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

FORM 10-Q

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

For the quarterly period ended March 31, 2019

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	**52-1165937**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
151 W. 42nd Street, New York, New York	**10036**
(Address of Principal Executive Offices)	**(Zip Code)**

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

No changes
(Former name, former address and former fiscal year, if changed since last report)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

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 April 23, 2019
Common Stock, $.01 par value per share	165,704,510 shares

Nasdaq, Inc.

About This Form 10-Q

Throughout this Form 10-Q, 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 GEMX" refers to the options exchange operated by Nasdaq GEMX, LLC.
- "Nasdaq ISE" refers to the options exchange operated by Nasdaq ISE, LLC.
- "Nasdaq MRX" refers to the options exchange operated by Nasdaq MRX, LLC.
- "Nasdaq Nordic" refers to collectively, Nasdaq Clearing AB, Nasdaq Stockholm AB, Nasdaq Copenhagen A/S, Nasdaq Helsinki Ltd, and Nasdaq Iceland hf.
- "Nasdaq PHLX" refers to the options exchange operated by Nasdaq PHLX LLC.
- "Nasdaq PSX" refers to the cash equity exchange operated by Nasdaq PHLX LLC.
- "The Nasdaq Options Market" refers to the options exchange operated by The Nasdaq Stock Market LLC.
- "The Nasdaq Stock Market" refers to the cash equity exchange operated by The Nasdaq Stock Market LLC.

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

401(k) Plan: Voluntary Defined Contribution Savings Plan

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

2017 Credit Facility: $1 billion senior unsecured revolving credit facility which matures on April 25, 2022

2019 Notes: $500 million aggregate principal amount of senior unsecured floating rate notes due March 22, 2019

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

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

ASU: Accounting Standards Update

BWise: BWise Beheer B.V. and its subsidiaries

CCP: Central Counterparty

EMIR: European Market Infrastructure Regulation

Equity Plan: Nasdaq Equity Incentive Plan

ESPP: Nasdaq Employee Stock Purchase Plan

ETF: Exchange Traded Fund

ETP: Exchange Traded Product

eVestment: eVestment, Inc. and its subsidiaries

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

NFX: Nasdaq Futures, Inc.

NPM: The NASDAQ Private Market, LLC

NSCC: National Securities Clearing Corporation

OCC: The Options Clearing Corporation

OTC: Over-the-Counter

PSU: Performance Share Unit

SEC: U.S. Securities and Exchange Commission

SERP: Supplemental Executive Retirement Plan

SFSA: Swedish Financial Supervisory Authority

S&P: Standard & Poor's

S&P 500: S&P 500 Stock Index

TSR: Total Shareholder Return

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

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This Quarterly Report on Form 10-Q 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 Quarterly Report on Form 10-Q 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 Quarterly Report on Form 10-Q 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 Quarterly Report on Form 10-Q for IPOs and new listings of equity securities on the Nasdaq Nordic and Nasdaq Baltic exchanges and Nasdaq First North also is based on data generated internally by us. IPOs and new listings data is presented as of period end. While we are not aware of any misstatements regarding industry data presented herein, our estimates involve risks and uncertainties and are subject to change based on various factors. We refer you to the "Risk Factors" section in this Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, and the "Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 that was filed with the SEC on February 22, 2019.

* * * * * *

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

Forward-Looking Statements

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This Quarterly Report on Form 10-Q 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 strategy, growth forecasts and 2019 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 or which may affect us.*

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

- *our operating results may be lower than expected;*
- *our ability to successfully integrate acquired businesses or divest sold businesses or assets, including the fact that any integration or transition may be more difficult, time consuming or costly than expected, and we may be unable to realize synergies from business combinations, acquisitions, divestitures or other transactional activities;*
- *loss of significant trading and clearing volumes or values, fees, market share, listed companies, market data 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 on which we rely;*
- *any significant error in our operational processes;*
- *our ability to continue to generate cash and manage our indebtedness; and*
- *adverse changes that may occur in the litigation or regulatory areas, or in the securities markets generally.*

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 "Part II. Item 1A. Risk Factors," in this Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 and more fully described in the "Risk Factors," section in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 that was filed with the SEC on February 22, 2019. 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 Quarterly Report on Form 10-Q, including "Part I. Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations," and the condensed 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 - FINANCIAL INFORMATION
Item 1. Financial Statements.
Nasdaq, Inc.
Condensed Consolidated Balance Sheets
(in millions, except share and par value amounts)

