)	(1)	(2)
Foreign	(4)	5	9
Total deferred income taxes	(136)	(14)	(6)
Total income tax provision	$ 28	$ 203	$ 181

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. At December 31, 2016 , the cumulative amount of undistributed earnings in these subsidiaries is approximately $144 million . Given our intent to reinvest these earnings for an indefinite period of time, we have not accrued a deferred tax liability for U.S. federal income taxes on these earnings. A determination of 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, 2016 , 2015 and 2014 is as follows:

	Year Ended December 31,		
	2016	2015	2014
Federal income tax provision at the statutory rate	35.0 %	35.0 %	35.0 %
State income tax provision, net of federal effect	(6.7)%	3.9 %	3.4 %
Non-U.S. subsidiary earnings	(7.3)%	(6.4)%	(7.0)%
Tax credits and deductions	(5.1)%	(0.8)%	(0.6)%
Change in unrecognized tax benefits	4.2 %	0.3 %	(3.0)%
Other, net	0.5 %	0.2 %	2.7 %
Actual income tax provision	20.6 %	32.2 %	30.5 %

The lower effective tax rate in 2016 when compared to 2015 is primarily due to a shift in the geographic mix of earnings, largely driven by the write-off of the eSpeed trade name, partially offset by an unfavorable ruling from the Finnish Supreme Administrative Court. The higher effective tax rate in 2015 when compared with 2014 was primarily due to a decrease in unrecognized tax benefits in 2014 .

The temporary differences, which give rise to our deferred tax assets and (liabilities), consisted of the following:

	December 31,	
	2016	2015
	(in millions)	
Deferred tax assets:		
Deferred revenues	$ 39	$ 46
U.S. federal net operating loss	2	5
Foreign net operating loss	37	92
State net operating loss	1	2
Compensation and benefits	99	86
Foreign currency translation	528	458
Tax credits	7	7
Other	34	32
Gross deferred tax assets	747	728
Deferred tax liabilities:		
Amortization of software development costs and depreciation	(63)	(56)
Amortization of acquired intangible assets	(596)	(522)
Investments	(37)	(35)
Other	(24)	(13)
Gross deferred tax liabilities	(720)	(626)
Net deferred tax assets before valuation allowance	27	102
Less: valuation allowance	(30)	(85)
Net deferred tax assets (liabilities)	$ (3)	$ 17

A valuation allowance has been established with regards to the tax benefits primarily associated with certain net operating losses, or NOLs, as it is more likely than not that these benefits will not be realized in the foreseeable future.

As of December 31, 2016 , the expiration dates for the NOLs, and credits are as follows:

Jurisdiction	Amount	Expiration Date
	(in millions)	
U.S. Federal NOL	$ 2	2027
Foreign NOL	3	2018-2025
Foreign NOL	34	No expiration date
State NOL	1	2017-2035
U.S. Federal Tax credits	7	2018-2027

The following represents the domestic and foreign components of income before income tax provision:

	Year Ended December 31,		
	2016	2015	2014
	(in millions)		
Domestic	$ (155)	$ 393	$ 349
Foreign	291	237	245
Income before income tax provision	$ 136	$ 630	$ 594

We recorded income tax benefits of $41 million in 2016 , $34 million in 2015 and $9 million in 2014 , primarily related to share-based compensation. These amounts were recorded as additional paid-in-capital in the Consolidated Balance Sheets.

We are subject to examination by federal, state and local, and foreign tax authorities. 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. We believe that the resolution of tax matters will not have a material effect on our financial condition but may be material to our operating results for a particular period and the effective tax rate for that period.

There are $40 million as of December 31, 2016 and $33 million as of December 31, 2015 of unrecognized tax benefits that if recognized would affect our effective tax rate.

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

	Year Ended December 31,	
	2016	2015
	(in millions)	
Beginning balance	$ 40	$ 41
Additions as a result of tax positions taken in prior periods	9	3
Additions as a result of tax positions taken in the current period	3	3
Reductions related to settlements with taxing authorities	(4)	(2)
Reductions as a result of lapses of the applicable statute of limitations	—	(5)
Ending balance	$ 48	$ 40

Our policy is to recognize interest and/or penalties related to income tax matters in income tax expense. We have accrued $8 million as of December 31, 2016 and $7 million as of December 31, 2015 for interest and penalties, net of tax effect.

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. Federal income tax returns for the years 2011 through 2015 are subject to examination by the Internal Revenue Service. Several state tax returns are currently under examination by the respective tax authorities for the years 2005 through 2014 and we are subject to examination for the year 2015. Due to the uncertainty of the outcome of matters in certain states, in 2016 we recorded a reserve of $5 million . This reserve is mostly offset by the recognition of $4 million of previously unrecognized tax benefits, in 2016, due to settlements of audits in various states. Non-U.S. tax returns are subject to examination by the respective tax authorities for the years 2008 through 2015 . In 2015, we received an assessment of $6 million from the Swedish Tax Agency for the year 2013. We have appealed this assessment to the Swedish Courts. Due to the uncertainty of the outcome of this matter, in 2015 we recorded a reserve of $6 million . This reserve is mostly offset by the recognition of $5 million of previously unrecognized tax benefits, in 2015, due to the lapse of the statute of limitations related to tax examinations in various jurisdictions in the U.S. We anticipate that the amount of unrecognized tax benefits at December 31, 2016 will significantly decrease in the next twelve months as we expect to settle certain tax audits. The final outcome of such audits cannot yet be determined. We anticipate that such adjustments will not have a material impact on our consolidated financial position or results of operations.

In the fourth quarter of 2010, we received an appeal from the Finnish Tax Authority challenging certain interest expense deductions claimed by Nasdaq in Finland for the year 2008. The appeal also demanded certain penalties be paid with regard to the company's tax return filing position. In October 2012, the Finnish Appeals Board disagreed with the company's tax return filing position for years 2009 through 2011, even though the tax return position with respect to this deduction was previously reviewed and approved by the Finnish Tax Authority. In June 2014, the Finnish Administrative Court also disagreed with the company's tax return filing position for these years. We appealed this ruling to the Finnish Supreme Administrative Court. Through March 31, 2016, we recorded tax benefits of $30 million associated with this filing position. We paid $41 million to the Finnish tax authorities, which includes $11 million in interest and penalties. In May 2016, we received an unfavorable ruling from the Finnish Supreme Administrative Court, in which the Court disagreed with our position. As such, in the second quarter of 2016 we recorded tax expense of $28 million , or $0.17 per diluted share. This expense reflects the reversal of previously recorded Finnish tax benefits, and related interest and penalties, of $38 million through the first quarter of 2016, net of a related U.S. tax benefit of $10 million . The tax expense recorded reflects the impact of foreign currency translation. We expect to record future quarterly net tax expense of approximately $1 million as a result of this ruling.

From 2009 through 2012, we recorded tax benefits associated with certain interest expense incurred in Sweden. Our position is supported by a 2011 ruling we received from the Swedish Supreme Administrative Court. However, under new legislation effective January 1, 2013, limitations are imposed on certain forms of interest expense. Because this legislation is unclear with regard to our ability to continue to claim such interest deductions, Nasdaq filed an application for an advance tax ruling with the Swedish Tax Council for Advance Tax Rulings. In June 2014, we received an unfavorable ruling from the Swedish Tax Council for Advance Tax Rulings. We

appealed this ruling to the Swedish Supreme Administrative Court; however the Swedish Supreme Administrative Court denied our request for a ruling based on procedural requirements. In the third quarter of 2015, and in October 2016, we received notices from the Swedish Tax Agency that interest deductions for the years 2013 and 2014, respectively, have been disallowed. We have appealed to the Swedish Lower Administrative Court and continue to expect a favorable decision. Since January 1, 2013, we have recorded tax benefits of $50 million associated with this matter. We continue to pay all assessments from the Swedish Tax Agency while this matter is pending. If the Swedish Courts agree with our position we will receive a refund of all paid assessments; if the Swedish Courts disagree with our position, we will record tax expense of $38 million , or $0.22 per diluted share, which is gross of any related U.S. tax benefits and reflects the impact of foreign currency translation. We expect to record recurring quarterly tax benefits of $1 million to $2 million with respect to this matter for the foreseeable future.

Other Tax Matter

In December 2012, the Swedish Tax Agency approved our 2010 amended VAT tax return and we received a cash refund for the amount claimed. In 2013, we filed amended VAT tax returns for 2011 and 2012 and utilized the same approach which was approved for the 2010 filing. We also utilized this approach in our 2013 and 2014 filings. However, even though the VAT return position was previously reviewed and approved by the Swedish Tax Agency, the Swedish Tax Agency challenged our approach. The revised position of the Swedish Tax Agency was upheld by the Lower Administrative Court in 2015. As a result, in 2015, we reversed the previously recorded benefit of $12 million , based on the court decision. We have appealed the ruling of the Lower Administrative Court to the Court of Appeals.

11. 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 in 2016 , 2015 and 2014 . Savings plan expense included in compensation and benefits expense in the Consolidated Statements of Income was $11 million in 2016 , $10 million in 2015 and $9 million in 2014 .

Prior to 2015, we had a profit-sharing contribution feature to our 401(k) Plan which allowed eligible U.S. employees to receive employer retirement contributions when we met our annual corporate goals. Employer retirement contribution expense recorded in compensation and benefits expense in the Consolidated Statements of Income was $3 million in 2014.

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 $23 million in 2016 , $22 million in 2015 and $21 million in 2014 .

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 funded status related to the Nasdaq Benefit Plans was underfunded by $59 million at December 31, 2016 and $64 million at December 31, 2015 and is included in accrued personnel costs and other non-current liabilities in the Consolidated Balance Sheets. The fair value of the plan assets was $74 million as of December 31, 2016 and $70 million as of December 31, 2015 and the benefit obligation was $133 million at December 31, 2016 and $134 million at December 31, 2015. The plan assets of the Nasdaq Benefit Plans are invested in securities per target allocations adopted by Nasdaq's Pension and 401(k) Committee and are primarily invested in equity and fixed income securities, which are primarily categorized as Level 2 in the fair value hierarchy.

Accumulated Other Comprehensive Loss

As of December 31, 2016 , accumulated other comprehensive loss for the Nasdaq Benefit Plans was $21 million reflecting an unrecognized net loss of $35 million , partially offset by an income tax benefit of $14 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)			
2017	$ 4	$ 7	$ 1	$ 12
2018	4	3	—	7
2019	5	4	—	9
2020	5	5	—	10
2021	5	1	—	6
2022 through 2026	26	8	1	35
	$ 49	$ 28	$ 2	$ 79

12. Share-Based Compensation

We have a share-based compensation program that provides our board of directors broad discretion in creating employee equity incentives. Share-based awards granted under this program include stock options, restricted stock (consisting of restricted stock units), and PSUs. For accounting purposes, we consider PSUs to be a form of restricted stock.

Summary of Share-Based Compensation Expense

The following table shows the total share-based compensation expense resulting from equity awards and the 15.0% discount for the ESPP for the years ended December 31, 2016 , 2015 and 2014 in the Consolidated Statements of Income:

	Year Ended December 31,		
	2016	2015	2014
	(in millions)		
Share-based compensation expense before income taxes	$ 86	$ 68	$ 62
Income tax benefit	(35)	(28)	(26)
Share-based compensation expense after income taxes	$ 51	$ 40	$ 36

Common Shares Available Under Our Equity Plan

As of December 31, 2016 , we had approximately 6.7 million shares of common stock authorized for future issuance under our Equity Plan.

Restricted Stock

We grant restricted stock to most active employees. The grant date fair value of restricted stock awards is based on the closing price at the date of grant less the present value of future cash dividends. Restricted stock awards granted generally vest 25.0% on the second anniversary of the grant date, 25.0% on the third anniversary of the grant date, and 50.0% on the fourth anniversary of the grant date. We generally recognize compensation expense for restricted stock awards on a straight-line basis over the requisite service period of the award, taking into account an estimated forfeiture rate.

Summary of Restricted Stock Activity

The following table summarizes our restricted stock activity for the years ended December 31, 2016 , 2015 and 2014 :

	Restricted Stock	
	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested balances at December 31, 2013	3,826,470	$ 25.96
Granted	1,196,441	36.87
Vested	(1,529,792)	23.29
Forfeited	(299,889)	29.87
Unvested balances at December 31, 2014	3,193,230	$ 30.99
Granted	823,950	49.26
Vested	(370,998)	29.90
Forfeited	(302,444)	34.34
Unvested balances at December 31, 2015	3,343,738	$ 35.36
Granted	724,200	62.91
Vested	(1,238,980)	27.91
Forfeited	(268,380)	43.29
Unvested balances at December 31, 2016	2,560,578	$ 45.92

At December 31, 2016 , $52 million of total unrecognized compensation cost related to restricted stock is expected to be recognized over a weighted-average period of 1.7 years .

PSUs

The grant date fair value of PSUs is based on the closing price at the date of grant less the present value of future cash dividends. PSUs are based on performance measures that impact the amount of shares that each recipient will receive upon vesting. We report the target number of PSUs granted, unless we have determined that it is more likely than not, based on the actual achievement of performance measures, that an employee will receive a different amount of shares underlying the PSUs, in which case we report the amount of shares the employee is likely to receive. We have two performance-based long-term PSU programs for certain officers, a one -year performance-based program and a three -year cumulative performance-based program that focuses on TSR.

One -Year PSU Program

Under the one -year performance-based program, an employee may receive 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 performance period. Compensation cost is recognized over the performance period and the three -year vesting period, taking into account an estimated forfeiture rate.

During 2016, certain grants of PSUs with a one -year performance period exceeded the applicable performance parameters. As a result, an additional 56,533 units above target were considered granted in the first quarter of 2017.

Three -Year PSU Program

Under the three -year performance-based program, each individual receives PSUs with a three -year cumulative performance period that vest at the end of the performance period. Compensation cost is recognized over the three -year vesting period. 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 payout 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 payout will not exceed 100.0% of the number of PSUs granted. We estimate the fair value of PSU's granted under the three -year PSU program using the Monte Carlo simulation model, as these awards contain a market condition.

Certain grants of PSUs that were issued in 2014 with a three -year performance period exceeded the applicable performance parameters. As a result, an additional 538,892 units above target were considered granted in the first quarter of 2017.

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, 2016 and December 31, 2015 :

	Year Ended December 31,	
	2016	2015
Weighted-average risk free interest rate [1]	0.84%	0.81%
Expected volatility [2]	21.0%	21.5%
Weighted-average grant date share price	$ 66.36	$ 50.97
Weighted-average fair value at grant date	$ 93.25	$ 64.08

(1) 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.

(2) 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, 2016 , 2015 and 2014 :

	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 balances at December 31, 2013	804,377	$ 27.38	1,111,224	$ 31.95
Granted	328,791	36.20	553,846	42.80
Vested	(442,781)	27.75	—	—
Forfeited	(132,347)	28.58	(10,503)	30.82
Unvested balances at December 31, 2014	558,040	$ 24.17	1,654,567	$ 35.57
Granted	206,199	48.16	649,626	49.69
Vested	(247,273)	30.51	(837,109)	22.50
Forfeited	(92,999)	34.74	(27,366)	43.49
Unvested balances at December 31, 2015	423,967	$ 41.34	1,439,718	$ 49.41
Granted	242,642	58.33	761,501	66.89
Vested	(242,793)	39.63	(879,926)	43.81
Forfeited	(45,050)	47.72	(6,625)	69.11
Unvested balances at December 31, 2016	378,766	$ 52.55	1,314,668	$ 63.18

At December 31, 2016 , $10 million of total unrecognized compensation cost related to the one -year PSU program is expected to be recognized over a weighted-average period of 1.4 years . For the three -year PSU program, $20 million of total unrecognized compensation cost is expected to be recognized over a weighted-average period of 1.3 years .

Stock Options

The fair value of stock options are estimated using the Black-Scholes option-pricing model. Each grant has a 10 -year life, vesting ratably over a four -year period, starting at the date of the grant. There were no stock option awards granted for the years ended December 31, 2016 , 2015 and 2014 .

Summary of Stock Option Activity

A summary of stock option activity for the years ended December 31, 2016 , 2015 and 2014 is as follows:

	Number of Stock Options	Weighted-Average Exercise Price
Outstanding at December 31, 2013	4,926,522	$ 25.21
Exercised	(1,578,050)	20.31
Forfeited or expired	(31,690)	24.23
Outstanding at December 31, 2014	3,316,782	$ 27.56
Exercised	(682,054)	26.84
Forfeited or expired	(8,241)	28.53
Outstanding at December 31, 2015	2,626,487	$ 27.74
Exercised	(1,219,820)	34.00
Forfeited or expired	(296)	23.31
Outstanding at December 31, 2016	1,406,371	$ 22.32

We received net cash proceeds of $41 million from the exercise of 1,219,820 stock options for the year ended December 31, 2016 , received net cash proceeds of $18 million from the exercise of 682,054 stock options for the year ended December 31, 2015 and received net cash proceeds of $32 million from the exercise of 1,578,050 stock options for the year ended December 31, 2014 .

The following table summarizes significant ranges of outstanding and exercisable stock options as of December 31, 2016 :

	Outstanding and Exercisable			
Range of Exercise Prices	Number of Stock Options	Weighted-Average Remaining Contractual Term (in years)	Weighted-Average Exercise Price	Aggregate Intrinsic Value (in millions)
$ 17.36 - $ 19.99	140,733	3.13	$ 19.74	$ 7
$ 20.00 - $ 25.75	1,237,333	2.62	22.16	55
$ 25.76 - $ 45.38	28,305	1.17	41.77	1
Total	1,406,371	2.65	$ 22.32	$ 63

The aggregate intrinsic value in the above table represents the total pre-tax intrinsic value (i.e., the difference between our closing stock price on December 30, 2016 of $67.12 and the exercise price, times the number of shares) based on stock options with an exercise price less than Nasdaq's closing price of $67.12 as of December 30, 2016, 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. The total number of in-the-money stock options exercisable as of December 31, 2016 was 1.4 million . As of December 31, 2015 , 2.6 million outstanding stock options were exercisable and the weighted-average exercise price was $27.74 .

Total fair value of stock options vested was immaterial for both the years ended December 31, 2016 and 2015 . The total pre-tax intrinsic value of stock options exercised was $40 million during 2016 , $17 million during 2015 and $33 million during 2014 .

ESPP

We have an ESPP under which approximately 2.3 million shares of our common stock have been reserved for future issuance as of December 31, 2016 . 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, 2016, 2015 and 2014.

	Year Ended December 31,		
	2016	2015	2014
Number of shares purchased by employees	233,464	247,444	256,772
Weighted-average price of shares purchased	$ 50.39	$ 40.95	$ 33.06
Compensation expense (in millions)	$ 4	$ 4	$ 4

13. Nasdaq Stockholders' Equity

Common Stock

At December 31, 2016 , 300,000,000 shares of our common stock were authorized, 170,501,186 shares were issued and 166,579,468 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 person 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. Most shares repurchased under our share repurchase program are retired and cancelled, and the remaining shares are

available for general corporate purposes. When treasury shares are reissued, they are recorded at the average cost of the treasury shares acquired. We held 3,921,718 shares of common stock in treasury as of December 31, 2016 and 2,917,464 shares as of December 31, 2015 .

Share Repurchase Program

In the fourth quarter of 2014, our board of directors authorized the repurchase of up to $500 million of our outstanding common stock and in the first quarter of 2016, our board of directors authorized the repurchase of an additional $370 million of our outstanding common stock under our share repurchase program.

These purchases may be made from time to time at prevailing market prices in open market purchases, privately-negotiated transactions, block purchase techniques or otherwise, as determined by our management. The purchases are primarily funded from existing cash balances. The share repurchase program may be suspended, modified or discontinued at any time.

The following table summarizes our share repurchase activity:

	Year Ended December 31,	
	2016	2015
Number of shares of common stock repurchased	1,547,778	7,191,685
Average price paid per share	$ 64.42	$ 52.44
Total purchase price (in millions)	$ 100	$ 377

As discussed above in "Common Stock in Treasury, at Cost," most shares repurchased under our share repurchase program are retired and cancelled, and the remaining shares are available for general corporate purposes. As of December 31, 2016 , the remaining amount authorized for share repurchases under the program was $429 million .

Other Repurchases of Common Stock

For the year ended December 31, 2016 , we repurchased 1,004,254 shares of our common stock in settlement of employee tax withholding obligations arising from the vesting of restricted stock.

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. At December 31, 2016 and December 31, 2015 , no shares of preferred stock were issued or outstanding.

* * * * * *

Cash Dividends on Common Stock

During 2016 , our board of directors declared the following cash dividends:

Declaration Date	Dividend Per Common Share	Record Date	Total Amount Paid	Payment Date
			(in millions)	
January 27, 2016	$ 0.25	March 14, 2016	$ 41	March 28, 2016
March 28, 2016	0.32	June 10, 2016	53	June 24, 2016
July 26, 2016	0.32	September 16, 2016	53	September 30, 2016
October 25, 2016	0.32	December 16, 2016	53	December 30, 2016
			$ 200	

The total amount paid of $200 million was recorded in retained earnings in the Consolidated Balance Sheets at December 31, 2016 .

In January 2017, the board of directors declared a regular quarterly cash dividend of $0.32 per share on our outstanding common stock. The dividend is payable on March 31, 2017 to shareholders of record at the close of business on March 17, 2017. Future declarations of quarterly dividends and the establishment of future record and payment dates are subject to approval by the board of directors.

Accumulated Other Comprehensive Loss

The following table outlines the components of accumulated other comprehensive loss:

	Foreign Currency Translation Adjustments	Employee Benefit Plan Adjustments	Accumulated Other Comprehensive Loss
		(in millions)	
Gross balance, December 31, 2015	$ (1,298)	$ (35)	$ (1,333)
Income taxes	455	14	469
Net balance, December 31, 2015	$ (843)	$ (21)	$ (864)
Gross balance, December 31, 2016	$ (1,481)	$ (35)	$ (1,516)
Income taxes	523	14	537
Net balance, December 31, 2016	$ (958)	$ (21)	$ (979)

Foreign currency translation adjustments include cumulative gains (losses) on foreign currency translation adjustments from non-U.S. subsidiaries for which the functional currency is other than the U.S. dollar.

Employee benefit plan adjustments represent unrecognized net actuarial gains (losses) related to the Nasdaq Benefit Plans.

14. Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

	Year Ended December 31,		
	2016	2015	2014
	(in millions, except share and per share amounts)		
Numerator:			
Net income attributable to common shareholders	$ 108	$ 428	$ 414
Denominator:			
Weighted-average common shares outstanding for basic earnings per share	165,182,290	167,285,450	168,926,733
Weighted-average effect of dilutive securities:			
Employee equity awards	3,258,136	3,638,981	3,727,839
Contingent issuance of common stock	360,571	358,840	364,277
Weighted-average common shares outstanding for diluted earnings per share	168,800,997	171,283,271	173,018,849
Basic and diluted earnings per share:			
Basic earnings per share	$ 0.65	$ 2.56	$ 2.45
Diluted earnings per share	$ 0.64	$ 2.50	$ 2.39

For further discussion of our contingent issuance of common stock, see “Non-Cash Contingent Consideration,” of Note 18, “Commitments, Contingencies and Guarantees.”

Stock options to purchase 1,406,371 shares of common stock and 4,254,012 shares of restricted stock and PSUs were outstanding at December 31, 2016 . For the year ended December 31, 2016 , we included all of the outstanding stock options and 3,663,919 shares of restricted stock and PSUs in the computation of diluted earnings per share, on a weighted-average basis, as their inclusion was dilutive. The remaining shares of restricted stock and PSUs are antidilutive, and as such, they were properly excluded.

Stock options to purchase 2,626,487 shares of common stock and 5,207,423 shares of restricted stock and PSUs were outstanding at December 31, 2015 . For the year ended December 31, 2015 , we included all of the outstanding stock options and 4,842,383 shares of restricted stock and PSUs in the computation of diluted earnings per share, on a weighted-average basis, as their inclusion was dilutive. The remaining shares of restricted stock and PSUs are antidilutive, and as such, they were properly excluded.

Stock options to purchase 3,316,782 shares of common stock and 5,405,837 shares of restricted stock and PSUs were

outstanding at December 31, 2014 . For the year ended December 31, 2014 , we included 3,198,842 of the outstanding stock options and 4,836,518 shares of restricted stock and PSUs in the computation of diluted earnings per share, on a weighted-average basis, as their inclusion was dilutive. The remaining stock options and shares of restricted stock and PSUs are antidilutive, and as such, they were properly excluded.

15. Fair Value of Financial Instruments

The following table presents our financial assets that are measured at fair value on a recurring basis as of December 31, 2016 and 2015 . We did not have any financial liabilities measured at fair value on a recurring basis as of December 31, 2016 and 2015 .