	March 31, 2019	December 31, 2018
	(unaudited)	
Assets		
Current assets:		
Cash and cash equivalents	$ 472	$ 545
Restricted cash	67	41
Financial investments, at fair value	220	268
Receivables, net	447	384
Default funds and margin deposits	3,274	4,742
Other current assets	256	390
Total current assets	4,736	6,370
Property and equipment, net	370	376
Goodwill	6,380	6,363
Intangible assets, net	2,329	2,300
Operating lease assets	378	—
Other non-current assets	310	291
Total assets	$ 14,503	$ 15,700
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	$ 218	$ 198
Section 31 fees payable to SEC	69	109
Accrued personnel costs	118	199
Deferred revenue	402	194
Other current liabilities	321	253
Default funds and margin deposits	3,274	4,742
Short-term debt	1,239	875
Total current liabilities	5,641	6,570
Long-term debt	2,328	2,956
Deferred tax liabilities, net	503	501
Operating lease liabilities	357	—
Other non-current liabilities	180	224
Total liabilities	9,009	10,251
Commitments and contingencies		
Equity		
Nasdaq stockholders' equity:		
Common stock, $0.01 par value, 300,000,000 shares authorized, shares issued: 171,592,982 at March 31, 2019 and 170,709,425 at December 31, 2018; shares outstanding: 165,701,483 at March 31, 2019 and 165,165,104 at December 31, 2018	2	2
Additional paid-in capital	2,732	2,716
Common stock in treasury, at cost: 5,891,499 shares at March 31, 2019 and 5,544,321 shares at December 31, 2018	(327)	(297)
Accumulated other comprehensive loss	(1,645)	(1,530)
Retained earnings	4,732	4,558
Total Nasdaq stockholders' equity	5,494	5,449
Total liabilities and equity	$ 14,503	$ 15,700

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018
Revenues:		
Market Services	$ 638	$ 735
Corporate Services	131	132
Information Services	193	174
Market Technology	77	60
Other revenues	—	50
Total revenues	1,039	1,151
Transaction-based expenses:		
Transaction rebates	(331)	(348)
Brokerage, clearance and exchange fees	(74)	(137)
Revenues less transaction-based expenses	634	666
Operating expenses:		
Compensation and benefits	175	197
Professional and contract services	37	37
Computer operations and data communications	33	32
Occupancy	24	25
General, administrative and other	16	22
Marketing and advertising	10	9
Depreciation and amortization	48	53
Regulatory	7	8
Merger and strategic initiatives	9	10
Total operating expenses	359	393
Operating income	275	273
Interest income	3	2
Interest expense	(37)	(38)
Net gain on divestiture of business	27	—
Net income from unconsolidated investees	45	2
Income before income taxes	313	239
Income tax provision	66	62
Net income attributable to Nasdaq	$ 247	$ 177
Per share information:		
Basic earnings per share	$ 1.49	$ 1.06
Diluted earnings per share	$ 1.48	$ 1.05
Cash dividends declared per common share	$ 0.44	$ 0.82

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended March 31,	
	2019	2018
Net income	$ 247	$ 177
Other comprehensive loss:		
Foreign currency translation losses	(106)	(76)
Income tax expense[1]	(9)	(115)
Foreign currency translation, net	(115)	(191)
Employee benefit plan income tax expense[1]	—	(7)
Total other comprehensive loss, net of tax	(115)	(198)
Comprehensive income (loss) attributable to Nasdaq	$ 132	$ (21)

(1) Includes a reclassification of the stranded tax effects, for the three months ended March 31, 2018, related to the Tax Cuts and Jobs Act. See "Tax Cuts and Jobs Act," of Note 17, "Income Taxes," for further discussion.

See accompanying notes to condensed consolidated financial statements.

Nasdaq, Inc.
Condensed Consolidated Statements of Changes in Equity
(Unaudited)
(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	Total Equity
Balance at December 31, 2018	165,165,104	$ 2	$ 2,716	$ (297)	$ (1,530)	$ 4,558	$ 5,449
Net income	—	—	—	—	—	247	247
Other comprehensive loss	—	—	—	—	(115)	—	(115)
Cash dividends declared per common share	—	—	—	—	—	(73)	(73)
Share-based compensation	874,404	—	16	—	—	—	16
Stock option exercises, net	8,666	—	—	—	—	—	—
Restricted stock and performance-based shares withheld for taxes	(346,691)	—	—	(30)	—	—	(30)
Balance at March 31, 2019	165,701,483	$ 2	$ 2,732	$ (327)	$ (1,645)	$ 4,732	$ 5,494

	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	Total Equity
Balance at December 31, 2017	167,441,030	$ 2	$ 3,024	$ (247)	$ (862)	$ 3,963	$ 5,880
Net income	—	—	—	—	—	177	177
Other comprehensive loss[(1)]	—	—	—	—	(198)	142	(56)
Cash dividends declared per common share	—	—	—	—	—	(136)	(136)
Share repurchase program	(1,258,946)	—	(99)	—	—	—	(99)
Share-based compensation	1,250,013	—	15	—	—	—	15
Stock option exercises, net	34,195	—	1	—	—	—	1
Restricted stock and performance-based shares withheld for taxes	(519,700)	—	—	(42)	—	—	(42)
Other employee stock activity	—	—	(15)	—	—	—	(15)
Balance at March 31, 2018	166,946,592	$ 2	$ 2,926	$ (289)	$ (1,060)	$ 4,146	$ 5,725

(1) Includes a reclassification of the stranded tax effects, for the three months ended March 31, 2018, related to the Tax Cuts and Jobs Act. See "Tax Cuts and Jobs Act," of Note 17, "Income Taxes," for further discussion.

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended March 31,	
	2019	2018
Cash flows from operating activities:		
Net income	$ 247	$ 177
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	48	53
Share-based compensation	16	15
Deferred income taxes	(16)	(9)
Net gain on divestiture of business	(27)	—
Net income from unconsolidated investees	(45)	(2)
Other reconciling items included in net income	—	3
Net change in operating assets and liabilities, net of effects of divestiture and acquisitions:		
Receivables, net	(50)	(127)
Other assets	(288)	68
Accounts payable and accrued expenses	34	65
Section 31 fees payable to SEC	(40)	—
Accrued personnel costs	(79)	(59)
Deferred revenue	186	208
Other liabilities	351	(17)
Net cash provided by operating activities	337	375
Cash flows from investing activities:		
Purchases of securities	(101)	(73)
Proceeds from sales and redemptions of securities	138	81
Proceeds from divestiture of business	108	—
Acquisition of business, net of cash and cash equivalents acquired	(193)	—
Purchases of property and equipment	(20)	(16)
Other investing activities	(6)	—
Net cash used in investing activities	(74)	(8)
Cash flows from financing activities:		
Proceeds from (repayments of) commercial paper, net	265	(18)
Repayments of long-term debt	(515)	(115)
Proceeds from long-term debt issuances	15	—
Repurchases of common stock	—	(99)
Dividends paid	(73)	(63)
Payments related to employee shares withheld for taxes	(30)	(42)
Proceeds of customer funds	36	—
Net cash used in financing activities	(302)	(337)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(8)	—
Net increase (decrease) in cash and cash equivalents and restricted cash	(47)	30
Cash and cash equivalents and restricted cash at beginning of period	586	399
Cash and cash equivalents and restricted cash at end of period	$ 539	$ 429
Supplemental Disclosure Cash Flow Information		
Cash paid for:		
Interest	$ 23	$ 33
Income taxes, net of refund	$ 22	$ 27

See accompanying notes to condensed consolidated financial statements.

Nasdaq, Inc.

Notes to Condensed Consolidated Financial Statements (Unaudited)

1. Organization and Nature of Operations

Nasdaq, Inc. is a leading provider of trading, clearing, marketplace technology, regulatory, securities listing, information and public and private company services. Our global offerings are diverse and include trading and clearing across multiple asset classes, trade management services, market data products, financial indexes, investment data and analytics, 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, trading surveillance and many other functions.

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. 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.

In the U.S., we operate six electronic options exchanges and three cash equity exchanges. 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 designated contract market which lists cash-settled energy derivatives based on key energy benchmarks including oil, natural gas and U.S. power. In addition, we also operate a Canadian exchange for the trading of certain Canadian-listed securities.

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

Nasdaq Commodities is the brand name for Nasdaq's European commodity-related products and services. Nasdaq Commodities' offerings include derivatives in oil, power, natural gas and carbon emission markets, seafood, electricity certificates and clearing services. These 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, and connectivity to various data feeds. We also provide data center services, including co-location to market participants, whereby we offer firms cabinet space and power to house their own servers and other equipment within our data centers. Our broker services operations offer technology and customized securities administration solutions to financial participants in the Nordic market.

In March 2019, we entered into an agreement to sell Nordic Fund Market, an electronic mutual fund service which is a smaller part of our Broker Services business.

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 enhance their ability to understand and expand their global shareholder base, and improve corporate governance through our suite of advanced technology, analytics, and consultative services. In March 2019, we advanced technology, analytics, and consultative services. In March 2019, we sold our BWise enterprise governance, risk and compliance software platform and in April 2018, we sold our Public Relations Solutions and Digital Media Services businesses. See Note 5, “Acquisitions and Divestitures,” for further discussion. As of March 2019, our Corporate Solutions business includes our Investor Relations Intelligence and Governance Solutions businesses.

As of December 31, 2018, BWise was classified as held for sale. See Note 6, “Assets and Liabilities Held for Sale,” for further discussion.

For segment reporting purposes, we have included the revenues and expenses of the Public Relations Solutions and Digital Media Services businesses in corporate items, which were part of the Corporate Solutions business, within our Corporate Services segment, prior to the date of sale. For discussion of business segments, see Note 19, “Business Segments.”

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 liquidity solutions for private companies and private funds.

In December 2018, we launched a Corporate Bond exchange for the listing and trading of corporate bonds. The new exchange operates pursuant to The Nasdaq Stock Market exchange license and is powered by the Nasdaq Financial Framework.

As of March 31, 2019, there were 3,059 total listings on The Nasdaq Stock Market, including 388 ETPs. The combined market capitalization was approximately $12.9 trillion. In Europe, the Nasdaq Nordic and Nasdaq Baltic exchanges, together with Nasdaq First North, were home to 1,018 listed companies with a combined market capitalization of approximately $1.4 trillion.

Information Services

Our Information Services segment includes our Market Data, Index and Investment Data & Analytics businesses.

Our Market Data business sells and distributes historical and real-time quote and trade information to the sell-side, the buy-side, retail online brokers, proprietary trading shops, other venues, internet portals and data distributors. Our market data products enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally.