	December 31, 2016			
	Total	Level 1	Level 2	Level 3
	(in millions)			
Financial investments, at fair value	$ 245	$ 228	$ 17	$ —
Default fund and margin deposit investments	1,900	1,763	137	—
Total	$ 2,145	$ 1,991	$ 154	$ —

	December 31, 2015			
	Total	Level 1	Level 2	Level 3
	(in millions)			
Financial investments, at fair value	$ 201	$ 189	$ 12	$ —
Default fund and margin deposit investments	1,556	1,253	303	—
Total	$ 1,757	$ 1,442	$ 315	$ —

Our Level 1 financial investments, at fair value were primarily comprised of trading securities, mainly highly rated European government debt securities. Of these securities, $172 million as of December 31, 2016 and $166 million as of December 31, 2015 are assets utilized to meet regulatory capital requirements, primarily for our clearing operations at Nasdaq Clearing. As of December 31, 2016 and 2015 , Level 2 financial investments, at fair value were primarily comprised of available-for-sale investment securities in short-term commercial paper.

Our default fund and margin deposit investments include cash contributions invested by Nasdaq Clearing, in accordance with its investment policy. Of the total balance of $3,301 million recorded in the Consolidated Balance Sheets as of December 31, 2016 , $137 million of cash contributions have been invested in reverse repurchase agreements and $1,763 million of cash contributions have been invested in highly rated European, and to a lesser extent, U.S. government debt securities or central bank certificates. The remainder of this balance is held in cash. Of the total balance of $2,228 million recorded in the Consolidated Balance Sheets as of December 31, 2015 , $303 million of cash contributions have been invested in reverse repurchase agreements and $1,253 million of cash contributions have been invested in highly rated European, and to a lesser extent, U.S. government debt securities and time deposits. The remainder of this balance is held in cash. See Note 16, “Clearing Operations,” for further discussion of default fund contributions and margin deposits.

There were no transfers between Level 1 and Level 2 of the fair value hierarchy as of December 31, 2016 and 2015 .

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, receivables, net, certain other current assets, accounts payable and accrued expenses, Section 31 fees payable to SEC, accrued personnel costs, and certain other current liabilities.

In addition, our investments in OCC and EuroCCP N.V. are accounted for under the equity method of accounting and our investments in Borsa Istanbul and LCH.Clearnet Group Limited are carried at cost. See “Equity Method Investments,” and “Cost Method Investments,” of Note 6, “Investments,” for further discussion.

We also consider our debt obligations to be financial instruments. The fair value of our debt, utilizing discounted cash flow analyses for our floating rate debt and prevailing market rates for our fixed rate debt, was $3.8 billion at December 31, 2016 and $2.5 billion at December 31, 2015 . The discounted cash flow analyses are based on borrowing rates currently available to us for debt with similar terms and maturities. Our fixed rate and our floating rate debt is categorized as Level 2 in the fair value hierarchy. For further discussion of our debt obligations, see Note 9, “Debt Obligations.”

16. Clearing Operations

Nasdaq Clearing

Nasdaq Clearing is authorized and supervised under EMIR as a multi-asset clearinghouse by the SFSA and is authorized to conduct clearing operations in Norway by the Norwegian Ministry of Finance. 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, freight and fuel oil derivatives, iron ore 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, clearing members' open positions are aggregated to create a single portfolio for which default fund and margin collateral requirements are calculated. See "Default Fund Contributions and Margin Deposits" below for further discussion of Nasdaq Clearing's default fund and margin requirements.

Nasdaq Clearing maintains four member sponsored default funds: one related to financial markets, one related to commodities markets, one related to the seafood market, and a mutualized fund. 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. Simultaneously, a mutualized default fund provides capital efficiencies to Nasdaq Clearing's members with regard to total regulatory capital required. See "Default Fund Contributions" below for further discussion of Nasdaq Clearing's default fund. Power of assessment and a liability waterfall also have been implemented. See "Power of Assessment" and "Liability Waterfall" below for further discussion. These requirements ensure the alignment of risk between Nasdaq Clearing and its clearing members.

Default Fund Contributions and Margin Deposits

As of December 31, 2016 , clearing member default fund contributions and margin deposits were as follows:

	December 31, 2016		
	Cash Contributions	Non-Cash Contributions	Total Contributions
	(in millions)		
Default fund contributions	$ 314	$ 89	$ 403
Margin deposits	2,987	3,713	6,700
Total	$ 3,301	$ 3,802	$ 7,103

In accordance with its investment policy, of the total cash contributions of $3,301 million , Nasdaq Clearing has invested cash contributions of $137 million in reverse repurchase agreements and $1,763 million in highly rated European, and to a lesser extent, U.S. government debt securities or central bank certificates. The remainder of this balance is held in cash.

Of the total default fund contributions of $403 million , Nasdaq Clearing can utilize $332 million as capital resources in the event of a counterparty default. The remaining balance of $71 million pertains to member posted surplus balances.

Default Fund Contributions

Contributions made 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 held in cash or invested by Nasdaq Clearing, in accordance with its investment policy, either in highly rated government debt securities, time deposits, central bank certificates or reverse repurchase agreements with highly rated government debt securities as collateral. 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 default funds, Nasdaq Clearing is also required to contribute capital to the default funds and overall regulatory capital as specified under its clearinghouse rules. As of December 31, 2016 , Nasdaq Clearing committed capital totaling $133 million to the member sponsored default funds and overall regulatory capital, in the form of government debt securities, which are recorded as financial investments, at fair value in the Consolidated Balance Sheets. The combined regulatory capital of the clearing members and Nasdaq Clearing will serve to secure the obligations of a clearing member 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. These cash deposits are recorded in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and

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 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 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 traded 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, the estimated liability was nominal and no liability was recorded as of December 31, 2016 .

The market value of derivative contracts outstanding prior to netting was as follows:

	December 31, 2016
	(in millions)
Commodity and seafood options, futures and forwards [1][2][3]	$ 613
Fixed-income options and futures [1][2]	727
Stock options and futures [1][2]	151
Index options and futures [1][2]	116
Total	$ 1,607

(1) 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.

(2) We determined the fair value of our futures contracts based upon quoted market prices and average quoted market yields.

(3) We determined the fair value of our forward contracts using standard valuation models that were based on market-based observable inputs including LIBOR rates and the spot price of the underlying instrument.

The total number of derivative contracts cleared through Nasdaq Clearing for the years ended December 31, 2016 and 2015 was as follows:

	December 31, 2016	December 31, 2015
Commodity and seafood options, futures and forwards [1]	3,530,746	3,055,073
Fixed-income options and futures	14,639,065	19,631,917
Stock options and futures	28,496,143	33,455,560
Index options and futures	50,636,527	49,771,223
Total	97,302,481	105,913,773

(1) The total volume in cleared power related to commodity contracts was 1,658 Terawatt hours (TWh) for the year ended December 31, 2016 and 1,496 TWh for the year ended December 31, 2015 .

The outstanding contract value of resale and repurchase agreements was $1.9 billion as of December 31, 2016 and $1.1 billion at December 31, 2015 . The total number of contracts cleared was 7,941,666 for the year ended December 31, 2016 and was 7,908,873 for the year ended December 31, 2015 .

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 100.0% 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 $18 million at December 31, 2016 ;

- 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;
- senior capital contributed to each specific market by Nasdaq Clearing, calculated in accordance with clearinghouse rules, which totaled $49 million at December 31, 2016 ; and
- mutualized default fund, which includes capital contributions of the clearing members on a pro-rata basis.

If additional funds are needed after utilization of the mutualized default fund, 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.

17. Leases

We lease some of our office space under non-cancelable operating leases with third parties and sublease office space to third parties. Some of our lease agreements contain renewal options and escalation clauses based on increases in property taxes and building operating costs.

As of December 31, 2016 , future minimum lease payments under non-cancelable operating leases (net of sublease income) are as follows:

	Gross Lease Commitments	Sublease Income	Net Lease Commitments
		(in millions)	
Year ending December 31:			
2017	$ 76	$ 3	$ 73
2018	73	3	70
2019	67	3	64
2020	57	3	54
2021	46	3	43
Thereafter	113	5	108
Total future minimum lease payments	$ 432	$ 20	$ 412

Rent expense for operating leases (net of sublease income of $4 million in 2016 , $5 million in 2015 and $4 million in 2014) was $78 million in 2016 , $88 million in 2015 and $93 million in 2014 .

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 16, "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 $13 million at December 31, 2016 and 2015 . As discussed in "Other Credit Facilities," of Note 9, "Debt Obligations," credit facilities, which are available in multiple currencies, totaled $170 million at December 31, 2016 and $202 million at December 31, 2015 , in available liquidity, none of which was utilized.

Execution Access is an introducing broker which operates the trading platform for our Fixed Income business to trade in U.S. Treasury securities. Execution Access has a clearing arrangement with Cantor Fitzgerald. As of December 31, 2016 , we have contributed $20 million of clearing deposits to Cantor Fitzgerald in connection with this clearing arrangement. These deposits are recorded in other current assets in our Consolidated Balance Sheets. Some of the trading activity in Execution Access is cleared by Cantor Fitzgerald through the Fixed Income Clearing Corporation. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and the settlement date of the individual transactions, which is one business day. All of Execution Access' obligations under the clearing arrangement with Cantor Fitzgerald are guaranteed by Nasdaq. Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk.

We believe that the potential for us to be required to make payments under these arrangements is mitigated through the pledged collateral and our risk management policies. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for these arrangements.

Lease Commitments

We lease some of our office space under non-cancelable operating leases with third parties and sublease office space to third parties. Some of our lease agreements contain renewal options and escalation clauses based on increases in property taxes and building operating costs.

Other Guarantees

We have provided other guarantees of $3 million as of December 31, 2016 and $11 million at December 31, 2015 . These guarantees are primarily related to obligations for our rental and leasing contracts as well as performance guarantees on certain market technology contracts related to the delivery of software technology and support services. We have received

financial guarantees from various financial institutions to support the above 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 16, “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.

Non-Cash Contingent Consideration

As part of the purchase price consideration of a prior acquisition, we have 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 will be paid ratably through 2027 if Nasdaq’s total gross revenues equal or exceed $25 million in each such year. The contingent future issuances of Nasdaq common stock are subject to anti-dilution protections and acceleration upon certain events.

Escrow Agreements

In connection with prior acquisitions, we entered into escrow agreements to secure the payment of post-closing adjustments and to ensure other closing conditions. At December 31, 2016 , these escrow agreements provide for future payment of $31 million and are included in other current liabilities in the Consolidated Balance Sheets.

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.

Litigation

As previously disclosed, we became a party to several legal and regulatory proceedings in 2012 and 2013 relating to the Facebook, Inc. IPO that occurred on May 18, 2012. As described in our Annual Report on Form 10-K for the year ended December 31, 2012, we were named as a defendant in a consolidated matter captioned In re Facebook, Inc., IPO Securities and Derivative Litigation, MDL No. 2389 (S.D.N.Y.). On December 27, 2016, the court of appeals affirmed the judgment of the district court approving the settlement the parties had reached in 2015.

As previously disclosed, we were named as a defendant in a putative class action, Rabin v. NASDAQ OMX PHLX LLC, et al., No. 15-551 (E.D. Pa.), filed in 2015 in the United States District Court for the Eastern District of Pennsylvania. On April 21, 2016, the court entered an order granting our motion to dismiss the complaint. The plaintiff appealed the dismissal to the Court of Appeals for the Third Circuit on May 18, 2016. Given that the complaint was dismissed at the preliminary stage of the proceeding, we are unable to estimate what, if any, liability may result from this litigation. However, we believe (as the district court concluded) that the claims are without merit, and we intend to defend the dismissal on appeal vigorously.

We also 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 alternative trading system. 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. 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 with prejudice, concluding that most of the plaintiffs’ theories were foreclosed by absolute immunity and in any event that the plaintiffs failed to state any claim. The plaintiffs have appealed the judgment of dismissal to the United States Court of Appeals for the Second Circuit. The Second Circuit heard oral argument on August 24, 2016. On August 25, 2016, the Second Circuit issued an order requesting the SEC’s views on whether the district court had subject-matter jurisdiction over the case, and whether the defendants are immune from suit regarding the challenged conduct. The SEC filed its brief on November 28, 2016. The exchanges and plaintiffs filed supplemental briefs responding to the SEC’s brief on December 12, 2016. Given the preliminary

nature of the proceedings, and particularly the fact that the complaints have been dismissed, we are unable to estimate what, if any, liability may result from this litigation. However, we believe (as the district court concluded) that the claims are without merit and will continue to litigate vigorously.

In addition, we were named as one of many exchange defendants in Lanier v. BATS Exchange Inc., et al., 14 Civ. 3745 (S.D.N.Y.), Lanier v. BATS Exchange Inc., et al., 14 Civ. 3865 (S.D.N.Y.), and Lanier v. Bats Exchange Inc., 14 Civ. 3866 (S.D.N.Y.), which were filed between May 23, 2014 and May 30, 2014 in the United States District Court for the Southern District of New York. The plaintiff is the same in each of these cases, and the three complaints contain substantially similar allegations. On behalf of a putative class of subscribers for market data provided by national exchanges, the plaintiff alleges that the exchanges provided data more quickly to certain market participants than to others, supposedly in breach of the exchanges' plans for dissemination of market data and subscriber agreements executed under those plans. The complaint asserts contractual theories under state law based on these alleged breaches. On September 29, 2014, we filed a motion to dismiss the complaints. On April 28, 2015, the district court entered an order dismissing the complaints in their entirety with prejudice, concluding that they are foreclosed by the Exchange Act and in any event do not state a claim under the contracts. The plaintiff appealed the judgment of dismissal to the United States Court of Appeals for the Second Circuit. On September 23, 2016, the Second Circuit issued an opinion affirming the district court's dismissal of all three complaints, concluding that many of plaintiff's claims were preempted, that plaintiff failed to state a claim for breach of contract, and that, insofar as plaintiff alleged that the exchanges' implementation or operation of certain plans under Regulation NMS violates the Exchange Act, plaintiff was required to exhaust his administrative remedies before the SEC. Plaintiff filed a petition for panel or en banc rehearing before the Second Circuit on October 7, 2016, in one of the three appeals. The Second Circuit denied the petition on November 4, 2016. Plaintiff did not file a petition for certiorari with the United States Supreme Court by the February 2, 2017 deadline.

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.

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.

19. Business Segments

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

The following table presents certain information regarding our operating segments for the years ended December 31, 2016 , 2015 and 2014 :

	Market Services	Corporate Services	Information Services	Market Technology	Corporate Items	Consolidated
	(in millions)					
2016						
Total revenues	$ 2,255	$ 635	$ 540	$ 275	$ —	$ 3,705
Transaction-based expenses	(1,428)	—	—	—	—	(1,428)
Revenues less transaction-based expenses	827	635	540	275	—	2,277
Depreciation and amortization	87	47	18	18	—	170
Operating income (loss)	450	158	383	69	(221)	839
Total assets	8,626	1,263	2,439	559	1,263	14,150
Purchase of property and equipment	62	37	8	27	—	134
2015						
Total revenues	$ 2,084	$ 562	$ 512	$ 245	$ —	$ 3,403
Transaction-based expenses	(1,313)	—	—	—	—	(1,313)
Revenues less transaction-based expenses	771	562	512	245	—	2,090
Depreciation and amortization	64	42	14	18	—	138
Operating income (loss)	413	140	365	58	(256)	720
Total assets	6,906	576	2,456	752	1,171	11,861
Purchase of property and equipment	53	38	11	31	—	133
2014						
Total revenues	$ 2,229	$ 552	$ 473	$ 246	$ —	$ 3,500
Transaction-based expenses	(1,433)	—	—	—	—	(1,433)
Revenues less transaction-based expenses	796	552	473	246	—	2,067
Depreciation and amortization	80	25	13	19	—	137
Operating income (loss)	413	121	348	49	(177)	754
Total assets	7,437	747	2,296	599	992	12,071
Purchase of property and equipment	50	43	12	35	—	140

Certain amounts are allocated to corporate items in our management reports based on the decision that those activities should not be used to evaluate the segment's ongoing operating performance. The following items are allocated to corporate items for segment reporting purposes:

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 more useful representation of our segment's ongoing activity in each period.

Restructuring charges: Restructuring charges are associated with our 2015 restructuring plan to improve performance, cut costs and reduce spending and are primarily related to (i) the rebranding of our company name from The NASDAQ OMX Group, Inc. to Nasdaq, Inc., (ii) severance and other termination benefits, (iii) costs to vacate duplicate facilities, and (iv) asset impairment charges. We do not allocate these restructuring costs because they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed a number of acquisitions in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses 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 do not allocate these costs for purposes of disclosing segment results because they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance.

Other significant items: We have excluded certain other charges or gains that are the result of other non-comparable events to measure operating performance. For 2016, other significant items primarily included costs associated with the acceleration of previously granted equity awards due to the retirement of our former CEO, a regulatory fine received by our exchange in Stockholm and Nasdaq Clearing, and the release of a sublease loss reserve due to the early exit of a facility. For 2015, other significant items included the reversal of a VAT refund and for 2014 other significant items included loss on extinguishment of debt. We believe the exclusion of such amounts allows management and investors to better understand the financial results of Nasdaq.

* * * * * *

A summary of our corporate items are as follows:

	December 31,		
	2016	2015	2014
	(in millions)		
Amortization expense of acquired intangible assets	$ 82	$ 62	$ 69
Restructuring charges	41	172	—
Merger and strategic initiatives expense	76	10	81
Executive compensation	12	—	—
Regulatory matter	6	—	—
Sublease loss reserve	(1)	—	11
Reversal of VAT refund receivables	—	12	—
Loss on extinguishment of debt	—	—	11
Other charges	5	—	5
Total	$ 221	$ 256	$ 177

The change in total assets as shown in the table above at December 31, 2016 compared with 2015 and 2015 compared with 2014 is as follows:

Total assets increased $2,289 million at December 31, 2016 compared with December 31, 2015 primarily due to new regulatory rules in 2016 that require all collateral pledged by members of our Nasdaq Clearing business to be recorded on the balance sheet and an increase in goodwill associated with our 2016 acquisitions, partially offset by a pre-tax, non-cash intangible asset impairment charge of $578 million to write off the full value of the eSpeed trade name. For further discussion of the impairment charge, see "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets." Total assets decreased $210 million at December 31, 2015 compared with December 31, 2014 primarily due to a decrease in goodwill and intangible assets, net reflecting the impact of changes in foreign exchange rates and amortization. In addition, as discussed in "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," the decrease is also due to a $119 million pre-tax, non-cash indefinite-lived intangible asset impairment charge recorded in 2015 . These decreases were partially offset by an increase in non-current deferred tax assets primarily due to the income tax benefits of net foreign currency translation losses which are recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets.

For further discussion of our segments' results, see "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Segment Operating Results."

Geographic Data

The following table presents total revenues and property and equipment, net by geographic area for 2016 , 2015 and 2014 . 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)	
2016:		
United States	$ 2,659	$ 244
All other countries	1,046	118
Total	$ 3,705	$ 362
2015:		
United States	$ 2,408	$ 217
All other countries	995	106
Total	$ 3,403	$ 323
2014:		
United States	$ 2,524	$ 198
All other countries	976	94
Total	$ 3,500	$ 292

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 2016 , 2015 and 2014 .

Corporate Services and Market Technology Segments - Summary Financial Information

Due to changes in our executive leadership and to better reflect how our chief operating decision maker views the businesses, Nasdaq realigned its segment reporting, as first applied in 2016, to integrate the Listing Services and Corporate Solutions businesses into a single Corporate Services segment. Market Technology is now a separate reportable segment. The table below presents certain recast historical financial information for these segments for the past eight quarters:

Corporate Services

	2016		2015	
	Revenues	Operating Income	Revenues	Operating Income
	(in millions)			
First quarter	$ 143	$ 34	$ 139	$ 32
Second quarter	162	41	142	37
Third quarter	162	42	138	36
Fourth quarter	167	41	143	36

Market Technology

	2016		2015	
	Revenues	Operating Income	Revenues	Operating Income
	(in millions)			
First quarter	$ 57	$ 10	$ 55	$ 10
Second quarter	69	17	59	11
Third quarter	73	19	59	12
Fourth quarter	77	23	71	23

20. Subsequent Events

Chief Executive Officer

Effective January 1, 2017, Adena T. Friedman became the President and Chief Executive Officer of Nasdaq.

Asset Impairment

On January 30, 2017, Nasdaq's board of directors approved a pre-tax, non-cash intangible asset impairment charge of $578 million related to the full write-off of the eSpeed trade name. See "Intangible Asset Impairment Charges," of Note 5, "Goodwill and Acquired Intangible Assets," for further discussion.

Nasdaq NLX

On January 30, 2017, Nasdaq's board of directors approved the decision to wind down Nasdaq NLX, our London-based multilateral trading venue.

Table of Contents

Exhibit Index

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).
2.2	Stock Purchase Agreement, dated as of March 9, 2016, by and among Deutsche Börse AG and Eurex Frankfurt AG and Nasdaq, Inc. (incorporated herein by reference to the Current Report on Form 8-K filed on March 15, 2016).
3.1	Amended and Restated Certificate of Incorporation of Nasdaq (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.1	Certificate of Elimination of Nasdaq's Series A Convertible Preferred Stock (incorporated herein by reference to Exhibit 3.1.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.2	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on November 19, 2014).
3.1.3	Certificate of Amendment of Nasdaq's Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on September 8, 2015).
3.2	Nasdaq's By-Laws (incorporated herein by reference to Exhibit 3.2 to the Current Report on Form 8-K filed on November 21, 2016).
4.1	Form of Common Stock certificate (incorporated herein by reference to Exhibit 4.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
4.2	Stockholders' Agreement, dated as of February 27, 2008, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on March 3, 2008).
4.2.1	First Amendment to Stockholders' Agreement, dated as of February 19, 2009, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 4.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.3	Registration Rights Agreement, dated as of February 27, 2008, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on March 3, 2008).
4.3.1	First Amendment to Registration Rights Agreement, dated as of February 19, 2009, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 4.11.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.4	Indenture, dated as of January 15, 2010, between Nasdaq (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 January 19, 2010).

4.5	First Supplemental Indenture, dated as of January 15, 2010, among Nasdaq (f/k/a The NASDAQ OMX Group, 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 January 19, 2010).
4.6	Second Supplemental Indenture, dated as of December 21, 2010, among Nasdaq (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 December 21, 2010).
4.7	Stockholders' Agreement, dated as of December 16, 2010, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Investor AB (incorporated herein by reference to Exhibit 4.12 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).
4.8	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).
4.9	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).
4.10	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).
4.11	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).
4.12	Fourth Supplemental Indenture, dated as of June 7, 2016, among Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to the Current Report on Form 8-K filed on June 7, 2016).
4.13	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).
10.1	Amended and Restated Board Compensation Policy, amended and restated on November 14, 2016.*
10.2	Nasdaq Executive Corporate Incentive Plan, effective as of January 1, 2015 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 11, 2015).*
10.3	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).*
10.4	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, 2016 filed on August 3, 2016).*
10.5	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, 2016 filed on August 3, 2016).*
10.6	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, 2016 filed on August 3, 2016).*

10.7	Form of Nasdaq Three-Year Performance Share Unit Agreement (incorporated herein by reference to Exhibit 10.5 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2016 filed on August 3, 2016).*
10.8	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).*
10.8.1	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).*
10.9	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).*
10.10	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 14, 2016 and effective as of January 1, 2017.*
10.11	Employment Agreement between Nasdaq and Robert Greifeld, effective as of February 22, 2012 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on February 28, 2012).*
10.11.1	Memorandum of Understanding between Nasdaq and Robert Greifeld, dated as of December 11, 2012 (incorporated herein by reference to Exhibit 10.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 21, 2013).*
10.11.2	Amendment to the Employment Agreement between Nasdaq and Robert Greifeld, entered into and effective as of November 14, 2016.*
10.12	Nonqualified Stock Option Agreement between Nasdaq and Robert Greifeld reflecting June 30, 2009 grant (incorporated herein by reference to Exhibit 10.11 to the Annual Report on Form 10-K for the year ended December 31, 2009 filed on February 18, 2010).*
10.13	Employment Agreement between Nasdaq and Hans-Ole Jochumsen, made and entered into and effective on August 5, 2014 (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2014 filed on November 5, 2014).*
10.13.1	Amendment One to the Employment Agreement between Nasdaq, Nasdaq International Ltd and Hans-Ole Jochumsen, entered into and effective as of January 1, 2017.*
10.14	Employment Agreement between Nasdaq and Edward Knight, effective as of December 29, 2000 (incorporated herein by reference to Exhibit 10.14 to the Annual Report on Form 10-K for the year ended December 31, 2002 filed on March 31, 2003).*
10.14.1	First Amendment to Employment Agreement between Nasdaq and Edward Knight, effective February 1, 2002 (incorporated herein by reference to Exhibit 10.14.1 to the Annual Report on Form 10-K for the year ended December 31, 2002 filed on March 31, 2003).*
10.14.2	Second Amendment to Employment Agreement between Nasdaq and Edward Knight, effective as of December 31, 2008 (incorporated herein by reference to Exhibit 10.13.2 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.14.3	Third Amendment to Employment Agreement between Nasdaq and Edward Knight, effective as of February 22, 2012 (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on February 28, 2012).*

10.14.4	Fourth Amendment to Employment Agreement between Nasdaq and Edward Knight, entered into and effective as of October 24, 2016.*
10.15	Employment Agreement between Nasdaq and Bradley J. Peterson, dated August 1, 2016 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 filed on November 8, 2016).*
10.16	General Release and Retirement Agreement between Nasdaq and Lee Shavel, effective January 26, 2016 (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2016 filed on May 5, 2016).*
10.17	General Release and Retirement Agreement between Nasdaq and Ronald Hassen, dated September 15, 2016.*
10.18	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).*
10.19	Credit Agreement, dated as of November 24, 2014, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Bank of America, N.A., JPMorgan Chase Bank, N.A. and Wells Fargo Bank, National Association, as Swingline Lenders, the other Lenders 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 1, 2014).
10.19.1	Amendment No. 1, dated as of September 28, 2015, to the Credit Agreement among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), the lenders party thereto and Bank of America, N.A., as Administrative Agent, a Swingline Lender and Issuing Bank (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
10.20	Credit Agreement, dated March 17, 2016, among Nasdaq, Inc., the various lenders party thereto and Bank of America, N.A., as Administrative Agent (incorporated herein by reference to the Current Report on Form 8-K filed on March 22, 2016).
11	Statement regarding computation of per share earnings (incorporated herein by reference from Note 14 to the consolidated financial statements under Part II, Item 8 of this Form 10-K).
12.1	Computation of Ratio of Earnings to Fixed Charges.
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, Corporate Strategy 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.INS	XBRL Instance Document.**

101.SCH	XBRL Taxonomy Extension Schema.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase.
101.DEF	Taxonomy Extension Definition Linkbase.
101.LAB	XBRL Taxonomy Extension Label Linkbase.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase.