Our Index business develops and licenses Nasdaq-branded indexes, associated derivatives, and financial products and also provides custom calculation services for third-party clients. As of March 31, 2019, we had 346 ETPs licensed to Nasdaq's indexes which had $196 billion in assets under management.

Our Investment Data & Analytics business is a leading content and analytics cloud-based solutions provider used by asset managers, investment consultants and asset owners to help facilitate better investment decisions.

Market Technology

Our Market Technology segment is a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers, buy-side firms and corporate businesses. Our 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 100 marketplaces in 50 countries. Market Technology also provides market surveillance services to broker-dealer firms worldwide, as well as risk management solutions.

2. Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The condensed consolidated financial statements are prepared in accordance with U.S. GAAP and include the accounts of Nasdaq, its wholly-owned subsidiaries and other entities in which Nasdaq has a controlling financial interest. When we do not have a controlling interest in an entity but exercise significant influence over the entity's operating and financial policies, such investment is accounted for under the equity method of accounting. We recognize our share of earnings or losses of an equity method investee based on our ownership percentage. See "Equity Method Investments," of Note 8, "Investments," for further discussion of our equity method investments.

The accompanying condensed 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.

As permitted under U.S. GAAP, certain footnotes or other financial information can be condensed or omitted in the interim condensed consolidated financial statements. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the condensed consolidated financial statements and accompanying notes included in Nasdaq's Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

On January 1, 2019, we adopted ASU 2016-02, "Leases," or ASU 2016-02. See Note 3, "Significant Accounting Policies Update," for further discussion.

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

The preparation of condensed 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 condensed consolidated financial statements and accompanying notes. Actual results could differ from those estimates.

Subsequent Events

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

Recent Accounting Pronouncements

Accounting Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
Goodwill In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment."	This ASU simplifies how an entity is required to test goodwill for impairment and removes the second step of the goodwill impairment test, which required a hypothetical purchase price allocation if the fair value of a reporting unit is less than its carrying amount. Goodwill impairment will now be measured using the difference between the carrying amount and the fair value of the reporting unit and the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. The amendments in this ASU should be applied on a prospective basis.	January 1, 2020, with early adoption permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017.	We will adopt this standard on January 1, 2020. We do not anticipate a material impact on our consolidated financial statements at the time of adoption of this new standard as the carrying amounts of our reporting units have been less than their corresponding fair values in recent years. However, changes in future projections, market conditions and other factors may cause a change in the excess of fair value of our reporting units over their corresponding carrying amounts.
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.	January 1, 2020, with early adoption permitted as of January 1, 2019.	We will adopt this standard on January 1, 2020 and will recognize a cumulative-effect adjustment to retained earnings as of the effective date to align our credit loss methodology with the new standard. We are currently assessing the impact that this standard will have on our consolidated financial statements.

	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.		

3. Significant Accounting Policies Update

Our significant accounting policies are detailed in Note 2, "Summary of Significant Accounting Policies," in our Annual Report on Form 10-K for the year ended December 31, 2018 that was filed with the SEC on February 22, 2019. A significant change to our accounting policies as a result of adopting ASU 2016-02 is discussed below.

We adopted ASU 2016-02 on January 1, 2019, and elected the optional transition method to initially apply the standard at the January 1, 2019 adoption date. As a result, we applied the new lease standard prospectively to our leases existing or commencing on or after January 1, 2019. Comparative periods presented were not restated upon adoption. Similarly, new disclosures under the standard were made for periods beginning January 1, 2019, and not for prior comparative periods. Prior periods will continue to be reported under guidance in effect prior to January 1, 2019. In addition, we elected the package of practical expedients permitted under the transition guidance within the standard, which among other things, allowed us to not reassess contracts to determine if they contain leases, lease classification and initial direct costs. The standard did not impact our statements of income and had no impact on our cash flows.

We have operating leases which are primarily real estate leases for our U.S. and European headquarters and for general office space. These leases have varying lease terms ranging from 3 months to 17 years. We determine if an arrangement is a lease at inception. Operating leases are included in operating lease assets, other current liabilities, and operating lease liabilities in our condensed consolidated balance sheets as of March 31, 2019. As of March 31, 2019, we do not have any finance leases.

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

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

Our lease agreements do not contain any material residual value guarantees or material restrictions or covenants.

We sublease certain real estate to third parties. Our sublease portfolio consists of operating leases.

The following table provides supplemental balance sheet information related to Nasdaq's operating leases:

Leases	Balance Sheet Classification	March 31, 2019
		(in millions)
Assets:		
Operating lease assets	Operating lease assets	$ 378
Liabilities:		
Current lease liabilities	Other current liabilities	$ 61
Non-current lease liabilities	Operating lease liabilities	357
Total lease liabilities		$ 418

Total lease liabilities	$	[illegible]

The following table summarizes Nasdaq's lease cost:

	Three Months Ended March 31, 2019	
	(in millions)	
Operating lease cost(1)	$	20
Variable lease cost		5
Sublease income		(1)
Total lease cost	$	24

(1) Includes short-term lease cost, which was immaterial.

The following table reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the operating lease liabilities recorded in our condensed consolidated balance sheet.

	March 31, 2019
	(in millions)
2019[1]	$ 60
2020	76
2021	66
2022	44
2023	39
Thereafter	260
Total lease payments	545
Less: interest[2]	(127)
Present value of lease liabilities[3]	$ 418

(1) Represents the estimated lease payments to be made for the remaining nine months of 2019.
(2) Calculated using the interest rate for each lease.
(3) Includes the current portion of $61 million.

Total lease payments in the above table exclude $128 million of legally binding minimum lease payments for leases signed but not yet commenced related to expansion of our world headquarters. These leases will commence in 2020 with a lease term of 16 years.

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

	March 31, 2019
Weighted-average remaining lease term (in years)	10.4
Weighted-average discount rate	4.6%

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

	Three Months Ended March 31, 2019
	(in millions)
Cash paid for amounts included in the measurement of operating lease liabilities	$ 18
Lease assets obtained in exchange for new operating lease liabilities	$ 16

4. Revenue From Contracts With Customers

Disaggregation of Revenue

The following tables summarize the disaggregation of revenue by major product and service and by segment for the three months ended March 31, 2019 and 2018:

	Three Months Ended March 31, 2019				
	Market Services	Corporate Services	Information Services	Market Technology	Consolidated
	(in millions)				
Transaction-based trading and clearing, net	$ 160	$ —	$ —	$ —	$ 160
Trade management services	73	—	—	—	73
Corporate solutions	—	60	—	—	60
Listing services	—	71	—	—	71
Market data products	—	—	100	—	100
Index	—	—	54	—	54
Investment data & analytics	—	—	39	—	39
Market technology	—	—	—	77	77
Revenues less transaction-based expenses	$ 233	$ 131	$ 193	$ 77	$ 634

	Three Months Ended March 31, 2018					
	Market Services	Corporate Services	Information Services	Market Technology	Other Revenues	Consolidated
	(in millions)					
Transaction-based trading and clearing, net	$ 175	$ —	$ —	$ —	$ —	$ 175
Trade management services	75	—	—	—	—	75
Corporate solutions	—	60	—	—	—	60
Listing services	—	72	—	—	—	72
Market data products	—	—	100	—	—	100
Index	—	—	50	—	—	50
Investment data & analytics	—	—	24	—	—	24
Market technology	—	—	—	60	—	60
Other revenues	—	—	—	—	50	50
Revenues less transaction-based expenses	$ 250	$ 132	$ 174	$ 60	$ 50	$ 666

For the three months ended March 31, 2019, approximately 65.0% of Market Services revenues were recognized at a point in time and 35.0% were recognized over time. For the three months ended March 31, 2018, approximately 66.0% of Market Services revenues were recognized at a point in time and 34.0% were recognized over time. Substantially all revenues from the Corporate Services, Information Services and Market Technology segments were recognized over time for the three months ended March 31, 2019 and 2018.

* * * * * *

Contract Balances

Substantially all of our revenues are considered to be revenues from contracts with customers. The related accounts receivable balances are recorded in our Condensed Consolidated Balance Sheets as receivables which are net of allowance for doubtful accounts of $11 million as of March 31, 2019 and $13 million as of December 31, 2018. The changes in the balance between periods were immaterial. We do not have obligations for warranties, returns or refunds to customers.

For the majority of our contracts with customers, except for our market technology and listings services contracts, our performance obligations are short-term in nature and there is no significant variable consideration.

We do not have revenues recognized from performance obligations that were satisfied in prior periods. We have elected not to provide disclosures about transaction price allocated to unsatisfied performance obligations if contract durations are less than one year. Excluding our market technology contracts, for contract durations that are one-year or greater, materially all of the transaction price allocated to unsatisfied performance obligations is included in deferred revenue. For our market technology contracts, the portion of transaction price allocated to unsatisfied performance obligations is shown in the table below. Deferred revenue primarily represents our contract liabilities related to our fees for annual and initial listings, market technology, corporate solutions and information services contracts. Deferred revenue is the only significant contract asset or liability as of March 31, 2019. See Note 9, "Deferred Revenue," for our discussion on deferred revenue balances, activity, and expected timing of recognition.

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Transaction Price Allocated to Remaining Performance Obligations

As stated above, for contract durations that are one-year or greater, we do not have a material portion of transaction price allocated to unsatisfied performance obligations that are not included in deferred revenue other than for our market technology contracts. For our market technology contracts, the following table summarizes the amount of the transaction price allocated to performance obligations that are unsatisfied as of March 31, 2019:

	(in millions)
2019[1]	$ 231
2020	257
2021	125
2022	82
2023	43
2024 and thereafter	82
Total	$ 820

(1) Represents performance obligations to be recognized over the remaining nine months of 2019.

Market technology deferred revenue, as discussed in Note 9, "Deferred Revenue," to the condensed consolidated financial statements, represents consideration received that is yet to be recognized as revenue for unsatisfied performance obligations.

5. Acquisitions and Divestitures

2019 Divestiture and Acquisition

We completed the following divestiture and acquisition in 2019. Financial results of each transaction are included in our condensed consolidated financial statements from the date of each divestiture or acquisition.