_____

* Management contract or compensatory plan or arrangement.

** The following materials from the Nasdaq, Inc. Annual Report on Form 10-K for the year ended December 31, 2016 , formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2016 and December 31, 2015 ; (ii) Consolidated Statements of Income for the years ended December 31, 2016 , 2015 and 2014 ; (iii) Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2016 , 2015 and 2014 ; (iv) Consolidated Statements of Changes in Equity for the years ended December 31, 2016 , 2015 and 2014 ; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2016 , 2015 and 2014 ; and (vi) notes to consolidated financial statements.

NASDAQ, INC.
BOARD COMPENSATION POLICY

AMENDED AND RESTATED ON NOVEMBER 14, 2016

PURPOSE & STATEMENT OF POLICY

Annual Non-Employee Director ("Director") compensation consists of the following elements, each of which is discussed further below: (i) annual retainer, (ii) annual equity award, (iii) annual committee chair fees (for certain committees) and (v) annual committee member fees (for certain committees).

Director compensation will be based on a compensation year in connection with the annual meeting of stockholders (the "Annual Meeting"). This enables Directors to receive equity immediately following election and appointment to the Board at the Annual Meeting.

QUESTIONS?

Please contact the Stock Plan Administrator if at any time you have questions about the equity element of the policy. Please contact the Office of the Corporate Secretary with questions about the cash element of the policy.

APPLICABILITY & SCOPE

This Policy is applicable to all non-employee Directors of Nasdaq, Inc.

ANNUAL RETAINER

+ Annual Director Retainer compensation is equal to a total value of $75,000 for each Director, other than the Chairman of the Board.
+ The Lead Independent Director will receive the Director Retainer plus an additional Lead Independent Director Retainer of $75,000 for the period of time from January 1, 2017 through the 2017 Annual Meeting of Stockholders.
+ The Chairman of the Board will receive Chairman Retainer compensation equal to a total value of $240,000.
+ The Annual Retainer will be delivered in the form of equity; however, Directors may annually elect to receive the Annual Retainer compensation in cash or equity. Equity will be paid in the form of equity awards permitted under the Nasdaq, Inc. Equity Incentive Plan (the "Equity Plan") to be awarded automatically on the date of the Annual Meeting immediately following the election of the Board. Each Director will have the opportunity to make this election during the thirty (30) day period preceding the Annual Meeting. If the Director declines to make an election, the entire Annual Retainer will be paid in equity.
+ If cash is selected, the cash portion will be paid semi-annually in arrears, in equal installments, no later than the fifteenth day of the third month following the end of the semi-annual period; provided, however, that a Director will have a right to receive a cash payment for any given period only if that person serves as a Director during all or a portion of that period, with the cash payment for the period being prorated in the case of a person who serves as a Director during only a portion of a period (other than on account of death or disability).
+ The equity portion selected will be paid in accordance with the "Policies and Procedures Relating to Equity Grants" below.
+ A Director appointed after the annual shareholders meeting will be eligible to receive a prorated share of the Annual Retainer compensation. Such a Director may elect to receive the Annual Retainer compensation in cash or equity. Equity will be paid retroactively on the date of the next Annual Meeting. Any cash portion will be paid semi-annually in arrears.

ANNUAL EQUITY AWARD

+ All Directors, including the Chairman and Lead Independent Director, will receive an additional annual equity award of a type permitted under the Equity Plan, such as Restricted Stock Units, in the amount of $200,000 per annum.

+ The annual equity award will be granted to each Director automatically on the date of the Annual Meeting immediately following the Director's election and appointment to the Board.

+ The annual equity award will be paid in accordance with the "Policies and Procedures Relating to Equity Grants" below.

ANNUAL COMMITTEE CHAIR FEES

+ The Chairperson of each of the Audit and Management Compensation Committees will receive an Annual Chair Fee of $30,000.

+ The Chairperson of the Nominating & Governance Committee will receive an Annual Chair Fee of $20,000.

+ The Annual Chair fees will be paid in equity; however, each Chairperson may elect to receive the Annual Chair fees in cash or equity. The Annual Chair fees will be paid at the beginning of the annual compensation year in connection with the Annual Meeting. Fees paid in equity will be paid annually in arrears on the date of the Annual Meeting and in accordance with the "Policies and Procedures Relating to Equity Grants" below.

ANNUAL COMMITTEE MEMBER FEES

+ Each Non-Chair Member of the Audit and Management Compensation Committees will receive an annual membership fee of $10,000.

  Each Non-Chair Member of the Nominating & Governance Committee will receive an annual membership fee of $5,000.

+ The Annual Committee Member fees will be paid in equity; however, each Non-Chair Member may elect to receive the Annual Committee Member fees in cash or equity. The Annual Committee Member fees will be paid at the beginning of the annual compensation year in connection with the Annual Meeting. Fees paid in equity will be paid annually in arrears on the date of the Annual Meeting and in accordance with the "Policies and Procedures Relating to Equity Grants" below.

POLICIES AND PROCEDURES RELATING TO EQUITY GRANTS

GENERAL

+ All Director equity will be granted under the Equity Plan.

+ Calculation of the number of shares of equity to be awarded to Directors will be valued at 100% of face value and based on the closing price of Nasdaq's common stock on the date of the grant. Equity awards are non-transferable and must be issued to the Director.

VESTING

+ Any equity wards paid as retroactive compensation (e.g. for Committee Chair and Committee Member fees) will vest immediately. All other equity awards will vest 100% one (1) year from the date of the grant. Equity awards will also vest upon the scheduled expiration of a Director's term, if such term is not renewed.

+ Upon a Director's resignation (other than for death or disability) prior to the end of the Director's term, equity awards will be forfeited.

+ Upon termination of a Director for "Misconduct," all equity awards will be forfeited without further consideration to the Director.

+ Upon termination of a Director on account of his death or disability, equity awards will vest.

+ Shortly after vesting, vested shares will appear in the Director's account at E*Trade. To view this information, a Director may log directly onto his or her online E*Trade account at https://us.etrade.com/e/t/user/login_sp . Additionally, a Director may contact E*Trade's Executive Services Team at 1.866.987.2339 or via email at executiveservices@etrade.com

EQUITY AGREEMENTS, SHARE RESTRICTIONS & VOTING RIGHTS

+ Equity awards will be evidenced by an Equity Award Agreement to be entered into with each Director.

+ Once vested, shares will be freely tradeable. Nasdaq does not have a repurchase right or obligation.

+ Trading in Nasdaq shares, however, is subject to the Director and Executive Officers Trading Policy and to any contractual restrictions on transfer, such as lock-up agreements, that may be applicable.

REPORTING AND DISCLOSURE

+ SEC Form 4s (Change in Beneficial Ownership) must be filed by each Director with the SEC within 2 business days of equity grants. The Director may request Nasdaq's assistance with the preparation and filing of Form 4s and other Section 16 reports by providing a completed Power of Attorney and CIK/CCC Code, if the Director has a CIK/CCC Code currently assigned.

+ Equity will be reflected as stock owned by Directors, if required, in the Beneficial Ownership Table of the Nasdaq Proxy and will be disclosed under the general Director compensation section of the Proxy.

STOCK OWNERSHIP GUIDELINES FOR DIRECTORS

+ Stock ownership guidelines for Directors of Nasdaq are as follows.

Value of Shares Owned
5x annual cash retainer

+ New Directors are expected to meet the applicable level of ownership within four years of their election to the Board of Directors.

+ The value of shares owned will be calculated based upon Nasdaq's average closing common stock price for a 90 day period prior to the date on which the Director is expected to meet the applicable level of stock ownership.

+ Shares that count toward meeting the stock ownership guidelines include:

  ☑ Shares owned outright (e.g., shares obtained upon option exercise, shares purchased in the open market, etc.)

- ☑ Shared ownership (e.g., shares owned or held in trust by immediate family)
- ☑ Vested and unvested restricted shares

+ Shares that do not count toward meeting the stock ownership guidelines:
  - ☑ Vested stock options
  - ☑ Unvested stock options
+ Once an applicable guideline threshold has been attained, the Director is expected to continuously retain sufficient share ownership to meet the guideline for as long as the Director is subject to the Stock Ownership Guidelines.
+ There may be instances where an exception to the guidelines is necessary or appropriate, including in cases where the satisfaction of the guidelines would place a severe hardship on the Director. In such cases, the Chairman of the Board will make a final determination as to whether an exception to the Stock Ownership Guidelines, in whole or in part, will be granted.

Exhibit 10.10

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT (this " *Agreement* "), made and entered into on November 14, 2016 and effective as of January 1, 2017 (the " *Effective Date* "), by and between Nasdaq, Inc. (the " *Company* ") and Adena Friedman (the " *Executive* "), hereby superseding the terms of Executive's prior Agreement effective June 16, 2014.

In consideration of the premises and mutual covenants herein and for other good and valuable consideration, the parties hereby agree as follows:

1. *Term of Agreement* . Subject to Section 8 below, the term of this Agreement shall commence on the Effective Date and end on January 1, 2022 (the "Term").

2. *Position.*

(a) *Duties.* The Executive shall serve as the Company's Chief Executive Officer and shall have such other duties as agreed to by the Executive and the Board of Directors of the Company (the " *Board* "). In such position, the Executive shall have such duties and authority as shall be determined from time to time by the Board and as shall be consistent with the by-laws of the Company as in effect from time to time; provided, however, that, at all times, the Executive's duties and responsibilities hereunder shall be commensurate in all material respects with her status as the senior-most officer of the Company. During the Term, the Executive shall devote her full time and best efforts to her duties hereunder. The Executive shall report directly to the Board (or any Committee of the Board designated for this purpose). In addition, the Executive agrees to serve during the Term as a member of the Board to the extent she is periodically elected or appointed to such position in accordance with the by-laws of the Company and applicable law.

(b) *Company Code of Ethics*. The Executive shall comply in all respects with the Company's Code of Ethics and all applicable corporate policies referenced in the Code of Ethics, as may be amended from time to time (the " *Code of Ethics* "). The Executive may, in accordance with the Code of Ethics, (i) engage in personal activities involving charitable, community, educational, religious or similar organizations and (ii) manage her personal investments; provided, however, that, in each case, such activities are in all respects consistent with applicable law, the Nasdaq Continuing Obligations Agreement dated as of November 14, 2016 attached as Exhibit A (" *Continuing Obligations Agreement* ") and Section 9 below.

3. *Base Salary*. During the Term, the Company shall pay the Executive a base salary (the " *Base Salary* ") at an annual rate of not less than $1,000,000. The Base Salary shall be payable in regular payroll installments in accordance with the Company's payroll practices as in effect from time to time (but no less frequently than monthly). The Management Compensation Committee of the Board (the " *Compensation Committee* ") shall review the Base Salary at least annually and may (but shall be under no obligation to) increase (but not decrease) the Base Salary on the basis of such review.

4. *Annual Bonus.*

(a) *Annual Bonus*. For each calendar year during the Term, the Executive shall be eligible to participate in the Executive Corporate Incentive Plan of the Company (the " *Bonus Program* ") in accordance with the terms and provisions of such Bonus Program as established from time to time by the Compensation Committee and pursuant to which the Executive will be eligible to earn an annual cash bonus (the " *Annual Bonus* "). Pursuant to the terms of the Bonus Program, the Executive shall be eligible to earn, for each full calendar year during the Term, a target Annual Bonus of not less than $2,000,000 (the " *Target Bonus* ") based upon the achievement of one or more performance goals established for such year by the Compensation Committee. The Executive shall have the

opportunity to make suggestions to the Compensation Committee prior to the determination of the performance goals for the Bonus Program for each performance period, but the Compensation Committee will have final power and authority concerning the establishment of such goals. The Compensation Committee shall review the Target Bonus at least annually and may (but shall be under no obligation to) increase (but shall not decrease) the Target Bonus on the basis of such review. The Target Bonus for each year during the Term shall never be less than the Target Bonus for the immediately preceding year.

(b) *Timing and Deferral of Annual Bonus.* The Annual Bonus for each year shall be paid to the Executive as soon as reasonably practicable following the end of such year, but in no event later than March 15 th following the end of the calendar year to which such Annual Bonus relates.

5. *Equity Compensation.* In calendar year 2017, the Company will grant the Executive $6,000,000 in performance share units. In subsequent years, based on the Compensation Committee's evaluation of the performance of the Company and Executive, peer group market data, internal equity and consistent with past practices with respect to the combined aggregate value of the grants of options, restricted share units and performance share units, the Executive may be granted equity awards, pursuant to Company's Equity Incentive Plan (the " *Stock Plan* "), which has been adopted by the Board and may from time to time be amended. The applicable provisions of the Company's Stock Plan or each equity award agreement executed by the Executive and the Company shall govern the treatment of the equity awards.

6. *Employee Benefits.* During the Term, the Company shall provide the Executive with benefits on the same basis as benefits are generally made available to other senior executives of the Company, including, without limitation, medical, dental, vision, disability and life insurance, financial and tax planning services and retirement benefits. The Executive shall be entitled to four weeks of paid vacation to be used in accordance with the Company's then current vacation policy; provided, however, that, in the event the Executive's employment ends for any reason, the Executive shall be paid only for unused vacation that accrued in the calendar year her employment terminated and any unused vacation for any prior year shall be forfeited.

7. *Business and Other Expenses.*

(a) *Business Expenses.* During the Term, the Company shall reimburse the Executive for reasonable business expenses incurred by her in the performance of her duties hereunder in accordance with the policy established by the Compensation Committee.

(b) *Transportation and Security.* During the Term, in accordance with the directives of the Compensation Committee, the Company shall provide the Executive with an automobile and driver during the business week for personal and business use and at other times as required for business purposes. The driver shall have security training as necessary and advisable for the personal safety of the Executive or her family.

8. *Termination.* Notwithstanding any other provision of this Agreement, subject to the further provisions of this Section 8, the Company may terminate the Executive's employment or the Executive may resign such employment for any reason or no stated reason at any time, subject to the notice and other provisions set forth below:

(a) *Generally.* In the event of the termination of the Executive's employment for any reason, the Executive shall receive payment of (i) any unpaid Base Salary through the Date of Termination (as defined below), to be paid in accordance with Section 3 above, (ii) subject to Section 6 above, any accrued but unpaid vacation through the Date of Termination payable within 14 days of the Date of Termination (iii) any earned but unpaid Annual Bonus with respect to the calendar year ended prior to the Date of Termination, payable in accordance with Section 4(b) (the " *Base Obligations* "). In addition, in the event of the Executive's termination of employment, the applicable provisions of the Company's Stock Plan or each equity award agreement executed by the Executive and the Company shall govern the treatment of the equity awards.

For purposes of this Agreement, " *Date of Termination* " means (i) in the event of a termination of the Executive's employment by the Company for Cause or by the Executive for Good Reason, the date specified in a written notice of termination (or, if not specified therein, the date of delivery of such notice), but in no event earlier than the expiration of the cure periods set forth in Section 8(b)(ii) or 8(b)(iii) below, respectively; (ii) in the event of a termination of the Executive's employment by the Company without Cause, the date specified in a written notice of termination (or if not specified therein, the date of delivery of such notice); (iii) in the event of a termination of the Executive's employment by the Executive without Good Reason, the date specified in a written notice of termination, but in no event less than 60 days following the date of delivery of such notice; (iv) in the event of a termination of the Executive's employment due to Permanent Disability (as defined below), the date the Company terminates the Executive's employment following the certification of the Executive's Permanent Disability; or (v) in the event of a termination of employment due to the Executive's death, the date of the Executive's death.

(b) *Termination by the Company Without Cause or by the Executive for Good Reason Other Than in Connection with Change in Control.*

(i) The Executive's employment hereunder may be terminated by the Company without Cause or by the Executive for Good Reason. Upon the termination of the Executive's employment by the Company without Cause or by the Executive for Good Reason pursuant to this Section 8(b), the Executive shall, subject to Section 8(h) below, and unless the Executive is entitled to the CIC Severance Benefits (as defined below), be entitled to receive, in addition to the Base Obligations, the following payments and benefits (the " *Severance Benefits* "):

(A) *Severance Payment* . The Company shall pay the Executive an amount (the " *Severance Payment* ") equal to the sum of (I) two times the Base Salary paid to the Executive with respect to the calendar year immediately preceding the Executive's Date of Termination, (II) the Target Bonus and (III) any pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation. Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year which precedes the year in which occurs the Executive's Date of Termination. Target Bonus is intended to be a fixed severance payment equal to the prior year Target Bonus and not a performance-contingent payment dependent on current year or prior year performance. " *Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five. Pro-rata Target Bonus with respect to the calendar year in which Executive's Date of Termination occurs shall be paid only in the event the performance goals established under the ECIP for that calendar year with respect to such Target Bonus have been satisfied. Payment of the pro-rata Target Bonus shall be delayed until following the date the Company's Compensation Committee determines that such performance goals have been satisfied, in accordance with the rules under the ECIP (the "Performance Goal Determination Date").

The Severance Payment is payable in substantially equal monthly installments for the twelve month period following the Executive's Date of Termination, with the first installment to be paid in the month following the month in which the Release Effective Date occurs; provided, however (consistent with the requirements of Section 409A), that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the first installment of the Severance Payment shall be paid not earlier than January 1 of the calendar year following the Date of Termination (the period during which the Severance Benefits are paid being the " *Severance Period* "). Payments of the pro-rata Target Bonus portion of the Severance Payment shall be paid beginning as of date described above or, if later, within 30 days following the Performance Goal Determination Date. If payment of one or more installments of the pro-rata Target Bonus portion of the Severance Payment must be delayed until following the Performance Goal Determination Date, the initial installment shall consist of a lump sum equal to the total of all such installments delayed or due as of such payment date, without adjustment for interest; and

(B) *Equity Vesting.* The Executive shall, subject to Section 8(h), be entitled to receive twelve (12) months of continued vesting of outstanding Performance Share Units (PSUs), based on actual PSU goal performance during the respective performance periods.

(C) *Health Care Coverage Payments* . The Company shall pay to the Executive on a monthly basis during the Coverage Period a taxable cash payment equal to the Consolidated Omnibus Budget Reconciliation Act ("COBRA") premium for the highest level of coverage available under the Company's group health plans, but reduced by the monthly amount that the Executive would pay for such coverage if the Executive was an active employee. " *Coverage Period* " shall mean the period commencing on the first day of the Severance Period and ending on the earlier of (i) the expiration of 24 months from the first day of the Severance Period, and (ii) the date that the Executive is eligible for coverage under the health care plans of a subsequent employer. The payments provided by this Section shall be conditioned upon the Executive being covered by the Company's health care plans immediately prior to the Date of Termination.

All other benefits, if any, due the Executive following termination pursuant to this Section 8(b) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company. The Severance Benefits are payments and benefits to which the Executive is not otherwise entitled, are given in consideration for the Release (as described in Section 8(h) below) and are in lieu of any severance plan, policy or program of the Company or any of its subsidiaries that may now or hereafter exist. The payments and benefits to be provided pursuant to this Section 8(b)(i) shall constitute liquidated damages and shall be deemed to satisfy and be in full and final settlement of all obligations of the Company to the Executive under this Agreement. The Executive acknowledges and agrees that such amounts are fair and reasonable, and are her sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of her employment hereunder. If, during the Severance Period, the Executive breaches in any material respect any of her obligations under Section 9, or the Confidentiality Agreement, the Company may, upon written notice to the Executive (x) terminate the Severance Period and cease to make any further payments of the Severance Payment and (y) cease any health care coverage payments, except in each case as required by applicable law.

(ii) For purposes of this Agreement, " *Cause* " shall mean (A) the Executive's conviction of, or pleading nolo contendere to, any crime, whether a felony or misdemeanor, involving the purchase or sale of any security, mail or wire fraud, theft, embezzlement, moral turpitude, or Company property (with the exception of minor traffic violations or similar misdemeanors); (B) the Executive's repeated neglect of her duties to the Company; or (C) the Executive's willful misconduct in connection with the performance of her duties or other material breach by the Executive of this Agreement provided that the Company may not terminate the Executive's employment for Cause unless (x) the Company first gives the Executive written notice of its intention to terminate and of the grounds for such termination within 90 days following the date the Board is informed of such grounds at a meeting of the Board and (y) the Executive has not, within 30 days following receipt of such notice, cured such Cause (if capable of cure) in a manner that is reasonably satisfactory to the Board.

(iii) For purposes of this Agreement, " *Good Reason* " shall mean the Company (A) reducing the Executive's position, duties, or authority; (B) failing to secure the agreement of any successor entity to the Company that the Executive shall continue in her position without reduction in position, duties or authority; (C) relocating the Executive's principal work location beyond a 50 mile radius of her work location as of the Effective Date (provided that this Clause (C) shall apply only to a relocation that occurs during the two year period beginning upon a Change of Control, as defined below, and ending two years thereafter); or (D) committing any other material breach of this Agreement; provided, however, that the occurrence of a Change in Control, following which the Company continues to have its common stock publicly traded and the Executive is offered continued employment as an executive officer with substantially the same duties and authority as she has hereunder of such publicly traded entity, shall not be deemed to give rise to an event or condition constituting Good Reason; and provided further that no event or condition shall constitute Good Reason unless (x) the Executive gives the Company a Notice of Termination specifying her objection to such event or condition within 90 days following the occurrence of such event or condition, (y) such event or condition is not corrected, in all material respects, by the Company in a manner that is reasonably satisfactory to the Executive within 30 days following the Company's

receipt of such notice and (z) the Executive resigns from her employment with the Company not more than 30 days following the expiration of the 30-day period described in the foregoing clause (y).

(c) *Permanent Disability.*

(i) The Executive's employment hereunder shall terminate upon her Permanent Disability. Upon termination of the Executive's employment due to Permanent Disability, the Executive shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations, (A) a pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in a lump sum within 30 days following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination) and (B) accelerated vesting of all unvested equity compensation awarded to the Executive by the Company as of the Effective Date and, in accordance with Section 5, each equity award agreement executed by the Executive and the Company shall describe the treatment of the equity awards under this Section 8(c). All other benefits, if any, due the Executive following termination pursuant to this Section 8(c) shall be determined in accordance with the plans, policies and practices of the Company; *provided* , *however* , that the Executive shall not participate in any other severance plan, policy or program of the Company.

(ii) For purposes of this Agreement, *"Permanent Disability"* means either (i) the inability of the Executive to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than 12 months or (ii) the Executive is, by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than 12 months, receiving income replacement benefits for a period of not less than three months under an accident and health plan covering employees of the Company. The Executive shall be deemed Permanently Disabled if she is determined to be (i) totally disabled by the Social Security Administration or (ii) disabled in accordance with a disability insurance program, provided such definition of disabled under the program complies with the definition of Permanent Disability hereunder. Otherwise, such Permanent Disability shall be certified by a physician chosen by the Company and reasonably acceptable to the Executive (unless she is then legally incapacitated, in which case such physician shall be reasonably acceptable to the Executive's authorized legal representative).

(d) *Death.* The Executive's employment hereunder shall terminate due to her death. Upon termination of the Executive's employment hereunder due to death, the Executive's estate shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations,(A) a pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in a lump sum within 30 days following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination) and (B) accelerated vesting of all unvested equity compensation awarded to the Executive by the Company as of the Effective Date and, in accordance with Section 5, each equity award agreement executed by the Executive and the Company shall describe the treatment of the equity awards under this Section 8(d). All other benefits, if any, due the Executive's estate following termination pursuant to this Section 8(d) shall be determined in accordance with the plans, policies and practices of the Company.