2019 Divestiture

In March 2019, we sold our BWise enterprise governance, risk and compliance software platform which was part of our Corporate Solutions business within our Corporate Services segment to SAI Global and recognized a pre-tax gain on the sale of $27 million, net of disposal costs ($20 million after tax). The pre-tax gain is included in net gain on divestiture of business in the Condensed Consolidated Statements of Income for the three months ended March 31, 2019.

As of December 31, 2018, the assets and liabilities of BWise were held for sale. See Note 6, "Assets and Liabilities Held For Sale," for further discussion.

2019 Acquisition

	Purchase Consideration	Total Net Assets Acquired	Total Net Deferred Tax Liability	Acquired Intangible Assets	Goodwill
	(in millions)				
Cinnober	$ 219	$ 22	$ (19)	$ 79	$ 137

In January 2019, we acquired Cinnober, a major Swedish financial technology provider to brokers, exchanges and clearinghouses worldwide for $219 million. Cinnober is part of our Market Technology segment.

Nasdaq used cash on hand to fund this acquisition.

The amounts in the table above represent the preliminary allocation of purchase price as of March 31, 2019 and 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 in the Cinnober acquisition.

2018 Acquisition and Divestiture

We completed an acquisition during the year ended December 31, 2018 and a divestiture in April 2018. Financial results of each transaction are included in our condensed consolidated financial statements from the date of the acquisition or divestiture.

2018 Acquisition

Acquisition of Quandl

In November 2018, we acquired Quandl, Inc., a leading provider of alternative and core financial data. Quandl is part of our Information Services segment.

Nasdaq used issuances of commercial paper to fund this acquisition.

2018 Divestiture

In April 2018, we sold our Public Relations Solutions and Digital Media Services businesses which were part of our Corporate Solutions business to West Corporation. A pre-tax gain of $41 million, net of disposal costs ($19 million after tax) was included in the Condensed Consolidated Statements of Income in the second quarter of 2018. A post-closing working capital adjustment of $8 million ($5 million after tax) was included in the Condensed Consolidated Statements of Income in the third quarter of 2018 bringing the net gain on the sale to $33 million, ($14 million after tax) for the nine months ended September 30, 2018.

Through a multi-year partnership with West, Nasdaq will continue to provide eligible Nasdaq-listed clients with access to public relations, webcasting and webhosting products and services as part of the terms of the transaction.

As part of the terms of the transaction, we are providing transition services to West, such as technology, finance and facilities related services until mid-2019, and the compensation received for such transition services is being reflected as a reduction to the underlying expenses incurred by Nasdaq to provide such transition services.

Intangible Assets

The following table presents the details of the customer relationships intangible asset at the date of acquisition for Cinnober which was the significant acquired intangible asset for this acquisition. All acquired intangible assets with finite lives are amortized using the straight-line method.

	March 31, 2019
	($ in millions)
Customer relationships	$ 67
Discount rate used	9.5%
Estimated average useful life	13 years

Customer Relationships

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

Methodology

Customer relationships were valued using the income approach, specifically an excess earnings method. The excess earnings method examines the economic returns contributed by the identified tangible and intangible assets of a company, and then isolates the excess return that is attributable to the intangible asset being valued.

Discount Rate

The discount 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 acquisition of Cinnober, 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 5 years.

Estimated Useful Life

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

6. Assets and Liabilities Held For Sale

In December 31, 2018, we decided to sell BWise, our enterprise governance, risk and compliance software platform and this business was recorded as held for sale. BWise was part of our Corporate Solutions business within our Corporate Services segment.

We determined that we met all of the criteria to classify the assets and liabilities of BWise as held for sale. The disposal of BWise did not represent a strategic shift that would have a major effect on our operations and financial results and was, therefore, not classified as discontinued operations. As a result of this classification, the assets and liabilities of this business were recorded at the lower of their carrying amount or fair value less costs to sell.

In February 2019, we entered into an agreement to sell BWise and in March 2019, we completed the sale and recognized a pre-tax gain on the sale of $27 million, net of disposal costs ($20 million after tax). See “2019 Divestiture,” of Note 5, “Acquisitions and Divestitures,” for further discussion.

Based on the sales price in the agreement, no impairment charge was recorded at the time of the sale as the carrying amount of the net assets was less than the sales price in the agreement less costs to sell.

Major Classes of Assets and Liabilities Held For Sale

The carrying amounts of the major classes of assets and liabilities that were classified as held for sale at December 31, 2018 were as follows:

	December 31, 2018
	(in millions)
Receivables, net	$ 13
Property and equipment, net	10
Goodwill [1]	47
Intangible assets, net[2]	16
Other assets	3
Total assets held for sale[3]	$ 89
Deferred tax liabilities	$ 4
Deferred revenue	12
Other current liabilities	4
Total liabilities held for sale[4]	$ 20

(1) The assignment of goodwill was based on the relative fair value of the disposal group and the portion of the remaining reporting unit.

(2) Primarily represents customer relationships.

(3) Included in other current assets in the Condensed Consolidated Balance Sheets as of December 31, 2018.

(4) Included in other current liabilities in the Condensed Consolidated Balance Sheets as of December 31, 2018.

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7. Goodwill and Acquired Intangible Assets

Goodwill

The following table presents the changes in goodwill by business segment during the three months ended March 31, 2019:

	Market Services	Corporate Services	Information Services	Market Technology	Total
			(in millions)		
Balance at December 31, 2018	$ 3,430	$ 455	$ 2,333	$ 145	$ 6,363
Goodwill acquired	—	—	—	137	137
Foreign currency translation adjustment	(62)	(4)	(44)	(10)	(120)
Balance at March 31, 2019	$ 3,368	$ 451	$ 2,289	$ 272	$ 6,380

The goodwill acquired for Market Technology shown above relates to our acquisition of Cinnober. See "2019 Acquisition," of Note 5, "Acquisitions and Divestitures," for further discussion.

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 three months ended March 31, 2019 and 2018; however, events such as extended 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:

	March 31, 2019				December 31, 2018			
	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	$ 65	$ (16)	$ 49	9	$ 54	$ (15)	$ 39	9
Customer relationships	1,599	(460)	1,139	18	1,532	(456)	1,076	18
Other	18	(3)	15	8	17	(2)	15	8
Foreign currency translation adjustment	(160)	51	(109)		(149)	64	(85)	
Total finite-lived intangible assets	$ 1,522	$ (428)	$ 1,094		$ 1,454	$ (409)	$ 1,045	
Indefinite-Lived Intangible Assets								
Exchange and clearing registrations	$ 1,257	$ —	$ 1,257		$ 1,257	$ —	$ 1,257	
Trade names	122	—	122		122	—	122	
Licenses	52	—	52		52	—	52	
Foreign currency translation adjustment	(196)	—	(196)		(176)	—	(176)	
Total indefinite-lived intangible assets	$ 1,235	$ —	$ 1,235		$ 1,255	$ —	$ 1,255	
Total intangible assets	$ 2,757	$ (428)	$ 2,329		$ 2,709	$ (409)	$ 2,300	

Amortization expense for acquired finite-lived intangible assets was $26 million for the three months ended March 31, 2019 and $28 million for the three months ended March 31, 2018. Amortization expense decreased in 2019 primarily due to certain assets becoming fully amortized in the fourth quarter of 2018, partially offset by additional amortization expense associated with acquired intangible assets in 2019. These amounts are included in depreciation and amortization expense in the Condensed Consolidated Statements of Income.

The estimated future amortization expense (excluding the impact of foreign currency translation adjustments of $109 million as of March 31, 2019) of acquired finite-lived intangible assets as of March 31, 2019 is as follows:

	(in millions)
2019[(1)]	$ 80
2020	104
2021	103
2022	100
2023	98
2024 and thereafter	718
Total	$ 1,203

(1) Represents the estimated amortization to be recognized for the remaining nine months of 2019.

8. Investments

The following table presents the details of our investments:

	March 31, 2019	December 31, 2018
	(in millions)	
Trading securities	$ 220	$ 259
Available-for-sale investment securities	—	9
Financial investments, at fair value	$ 220	$ 268
Equity method investments	$ 136	$ 135
Equity securities	$ 61	$ 44

Financial Investments, at Fair Value

Trading Securities

Trading securities, which are included in financial investments, at fair value in the Condensed Consolidated Balance Sheets, are primarily comprised of highly rated European government debt securities, of which $194 million as of March 31, 2019 and $166 million as of December 31, 2018, are assets primarily

utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing.

Available-for-Sale Investment Securities

As of December 31, 2018, available-for-sale investment securities, which are included in financial investments, at fair value in the Condensed Consolidated Balance Sheets, were primarily comprised of commercial paper. As of March 31, 2019 and December 31, 2018, the cumulative unrealized gains and losses on these securities were immaterial.

Equity Method Investments

As of March 31, 2019 and December 31, 2018, our equity method investments primarily included our equity interest in OCC.

The carrying amounts of our equity method investments are included in other non-current assets in the Condensed Consolidated Balance Sheets.

Net income recognized from our equity interest in the earnings and losses of these equity method investments was $45 million for the three months ended March 31, 2019 and $2 million for the three months ended March 31, 2018.

The change for the three months ended March 31, 2019 compared with the same period in 2018 is due to an increase in income recognized from our investment in OCC. Following the disapproval of the OCC capital plan in February 2019, described below, OCC suspended customer rebates and dividends to owners, including the unpaid dividend on 2018 results which Nasdaq expected to receive in March 2019. In 2018, we recorded $16 million of income relating to our share of OCC’s net income. We were not able to determine the impact of the disapproval of the OCC capital plan on OCC's 2018 net income until March 2019, when OCC's 2018 financial statements were made available to us. As a result, in March 2019, we recognized an additional $36 million of income relating to our share of OCC's net income for the year ended December 31, 2018. In March 2019, we also recognized our share of OCC's first quarter 2019 net income of $9 million.