(e) *For Cause by the Company or Without Good Reason by the Executive.* The Executive's employment hereunder may be terminated by the Company for Cause or by the Executive without Good Reason. Upon termination of the Executive's employment for Cause or without Good Reason pursuant to this Section 8(e), the Executive shall have no further rights to any compensation (including any Annual Bonus) or any other benefits under this Agreement other than the Base Obligations. All other benefits, if any, due the Executive following the Executive's termination of employment pursuant to this Section 8(e) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy, or program of the Company.

(f) *Termination in Connection with Change in Control by the Company Without Cause or by the Executive for Good Reason.*

(i) If, within the period beginning on a Change in Control (as defined herein below), and ending two (2) years following such Change in Control, the Executive's employment is terminated by the Company without Cause or by the Executive for Good Reason, the Executive shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations, the following payments and benefits (the " *CIC Severance Benefits* "):

(A) *CIC Severance Payment* . On the first day of the seventh (7th) month following the Executive's Date of Termination, the Company shall pay the Executive a lump sum cash payment equal to the sum of (I) two times the Base Salary paid to the Executive with respect to the calendar year immediately preceding the Executive's Date of Termination, (II) the Target Bonus and (III) a pro rata portion of the Target Bonus for the calendar year in which Executive's Date of Termination occurs and determined in accordance with the Pro Rata Target Bonus Calculation. Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year which precedes the year in which occurs the Executive's Date of Termination. Target Bonus is intended to be a fixed severance payment equal to the prior year Target Bonus and not a performance-contingent payment dependent on current year or prior year performance. " *Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five. Pro-rata Target Bonus with respect to the calendar year in which Executive's Date of Termination occurs shall be paid only in the event the performance goals established under the ECIP for that calendar year with respect to such Target Bonus have been satisfied. Payment of the pro-rata Target Bonus shall be delayed until following the date the Company's Compensation Committee determines that such performance goals have been satisfied, in accordance with the rules under the ECIP (the "Performance Goal Determination Date"). Payment of the pro-rata portion of the Severance Payment shall be paid in a lump sum on the date described above or, if later, within 30 days of the Performance Goal Determination Date with respect to such Performance-Conditioned Portion.

If (i) any amounts payable to the Executive under this Agreement or otherwise are characterized as excess parachute payments pursuant to Section 4999 of the Internal Revenue Code of 1986, as amended (the " *Section 4999* "), and (ii) the Executive thereby would be subject to any United States federal excise tax due to that characterization, the Executive's termination benefits hereunder will be reduced to an amount so that none of the amounts payable constitute excess parachute amounts payments if this would result, after taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, in Executive's receipt on an after-tax basis of the greatest amount of termination and other benefits. The determination of any reduction required pursuant to this section (including the determination as to which specific payments shall be reduced) shall be made by a neutral party designated by the Company and such determination shall be conclusive and binding upon the Company or any related corporation for all purposes.

(B) *Equity Vesting.* The Executive shall, subject to Section 8(h), be entitled to receive accelerated vesting of all outstanding, unvested equity awards. The schedule for acceleration of the various equity awards will be governed by Section 12 (Change in Control) of the Stock Plan.

(C) *Health and Welfare Benefits* . The Company shall pay to Executive on a monthly basis during the CIC Coverage Period a taxable monthly cash payment equal to the COBRA premium for the highest level of coverage available under the Company's group health plans, but reduced by the monthly amount that Executive would pay for such coverage if the Executive was an active employee. " *CIC Coverage Period* " shall mean the period (I) commencing on the first day of the month following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the CIC Coverage Period shall commence not earlier than January 1 of the calendar year following the Date of Termination) and (II) ending on the earlier of (x) the expiration of 24 months from the first day of the CIC Coverage Period, and (y) the date that the Executive is eligible for coverage under the health care plans of a subsequent employer. The

payments provided by this Section shall be conditioned upon the Executive being covered by the Company's health care plans immediately prior to the Date of Termination. The foregoing payments are not intended to limit or otherwise reduce any entitlements that Executive may have under COBRA. In addition, the Company shall continue to provide the Executive with the same level of accident (AD&D) and life insurance benefits upon substantially the same terms and conditions (including contributions required by the Executive for such benefits) as existed immediately prior to the Executive's Date of Termination (or, if more favorable to the Executive, as such benefits and terms and conditions existed immediately prior to the Change in Control) for the same period for which the Company shall provide the Executive with continued health care coverage payments.

All other benefits, if any, due the Executive following termination pursuant to this Section 8(g) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company. The payments and other benefits provided for in this Section 8(g) are payments and benefits to which the Executive is not otherwise entitled, are given in consideration for the Release and are in lieu of any severance plan, policy or program of the Company or any of its subsidiaries that may now or hereafter exist. The payments and benefits to be provided pursuant to this Section 8(g)(i) shall constitute liquidated damages and shall be deemed to satisfy and be in full and final settlement of all obligations of the Company to the Executive under this Agreement. The Executive acknowledges and agrees that such amounts are fair and reasonable, and are her sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of her employment hereunder. If, during the CIC Coverage Period, the Executive breaches in any material respect any of her obligations under Section 9 or the Confidentiality Agreement, the Company may, upon written notice to the Executive, (x) terminate the CIC Coverage Period and cease to make any further payments of the CIC Severance Payment and (y) cease any health and welfare benefits and payments, except in each case as required by applicable law.

(ii) For purposes of this Agreement "Change in Control" means the first to occur of any one of the following events:

(A) any "Person," as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934 (the " *Exchange Act* ") (other than (1) the Company, (2) any Person who becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act) of more than 50% of the Company's then outstanding securities eligible to vote in the election of the Board (" *Voting Securities* ") as a result of a reduction in the number of Voting Securities outstanding due to the repurchase of Voting Securities by the Company unless and until such Person, after becoming aware that such Person has become the beneficial owner of more than 50% of the then outstanding Voting Securities, acquires beneficial ownership of additional Voting Securities representing 1% or more of the Voting Securities then outstanding, (3) any trustee or other fiduciary holding securities under an employee benefit plan of the Company, and (4) any entity owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of Voting Securities), is or becomes the beneficial owner, directly or indirectly, of more than 50% of the Voting Securities (not including any securities acquired directly (or through an underwriter) from the Company or the Companies);

(B) the date on which, within any twelve (12) month period (beginning on or after the Effective Date), a majority of the directors then serving on the Board are replaced by directors not endorsed by at least two-thirds (2/3) of the members of the Board before the date of appointment or election;

(C) there is consummated a merger or consolidation of the Company with any other corporation or entity or the Company issues Voting Securities in connection with a merger or consolidation of any direct or indirect subsidiary of the Company with any other corporation, other than (1) a merger or consolidation that would result in the Voting Securities outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into Voting Securities of the surviving or parent entity) more than 50% of the Company's then outstanding Voting Securities or more than 50% of the combined voting power of such surviving or parent entity outstanding immediately after such merger or consolidation or (2) a merger or consolidation effected to implement a recapitalization of the Company (or similar transaction) in which no Person, directly or indirectly, acquired more than 50% of the Company's then outstanding Voting Securities (not including any securities acquired directly (or through an underwriter) from the Company or the Companies); or

(D) the consummation of an agreement for the sale or disposition by the Company of all or substantially all of the Company's assets (or any transaction having a similar effect), provided that such agreement or transaction of similar effect shall in all events require the disposition, within any twelve (12) month period, of at least 40% of the gross fair market value of all of the Company's then assets; other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity, at least 50% of the combined voting power of the voting securities of which are owned directly or indirectly by stockholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

Notwithstanding the foregoing, in no event shall a Change in Control be deemed to occur hereunder unless such event constitutes a change in ownership of the Company, a change in effective control of the Company or a change in ownership of a substantial portion of the Company's assets within the meaning of Section 409A.

(g) *Mitigation; Offset.* Following the termination of her employment under any of the above clauses of this Section 8, the Executive shall have no obligation or duty to seek subsequent employment or engagement as an employee (including self-employment) or as a consultant or otherwise mitigate the Company's obligations hereunder; nor shall the payments provided by this Section 8 be reduced by the compensation earned by the Executive as an employee or consultant from such subsequent employment or consultancy.

(h) *Release.* Notwithstanding anything to the contrary in this Agreement, receipt of the Severance Benefits and the CIC Severance Benefits or other compensation or benefits under this Section 8 (other than the Base Obligations), if any, by the Executive is subject to the Executive executing and delivering to the Company a general release of claims following the Date of Termination, in substantially the form attached as Exhibit B (the " *Release* "), that, within 60 days following the Executive's Date of Termination, has become irrevocable by the Executive (such date the Release becomes irrevocable being the " *Release Effective Date* "). If the Executive dies or becomes legally incapacitated prior to the Release Effective Date, then the Release requirements described in the preceding sentence shall apply with respect to the Executive's estate and the Release shall be modified as reasonably necessary to allow for execution and delivery by the personal representative of the Executive's estate or the Executive's authorized legal representative, as applicable.

9. *Non-Competition.* The Executive acknowledges and recognizes the highly competitive nature of the businesses of the Company and accordingly agrees as follows:

(a) *Non-Competition.* For a period of two years following the Date of Termination (the " *Restricted Period* "), regardless of the circumstances surrounding such termination of employment, the Executive will not, directly or indirectly (i) engage in any "Competitive Business" (as defined below) for the Executive's own account while she is in self-employment or acting as a sole proprietor, (ii) enter the employ of, or render any services to, any person engaged in a Competitive Business, (iii) acquire a financial interest in, or otherwise become actively involved with, any person engaged in a Competitive Business, directly or indirectly, as an individual, partner, shareholder, officer, director, principal, agent, trustee or consultant, or (iv) interfere with business relationships (whether formed before or after the Effective Date) between the Company and customers or suppliers of the Company. For purposes of this Agreement, " *Competitive Business* " shall mean (x) any national securities exchange registered with the Securities and Exchange Commission, (y) any electronic communications network or (z) any other entity that engages in substantially the same business as the Company, in each case in North America or in any other location in which the Company operates. For purposes of this Agreement, " *person* " shall mean an individual, corporation, partnership, limited partnership, limited liability company, syndicate, person (including, without limitation, a "person" as defined in Section 13(d)(3) of the Securities Exchange Act of 1934, as amended), trust, association or entity or government, political subdivision, agency or instrumentality of a government.

(b) *Securities Ownership.* Notwithstanding anything to the contrary in this Agreement, the Executive may, directly or indirectly, own, solely as an investment, securities of any person engaged in the business of the Company which are publicly traded on a national or regional stock exchange or on the over-the-counter market if the Executive (i) is not a controlling person of, or a member of a group which controls, such person and (ii) does not, directly or indirectly, own five percent or more of any class of securities of such person.

(c) *Severability.* It is expressly understood and agreed that, although the Executive and the Company consider the restrictions contained in this Section 9 to be reasonable, if a final judicial determination is made by a court of competent jurisdiction that the time or territory or any other restriction contained in this Agreement is an unenforceable restriction against the Executive, the provisions of this Agreement shall not be rendered void, but shall be deemed amended to apply as to such maximum time and territory and to such maximum extent as such court may judicially determine or indicate to be enforceable. Alternatively, in the event that any one or more of the provisions of this Agreement shall be or become invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be affected thereby.

10. *Specific Performance* The Executive acknowledges and agrees that the Company's remedies at law for a breach or threatened breach of Section 9 above would be inadequate and, in recognition of this fact, the Executive agrees that, in the event of such a breach or threatened breach, in addition to any remedies at law, the Company, without posting any bond, shall be entitled to obtain equitable relief in the form of specific performance, temporary restraining order, temporary or permanent injunction or any other equitable remedy which may then be available.

11. *Disputes.* Except as provided in Section 10 above, any dispute arising between the parties under this Agreement, under any statute, regulation, or ordinance, under any other agreement between the parties, and/or in way relating to the Executive's employment, shall be submitted to binding arbitration before the American Arbitration Association (" *AAA* ") for resolution. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted in accordance with the AAA's Employment Arbitration Rules as modified herein. The arbitration shall be conducted by a panel of three arbitrators that is mutually agreeable to both the Executive and the Company, all in accordance with AAA's Employment Arbitration Rules then in effect. If the Executive and the Company cannot agree upon the panel of arbitrators, the arbitration shall be settled before a panel of three arbitrators, one to be selected by the Company, one by the Executive, and the third to be selected by the two persons so selected, all in accordance with AAA's Employment Arbitration Rules. With respect to any and all costs and expenses associated with any such arbitration that are not assignable to one of the parties by the arbitrator, each party shall pay their own costs and expenses, including without limitation, attorney's fees and costs, except that the Company shall pay the cost of the arbitrators and the filing fees charged to Executive by the AAA, provided she is the claimant or counter claimant in such arbitration and is the prevailing party. The award of the arbitrators shall be final and binding on the parties, and judgment on the award may be confirmed and entered in any state or federal court in the State and City of New York. The arbitration shall be conducted on a strictly confidential basis, and Executive shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a claim, or the result of any action (collectively, " *Arbitration Materials"*), to any third party, with the sole exception of the Executive's legal counsel, who also shall be bound by confidentiality obligations no less protective than the provisions set forth in the Confidentiality Agreement. In the event of any court proceeding to challenge or enforce an arbitrators' award, the parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction. The parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information, as defined in the Confidentiality Agreement (and documents containing Confidential Information) under seal, subject to court order and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement. Nothing contained in this Section 11 shall be construed to preclude the Company from exercising its rights under Section 10 above.

12. *Miscellaneous.*

(a) *Acceptance.* The Executive hereby represents and warrants, as a material inducement to the Company's agreement to enter into this Agreement, that there are no legal, contractual or other impediments precluding the Executive from entering into this Agreement or from performing the services with the Company contemplated hereby. Any violation of this representation and warranty by the Executive shall render all of the obligations of the Company under this Agreement void *ab initio* and of no force and effect.

(b) *Entire Agreement; Amendments.* This Agreement, together with the equity award agreements between the Executive and the Company contain the entire understanding of the parties with respect to the employment of the Executive by the Company, and shall supersede any and all previous contracts, arrangements or understandings between the Company and the Executive with respect to the subject matter set forth herein. There are no restrictions, agreements, promises, warranties, or covenants by and between the Company and the Executive and undertakings between the parties with respect to the subject matter herein other than those expressly set forth herein. This Agreement may not be altered, modified or amended except by written instrument signed by the parties hereto.

(c) *No Waiver.* The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement.

(d) *Successor; Assignment.* This Agreement is confidential and personal and neither of the parties hereto shall, without the consent of the other, assign or transfer this Agreement or any rights or obligations hereunder. Without limiting the foregoing, the Executive's right to receive payments hereunder shall not be assignable or transferable whether by pledge, creation of a security interest or otherwise, other than a transfer by the Executive's will or by the laws of descent and distribution. In the event of any attempted assignment or transfer contrary to this Section 12(d), the Company shall have no liability to pay the assignee or transferee any amount so attempted to be assigned or transferred. The Company shall cause this Agreement to be assumed by any entity that succeeds to all or substantially all of the Company's business or assets and this Agreement shall be binding upon any successor to all or substantially all of the Company's business or assets; provided, however, that no such assumption shall release the Company of its obligations hereunder, to the extent not satisfied by such successor, without the Executive's prior written consent.

(e) *Confidentiality of Tax Treatment and Structure.* Notwithstanding anything herein to the contrary, each party and its representatives may consult any tax advisor regarding the tax treatment and tax structure of this Agreement and may disclose to any person, without limitation of any kind, the tax treatment and tax structure of this Agreement and all materials (including opinions or other tax analyses) that are provided relating to such treatment or structure.

(f) *Notice.* For the purpose of this Agreement, notices and all other communications provided for in this Agreement shall be in writing and shall be deemed to have been duly given when delivered or mailed by United States registered mail, return receipt requested, postage prepaid, addressed to the respective addresses set forth on the execution page of this Agreement, provided that all notices to the Company shall be directed to the attention of the General Counsel or to such other address as either party may have furnished to the other in writing in accordance herewith, except that notice of change of address shall be effective only upon receipt:

if to the Company:

The Office of the General Counsel
Nasdaq, Inc.
One Liberty Plaza
New York, NY 10006

if to the Executive:

her address as shown in the records of the Company

(g) *Withholding Taxes.* The Company may withhold from any amounts payable under this Agreement such federal, state and local taxes as may be required to be withheld pursuant to any applicable law or regulation.

(h) *Section 409A* . Notwithstanding any other provision of this Agreement, any payment, settlement or benefit triggered by termination of the Executive's employment with the Company shall not be made until six months and one day following Date of Termination if such delay is necessary to avoid the imposition of any tax, penalty or interest under Section 409A of the Internal Revenue Code of 1986, as amended (Section " *409A* "). Any installment payments that are delayed pursuant to this Section 12(h) shall be accumulated and paid in a lump sum on the day that is six months and one day following the Date of Termination (or, if earlier, upon the Executive's death) and the remaining installment payments shall begin on such date in accordance with the schedule provided in this Agreement. For purposes of this Agreement, termination or severance of employment will be read to mean a "separation from service" within the meaning of Section 409A where it is reasonably anticipated that no further services would be performed after that date or that the level of services the Executive would perform after that date (whether as an employee or independent contractor) would permanently decrease to no more than 20 percent of the average level of bona fide services performed over the immediately preceding thirty-six (36) month period. Additionally, the amount of expenses eligible for reimbursement or in-kind benefits to be provided during one calendar year may not affect the expenses eligible for reimbursement or any in-kind benefits to be provided in any other calendar year and the right to reimbursement or in-kind benefits is not subject to liquidation or exchange for another benefit. All reimbursements shall be made no later than the last day of the calendar year following the calendar year in which the Executive incurs the reimbursable expense. This Agreement is intended to comply with the requirements of Section 409A (including the exceptions thereto), to the extent applicable, and the Agreement shall be administered and interpreted in accordance with such intent. If any provision contained in the Agreement conflicts with the requirements of Section 409A (or the exemptions intended to apply under the Agreement), the Agreement shall be deemed to be reformed to comply with the requirements of Section 409A (or the applicable exemptions thereto). The Company, after consulting with the Executive, may amend this Agreement or the terms of any award provided for herein in any manner that the Company considers necessary or advisable to ensure that cash compensation, equity awards or other benefits provided for herein are not subject to United States federal income tax, state or local income tax or any equivalent taxes in territories outside the United States prior to payment, exercise, vesting or settlement, as applicable, or any tax, interest or penalties pursuant to Section 409A. Any such amendments shall be made in a manner that preserves to the maximum extent possible the intended benefits to the Executive. This Section 12(h) does not create an obligation on the part of the Company to modify this Agreement and does not guarantee that the amounts or benefits owed under the Agreement will not be subject to interest and penalties under Section 409A. For purposes of this Agreement, all rights to payments and benefits hereunder shall be treated as rights to receive a series of separate payments and benefits to the fullest extent allowed by Section 409A.

(i) *Clawback* . The Executive agrees that compensation and benefits provided by the Company under this Agreement or otherwise will be subject to recoupment or clawback by the Company under any applicable clawback or recoupment policy of the Company that is generally applicable to the Company's executives, as may be in effect from time-to-time, or as required by applicable law.

(j) *Audit Rights* . Any and all equity compensation of any kind due hereunder to Executive after the Date of Termination shall be accompanied by a detailed statement from the Company showing the calculation for such compensation for the period being measured. Within thirty (30) days after the delivery of such statement, the Executive may notify the Company of any objections or changes thereto, specifying in reasonable detail any such objections or changes. If the Executive does not notify the Company of any objections or changes thereto or if within twenty (20) days of the delivery of an objection notice the Executive and the Company agree on the resolution of all objections or changes, then such statements delivered by the Company, with such changes as are agreed upon, shall be final and binding. If the parties shall fail to reach an agreement with respect to all objections or changes within such twenty (20) day period, then all disputed objections or changes shall, be subject to resolution in accordance with Section 11 above.

(k) *Counterparts.* This Agreement may be signed in counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

(l) *Governing Law.* This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

* * *

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the day and year first above written.

EXECUTIVE

/s/ Adena Friedman
Adena Friedman

Nasdaq, Inc.

By: /s/ Börje E. Ekholm
Börje E. Ekholm

Title: Chairman of the Board

Exhibit A

NASDAQ CONTINUING OBLIGATIONS AGREEMENT

During the course of my employment or engagement with Nasdaq, Inc. and/or its subsidiaries and affiliates (collectively, the " ***Company*** "), I understand that I will have or be given access to, and/or receive, certain non-public, confidential, and proprietary information and or specialized training and trade secrets pertaining to the business of the Company and Company's customers or prospective customers (" ***Company Parties*** "). Any unauthorized disclosure or use of such information would cause grave harm to the Company Parties. Therefore, to assure the confidentiality and proper use of Confidential Information and other Company Property (each as defined herein), and in consideration of my engagement with the Company, my access to confidential information, training and trade secrets, and the compensation paid or to be paid for my services during that engagement, and the mutual covenants and promises contained herein, I agree to the following:

1. Confidentiality and Company Property .

All Confidential Information and Company Property is owned by and for the Company Parties exclusively; is intended solely for authorized, work-related purposes on behalf of the Company Parties; and shall not be used for personal or other non-work related purposes. Specifically, without limitation, I shall not, directly or indirectly, at any time during or after engagement with the Company, without prior express written authorization from the Company: (a) divulge, disclose, transmit, reproduce, convey, summarize, quote, share, or make accessible to any other person or entity Confidential Information or non-public Company Property; (b) use any Confidential Information or Company Property for any purpose outside the course of performing the authorized duties of my work with the Company; (c) remove Company Property or Confidential Information from the Company Parties' premises without obtaining prior express written authorization from the Company; or (d) review or seek to access any Confidential Information or Company Property except as required in connection with my work for the Company.

2. Non-Solicitation .

a) Non-Solicitation of Customers, Potential Customers and Employees .

I agree that, for a period of twenty-four (24) months following my separation from service for any reason, I shall not, directly or indirectly, without express written consent from Company's Office of General Counsel:

i) Interfere with any customer relationship the Company has with any of its current customers or potential customers that I had any involvement with, directly or indirectly, during the last twelve (12) months of my employment; or

ii) Solicit, or induce to enter into any business arrangement with, any employee or contractor of the Company with whom I had any contact or a relationship with during the last twelve (12) months of my employment; or

iii) Solicit, or induce to enter into any business arrangement with, any employee or contractor of the Company's customers that I knew, or reasonably could be expected to know, was solicited by the Company for any technology, operations, sales or business role during the last twelve (12) months of my employment with the Company.

3. Inventions Assignment .

a) Ownership of Nasdaq Inventions by the Company .

(i) As between me and the Company, all Nasdaq Inventions shall be owned by the Company.

(ii) I acknowledge that all Nasdaq Inventions shall be considered "works made for hire" under applicable law and that the Nasdaq Inventions, and all Intellectual Property Rights associated therewith, shall be the sole and exclusive property of the Company.

(iii) To the extent that any Nasdaq Inventions may not be considered "works made for hire" (due to below Paragraph 3(b) or for any other reason), I hereby assign to the Company, without any further consideration, all right, title, and interest in and to all such Nasdaq Inventions, including all Intellectual Property Rights associated therewith. I agree that this assignment includes a present conveyance to the Company of ownership of Nasdaq Inventions that are not yet in existence as of the Effective Date.

(iv) To the extent, if any, that this Agreement does not provide the Company with full ownership, right, title and interest in and to the Nasdaq Inventions, I hereby grant the Company an exclusive, perpetual, irrevocable, fully-paid, royalty-free, worldwide license to use, exploit, reproduce, perform (publicly or otherwise), display (publicly or otherwise), create derivative works from, modify, improve, develop, distribute, import, make, have made, sell, offer to sell or otherwise dispose of the Nasdaq Inventions, effective immediately on its creation, with the right to sublicense each and every such right, including through multiple tiers, alone or in combination. To the extent that any Moral Rights in the Nasdaq Inventions cannot be assigned under applicable law, I hereby unconditionally and irrevocably waive and agree not to enforce any and all Moral Rights, including any limitation on subsequent modification, to the extent permitted under applicable law.

(v) I agree to promptly make upon request full written disclosure to the Company of any and all Nasdaq Inventions. During and after my employment or engagement and at the Company's request and expense, I will (i) assist the Company in every proper way to establish or perfect the Company's rights in the Nasdaq Inventions and associated Intellectual Property Rights throughout the world, including by executing in favor of the Company or its designee(s) any necessary or desirable documents, including patent and copyright assignment documents, and (ii) consent to or join in any action to enforce any Intellectual Property Right associated with the Nasdaq Inventions. I agree that, if the Company is unable, because of my unavailability, mental or physical incapacity, or for any other reason, to secure my signature with respect to the purposes set forth in the preceding sentence, then I hereby irrevocably designate and appoint the Company and its duly authorized officers and agents as my agent and attorney-in-fact, to act for and on my behalf to execute and file any papers and oaths, and to do all other lawfully permitted acts with respect to such Nasdaq Inventions and associated Intellectual Property Rights to further the prosecution, issuance, and enforcement of such Intellectual Property Rights with the same legal force and effect as if executed by me. This power of attorney shall be deemed coupled with an interest, and shall be irrevocable.

(vi) I agree not to challenge the validity of the Nasdaq Inventions or the Intellectual Property Rights associated therewith, or the ownership by the Company (or its designee(s)) of the Nasdaq Inventions or the Intellectual Property Rights associated therewith.

4. Non-Disparagement .

I agree that I shall not issue, circulate, publish or utter any false or disparaging, statement, remarks, opinions or rumors about the Company or its shareholders unless giving truthful testimony under subpoena or court order. Notwithstanding, I understand that I may provide truthful information to any governmental agency or self-regulatory organization with or without subpoena or court order. With the exception of communications made in a private corporate communication as an employee or consultant with regard to a listing decision of my employer or my consulting client, I agree that public communications regarding a preference for listing a security on a market other than the Company, that the quality of the Company as a securities market is in any way inferior to any other securities market or exchange, and/or that the regulatory efforts and programs of the Company are or have been lax in any way, are specifically defined as disparaging and will constitute a material breach of this Agreement. Nothing in this paragraph, however, shall prevent me from making good faith, factual and truthful statements related to listing with the Company as long as my statements are not based on proprietary information.

5. Cooperation .

If I receive a subpoena or process from any person or entity (including, but not limited to, any governmental agency) which may or will require me to disclose documents or information or provide testimony (in a deposition, court proceeding, or otherwise) regarding, in whole or in part, any of the Company Parties or any Confidential Information or Company Property, I shall: (a) to the extent permissible by law, notify Nasdaq's Office of the General Counsel of the subpoena or other process within twenty-four (24) hours of receiving it; and (b) to the maximum extent possible, not make any disclosure until the Company Parties have had a reasonable opportunity to contest the right of the requesting person or entity to such disclosure, limit the scope or nature of such disclosure, and/or seek to participate in the proceeding or matter in which the disclosure is sought.

6. Return Of Confidential Information And Company Property .

Upon my termination of engagement with the Company, for any reason, or if the Company so requests, I shall promptly deliver to the Company all Confidential Information and Company Property, including Nasdaq Inventions in my possession or under my control, as well as all documents, disks, tapes, or other electronic, digital, or computer means of storage, and all copies of such information and property.

7. Immunity for Disclosure of Trade Secrets in Certain Circumstances .

I understand and acknowledge that, pursuant to 18 U.S.C. §1833 (as defined in the Defend Trade Secrets Act of 2016) and notwithstanding anything else in this Agreement, I am permitted to disclose trade secrets to third parties under certain circumstances.

The relevant portion of 18 U.S.C. § 1833 is reproduced as follows:

(b) Immunity From Liability for Confidential Disclosure of a Trade Secret to the Government or in a Court Filing.—

(1) Immunity.—An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that—
(A) is made—
(i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and
(ii) solely for the purpose of reporting or investigating a suspected violation of law; or
(B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.

(2) Use of trade secret information in anti-retaliation lawsuit.—An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual—
(A) files any document containing the trade secret under seal; and
(B) does not disclose the trade secret, except pursuant to court order.

Nothing in this Agreement is intended to conflict with 18 U.S.C. §1833 or create liability for disclosures of trade secrets that are expressly allowed by 18 U.S.C. §1833.

8. Injunctive Action .

I acknowledge that the provisions and restrictions of this Agreement are reasonable and necessary for the protection of the Company Parties and their respective businesses. These obligations are not limited in time to the duration of my engagement and rather shall survive the termination of my engagement by the Company, regardless of the reason for its termination. I agree that my breach of any of the foregoing provisions will result in irreparable injury to the Company Parties, that monetary relief alone will be inadequate to redress such a breach, and further that the

Company shall be entitled to obtain an injunction to prevent and/or remedy such a breach (without first having to post a bond).

In any proceeding for an injunction and upon any motion for a temporary or permanent injunction ("Injunctive Action"), the Company's right to receive monetary damages shall not be a bar or interposed as a defense to the granting of such injunction. The Company's right to an injunction is in addition to, and not in lieu of, any other rights and remedies available to the Company under law or in equity, including any remedy the Company may seek in any arbitration brought pursuant to Section 9 of this Agreement.

I hereby irrevocably submit to the jurisdiction of the courts of New York in any Injunctive Action and waive any claim or defense of inconvenient or improper forum or lack of personal jurisdiction under any applicable law or decision. Upon the issuance (or denial) of an injunction, the underlying merits of any such dispute shall be resolved in accordance with Section 9 of this Agreement.

9. Arbitration .

Except as provided in Section 8 of this Agreement, any dispute arising between the Parties under this Agreement, under any statute, regulation, or ordinance, under any other agreement between the Parties, and/or in way relating to my engagement by the Company, shall be submitted to binding arbitration before the American Arbitration Association ("AAA") for resolution. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted in accordance with the AAA's Employment Arbitration Rules as modified herein. The arbitration shall be conducted by a single arbitrator, who shall be an attorney who specializes in the field of employment law and who shall have prior experience arbitrating employment disputes. The award of the arbitrator shall be final and binding on the Parties, and judgment on the award may be confirmed and entered in any state or federal court in the State of New York and City of New York. In the event of any court proceeding to challenge or enforce an arbitrator's award, the Parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction.

The arbitration shall be conducted on a strictly confidential basis, and I shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a claim, or the result of any action (collectively, " **Arbitration Materials** "), to any third party, with the sole exception of my legal counsel, who also shall be bound by these confidentiality terms. The Parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information (and documents containing Confidential Information) under seal, and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement.

10. Governing Law; Amendment; Waiver; Severability .

This Agreement shall be construed in accordance with and shall be governed by the laws of the State of New York, excluding any choice of law principles. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof, and may not be amended, discharged, or terminated, nor may any of its provisions be waived, except upon the execution of a valid written instrument executed by me and the Company.

If any term or provision of this Agreement (or any portion thereof) is determined by an arbitrator or a court of competent jurisdiction to be invalid, illegal, or incapable of being enforced, all other terms and provisions of this Agreement shall nevertheless remain in full force and effect.

Upon a determination that any term or provision (or any portion thereof) is invalid, illegal, or incapable of being enforced, the Company and I agree that an arbitrator or reviewing court shall have the authority to amend or modify this Agreement so as to render it enforceable and effect the original intent of the Parties to the fullest extent permitted by applicable law.

11. Definitions .

“ ***Confidential Information”*** means any non-public, proprietary information regarding the Company Parties, whether in writing or not, whether in digital, hardcopy, or another format, including all personal information, all personnel information, financial data, commercial data, trade secrets, business plans, business models, organizational structures and models, business strategies, pricing and advertising techniques and strategies, research and development activities, software development, market development, exchange registration, studies, market penetration plans, listing retention plans and strategies, marketing plans and strategies, communication and/or public relations products, plans, programs, recruiting strategies, databases, processes, work product or inventions, financial formulas and methods relating to Company Parties’ business, computer software programs, accounting policies and practices, and all strategic plans or other matters, strategies, and financial or operating information pertaining to current or potential customers or transactions (including information regarding each Company Party’s current or prospective customers, customer names, and customer representatives), templates and agreements, and all other information about or provided by the Company Parties, including information regarding any actual or prospective business opportunities, employment opportunities, finances, investments, and other proprietary information and trade secrets. Notwithstanding the above, Confidential Information shall not include any information that: (a) was known to me prior to my engagement with the Company as evidenced by written records in my possession prior to such disclosure; or (b) is generally and publicly available and known to all persons in the industries where the Company conducts business, other than because of any unauthorized disclosure by me.

“ ***Company Property*** ” means all property and resources of the Company Parties, or any Company Party, including Confidential Information, each Company Party’s products, each Company Party’s computer systems and all software, e-mail, web pages and databases, telephone and facsimile services, and all other administrative and/or support services provided by the Company Parties. I further agree that “Company Property” shall include processes, data, works of authorship, methods, Nasdaq Inventions, developments, and improvements that I conceive, originate, develop, author, or create, solely or jointly with others, during or as a result of my employment with the Company, or using Company Property, and without regard to whether any of the foregoing also may be included within “Confidential Information” as defined under this Agreement.

“ ***Intellectual Property Rights*** ” shall mean any or all statutory or common law rights in, to, or arising under the following, worldwide: (a) patents, patent applications, and design rights (including industrial design rights); (b) works of authorship, including copyrights, Moral Rights, and mask work rights; (c) trade secrets and other rights in know-how and confidential or proprietary information; (d) trademarks, trade names, logos and service marks; (e) domain names, web addresses and social media identifiers; (f) databases; (g) any registrations or applications for registration for any of the foregoing (a)-(f), including any provisionals, divisions, continuations, continuations-in-part, renewals, reissuances, rights subject to and/or arising out of post-grant review (including re-examinations) and extensions (as applicable); (h) all contract and licensing rights and all claims and causes of action of any kind with respect to any of the foregoing (a)-(h), including the right to sue and recover damages or other compensation and/or obtain equitable relief for any past, present, or future infringement or misappropriation thereof; and (i) analogous rights to those set forth above.

“ ***Moral Rights*** ” shall mean all rights of attribution, paternity, integrity, modification, disclosure and withdrawal, and any other rights throughout the world that may be known as or referred to as “moral rights,” “artist’s rights,” “droit moral,” or the like.

“ ***Nasdaq Inventions*** ” means ideas, improvements, trade secrets, know-how, confidential technical or business information, sales and other commercial relationships, potential sales and other commercial relationships, business methods or processes, copyrightable expression, research, marketing plans, computer software (including source code(s)), computer programs, original works of authorship, industrial designs, trade dress, developments, discoveries, trading systems, trading strategies and methodologies, improvements, modifications, technology, algorithms and designs, (regardless of whether any of the foregoing are subject to patent or copyright protection), that are (a) made, conceived, expressed, developed, or reduced to practice by me (solely or jointly with others) during or as a result of my employment with the Company or using Company Property and (b) which relate in any manner to the Company, the business of the Company (including the services the Company provides to any of the Company Parties), or my engagement by the Company.

12. Miscellaneous .

This Agreement (a) may be executed in identical counterparts, which together shall constitute a single agreement, and (b) shall be fairly interpreted in accordance with its terms and without any strict construction in favor of or against either Party, notwithstanding which Party may have drafted it. The headings herein are included for reference only and are not intended to affect the meaning or interpretation of the Agreement. This Agreement is binding upon, and shall inure to the benefit of, me and the Company and our respective heirs, executors, administrators, successors and assigns.

Without limiting the scope or generality of the terms of this Agreement in any way, I acknowledge and agree that the terms of this Agreement and all discussions regarding this Agreement are confidential, and accordingly I agree not to disclose any such information to any third party, except to my attorney(s), or as otherwise may be required by law. Notwithstanding the foregoing, I may disclose to any prospective employer the fact and existence of this Agreement, and provide copies of this Agreement to such entity. The Company also has the right to apprise any prospective employer or other entity or person of the terms of this Agreement and provide copies to any such persons or entities.

13. Other Terms of My Engagement .

Nothing in this Agreement alters the at-will nature of my employment or engagement with the Company. I acknowledge and agree that my employment or engagement is at-will, which means that both I and the Company shall have the right to terminate such engagement at any time, for any reason, with or without cause and with or without prior notice. To the extent I am signing this Agreement in any capacity other than as an employee (e.g., consultant, independent contractor), the written terms of my engagement supersede any conflicting terms in this Agreement.

14. Signature .

I hereby acknowledge and accept the terms of this Agreement as of the Effective Date, by signature below.

Signature: /s/ Adena T. Friedman Date: 11/3/2016

Print Name: Adena T. Friedman

Exhibit B

Release of Claims

GENERAL RELEASE

WHEREAS, Adena Friedman (hereinafter referred to as the " *Executive* ") and Nasdaq, Inc. (hereinafter referred to as " *Employer* ") are parties to an Employment Agreement, dated November 14, 2016 (the " *Employment Agreement* "), which provided for the Executive's employment with Employer on the terms and conditions specified therein; and

WHEREAS, the Executive has agreed to execute a release of the type and nature set forth herein as a condition to her entitlement to certain payments and benefits upon her termination of employment with Employer.

NOW, THEREFORE, in consideration of the premises and mutual promises herein contained and for other good and valuable consideration received or to be received by the Executive in accordance with the terms of the Employment Agreement, it is agreed as follows:

1. Excluding enforcement of the covenants, promises and/or rights reserved herein, the Executive hereby irrevocably and unconditionally releases, acquits and forever discharges Employer and each of Employer's owners, stockholders, predecessors, successors, assigns, directors, officers, employees, divisions, subsidiaries, affiliates (and directors, officers and employees of such companies, divisions, subsidiaries and affiliates) and all persons acting by, through, under or in concert with any of them (collectively "Releasees"), or any of them, from any and all all Claims (as defined below) through the date of this Release. You agree not to file a lawsuit or arbitration to assert any such Claim. Further, you agree that should any other person, organization or entity file a lawsuit or arbitration to assert any such Claim, you will not seek or accept any personal relief in such action.

a. Definition of “Claims .” Except as stated below, “Claims” includes without limitation all actions or demands of any kind that you may now have or have had or reasonably known you should have had (although you are not being asked to waive Claims that may arise after the date of this Agreement). More specifically, Claims include rights, causes of action, damages, penalties, losses, attorneys’ fees, costs, expenses, obligations, agreements, judgments and all other liabilities of any kind or description whatsoever, either in law or in equity, whether known or unknown, suspected or unsuspected. The nature of Claims covered by this release includes without limitation all actions or demands in any way based on your employment with the Company, the terms and conditions of such employment, or your separation from employment. More specifically, all of the following are among the types of Claims which are waived and barred by this General Release of Claims to the extent allowable under applicable law and are considered illustrative but not exhaustive:

- Contract Claims, whether express or implied;
- Tort Claims, such as for defamation or emotional distress;
- Claims under federal, state and municipal laws, regulations, ordinance or court decisions of any kind;
- Claims of discrimination, harassment or retaliation, whether based on race, color, religion, gender, sex, age, sexual orientation, handicap and/or disability, genetic information, national origin, or any other legally protected class;
- Claims under the AGE DISCRIMINATION IN EMPLOYMENT ACT, Title VII of the Civil Rights Act of 1964, as amended, the Americans with Disabilities Act as amended, the Genetic Information Nondiscrimination Act, the Family and Medical Leave Act, and similar state and local statutes, laws and ordinances, including but not limited to the New York State Human Rights Law, the New York

Labor Act, the New York Equal Pay Law, the New York Civil Rights Law, the New York Rights of Persons With Disabilities Law, and the New York Equal Rights Law, all as amended;

- Claims under the Employee Retirement Income Security Act, the Occupational Safety and Health Act, the False Claims Act, and similar state and local statutes, laws and ordinances;

- Claims for wrongful discharge; and

- Claims for attorneys' fees, including litigation expenses and/or costs,

provided , *however* , that this release shall not apply to any of the obligations of Employer or any other Releasee under the Employment Agreement, or under any agreements, plans, contracts, documents or programs described or referenced in the Employment Agreement; and *provided* , *further* , that this release shall not apply to any rights the Executive may have to obtain contribution or indemnity against Employer or any other Releasee pursuant to contract, Employer's certificate of incorporation and by-laws or otherwise.

b. Exclusions : Notwithstanding any other provision of this release, the following are not barred by the release: (a) Claims relating to the validity of this Agreement; (b) Claims by either party to enforce this Agreement; (c) Claims which are not legally waiveable, including SEC whistleblowing claims pursuant to Rule 21F-17. In addition, this General Release of Claims will not operate to limit or bar your right to file an administrative charge of discrimination with the Equal Employment Opportunity Commission (EEOC) or to testify, assist or participate in an investigation, hearing or proceeding conducted by the EEOC. However, the Release does bar your right to recover any personal or monetary relief, including if you or anyone on your behalf seeks to file a lawsuit or arbitration on the same basis as the charge of discrimination. Additionally, nothing in this Release should have a chilling effect on your ability to engage in whistleblowing activity, by prohibiting or restricting you (or your attorney) from initiating communications directly with, or responding to any inquiry from, or providing testimony before, the SEC or FINRA regarding your employment at the Company, and nothing prevents you from reporting to, communicating with, contacting, responding to an inquiry from, providing relevant information to, participating or assisting in an investigation conducted by, or receiving a monetary award from the SEC or any other governmental enforcement agency related to such communication (except as noted in Section 3(b) above).

2. The Executive expressly waives and relinquishes all rights and benefits afforded by California Civil Code Section 1542 and does so understanding and acknowledging the significance of such specific waiver of Section 1542. Section 1542 states as follows:

"A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR."

Thus, notwithstanding the provisions of Section 1542, and for the purpose of implementing a full and complete release and discharge of the Releasees, the Executive expressly acknowledges that this Agreement is intended to include in its effect, without limitation, all Claims that the Executive does not know or suspect to exist in the Executive's favor at the time of execution hereof, and that this Agreement contemplates the extinguishment of any such Claim or Claims.

3. The Executive understands that she has been given a period of 21 days to review and consider this General Release before signing it pursuant to the Age Discrimination In Employment Act of 1967, as amended. The Executive further understands that she may use as much of this 21-day period as the Executive wishes prior to signing.

4. The Executive acknowledges and represents that she understands that she may revoke the waiver of her rights under the Age Discrimination In Employment Act of 1967, as amended, effectuated in this Agreement within 7 days of signing this Agreement. Revocation can be made by delivering a written notice of revocation to Office of the General Counsel, Nasdaq, Inc., One Liberty Plaza, New York, New York 10006. For this revocation to be effective, written notice must be received by the General Counsel no later than the close of business on the seventh day after the Executive signs this Agreement. If the Executive revokes the waiver of her rights under the Age Discrimination in Employment Act of 1967, as amended, Employer shall have no obligations to the Executive under Section 8 (other than the Base Obligations) of the Employment Agreement.

5. The Executive and Employer respectively represent and acknowledge that in executing this Agreement neither of them is relying upon, and has not relied upon, any representation or statement not set forth herein made by any of the agents, representatives or attorneys of the Releasees with regard to the subject matter, basis or effect of this Agreement or otherwise.

6. This Agreement shall not in any way be construed as an admission by any of the Releasees that any Releasee has acted wrongfully or that the Executive has any rights whatsoever against any of the Releasees except as specifically set forth herein, and each of the Releasees specifically disclaims any liability to any party for any wrongful acts.

7. It is the desire and intent of the parties hereto that the provisions of this Agreement be enforced to the fullest extent permissible under law. Should there be any conflict between any provision hereof and any present or future law, such law will prevail, but the provisions affected thereby will be curtailed and limited only to the extent necessary to bring them within the requirements of law, and the remaining provisions of this Agreement will remain in full force and effect and be fully valid and enforceable.

8. The Executive represents and agrees (a) that the Executive has to the extent she desires discussed all aspects of this Agreement with her attorney, (b) that the Executive has carefully read and fully understands all of the provisions of this Agreement, and (c) that the Executive is voluntarily entering into this Agreement.

9. This General Release shall be governed by, and construed in accordance with, the laws of the State of New York, without giving effect to the conflicts of laws principles thereof or to those of any other jurisdiction which, in either case, could cause the application of the laws of any jurisdiction other than the State of New York. This General Release is binding on the successors and assigns of, and sets forth the entire agreement between, the parties hereto; fully supersedes any and all prior agreements or understandings between the parties hereto pertaining to the subject matter hereof; and may not be changed except by explicit written agreement to that effect subscribed by the parties hereto.

PLEASE READ CAREFULLY. THIS GENERAL RELEASE INCLUDES A RELEASE OF ALL KNOWN AND UNKNOWN CLAIMS.

This General Release is executed by the Executive and Employer as of the ____ day of _____, 20__.

_____
Adena Friedman

Nasdaq, Inc.

By: /s/ Börje E. Ekholm
Name: Börje E. Ekholm
Title: Chairman of the Board

Exhibit 10.11.2

AMENDMENT TO THE EMPLOYMENT AGREEMENT

This Amendment (the " *Amendment* ") is hereby entered into and effective as of November 14, 2016 (" *Effective Date* "), by and between Nasdaq, Inc. ("Company"), and Robert Greifeld (" *Executive* ") (Company and Executive, each a " ***Party*** " and together, the " ***Parties*** ").

WHEREAS, the Executive and Company (f/k/a/ "The NASDAQ OMX Group, Inc.") entered into an employment agreement dated February 22, 2012 (" ***Employment Agreement*** ");

NOW, THEREFORE, in consideration of Executive's employment and continued employment with Company and the compensation paid or to be paid for Executive's services during his employment, and the mutual covenants and promises contained herein, Executive agrees with the Company to amend the provisions of the Employment Agreement by written instrument as referenced in Section 12(b) of the Employment Agreement and as set forth below.

The Employment Agreement is amended as follows:

1. Section 1 is deleted and restated as follows:

Term of Agreement . The term of the Executive's employment under this Agreement shall commence on the Effective Date and end with the effective date of the earlier of (i) Executive's voluntary retirement (ii) the agreement by Executive with the Nominating Committee and the Board of Directors for Executive not to stand for reelection to the Board (iii) the Board of Director's decision to elect a new Chairman of the Board of Directors, or (iv) a shareholder vote against Executive's reelection to the Board of Directors (the "Term" upon which the last date is the "Date of Termination").

2. Section 2(a) is amended and restated as follows:

(a) *Duties* . Until December 31, 2016, the Executive shall serve as the Company's Chief Executive Officer and shall have such other duties as agreed to by the Board of Directors of the Company (the "Board"). Beginning January 1, 2017, the Executive shall serve as Executive Chairman of the Board. In such positions, the Executive shall have such duties and authority as shall be determined from time to time by the Board and as shall be consistent with the by-laws of the Company as in effect from time to time. The Executive shall devote his best efforts to his duties hereunder, in accordance with the by-laws of the Company and applicable law.

3. Section 4(a) is amended and restated as follows:

(a) *Annual Bonus.* During the Term up through December 31, 2016, the Executive shall be eligible to participate in the Executive Corporate Incentive Plan of the Company (the "Bonus Program") in accordance with the terms and provisions of such Bonus Program as established from time to time by the Compensation Committee and pursuant to which the Executive will be eligible to earn an annual cash bonus (the "Annual Bonus"). Pursuant to the terms of the Bonus Program, the Executive shall be eligible to earn, for each full calendar year during the Term, a target Annual Bonus of not less than 200% of Base Salary (the product, the "Target Bonus") based upon the achievement of one or more performance goals established for such year by the Compensation Committee. The Executive shall have the opportunity to make suggestions to the Compensation Committee prior to the determination of the performance goals for the Bonus Program for each performance period, but the Compensation Committee will have final power and authority concerning the establishment of such goals. The Compensation Committee shall review the Target Bonus at least annually and may (but shall be under no obligation to) increase (but shall not decrease) the Target Bonus on the basis of such review. The Target Bonus for each year during the Term shall never be less than the Target Bonus for the immediately preceding year.

After January 1, 2017 the Executive shall be eligible to earn an Annual Bonus equal to 200% of Base Salary (the *"Executive Chairman Bonus* ") based upon the achievement of one or more performance goals established for such year by the Board of Directors and the Compensation Committee.

4. Section 8(a), the last sentence of the first paragraph and the second paragraph only is deleted, and 8(b)(i)(A) and 8(b)(i)(B) are amended and restated as follows:

(b) *Termination by the Company Without Cause, or by the Executive for any Reason, or Termination Because the Term has Ended.*

(i) The Executive's employment hereunder may be terminated by the Company without Cause or by the Executive for any reason, due to retirement eligibility. Upon the termination of the Executive's employment by the Company without Cause or by the Executive for any reason (including permanent disability or death) pursuant to this Section 8(b), or due to end of the Term, the Executive shall be entitled to receive, in addition to the Base Obligations, the following payments and benefits (the " *Retirement Benefits* "):

(A) *Retirement Payment* . The Executive shall be entitled to receive (i) a Target Bonus or Executive Chairman Bonus with respect to the calendar year in which the Date of Termination occurs determined in accordance with the Pro Rata Target Bonus Calculation and payable in substantially equal monthly installments for the twelve month period following the Executive's Date of Termination with the first installment to be paid in the month following the month of the Date of Termination, (ii) continued vesting of outstanding performance share units, and/or other forms of equity compensation issued during and/or prior to the Term *("Continued Vesting Period"*), based on actual performance of the Company during the respective performance periods as set forth in the respective performance share unit agreements between the Executive and the Company and (iii) the benefit of full remaining exercise periods, through the expiration dates specified in the respective award agreements, applicable to any vested stock options. " *Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five.

The Executive acknowledges and agrees that the compensation paid under this Section 8(b) is fair and reasonable, and enforcement of his rights to payment therefor is his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder, and is subject to the Executive complying in all material respects with his obligations under Section 9 or the Confidentiality Agreement (as amended hereby); provided, however, that if the Company claims that the Executive has not complied in all material respects with said obligations, then the Company must first give written notice of the alleged non-compliance to the Executive, and the Executive will have 30 days from receipt of such notice to cure the alleged non-compliance before the Company were to withhold any or all of such Retirement Benefits. All benefits, if any, other than the Retirement Benefits, due the Executive following termination pursuant to this Section 8(b) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company; and

(B) *Benefits* . The Company shall pay to the Executive on a monthly basis during the Coverage Period a taxable cash payment equal to the Consolidated Omnibus Budget Reconciliation Act ("COBRA") premium for the highest level of coverage available under the Company's group health plans, but reduced by the monthly amount that the Executive would pay for such coverage if the Executive was an active employee. " *Coverage Period* " shall mean the period commencing on the Date of Termination and ending on the expiration of 18 months from the Date of Termination. The payments provided by this Section shall be conditioned upon the Executive being covered by the Company's health care plans immediately prior to the Date of Termination.

The Company will also continue to provide, for a period of 24 months following the Date of Termination, financial and tax services (currently provided by Ayco) and executive physical exams (currently provided by EHE International).

All benefits, if any, other than the Retirement Benefits, due the Executive following termination pursuant to this Section 8(b) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company. The payments and benefits to be provided pursuant to this Section 8(b)(i) shall be deemed to satisfy and be in full and final settlement of all obligations of the Company to the Executive under this Agreement. The Executive acknowledges and agrees that such amounts are fair and reasonable, and are his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder. If, during the Continued Vesting Period, the Executive breaches in any material respect any of his obligations under Section 9, or the Confidentiality Agreement (as amended hereby), the Company may, upon written notice to the Executive terminate the Continued Vesting Period and cease any benefits continuation coverage or payments, except in each case as required by applicable law, and further provided, however, that if the Company claims that the Executive has breached in any material respect said obligations, then the Company must first give written notice of the alleged breach to the Executive, and the Executive will have 30 days from receipt of such notice to cure the alleged breach before any such termination or cessation by the Company.

5. Sections 8(c) and 8(d) are deleted.

6. Section 8(e) is amended and restated as follows:

(c) *For Cause by the Company.*

The Executive's employment hereunder may be terminated by the Company for Cause. Upon termination of the Executive's employment for Cause pursuant to this Section 8(c), the Executive shall have no further rights to any compensation (including any Annual Bonus or Executive Chairman Bonus) or any other benefits under this Agreement other than the Base Obligations. All other benefits, if any, due the Executive following the Executive's termination of employment pursuant to this Section 8(c) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy, or program of the Company.

7. Sections 8(f) is deleted.

8. Section 8(g)(i)(A) is amended and restated as follows:

(d) *Termination in Connection with Change in Control by the Company Without Cause.*

(i) If, following a Change in Control (as defined herein below), the Executive's employment is terminated by the Company without Cause, the Executive shall be entitled to receive, in addition to the benefits provided in Section 8(b), the following benefits (the "CIC Severance Benefits"):

(A) *Equity Vesting.* The Executive shall be entitled to receive accelerated vesting of all outstanding, unvested equity awards. The schedule for acceleration of the various equity awards will be governed by Section 12 (Change in Control) of the Stock Plan. If (i) any amounts payable to the Executive under this Agreement or otherwise are characterized as excess parachute payments pursuant to Section 4999 of the Internal Revenue Code of 1986, as amended (the "Section 4999"), and (ii) the Executive thereby would be subject to any United States federal excise tax due to that characterization, the Executive's termination benefits hereunder will be reduced to an amount so that none of the amounts payable constitute excess parachute amounts payments if this would result, after taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, in Executive's receipt on an after-tax basis of the greatest amount of termination and other benefits. The determination

of any reduction required pursuant to this section (including the determination as to which specific payments shall be reduced) shall be made by a neutral party designated by the Company and such determination shall be conclusive and binding upon the Company or any related corporation for all purposes.

9. Section 8(h) and 8(i) are renamed 8(e) and 8(f), respectively.

10. Unless otherwise modified herein, the terms and conditions of the Employment Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the Parties hereto acknowledge the acceptance of the terms of this Amendment as of the Effective Date, by the signatures of their respective duly authorized representatives.

EXECUTIVE

/s/ Robert Greifeld

Print Name: Robert Greifeld

Nasdaq, Inc.

/s/ Börje E. Ekholm

By: Börje E. Ekholm

Exhibit 10.13.1

AMENDMENT ONE TO THE EMPLOYMENT AGREEMENT

This Amendment (the " *Amendment* ") is hereby entered into and effective as of January 1, 2017 (" *Effective Date* "), by and between Nasdaq, Inc., Nasdaq International Ltd ("Company"), and Hans-Ole Jochumsen (" *Executive* ") (Nasdaq, Inc., Company and Executive, each a " ***Party*** " and together, the " ***Parties*** ").

WHEREAS, the Executive and Nasdaq Inc. (f/k/a/ "The NASDAQ OMX Group, Inc.") entered into an employment agreement dated August 5, 2014 (" ***Employment Agreement*** ");

WHEREAS, the Parties agree that the Executive's employment by Nasdaq, Inc shall terminate and his employment shall transfer to Company on the same terms as the Employment Agreement (as amended by this Amendment) with immediate effect on the Effective Date, without need for any notice or compensation;

WHEREAS, the Executive is providing notice of his transition into the Vice Chairman role from January 1, 2017 through January 1, 2018, at which point his employment agreement will expire, pursuant to Section 8(f)(a "Non-Continuation Notice") of his Employment Agreement, unless there is mutual agreement to extend the term;

NOW, THEREFORE, in consideration of Executive's continued employment by Company and the compensation paid or to be paid for Executive's services during his employment by the Parties, and the mutual covenants and promises contained herein, Executive agrees with the Company to amend the provisions of the Employment Agreement by written instrument as referenced in Section 12(b) of the Employment Agreement and as set forth below.

The Employment Agreement is amended as follows:

1. Section 1 is deleted and restated as follows:

Transfer of Employment. The Executive hereby agrees that his employment by Nasdaq, Inc shall terminate and his employment shall transfer to Nasdaq International Ltd with immediate effect and without need for any notice or compensation. All references to Company herein shall be construed to refer to Nasdaq International Ltd.

Term of Agreement . The term of the Executive's employment under this Agreement shall commence on the Effective Date and end with his retirement on January 1, 2018 (the "Term").

2. Section 2(a) is amended and restated as follows:

(a) *Duties* . From January 1, 2017 through January 1, 2018, the Executive shall serve as a Vice Chairman. In such positions, the Executive shall have such duties and authority as shall be determined from time to time by the Chief Executive Officer and the Board and as shall be consistent with the by-laws of the Company as in effect from time to time. From January 1, 2017 through June 30, 2017, the Executive shall devote his full time and best efforts to his duties hereunder; for the remainder of the Term, the Executive shall devote on average two to three days per week and best efforts to his duties hereunder. The Executive shall report directly to the Chief Executive Officer and will perform activities as officer/employee/agent of Nasdaq International Ltd (and not for Nasdaq, Inc.); he will not hold himself out to others as an officer/employee/agent of Nasdaq, Inc. Executive will carry business cards indicating his employment by Company, with a U.K. office address and a U.K. office telephone number; he will have a dedicated place of business located in the U.K. and will not have a dedicated place of business located in the U.S. Executive will not have the authority to negotiate and conclude contracts in the name of Nasdaq, Inc.

3. Section 2 is amended by inserting a new Section 2(c) as follows:

During and in respect of any periods of employment spent in the United Kingdom, the Executive agrees that for the purposes of the Working Time Regulations 1998 (and any amendment or re-enactment thereof) any legislative provisions imposing a maximum number of average weekly working hours shall not apply to the Executive's employment. The Executive may withdraw consent by giving the Company not less than three months' notice in writing.

4. Section 3 is amended and restated as follows:

Base Salary . During the Term from January 1, 2017 through January 1, 2018, the Company shall economically bear the cost of Executive's compensation, and shall pay the Executive a base salary (the *"Vice Chairman Base Salary"*) at an annual rate of not less than £400,000 (subject to any deductions required by law, including any necessary PAYE deductions in respect of any period of employment in the United Kingdom). The Vice Chairman Base Salary shall be payable in regular payroll installments in accordance with the Company's payroll practices as in effect from time to time (but no less frequently than monthly).

5. Section 4(a) is amended and restated as follows:

(a) *Annual Bonus.* During the Term from January 1, 2017 through December 31, 2017 the Executive shall be eligible to earn a target Annual Bonus of not less than £400,000 (the *"Vice Chairman Target Bonus* ") based upon the achievement of one or more performance goals established for such year by the Chief Executive Officer and the Compensation Committee. The Executive shall have the opportunity to make suggestions to the Chief Executive Officer and the Compensation Committee prior to the determination of the performance goals for the Bonus Program for each performance period, but the Compensation Committee will have final power and authority concerning the establishment of such goals. All sums referred to in this Section 4(a) shall be paid less any deductions required by law, including any necessary PAYE deductions in respect of any period of employment in the United Kingdom.

6. Section 5 is amended and restated as follows:

Equity Compensation. For calendar year 2017, the Executive shall be eligible for a target equity compensation award of US$750,000 (the " *Target Equity Incentive* "), in accordance with the Executive Vice President grant guidelines and the terms and provisions of the Company's Equity Incentive Plan (the " *Stock Plan* "), which has been adopted by the Board and may from time to time be amended. The applicable provisions of the Company's Stock Plan or each equity award agreement executed by the Executive and the Company shall govern the treatment of the equity awards.

7. Section 8(a) is amended by inserting a new first paragraph as follows:

During and in respect of any periods of employment in the United Kingdom, the termination of the Executive's employment shall be subject always to the statutory minimum notice period (" **Statutory Notice Period** ") as applicable, except in the case of dismissal by the Company for Cause in accordance with Section 8(e).

In circumstances where the Statutory Notice Period applies, the Company reserves the right to terminate the Executive's employment lawfully at any time by written notice having immediate effect by notifying the Executive that the Company is exercising this right and will make payment of the Executive's basic salary only in lieu or all or any part of the Statutory Notice Period (less any tax and national insurance which the Company may be required to deduct) (" **Payment in Lieu of Notice** "). If the Company discovers after notice has been served that it would otherwise have been entitled to terminate the employment in accordance with Section 8(e), the Executive shall cease to have any entitlement to a Payment in Lieu of Notice payment pursuant to this paragraph and if payment has already been made it shall be recoverable as a debt.

For the avoidance of doubt, all references to the Severance Payment and the CIC Severance Payment in this Section 8 shall be deemed to include a Payment in Lieu of Notice, where applicable, and shall be paid less any deductions required by law, including any necessary PAYE deductions in respect of any period of employment in the United Kingdom.

8. Section 8(b)(i)(A), the first paragraph is amended and restated as follows:

(A) *Severance Payment* . During the Term of the Agreement through December 31, 2016, in addition to the benefits provided under Section 8(f) associated with provided Non-Continuation Notice, the Company shall pay the Executive an amount (the "Severance Payment") equal to the sum of (I) two times the Base Salary paid to the Executive with respect to the calendar year immediately preceding the Executive's Date of Termination, (II) the Target Bonus and (III) any pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation. Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year which precedes the year in which occurs the Executive's Date of Termination. Target Bonus is intended to be a fixed severance payment equal to the prior year Target Bonus and not a performance-contingent payment dependent on current year or prior year performance. " *Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five. Pro-rata Target Bonus with respect to the calendar year in which Executive's Date of Termination occurs shall be paid only in the event the performance goals established under the ECIP for that calendar year with respect to such Target Bonus have been satisfied. Payment of the pro-rata Target Bonus shall be delayed until following the date the Company's Compensation Committee determines that such performance goals have been satisfied, in accordance with the rules under the ECIP (the "Performance Goal Determination Date"). Effective January 1, 2017, in addition to the benefits provided under Section 8(f) associated with providing Non-Continuation Notice, the Severance Payment shall be equal to the sum of (I) any unpaid 2016 Base Salary through December 31, 2016 (II) any unpaid 2017 Vice Chairman Base Salary for the remaining Term of the Agreement, (III) any unpaid 2016 Annual Bonus, not prorated and determined based on actual Corporate, business unit and individual performance goal achievement, and (IV) the 2017 Vice Chairman Target Bonus. Vice Chairman Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year in which the Executive's Date of Termination occurs. Vice Chairman Target Bonus is intended to be a fixed severance payment equal to the current year Vice Chairman Target Bonus and not a performance-contingent payment dependent on current year or prior year performance.

9. Section 8(b)(iii) is amended and restated as follows:

(iii) For purposes of this Agreement, " *Good Reason* " shall mean the Company (A) reducing the Executive's position, duties, or authority, other than as specifically related to his change in position, duties and authority (including compensation changes) to the Vice Chairman position to occur between January 1, 2017 through January 1, 2018; (B) failing to secure the agreement of any successor entity to the Company that the Executive shall continue in his position without reduction in position, duties or authority; (C) relocating the Executive's principal work location beyond a 50 mile radius of his work location as of the Effective Date, without his request or permission to do so (provided that this Clause (C) shall apply only to a relocation that occurs beginning upon a Change of Control, as defined below, and ending January 1, 2018); or (D) committing any other material breach of this Agreement; provided, however, that the occurrence of a Change in Control, following which the Company continues to have its common stock publicly traded and the Executive is offered continued employment with substantially the same duties and authority as he has hereunder of such publicly traded entity, shall not be deemed to give rise to an event or condition constituting Good Reason;

and provided further that no event or condition shall constitute Good Reason unless (x) the Executive gives the Company a Notice of Termination specifying his objection to such event or condition within 90 days following the occurrence of such event or condition, (y) such event or condition is not corrected, in all material respects, by the Company in a manner that is reasonably satisfactory to the Executive within 30 days following the Company's receipt of such notice and (z) the Executive resigns from his employment with the Company not more than 30 days following the expiration of the 30-day period described in the foregoing clause (y).

10. Section 8(f), the second sentence is amended and restated as follows:

Upon termination of the Executive's employment pursuant to a Non-Continuation Notice, the Executive shall, subject to Section 8(i), be entitled to receive, in addition to the Base Obligations, a pro-rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in substantially equal monthly installments for the twelve month period following the Executive's Date of Termination, for which the first installment shall be paid in the month following the month in with the Release Effective Date occurs (provided that if the 60 day period described in Section 8(i) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination), the equity awards described in Section 5 and continued vesting of outstanding performance share units, and/or other forms of equity compensation issued during the Term based on actual performance during the respective performance period.

11. Section 8(g)(i)(A), first paragraph, is amended and restated as follows:

(A) *CIC Severance Payment* . In addition to the benefits provided under Section 8(f) associated with providing Non-Continuation notice, on the first day of the seventh (7th) month following the Executive's Date of Termination, the Company shall pay the Executive a lump sum cash payment equal to the sum of (I) Base Salary for the remaining Term of the agreement, (II) the Target Bonus for the calendar year in which Executive's Date of Termination occurs. Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year in which the Executive's Date of Termination occurs. Target Bonus is intended to be a fixed severance payment equal to the current year Target Bonus and not a performance-contingent payment dependent on current year or prior year performance.

12. The Company's address for the purpose of providing notices as set out in Section 12(f) is amended as follows:

Blake Stephenson
Nasdaq International Ltd
3rd Floor
Woolgate Exchange
25 Basinghall Street
London
EC2V 5HA

13. Section 12(l) is amended and restated as follows:

This Agreement shall be governed by and construed in all respects in accordance with the laws of England. Each of the parties hereto hereby irrevocably submits to the non-exclusive jurisdiction of the English Courts.

14. Exhibit B (the General Release of Claims) is amended and replaced as follows:

Release of Claims

GENERAL RELEASE

WHEREAS, Hans-Ole Jochumsen (hereinafter referred to as the " *Executive* ") and Nasdaq Inc. (f/k/a/ “The NASDAQ OMX Group, Inc.”) entered into an Employment Agreement, dated August 5, 2014 subsequently and amended and transferred to Nasdaq International Limited on [*date*] (the " *Employment Agreement* ") (Nasdaq Inc. and Nasdaq International Ltd together hereinafter referred to as " *Employer* "), which provided for the Executive's employment with Nasdaq Inc. and subsequently Nasdaq International Ltd on the terms and conditions specified therein; and

WHEREAS, the Executive has agreed to execute a release of the type and nature set forth herein as a condition to his entitlement to certain payments and benefits upon his termination of employment with Nasdaq International Ltd.

NOW, THEREFORE, in consideration of the premises and mutual promises herein contained and for other good and valuable consideration received or to be received by the Executive in accordance with the terms of the Employment Agreement, it is agreed as follows:

1. Excluding enforcement of the covenants, promises and/or rights reserved herein, the Executive hereby irrevocably and unconditionally releases, acquits and forever discharges Employer and each of Employer's owners, stockholders, predecessors, successors, assigns, directors, officers, employees, divisions, subsidiaries, affiliates (and directors, officers and employees of such companies, divisions, subsidiaries and affiliates) and all persons acting by, through, under, or in concert with any of them (collectively " *Releasees* "), or any of them, from any and all charges, complaints, claims, liabilities, obligations, promises, agreements, controversies, damages, actions, causes of action, suits, rights, demands, costs, losses, debts and expenses (including attorneys' fees and costs actually incurred) of any nature whatsoever, known or unknown, suspected or unsuspected, including, but not limited to, rights arising out of alleged violations of any contracts, express or implied, any covenant of good faith and fair dealing, express or implied, or any tort or any legal restrictions on Employer's right to terminate employees, or any Federal, state or other governmental statute, regulation or ordinance, including, without limitation, Title VII of the Civil Rights Act of 1964, as amended, the Federal Age Discrimination In Employment Act of 1967 (" *ADEA* "), as amended, the Employee Retirement Income Security Act (" *ERISA* "), as amended, the Civil Rights Act of 1991, as amended, the Rehabilitation Act of 1973, as amended, the Older Workers Benefit Protection Act (" *OWBPA* "), as amended, the Worker Adjustment Retraining and Notification Act (" *WARN* "), as amended, the Fair Labor Standards Act (" *FLSA* "), as amended, the Occupational Safety and Health Act of 1970 (" *OSHA* "), the New York State Human Rights Law, as amended, the New York Labor Act, as amended, the New York Equal Pay Law, as amended, the New York Civil Rights Law, as amended, the New York Rights of Persons With Disabilities Law, as amended, and the New York Equal Rights Law, as amended, that the Executive now has, or has ever had, or ever will have, against each or any of the Releasees, by reason of any and all acts, omissions, events, circumstances or facts existing or occurring up through the date of the Executive's execution hereof that directly or indirectly arise out of, relate to, or are connected with, the Executive's services to, or employment by Employer (any of the foregoing being a " *Claim* " or, collectively, the " *Claims* "); *provided* , *however* , that this release shall not apply to any of the obligations of Employer or any other Releasee under the Employment Agreement, or under any agreements, plans, contracts, documents or programs described or referenced in the Employment Agreement; and *provided* , *further* , that this release shall not apply to any rights the Executive may have to obtain contribution or indemnity against Employer or any other Releasee pursuant to contract, Employer's certificate of incorporation and by-laws or otherwise.

Additionally, nothing in this General Release of Claims will operate to limit or bar Executive’s right to file an administrative charge of discrimination with the Equal Employment Opportunity Commission (EEOC) or to testify, assist or participate in an investigation, hearing or proceeding conducted by the EEOC. However, the release does bar Executive’s right to recover any personal or monetary relief, including if he or anyone on his behalf seeks to file a lawsuit or arbitration on the same basis as the charge of discrimination.

2. The Executive expressly waives and relinquishes all rights and benefits afforded by California Civil Code Section 1542 and does so understanding and acknowledging the significance of such specific waiver of Section 1542. Section 1542 states as follows:

"A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR his FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR his MUST HAVE MATERIALLY AFFECTED HIS OR his SETTLEMENT WITH THE DEBTOR."

Thus, notwithstanding the provisions of Section 1542, and for the purpose of implementing a full and complete release and discharge of the Releasees, the Executive expressly acknowledges that this Agreement is intended to include in its effect, without limitation, all Claims that the Executive does not know or suspect to exist in the Executive's favor at the time of execution hereof, and that this Agreement contemplates the extinguishment of any such Claim or Claims.

3. The Executive understands that he has been given a period of 21 days to review and consider this General Release before signing it pursuant to the Age Discrimination In Employment Act of 1967, as amended. The Executive further understands that he may use as much of this 21-day period as the Executive wishes prior to signing.

4. The Executive acknowledges and represents that he understands that he may revoke the waiver of his rights under the Age Discrimination In Employment Act of 1967, as amended, effectuated in this Agreement within 7 days of signing this Agreement. Revocation can be made by delivering a written notice of revocation to Office of the General Counsel, The NASDAQ OMX Group, Inc., One Liberty Plaza, New York, New York 10006. For this revocation to be effective, written notice must be received by the General Counsel no later than the close of business on the seventh day after the Executive signs this Agreement. If the Executive revokes the waiver of his rights under the Age Discrimination In Employment Act of 1967, as amended, Employer shall have no obligations to the Executive under Section 8 (other than the Base Obligations) of the Employment Agreement.

5. The Executive and Employer respectively represent and acknowledge that in executing this Agreement neither of them is relying upon, and has not relied upon, any representation or statement not set forth herein made by any of the agents, representatives or attorneys of the Releasees with regard to the subject matter, basis or effect of this Agreement or otherwise.

6. This Agreement shall not in any way be construed as an admission by any of the Releasees that any Releasee has acted wrongfully or that the Executive has any rights whatsoever against any of the Releasees except as specifically set forth herein, and each of the Releasees specifically disclaims any liability to any party for any wrongful acts.

7. It is the desire and intent of the parties hereto that the provisions of this Agreement be enforced to the fullest extent permissible under law. Should there be any conflict between any provision hereof and any present or future law, such law will prevail, but the provisions affected thereby will be curtailed and limited only to the extent necessary to bring them within the requirements of law, and the remaining provisions of this Agreement will remain in full force and effect and be fully valid and enforceable.

8. The Executive represents and agrees (a) that the Executive has to the extent he desires discussed all aspects of this Agreement with his attorney, (b) that the Executive has carefully read and fully understands all of the provisions of this Agreement, and (c) that the Executive is voluntarily entering into this Agreement.

9. This General Release shall be governed by, and construed in accordance with, the laws of the State of New York, without giving effect to the conflicts of laws principles thereof or to those of any other jurisdiction which, in either case, could cause the application of the laws of any jurisdiction other than the State of New York. This General Release is binding on the successors and assigns of, and sets forth the entire agreement between, the parties hereto; fully supersedes any and all prior agreements or understandings between the parties

hereto pertaining to the subject matter hereof; and may not be changed except by explicit written agreement to that effect subscribed by the parties hereto.

10. At the same time as executing this General Release of Claims, the Executive shall sign and return to Nasdaq International Ltd a waiver of claims in respect of any periods of employment spent in the United Kingdom in substantially the same form as set out in Appendix 1, subject to any amendments as result of changes to the relevant law.

PLEASE READ CAREFULLY. THIS GENERAL RELEASE INCLUDES A RELEASE OF ALL KNOWN AND UNKNOWN CLAIMS.

This General Release is executed by the Executive, Nasdaq Inc. and Nasdaq International Ltd as of the ____ day of _____, 2016

_____

Hans-Ole Jochumsen

Nasdaq, Inc.

By: /s/ Bryan Smith
Name: Bryan Smith
Title: Senior Vice-President, Global Head of Human Resources

Nasdaq International Ltd

By: /s/ Blake Stephenson
Name: Blake Stephenson
Title: Director

Appendix 1

UK Waiver of Claims

1. The Executive accepts the payments and benefits provided to him by Nasdaq International Ltd (the "Company") upon termination of his employment in full and final settlement of the Employment Claims and all and any claims or rights of action he may have now or may have in the future against the Company and any other Protected Person in connection with or arising from his employment or its termination, the holding and/or loss of any office, or any other related or connected matter including without limitation any claims that he may have in any jurisdiction in the world under statute, common law or European law. The Executive and the Company both acknowledge that it is their express intention, when entering into this Agreement, that it covers all such claims, whether known or unknown to one or the other or neither or both of the parties and whether the factual or legal basis for the claim is known or could have been known to one or the other or neither or both of the parties.

2. The Executive agrees that he is solely responsible for and fully and effectively indemnifies the Company and all Group Companies against any demand for tax and employee national insurance contributions (whether payable in the United Kingdom or elsewhere) arising out of or in connection with any liability to pay (or deduct) tax or employee national insurance contributions in respect of the payments and benefits set out in this Agreement, together with any interest, penalties, costs, damages or expenses which the Company or any other Group Company may incur in connection with such a demand, provided always that he shall have a reasonable opportunity to make representations to the HM Revenue and Customs before the Company makes payment against any demand.

3. It is agreed that the Executive has notified the following possible claims to the Company:

    - unfair dismissal pursuant to section 98 Employment Rights Act 1996
    - unlawful deductions from wages
    - breach of contract
    - [*Adviser to insert any other relevant claims*]

4. The Executive warrants that having made all reasonable enquiries he is not aware of any other claim or grounds for a claim against the Company, any Group Company or any other Protected Person in relation to any matters (howsoever arising) other than the claims notified by the Executive to the Company as set out above.

5. It is agreed that this Agreement satisfies the conditions governing settlement agreements and compromise agreements in Section 147 of the Equality Act 2010, Section 203(3) Employment Rights Act 1996, Section 77(4A) Sex Discrimination Act 1975, Section 72(4A) Race Relations Act 1976; Section 288 Trade Union and Labour Relations (Consolidation) Act 1992; Schedule 3A Disability Discrimination Act 1995; Regulation 35 Working Time Regulations 1998; Part 1, Schedule 4 Employment Equality (Religion Or Belief) Regulations 2003; Part 1, Schedule 4 Employment Equality (Sexual Orientation) Regulations 2003; Section 49 National Minimum Wage Act 1998; Regulation 41 Transnational Information and Consultation of Employees Regulations 1999; Regulation 40 Information and Consultation of Employees Regulations 2004; and Part 1, Schedule 5 Employment Equality (Age) Regulations 2006, paragraph 12 of the schedule to the Occupational & Personal Pension Schemes (Consultation by Employers and Miscellaneous Amendment) Regulations 2006, Regulation 9 Part-Time Workers (Prevention of Less Favourable Treatment) Regulations 2000, Regulation 10 Fixed Term Employees (Protection of Less Favourable Treatment) Regulations 2002, Regulation 62 of

the Companies (Cross Border Mergers) Regulations 2007 and Section 58 Pensions Act 2003 as such legislation has been or is amended, extended or re-enacted from time to time ("Settlement Agreement Conditions").

6. The Executive warrants and confirms that he has received independent legal advice as to the terms and effect of terms of this Agreement and in particular his ability to pursue the Employment Claims, from a relevant independent adviser, namely _____of _____ ("Adviser") who is a solicitor of the Senior Courts of England and Wales, holding a current practising certificate and whose firm has in place a contract of insurance or an indemnity provided for members of a professional body covering the risk of a claim by the Executive in respect of any loss arising in consequence of such advice.

7. The Executive represents and warrants that:

7.1.1 he has instructed the Adviser to advise whether he has or may have any claims, including statutory claims, against the Company arising out of or in connection with his employment or its termination;

7.1.2 he has provided the Adviser with all available information which the Adviser required or may have required in order to advise whether he has any such claims; and

7.1.3 the Adviser has advised the Executive that on the basis of the information made available by him, his only claims or particular complaints against the Company are the potential claims listed in Section 2 above, and that he has no other claim of any type against the Company or any other Protected Person.

8. The Executive will procure that the Adviser completes and returns to the Company the Adviser's Certificate set out in the attached Schedule, which is a condition of this Agreement.

9. The terms of the UK Waiver of Claims set out in this Agreement and any agreement concluded in relation to it are to be construed in accordance with and subject to English Law. The proposals contained in it are made without any admission of liability. Any dispute regarding these terms shall be subject to the exclusive jurisdiction of the Courts of England and Wales.

10. In this Agreement the following terms have the following meanings:

"Group Company /Group Companies"	means the Company, any subsidiary of the Company, any holding company of the Company and any subsidiary of each such holding company from time to time. A "subsidiary" or "holding company" is to be construed in accordance with section 1159 and schedule 6 of the Companies Act 2006 as repealed and re-enacted, or as modified by all other statutes or subordinate legislation concerning companies;
"Protected Person"	means the Company, any Group Company and their respective shareholders, officers, employees, workers and agents;
"Employment Claims"	means any allegation or claim against the Company, any Group Company or any other Protected Person in connection with any of the following:

1. unfair dismissal (including automatic unfair dismissal);
2. pay in lieu of notice or damages for termination of employment without notice;
3. any redundancy payment whether statutory or enhanced;
4. any breach of contract including, but not limited to, any claim in respect of any share options or any other bonus or commission schemes the Executive participated in during his employment;
5. any unlawful deductions from "wages" (as defined by section 27 Employment Rights Act 1996) including unpaid holiday pay and/or unpaid sick pay, maternity pay (statutory or otherwise), bonus or commission;
6. for direct or indirect discrimination, victimisation or harassment related to race under section 120 of the Equality Act 2010 and/or for direct or indirect discrimination, harassment or victimisation related to colour, race, nationality or ethnic or national origin under section 54 of the Race Relations Act 1976;

7. for pregnancy or maternity discrimination, direct or indirect discrimination, harassment or victimisation related to sex, marital or civil partnership status, pregnancy or maternity or gender reassignment, under section 120 of the Equality Act 2010 and/or for direct or indirect discrimination, victimisation or harassment related to sex, marital or civil partnership status, gender reassignment, pregnancy or maternity under section 63 of the Sex Discrimination Act 1975;
8. any other rights arising under Parts VI, VII and VIII Employment Rights Act 1996, including but not limited to suspension from work, time off work, adoption leave, paternity leave and flexible working;
9. for direct or indirect discrimination, harassment or victimisation related to disability, discrimination arising from disability, or failure to make adjustments, under section 120 of the Equality Act 120 and/or for direct discrimination, disability-related discrimination, harassment or victimisation, or failure to make adjustments under section 17A of the Disability Discrimination Act 1995;
10. for direct or indirect discrimination, harassment or victimisation related to religion or belief under section 120 of the Equality Act 2010 and/or for direct or indirect discrimination, harassment or victimisation under regulation 28 of the Employment Equality (Religion or Belief) Regulations 2003;
11. for direct or indirect discrimination, harassment or victimisation related to sexual orientation under section 120 of the Equality Act 2010 and/or for direct or indirect discrimination, harassment or victimisation under regulation 28 of the Employment Equality (Sexual Orientation) Regulations 2003;
12. for direct or indirect discrimination, harassment or victimisation related to age, under section 120 of the Equality Act 2010 and/or for direct or indirect discrimination, harassment or victimisation under regulation 36 of the Employment Equality (Age) Regulations 2006;
13. in relation to the duty to consider working beyond retirement, under paragraphs 11 and 12 of Schedule 6 to the Employment Equality (Age) Regulations 2006;
14. any claim for equal pay or equality of terms, under sections 120 and/or 127 of the Equality Act 2010 and/or any claim for equal pay under the Equal Pay Act 1970;
15. any other claims under the Equality Act 2010 including under section 71 (sex discrimination in relation to contractual pay) and victimisation under section 77 (relevant discussions about pay);
16. any claim regarding less favourable treatment or detriment under the Part-time Workers (Prevention of Less Favourable Treatment) Regulations 2000 or the Fixed-Term Employees (Regulations) 2002;
17. breaches of the Working Time Regulations 1998;
18. breaches of the National Minimum Wage Act 1998;
19. protected disclosures and/or any claim arising under Part IV A Employment Rights Act 1996;
20. any act constituting a detriment in employment under Part V Employment Rights Act 1996;
21. any liability arising in relation to statutory minimum procedures under the Employment Act 2002 and/or the Employment Act 2002 (Dispute Resolution Regulations) 2004;
22. any failure to consult trade unions or employee representatives in relation to the transfer of an undertaking;
23. any claims under the Information and Consultation of Employees Regulations 2004;
24. any claim relating to time off or detriment in relation to European Works Councils arising under the Transnational Information and Consultation of Employees Regulations 1999;
25. any other claim arising under or by virtue of the Employment Rights Act 1996 or the Employment Relations Act 1998;
26. claims under the Trade Union and Labour Relations (Consolidation) Act 1992;
27. claims under the European Public Limited-Liability Company Regulations 2004;
28. a failure to comply with obligations under the Data Protection Act 1998;
29. a written statement of reasons for dismissal;
30. tort or breach of statutory duty; and
31. any other claims at common law.

Signed /s/ Blake Stephenson
For and on behalf of Nasdaq International Ltd

Dated 23 rd December 2016

Signed /s/ Bryan Smith
For and on behalf of Nasdaq, Inc.

Dated December 22, 2016

Signed ……
Hans-Ole Jochumsen

Dated ……

Schedule

Certificate of Relevant Independent Adviser

Hans-Ole Jochumsen (the Executive)

We refer to the Agreement between our client (the **Executive**) and the Company. We now warrant and confirm that:

1. the Executive has received independent legal advice from [name of advising solicitor] (**Adviser**) as to the terms and effect of the Agreement in accordance with the Settlement Agreement Conditions (as defined in the Agreement) and in particular the effect of the Agreement on his ability to pursue his rights before an Employment Tribunal;

2. the Adviser has advised the Executive in respect of all of the claims and prospective proceedings that he has or may have against the Company and any other Protected Person (as defined in the Agreement) out of or in connection with his employment or its termination;
3. the Adviser is a Solicitor of the Senior Courts of England and Wales holding a current practising certificate and there is in place professional indemnity or insurance cover in respect of the risk of a claim by the Employee in respect of loss arising in consequence of the advice given by the Adviser;

4. we are not employed by or acting in this matter for the Company or any other Group Company (as defined in the Agreement); and
5. the Settlement Agreement Conditions (as defined in the Agreement) are intended to be satisfied.

Signed:
Name of Adviser:
Firm:
Address:

Date

IN WITNESS WHEREOF, the Parties hereto acknowledge the acceptance of the terms of this Amendment as of the December 23, 2016, by the signatures of their respective duly authorized representatives.

EXECUTED

/s/ Hans-Ole Jochumsen

Print Name:	Hans-Ole Jochumsen

For and on behalf of Nasdaq, Inc.

/s/ Bryan E. Smith

By:	Bryan E. Smith
Its:	Senior Vice President, Global Head of Human Resources

For and on behalf of Nasdaq International Ltd

By /s/ Blake Stephenson

Its:	Blake Stephenson

The Office of General Counsel
Nasdaq, Inc (f/k/a The NASDAQ OMX Group, Inc.)
One Liberty Plaza
New York, NY 10006

Nasdaq International Ltd
3rd Floor
Woolgate Exchange
25 Basinghall Street
London
EC2V 5HA

December 23, 2016

Re: Notice of Transition to Vice Chairman Position and Eventual Non-Continuation

I, **Hans-Ole Jochumsen** , provide official written notice of my decision to transition into the Vice Chairman role from January 1, 2017 through January 1, 2018, working directly for Nasdaq International Ltd, at which point my employment agreement will expire pursuant to Section 8(f) of my August 5, 2014 Employment Agreement, as amended, unless there is mutual agreement to extend the term.

Attached is an executed copy of the Amendment to my July 16, 2014 Employment Agreement, reflecting these changes noted therein.

Thank you,

/s/ Hans-Ole Jochumsen
Hans-Ole Jochumsen
President, Nasdaq

Exhibit 10.14.4

AMENDMENT FOUR TO THE EMPLOYMENT AGREEMENT

This Amendment (the " *Amendment* ") is hereby entered into and effective as of October 24, 2016 (" *Effective Date* "), by and between Nasdaq, Inc. ("Company"), and Edward S. Knight (" *Executive* ") (Company and Executive, each a " ***Party*** " and together, the " ***Parties*** ").

WHEREAS, the Executive and Company (f/k/a/ The NASDAQ OMX Group, Inc.) entered into an employment agreement dated December 29, 2000, as subsequently amended by Amendment Number One, effective as of February 1, 2002, and as subsequently amended by Amendment Number Two, effective as of December 31, 2008, and as subsequently amended by Amendment Number Three, effective as of February 22, 2012 (collectively, the " ***Employment Agreement*** ");

WHEREAS, the Parties agree to amend the Employment Agreement as described below; and

NOW, THEREFORE, in consideration of Executive's employment and continued employment with Company and the compensation paid or to be paid for Executive's services during his employment, and the mutual covenants and promises contained herein, Executive agrees with the Company to amend the provisions of the Employment Agreement as set forth below.

The Employment Agreement is amended as follows:

1. Section 1 is deleted and restated as follows:

   Term of Employment . Subject to Section 9, the term of the Executive's employment under this Agreement shall commence on December 30, 2000 (the "Effective Date") and shall end on February 22, 2019 (the "Employment Term").

2. The first sentence of the second paragraph of Section 9(b) is amended and restated as follows:

   Upon termination of the Executive's employment hereunder for either Disability or death, the Executive or his estate (as the case may be) shall be entitled to receive (i) any accrued but unpaid Base Salary through the end of the month in which such termination occurs, (ii) all other current cash obligations of the Company to the Executive (e.g. unused vacation), (iii) any earned but unpaid Incentive Compensation with respect to the calendar year ended prior to the date of termination, payable in accordance with Section 4, and (iv) accelerated vesting of all unvested equity awarded to the Executive by the Company during the Employment Term, and in accordance with Section 6, each equity award agreement executed by the Executive and the Company shall describe the treatment of equity awards under this Section 9(b).

3. Section 9(c) is amended and restated as follows:

   (c) Termination by the Executive for Good Reason or by the Company without Cause . The Employment Term and the Executive's employment hereunder may be terminated by the Executive for "Good Reason" as defined below upon not less than thirty (30) days written notice to the Company. For purposes of this Agreement "Good Reason" shall mean the Company (i) reducing the Executive's position, duties, or authority, (ii) failing to secure the agreement of any successor entity to the Company that the Executive shall continue in this position without reduction in position, duties, or authority, or (iii) committing any other material breach of this Agreement which is not remedied by the Company (if capable of remedy) within thirty (30) days after receiving notice thereof from the Executive.

If the Executive's employment is terminated by the Company without "Cause" (other than by reason of his Disability or death) or the Executive terminates this Agreement for Good Reason, the Executive shall be entitled to receive: (i) any accrued but unpaid Base Salary through the date of such termination, (ii) the Stay Pay Bonus provided by Section 8 hereof if not already paid, (iii) all other current cash obligations of the Company to the Executive (e.g. unused vacation), (iv) a pro-rata portion of the Incentive Compensation due the Executive pursuant to Section 4 and calculated in accordance with Section 4, and (v) any earned but unpaid Incentive Compensation with respect to the calendar year ended prior to the date of termination, payable in accordance with Section 4. In addition, the Executive shall be entitled to receive his Base Salary and Incentive Compensation through the later of (i) the balance of the Employment Term or (ii) twenty-four months from the date of such termination (the "Severance Period"). All amounts described in the two preceding sentences shall be paid in a lump sum within thirty (30) days following the termination date. The Company shall provide the Executive with continued health coverage with such cost of coverage to be provided, directly or indirectly, by the Company on at least a monthly basis for the Severance Period. In addition, if the Executive's employment is terminated by the Company without Cause or the Executive terminates the Agreement for Good Reason within one (1) year following a Change in Control, as defined in the Company's Stock Plan, Executive's outstanding performance share units, and/or any other forms of equity compensation issued during the Employment Term, shall vest in accordance with the terms of the Stock Plan . All other benefits, if any, due the Executive following termination pursuant to this Section 9(c) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company.

4. Section 9(d) is amended and restated as follows:

(d) Termination by the Executive without Good Reason . The Employment Term and the Executive's employment hereunder may be terminated by the Executive for any reason upon 60 days notice to the Company. Upon a termination by the Executive pursuant to this Section 9(d) (provided that a termination by the Executive in accordance with a Non-Continuation Notice (defined below) shall not constitute a termination without Good Reason pursuant to this Section 9(d)) the Executive shall be entitled to his unpaid Base Salary through the date of termination, to be paid in accordance with the Company's usual payroll practices as described in Section 3 above. Upon termination of the Executive pursuant to this Section 9(d), the Executive shall have no further rights, other than those set forth in this Section 9(d), to any compensation or any other benefits under the Agreement. All other benefits, if any, due the Executive following termination pursuant to this Section 9(d) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company.

5. Section 9(e) is amended by renumbering as paragraph (f).

6. Section 9 is amended by adding a new paragraph (e) to read as follows:

(e) Termination of Employment due to a Non-Continuation Notice . The Executive's employment hereunder may be terminated by the Executive by providing at least 270 days prior written notice to the Company designating the termination as being pursuant to this Section 9(e) (a "Non-Continuation Notice"). Upon termination of the Executive's employment pursuant to a Non-Continuation Notice, the Executive shall be entitled to receive: any unpaid Base Salary through the date of termination, (ii) all other cash obligations of the Company to the Executive (e.g. unused vacation), (iii) any earned but unpaid Incentive Compensation with respect to the calendar year ended prior to the date of termination, payable in accordance with Section 4, (iv) a pro-rata Incentive Compensation with respect to the calendar year in which the date of termination occurs determined in accordance with Section 4 and payable in substantially equal monthly installments for the twelve month period following the Executive's date of termination with the first

installment to be paid in the month following the date of termination, (v) the equity awards described in Section 6 and continued vesting of outstanding performance share units, and/or other forms of equity compensation issued during the Employment Term, based on actual performance during the respective performance periods. The Executive acknowledges and agrees that the compensation paid under this Section 9(e) is fair and reasonable, and are his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder, and is subject to the Executive complying in all material respects with his obligations under Section 10(b) or the Confidentiality Agreement. All other benefits, if any, due the Executive following termination pursuant to this Section 9(e) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company.

IN WITNESS WHEREOF, the Parties hereto acknowledge the acceptance of the terms of this Amendment as of the Effective Date, by the signatures of their respective duly authorized representatives.

EXECUTED

/s/ Edward S. Knight

Print Name:	Edward S. Knight

Nasdaq, Inc.

/s/ Bryan Smith

By:	Bryan Smith
Its:	SVP, Human Resources

GENERAL RELEASE AND RETIREMENT AGREEMENT

September 15, 2016

Ron Hassen
3 Grand Court
Colts Neck, NJ 07722

Dear Ron:

This General Release and revised Retirement Agreement ("Agreement"), reflects our mutual agreement and understanding concerning your retirement from employment with Nasdaq, Inc. or any of its subsidiaries or affiliates (the "Company") in accordance with the terms and conditions set forth below. This Agreement supersedes any prior written agreement.

1. Retirement Date and Transition Period

As of December 31, 2016 ("Retirement Date"), you will no longer be a full time employee of the Company. Between now and December 31, 2016 (the "Transition Period"), you will serve as a full time Strategic Advisor to the Chief Financial Officer, with a monthly salary of $ $41,667, and perform the duties of that role as assigned by the Chief Financial Officer. From January 1, 2017 through December 31, 2017 you will remain on Nasdaq payroll and be available as needed for special projects and consultation.

a. Contingent upon your remaining an employee through at least December 31, 2016, and provided the Company has received a copy of this Agreement signed by you and the seven-day revocation period set forth below has expired, you will continue to be eligible for the 2016 Corporate Incentive Plan ("CIP") at an annual target bonus opportunity of $750,000, paid based on actual Corporate, business unit and individual performance goal achievement vs. targets at the same time as paid to other CIP participants in or about February 2017 (the "CIP Payment"). If Nasdaq terminates your employment due to gross misconduct or gross negligence (as determined in Nasdaq's sole discretion), or you voluntarily resign before September 30, 2016, you will not be entitled to any part of the CIP Payment.

b. From this date through your Retirement Date, you shall remain fully eligible for participation in the Company's compensation and benefits plans in which you now participate, through the Retirement Date, including the Nasdaq equity plan, pension plan and SERP. You will also be paid for all accrued but unused vacation, after retirement. If you do not execute this Agreement, your health benefits provided through the Company will continue through September 30, 2016 (or at the end of the last month of your employment, if prior to September 2016). Pursuant to federal law, and independent of this Agreement, you and your eligible dependents will be eligible to elect benefit continuation coverage if you timely apply for COBRA benefits. Information regarding your rights under COBRA will be provided to you in a separate mailing. If you choose to accept the offer of benefits set forth in Paragraph 2 of this Agreement, your group health, vision, and dental benefits will end in accordance with Paragraph 2. You will be separately notified of your benefit conversion privileges and COBRA rights.

c. From this date through your Retirement Date, you will remain an at-will employee of the Company, meaning that you or the Company can terminate your employment at any time, with or without notice or reason. During the Transition Period, the Company reserves the right in its sole discretion to relieve you from all job duties, alter your job duties, or require you to work from home. During the Transition Period you agree to (i) continue to satisfactorily perform your job duties, as assigned; (ii) comply with all Company policies, including but not limited to the Code of Ethics; (iii) transition and transfer knowledge of your job duties

to others as requested, and; (iv) maintain a professional demeanor and attitude toward internal associates, managers and external customers.

2. Separation Benefits

In consideration for signing and not revoking this Agreement, in full settlement of any compensation and benefits to which you would otherwise be entitled, and in exchange for the promises, covenants, releases, and waivers set forth herein, the Company, subject to final approval by the Management Compensation Committee, will do the following:

a. The Company will provide you a retirement payment of $750,000 (minus applicable taxes and withholdings) ("the Retirement Payment"), provided you continue to perform services as described in Section 1, above, through the Transition Period. The Retirement Payment will be paid in 26 periodic payments on the Company's regular biweekly pay schedule beginning on or around January 1, 2016.

b. Subject to approval by the Management Compensation Committee, you will (i) remain eligible for continued vesting of the Three-Year Performance Share Units (PSU's) granted on March 31, 2014 ("2014 Grant"), on March 31, 2015 ("2015 Grant"), and in March 2016 ("2016 Grant"), unless your employment ends any time before September 30, 2016 due to your resignation, gross misconduct, or gross negligence; and (ii) you will also remain eligible for accelerated vesting of all outstanding 1-year PSU's on September 30, 2016, as long as you remain employed through that date. Any 2016 Grant 1-year PSUs will vest after the 1-year performance cycle concludes on December 31, 2016. Your 2016 Grant target value will be at least equal to $400,000. To the extent this Agreement conflicts with all relevant PSU Agreements, this Agreement will apply, provided that the time and form of settlement of the PSU's shall be governed by the terms of the applicable award agreement and governing plan document. Consistent with the Nasdaq Equity Plan, in the event a change in control event occurs after your Retirement Date, all unvested awards shall vest immediately, at target, prior to the effective time of such change in control.

c. Until December 31, 2017, you shall remain fully eligible for participation in the Company's health and welfare benefits plans, including medical, dental and vision, in which you now participate. You will not continue eligibility for the Company's retirement benefits.

d. You will be eligible for senior executive full service professional outplacement assistance pursuant to the Company's contract with The Ayers Group (or the professional outplacement company of your choice, upon prior consultation with the Company) for a period of 12 months following your Retirement Date, at the Company's expense, up to a maximum of $50,000. You may use all or part of the $50,000 identified in this paragraph for board director training.

e. You will be eligible for annual physical coverage (currently provided by EHE International), for 12 months immediately following your Retirement Date.

f. You acknowledge and agree that the Retirement Payments and any other payment or benefits provided to you and on your behalf pursuant to this Agreement, including but not limited to, the legal representation and indemnification identified in Paragraph 6 of this Agreement: (i) are in full discharge of any and all liabilities and obligations of the Company to you, monetarily or with respect to your employment; and (ii) exceed any payment, benefit, or other thing of value to which you might otherwise be entitled.

g. If you accept another position as an employee with the Company or any of its affiliates while you are receiving any Retirement Payments, or any other payments or benefits under this paragraph, you will not receive any additional Retirement Payments, or any other payments or benefits under this Agreement following your start date in the new position.

3. **General Release of Claims** . You, for yourself and your heirs, executors, administrators, assigns, agents and beneficiaries, if any, do hereby agree to execute and be bound by this General Release of Claims. You waive, release, and forever discharge the Company of and from any and all Claims (as defined below) through the

date of this Agreement. You agree not to file a lawsuit or arbitration to assert any such Claim. Further, you agree that should any other person, organization or entity file a lawsuit or arbitration to assert any such Claim, you will not seek or accept any personal relief in such action. In exchange for your waiver of Claims, the Company, its subsidiaries, directors and agents acting on behalf of the Company expressly waive and release any and all Claims against you that may be waived and released by law, and agree not to file a lawsuit or arbitration to assert any such Claims.

a. Definition of "Claims." Except as stated below, "Claims" includes without limitation all actions or demands of any kind that you may now have or have had (although you are not being asked to waive Claims that may arise after the date of this Agreement). More specifically, Claims include rights, causes of action, damages, penalties, losses, attorneys' fees, costs, expenses, obligations, agreements, judgments and all other liabilities of any kind or description whatsoever, either in law or in equity, whether known or unknown, suspected or unsuspected. The nature of Claims covered by this release includes without limitation all actions or demands in any way based on your employment with Nasdaq, the terms and conditions of such employment or your separation from employment. More specifically, all of the following are among the types of Claims which are waived and barred by this General Release of Claims to the extent allowable under applicable law:

    - Contract Claims, whether express or implied;
    - Tort Claims, such as for defamation or emotional distress;
    - Claims under federal, state and municipal laws, regulations, ordinance or court decisions of any kind;
    - Claims of discrimination, harassment or retaliation, whether based on race, color, religion, gender, sex, age, sexual orientation, handicap and/or disability, genetic information, national origin, whistleblowing or any other legally protected class;
    - Claims under the Age Discrimination in Employment Act, Title VII of the Civil Rights Act of 1964, as amended, the Americans with Disabilities Act, the Genetic Information Nondiscrimination Act, the Family and Medical Leave Act, and similar state and local statutes, laws and ordinances;
    - Claims under the Employee Retirement Income Security Act, the Occupational Safety and Health Act, the False Claims Act, and similar state and local statutes, laws and ordinances;
    - Claims for wrongful discharge; and
    - Claims for attorneys' fees, beyond those specified in this Agreement (such as the legal representation and indemnification identified in Paragraph 6 of this Agreement), including litigation expenses and/or costs.

    The foregoing description of claims is intended to be illustrative and is not exhaustive.

b. Exclusions **:** Notwithstanding any other provision of this release, the following are **not** barred by the release: (a) Claims relating to the validity of this Agreement; (b) Claims by either party to enforce this Agreement; (c) Claims which are not legally waiveable. In addition, this General Release of Claims will not operate to limit or bar your right to file an administrative charge of discrimination with the Equal Employment Opportunity Commission (EEOC) or to testify, assist or participate in an investigation, hearing or proceeding conducted by the EEOC. However, the release does bar your right to recover any personal or monetary relief, including if you or anyone on your behalf seeks to file a lawsuit or arbitration on the same basis as the charge of discrimination.

4. **Confidentiality**. You agree to keep the terms of this Agreement confidential, except that you may disclose the terms to your immediate family, attorneys, accountants, or tax planners (provided that they agree to keep this Agreement confidential as well), or in response to a subpoena, or as otherwise specifically permitted, required, or ordered by law. The Company agrees to share the terms of this Agreement only with persons who have a bona fide need to know and who agree to keep the terms of this Agreement confidential other than in response to a subpoena, or as otherwise specifically permitted, required or ordered by law. However, nothing in this Agreement should have a chilling effect on your ability to engage in whistleblowing activity, by prohibiting or restricting you (or your attorney) from initiating communications directly with, or responding to any inquiry from, or providing testimony before, the SEC or FINRA regarding your employment at the Company, and nothing prevents you from reporting to, communicating with, contacting, responding to an inquiry from, providing relevant information to, participating or assisting in an investigation conducted by, or receiving a monetary award from the SEC or any other governmental enforcement agency related to such communication (except as noted in Section 3(b) above).

5. **Non-Disparagement**. You agree that you will not disparage or defame the reputation, character, image, products, or services of the Company, provided that you shall respond accurately and fully to any question, inquiry, or request for information when required by legal process.

6. **Cooperation and Legal Representation**. You agree to reasonably cooperate with the Company in transitioning your responsibilities and in relation to any actual or threatened legal proceedings concerning Company-related matters about which you have relevant knowledge.

7. **Non-Admission.** This Agreement does not represent an admission of liability or finding of wrongdoing by you or the Company.

8. **Return of Company Property**. After the Retirement Date, you agree to promptly return to the Company all property that belongs to the Company, including without limitation all equipment, supplies, documents, files (electronic and hardcopy), and computer disks in good working order; provided you may retain any records relating to your relationship with the Company and the termination thereof. You agree not to "wipe" or otherwise destroy, erase, or compromise company files, records or information contained on any company-issued electronic equipment prior to returning these items. You further agree to remove from any personal computer all data files containing Company information.

9. **Confidential Business Information**. You acknowledge your continuing obligations to the Company contained in any proprietary rights or other confidentiality agreements that you signed in favor of the Company during your employment.

10. **Non-competition**. For a period of 12 months from the Retirement Date, you shall not, directly or indirectly, without the prior written permission of the Company, anywhere in the world where at the date of such termination the Company is doing business or planning to do business, enter into the employ of or render any services to: InterContinentalExchange, BATS Global Markets, CME Group, CBOE Holdings, Deutsche Borse, London Stock Exchange Group, and TMX. This provision supersedes any prior terms to which you may have previously agreed which specifically relate to any restrictions on your ability to work elsewhere. All other restrictions from prior agreements, including nonsolicitation of customers or employees, remain, as noted in Section 9 above.

    You acknowledge and agree that the provisions of, and your obligations under, this Agreement are reasonable in scope and necessary for the protection of the Company and its legitimate business interests; that your breach (or threatened breach) of any such provisions or obligations will result in grave and irreparable harm to the Company, inadequately compensable in money damages; and that the Company shall be entitled to seek and obtain, in addition to any legal remedies that might be available to it, injunctive relief to prevent and/or remedy such a breach or threatened breach upon the issuance (or denial) of an injunction, the underlying merits of any dispute shall be resolved in accordance with the arbitration provisions of Section 12 of this Agreement.

11. **Breach.** Should you materially breach this Agreement, then:

a. The Company shall have no further obligations to you under this Agreement (including but not limited to any obligation to make any further payments or provide any further benefits to you, unless required by applicable law);

b. The Company shall be entitled to recoup the amount of any payment you received pursuant to this Agreement, plus the reasonable attorneys' fees and costs the Company incurs in recouping such amounts from you;

c. The Company shall have all rights and remedies available to it under this Agreement and any applicable law; and

d. All of your promises, covenants, representations, and warranties under this Agreement shall remain in full force and effect.

12. **Arbitration.** You and the Company agree that should a dispute arise between the parties under this Agreement, under any statute, regulation, or ordinance, and/or in connection with your employment or termination thereof (except as provided in Sections 3 or 4 of this Agreement), the dispute shall be submitted to binding arbitration before the American Arbitration Association ("AAA") for resolution. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted in accordance with the AAA's Employment Arbitration Rules as modified herein. The arbitration shall be conducted by a single arbitrator, who shall be an attorney who specializes in the field of employment law and who shall have prior experience arbitrating employment disputes. The award of the arbitrator shall be final and binding on the parties, and judgment on the award may be confirmed and entered in any state or federal court in the State and City of New York. The arbitration shall be conducted on a strictly confidential basis, and you shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a claim, or the result of any action (collectively, "Arbitration Materials"), to any third party, with the sole exception of your legal counsel, who also shall be bound by these confidentiality terms. In the event of any court proceeding to challenge or enforce an arbitrator's award, the parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction. The parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information (and documents containing Confidential Information) under seal, and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement.

13. **Severability .** You agree that if any provision of this General Release of Claims is or shall be declared invalid or unenforceable by a court of competent jurisdiction, then such provision will be modified only to the extent necessary to cure such invalidity, with a view to enforcing the parties' intention as set forth in this Agreement to the extent permissible. All remaining provisions of this Agreement shall not be affected thereby and shall remain in full force and effect.

14. **Compliance with 409A.** It is the intent of the parties to this Agreement that no payments under this Agreement be subject to the additional tax on deferred compensation imposed by Section 409A of the Internal Revenue Code of 1986, as amended (the "Code"). Notwithstanding the foregoing, the Company does not guarantee that any payment hereunder complies with or is exempt from Section 409A of the Code and neither the Company, nor its current or former executives, directors, officers, or affiliates shall have any liability with respect to any failure of any payments or benefits herein to comply with or be exempt from Section 409A of the Code. To the extent that the parties determine that you would be subject to the additional 20% tax imposed on certain deferred compensation arrangements pursuant to Section 409A of the Code as a result of any provision of this Agreement, to the extent permitted by Section 409A of the Code, such provision shall be deemed amended in the manner that, in the parties' judgment, fulfills the intent of the parties and avoids application of such additional tax, and the parties hereby agree to promptly execute any amendment reasonably necessary to implement this Section 14. Each payment made under this Agreement will be treated as a separate payment for purposes of Section 409A of the Code and the right to a series of installment payments under this Agreement is to be treated as a right to a series of separate payments.

Notwithstanding any provision of this Agreement to the contrary, in the event that any payment to you or any benefit hereunder is made upon, or as a result of your termination of employment, and you are a "specified employee" (as that term is defined under Code Section 409A) at the time you become entitled to any such payment or benefit, and provided further that such payment or benefit does not otherwise qualify for an applicable exemption from Code Section 409A, then no such payment or benefit shall be paid or commenced to be paid to you under this Agreement until the date that is the earlier to occur of: (i) your death, or (ii) six (6) months and one (1) day following your termination of employment (the "Delay Period"). Any payments which you would otherwise have received during the Delay Period shall be payable to you in a lump sum on the date that is six (6) months and one (1) day following the effective date of your termination.

Any reimbursements by the Company to you of any eligible expenses under this Agreement, other than reimbursements that would otherwise be exempt from income or the application of Code Section 409A, ("Reimbursements") will be made promptly and, in any event, on or before the last day of your taxable year following your taxable year in which the expense was incurred. The amount of any Reimbursements, and the value of any in-kind benefits to be provided to you under this Agreement, other than in-kind benefits that would otherwise be exempt from income or the application of Code Section 409A, during any of the your taxable years will not affect the expenses eligible for reimbursement, or in-kind benefits to be provided, in any other of your taxable years, except for any limit on the amount of expenses that may be reimbursed under an arrangement described in Code Section 105(b). The right to Reimbursements, or in-kind benefits, will not be subject to liquidation or exchange for another benefit.

15. **Miscellaneous.** This Agreement (i) may be executed in identical counterparts, which together shall constitute a single agreement; (ii) shall be fairly interpreted in accordance with its terms and without any strict construction in favor of or against either party, notwithstanding which party may have drafted it; (iii) shall be governed by and construed in accordance with the laws of New York, excluding any choice of law principles; (iv) constitutes the parties' entire agreement, arrangement, and understanding regarding the subject matter herein, superseding any prior or contemporaneous agreements, arrangements, or understandings, whether written or oral, between you on one hand and the Company on the other hand regarding the same subject matter (other than Article VIII of the By-Laws of Nasdaq, Inc. and Section 19 of the Second Amended Limited Liability Company Agreement of The NASDAQ Stock Market); (v) may not be modified, amended, discharged, or terminated, nor may any of its provisions be varied or waived, except by a further signed written agreement between the parties; and (iv) shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors, and assigns. For the avoidance of doubt, in the unlikely event that you die prior to receiving all consideration set forth herein, the Company shall provide all such consideration to your estate at the same times as otherwise required to the extent permitted by law.

16. **Advice to Consult Legal Representative .** The Company recommends that you consult with an attorney and tax advisor of your own choosing with regard to entering into this Agreement, to be reimbursed by the Company.

17. **Consideration Period .** You acknowledge that you have carefully read and understand the provisions of this Agreement. You have been provided with a consideration period consisting of at least twenty-one (21) calendar days to consider the terms of the General Release of Claims from the date this Agreement first was presented to you. You agree to notify the Company of your acceptance of this Agreement by delivering a signed copy to the Company addressed to the attention of Bryan Smith, Senior Vice President, Global Head of Human Resources, One Liberty Plaza, New York, NY 10006 by the due date noted below. You understand that any change to this offer, whether material or immaterial, will not restart the running of the consideration period. You understand that you may take the entire consideration period to consider this Agreement and that you may return this Agreement in less than the full consideration period only if your decision to shorten it was knowing and voluntary and was not induced in any way by Employer. **You will also be required to sign a supplemental Release of Claims upon your Retirement Date, to address the period of time between this signed Agreement and your Retirement Date, in order to receive any post-Retirement Date benefits and payments noted herein.**

18. **Revocation Period .** You have seven (7) calendar days from the date you sign this General Release of Claims to revoke it if you choose to do so. If you elect to revoke, you must give written notice of such revocation to

Employer by delivering it to Bryan Smith, Senior Vice President, Head of Global Human Resources, One Liberty Plaza, New York, NY 10006 in such a manner that it is actually received within the seven (7) calendar day period. You understand that if you revoke this General Release of Claims, you will not be entitled to the benefits offered as consideration for this Agreement.

19. **Employee Certification - Validity of Agreement .** You certify that you have carefully read this Agreement and have executed it voluntarily and with full knowledge and understanding of its significance, meaning and binding effect. You further declare that you are competent to understand the content and effect of this Agreement and that your decision to enter into this Agreement has not been influenced in any way by fraud, duress, coercion, mistake or misleading information. You have not relied on any information except what is set forth in this Agreement.

Please acknowledge your understanding and acceptance of this Agreement by signing below where indicated and returning it to me **by no later than October 16, 2016 .**

Sincerely,
/s/ Bryan E. Smith
Bryan E. Smith
Senior Vice President, Global Head of Human Resources

NOTICE TO EMPLOYEE: YOUR SIGNATURE INDICATES THAT YOU HAVE CAREFULLY READ AND UNDERSTAND THE TERMS OF THIS AGREEMENT, RELEASE AND WAIVER OF CLAIMS AND RIGHTS, THAT YOU WERE ADVISED TO CONSULT AN ATTORNEY ABOUT THIS AGREEMENT, THAT THIS AGREEMENT PROVIDES BENEFITS TO WHICH YOU ARE NOT OTHERWISE ENTITLED AND THAT YOU ARE SIGNING THIS DOCUMENT VOLUNTARILY AND NOT AS A RESULT OF COERCION, DURESS OR UNDUE INFLUENCE.

9/19/2016 /s/ Ron Hassen
Date Ron Hassen

Exhibit 12.1

Nasdaq, Inc.
Computation of Ratio of Earnings to Fixed Charges
And Preferred Stock Dividends
(Dollars in Millions)
Unaudited

	Year Ended December 31,				
	2016	2015	2014	2013	2012
Pre-tax income from continuing operations [1]	$ 132 [3]	$ 612 [3]	$ 592	$ 600 [4]	$ 548 [4]
Add: fixed charges	151	127	134	126	111
Pre-tax income before fixed charges	283	739	726	726	659
Fixed charges:					
Interest expense [2]	151	127	134	126	111
Total fixed charges	151	127	134	126	111
Preferred stock dividend requirements	—	—	—	—	—
Total combined fixed charges and preferred stock dividends	$ 151	$ 127	$ 134	$ 126	$ 111
Ratio of earnings to fixed charges	1.87	5.82	5.42	5.76	5.94
Ratio of earnings to fixed charges and preferred stock dividends	1.87	5.82	5.42	5.76	5.94

[1] Pre-tax income from continuing operations is before equity in earnings of 50%-or-less-owned companies.
[2] Consists of interest expense on all debt obligations (including accretion of debt issuance costs and debt discount) and the portion of operating lease rental expense that is representative of the interest factor.
[3] Includes an asset impairment charge of $578 million in 2016 and costs of $41 million in 2016 and $172 million in 2015 associated with Nasdaq's 2015 restructuring program that was announced in 2015.
[4] Includes costs of $9 million in 2013 and $44 million in 2012 associated with Nasdaq's 2012 restructuring program that was announced in 2012.

Exhibit 21.1

SUBSIDIARIES

U.S. Subsidiaries

1. BoardVantage, Inc. (incorporated in Delaware)
2. Boston Stock Exchange Clearing Corporation (incorporated in Massachusetts)
3. Bwise Internal Control Inc. (incorporated in New York)
4. Consolidated Securities Source LLC (organized in Delaware)
5. Directors Desk, LLC (organized in Delaware)
6. Dorsey, Wright & Associates, LLC (organized in Virginia)
7. ETC Acquisition Corp. (incorporated in Delaware)
8. ExactEquity, LLC (organized in Delaware)
9. Execution Access, LLC (organized in Delaware)
10. FinQloud LLC (organized in Delaware)
11. FINRA/NASDAQ Trade Reporting Facility LLC (organized in Delaware)
12. FTEN, Inc. (incorporated in Delaware)
13. Global Network Content Services, LLC (organized in Florida)
14. GlobeNewswire, Inc. (incorporated in California)
15. GraniteBlock, Inc. (incorporated in Delaware)
16. Granite Redux, Inc. (incorporated in Delaware)
17. Inet Futures Exchange, LLC (organized in Delaware)
18. International Securities Exchange Holdings, Inc. (incorporated in Delaware)
19. International Securities Exchange, LLC (organized in Delaware)
20. ISE Gemini, LLC (organized in Delaware)
21. ISE Mercury, LLC (organized in Delaware)
22. ISE ETF Ventures LLC (organized in Delaware)
23. Kleos Managed Services Holdings, LLC (organized in Delaware)
24. Kleos Managed Services, L.P. (organized in Delaware)
25. Longitude LLC (organized in Delaware)
26. Marketwire, Inc. (organized in California)
27. MW Holdco (2006) Inc. (organized in Delaware)
28. NASDAQ BX, Inc. (incorporated in Delaware)
29. Nasdaq Capital Markets Advisory LLC (organized in Delaware)
30. Nasdaq Commodities Clearing LLC (organized in Delaware)
31. Nasdaq Corporate Solutions, Inc. (incorporated in Delaware)
32. Nasdaq Corporate Solutions, LLC (organized in Delaware)
33. NASDAQ Energy Futures, LLC (organized in Delaware)
34. Nasdaq Execution Services, LLC (organized in Delaware)
35. NASDAQ Futures, Inc. (incorporated in Pennsylvania)
36. NASDAQ Global, Inc. (incorporated in Delaware)
37. Nasdaq Information, LLC (organized in Delaware)
38. Nasdaq International Market Initiatives, Inc. (incorporated in Delaware)
39. NASDAQ OMX BX Equities LLC (organized in Delaware)
40. NASDAQ OMX (San Francisco) Insurance LLC (organized in Delaware)
41. NASDAQ PHLX LLC (organized in Delaware)
42. Nasdaq Technology Services, LLC (organized in Delaware)
43. Norway Acquisition LLC (organized in Delaware)
44. NPM Securities, LLC (organized in Delaware)
45. Operations & Compliance Network, LLC (incorporated in Delaware)
46. SecondMarket Labs, LLC (organized in Delaware)
47. SecondMarket Solutions, Inc. (organized in Delaware)
48. SMTX, LLC (organized in Delaware)
49. The NASDAQ Options Market LLC (organized in Delaware)
50. The NASDAQ Private Market, LLC (organized in California)
51. The NASDAQ Stock Market LLC (organized in Delaware)
52. The Stock Clearing Corporation of Philadelphia (incorporated in Pennsylvania)
53. U.S. Exchange Holdings, Inc. (incorporated in Delaware)

Non-U.S. Subsidiaries

1. 2157971 Ontario Ltd (organized in Canada)
2. AB “Lietuvos centrinis vertybinių popierių depozitoriumas” (organized in Lithuania)
3. AB Nasdaq Vilnius (organized in Lithuania) (96.35% owned, directly or indirectly, by Nasdaq, Inc.)
4. AS eCSD Expert (organized in Estonia)
5. AS Eesti Väärtpaberikeskus (organized in Estonia)
6. AS Latvijas Centralais depozitarijs (organized in Latvia)
7. BoardVantage (HK) Limited (organized in Hong Kong)
8. BoardVantage (UK) Limited (organized in the United Kingdom)
9. BoardVantage Singapore Pte. Limited (organized in Singapore)
10. Bwise Beheer B.V. (organized in the Netherlands)
11. Bwise B.V. (organized in the Netherlands)
12. Bwise Germany GmbH (organized in Germany)
13. Bwise Holding B.V. (organized in the Netherlands)
14. Clearing Control CC AB (organized in Sweden)
15. Eignarhaldsfelagid Verdbrefathing hf. (organized in Iceland)
16. Ensoleillement Inc. (organized in Canada)
17. Farm Church Holdings ULC (organized in Canada)
18. Hugin AS (organized in Norway)
19. Indxis Ltd (organized in the United Kingdom)
20. Longitude S.A. (organized in Luxembourg)
21. Marketwire China Holding (HK) Ltd. (organized in Hong Kong)
22. Marketwired UK Ltd (organized in the United Kingdom)
23. Nasdaq AB (organized in Sweden)
24. Nasdaq (Asia Pacific) Pte. Ltd. (organized in Singapore)
25. Nasdaq Australia Holding Pty Ltd (organized in Australia)
26. Nasdaq Broker Services AB (organized in Sweden)
27. Nasdaq Canada Inc. (organized in Canada)
28. Nasdaq Clearing AB (organized in Sweden)
29. Nasdaq Copenhagen A/S (organized in Denmark)
30. Nasdaq Corporate Solutions Canada ULC (organized in Canada)
31. Nasdaq Corporate Solutions (India) Private Limited (organized in India)
32. Nasdaq Corporate Solutions International Limited (organized in the United Kingdom)
33. Nasdaq CSD Iceland hf. (organized in Iceland)
34. Nasdaq CXC Limited (organized in Canada)
35. Nasdaq Exchange and Clearing Services AB (organized in Sweden)
36. Nasdaq France SAS (organized in France)
37. Nasdaq Germany GmbH (organized in Germany)
38. Nasdaq Helsinki Ltd (organized in Finland)
39. Nasdaq Holding AB (organized in Sweden)
40. Nasdaq Holding Denmark A/S (organized in Denmark)
41. Nasdaq Holding Luxembourg Sárl (organized in Luxembourg)
42. Nasdaq Iceland hf. (organized in Iceland)
43. Nasdaq International Ltd (organized in the United Kingdom)
44. Nasdaq Korea Ltd. (organized in South Korea)
45. Nasdaq Ltd (organized in Hong Kong)
46. Nasdaq NLX Ltd (organized in the United Kingdom)
47. Nasdaq Nordic Ltd (organized in Finland)
48. NASDAQ OMX Europe Ltd (organized in the United Kingdom)
49. Nasdaq Oslo ASA (organized in Norway)
50. Nasdaq Pty Ltd (organized in Australia)
51. Nasdaq Riga, AS (organized in Latvia) (92.98% owned, directly or indirectly, by Nasdaq, Inc.)
52. Nasdaq Stockholm AB (organized in Sweden)
53. Nasdaq Tallinn AS (organized in Estonia)
54. Nasdaq Technology AB (organized in Sweden)
55. Nasdaq Technology Canada Inc. (organized in Canada)
56. Nasdaq Technology Energy Systems AS (organized in Norway)
57. Nasdaq Technology Italy Srl (organized in Italy)

58. Nasdaq Technology (Japan) Ltd (organized in Japan)
59. Nasdaq Teknoloji Servisi Limited Sirketi (organized in Turkey)
60. Nasdaq Treasury AB (organized in Sweden)
61. Nasdaq Vilnius Services UAB (organized in Lithuania)
62. OMX Netherlands B.V. (organized in the Netherlands)
63. OMX Netherlands Holding B.V. (organized in the Netherlands)
64. OMX Treasury Euro AB (organized in Sweden) (99.9% owned, directly or indirectly, by Nasdaq, Inc.)
65. OMX Treasury Euro Holding AB (organized in Sweden)
66. Shareholder.com B.V. (organized in the Netherlands)
67. SMARTS (Asia) Ltd (organized in China)
68. SMARTS Broker Compliance Pty Ltd (organized in Australia)
69. SMARTS Group Holdings Pty Ltd (organized in Australia)
70. SMARTS Market Surveillance Pty Ltd (organized in Australia)

*The list of subsidiaries does not include not-for-profit entities or foreign branches of particular subsidiaries.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-3 No. 333-209080) of Nasdaq, Inc.,

(2) Registration Statement (Form S-8 No. 333-196838) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(3) Registration Statement (Form S-8 No. 333-167724) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Employee Stock Purchase Plan,

(4) Registration Statement (Form S-8 No. 333-167723) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(5) Registration Statement (Form S-8 No. 333-110602) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan,

(6) Registration Statement (Form S-8 No. 333-106945) pertaining to the Employment Agreement with Robert Greifeld of The Nasdaq Stock Market, Inc.,

(7) Registration Statement (Form S-8 No. 333-76064) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan,

(8) Registration Statement (Form S-8 No. 333-72852) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan, and

(9) Registration Statement (Form S-8 No. 333-70992) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan;

of our reports dated March 1, 2017, with respect to the consolidated financial statements of Nasdaq, Inc. and the effectiveness of internal control over financial reporting of Nasdaq, Inc. included in this Annual Report (Form 10-K) of Nasdaq, Inc. for the year ended December 31, 2016.

/s/ Ernst & Young LLP

New York, New York
March 1, 2017

Exhibit 24.1

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Charlene T. Begley

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Steven D. Black

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Börje E. Ekholm

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Robert Greifeld

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Glenn H. Hutchins

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Essa Kazim

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Thomas A. Kloet

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Ellyn A. McColgan

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Michael R. Splinter

Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints Edward S. Knight and Joan C. Conley, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2016, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of March 1, 2017.

/s/ Lars R. Wedenborn

Signature

Exhibit 31.1

CERTIFICATION

I, Adena T. Friedman, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Adena T. Friedman

Name: Adena T. Friedman

Title: President and Chief Executive Officer

Date: March 1, 2017

Exhibit 31.2

CERTIFICATION

I, Michael Ptasznik, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Michael Ptasznik

Name: Michael Ptasznik

Title: Executive Vice President, Corporate Strategy and Chief Financial Officer

Date: March 1, 2017

Exhibit 32.1

Certification of CEO and CFO Pursuant to
18 U.S.C. Section 1350
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Annual Report on Form 10-K of Nasdaq, Inc. (the "Company") for the year ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Adena T. Friedman, as President and Chief Executive Officer of the Company, and Michael Ptasznik, as Executive Vice President, Corporate Strategy and Chief Financial Officer of the Company, each hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of her or his knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of the operations of the Company.

	/s/ Adena T. Friedman
Name:	Adena T. Friedman
Title:	President and Chief Executive Officer
Date:	March 1, 2017

	/s/ Michael Ptasznik
Name:	Michael Ptasznik
Title:	Executive Vice President, Corporate Strategy and Chief Financial Officer
Date:	March 1, 2017

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by the Company for purposes of § 18 of the Securities Exchange Act of 1934, as amended.