OCC Capital Plan

In March 2015, OCC implemented a capital plan under which the options exchanges that are OCC’s stockholders contributed $150 million of new equity capital to OCC, committed to make future replenishment capital contributions under certain circumstances, and received commitments regarding future dividend payments and related matters. Nasdaq PHLX and ISE each contributed $30 million of new equity capital under the OCC capital plan. OCC adopted specific policies with respect to fees, customer refunds and stockholder dividends, which envisioned an annual dividend equal to the portion of OCC’s after-tax income that exceeded OCC’s capital requirements after payment of refunds to OCC’s clearing members (such refunds were generally 50% of the portion of OCC’s pre-tax income that exceeded OCC’s capital requirements). In 2018, 2017 and 2016, OCC disbursed annual dividends under the capital plan and Nasdaq, as the beneficial owner of shares held by Nasdaq PHLX and ISE, received $13 million in 2018, $10 million in 2017 and $4 million in 2016. The dividend recorded by Nasdaq in 2016 did not include the dividend due to ISE because our acquisition of ISE was completed in June 2016, after that year’s dividend had been paid.

In February 2016, after the SEC approved the rule change establishing the OCC capital plan, certain industry participants appealed that approval in the U.S. Court of Appeals. In February 2019, on remand from the Court of Appeals, the SEC disapproved the OCC rule change that established the capital plan. OCC began a phased return of capital contributed under the capital plan, and we received $44 million in February 2019, with the remainder to be repaid at a later date. As a result of the SEC's disapproval of the rule change, we are also released from any future capital replenishment obligations under the 2015 capital plan.

Equity Securities

The carrying amounts of our equity securities are included in other non-current assets in the Condensed Consolidated Balance Sheets. We elected the measurement alternative for primarily all of our equity securities as they do not have a readily determinable fair value. Under the measurement alternative, these securities are measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. For the three months ended March 31, 2019, no impairment charges were recorded on our equity securities and there were no upward or downward adjustments recorded. As of March 31, 2019 and December 31, 2018, our equity securities primarily represent various strategic investments made through our corporate venture program.

9. Deferred Revenue

Deferred revenue represents consideration received that is yet to be recognized as revenue. The changes in our deferred revenue during the three months ended March 31, 2019 are reflected in the following table:

	Initial Listing Revenues	Annual Listings Revenues	Market Technology Revenues	Corporate Solutions Revenues	Information Services Revenues	Other(1)	Total
	(in millions)						
Balance at December 31, 2018	$ 66	$ 4	$ 75	$ 36	$ 80	$ 20	$ 281
Additions	8	229	55	42	56	9	399
Revenue recognized	(8)	(56)	(49)	(38)	(40)	(7)	(198)
Translation adjustment	(1)	—	(3)	—	—	—	(4)
Balance at March 31, 2019	$ 65	$ 177	$ 78	$ 40	$ 96	$ 22	$ 478

(1) Primarily includes deferred revenue from U.S. listing of additional shares fees which will continue to run-off as a result of the implementation of our all-inclusive annual fee. Listing of additional shares fees are included in our Listing Services business. The additions primarily pertain to our Market Services business.

As of March 31, 2019, we estimate that our deferred revenue will be recognized in the following years:

	Initial Listing Revenues	Annual Listings Revenues	Market Technology Revenues	Corporate Solutions Revenues	Information Services Revenues	Other(1)	Total
	(in millions)						
Fiscal year ended:							
2019(2)	$ 19	$ 177	$ 49	$ 37	$ 87	$ 12	$ 381
2020	20	—	22	3	9	7	61
2021	11	—	7	—	—	3	21
2022	8	—	—	—	—	—	8
2023	5	—	—	—	—	—	5
2024 and thereafter	2	—	—	—	—	—	2
Total	$ 65	$ 177	$ 78	$ 40	$ 96	$ 22	$ 478

(1) Other primarily includes revenues from listing of additional shares fees which are included in our Listing Services business.
(2) Represents the estimated amortization to be recognized for the remaining nine months of 2019.

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.

10. Debt Obligations

The following table presents the changes in the carrying amount of our debt obligations during the three months ended March 31, 2019:

	December 31, 2018	Additions	Payments, Accretion and Other	March 31, 2019
		(in millions)		
Short-term debt:				
Commercial paper	$ 275	$ 692	$ (427)	$ 540
Senior unsecured floating rate notes repaid on March 22, 2019	500	—	(500)	—
5.55% senior unsecured notes due January 15, 2020[(1)]	599	—	—	599
$400 million senior unsecured term loan facility due November 25, 2019 (average interest rate of 4.00% for the period January 1, 2019 through March 31, 2019)	100	—	—	100
Total short-term debt	1,474	692	(927)	1,239
Long-term debt:				
3.875% senior unsecured notes due June 7, 2021	686	—	(15)	671
4.25% senior unsecured notes due June 1, 2024	497	—	—	497
1.75% senior unsecured notes due May 19, 2023	682	—	(15)	667
3.85% senior unsecured notes due June 30, 2026	496	—	—	496
$1 billion revolving credit commitment due April 25, 2022 (average interest rate of 5.60% for the period January 1, 2019 through March 31, 2019)	(4)	15	(14)	(3)
Total long-term debt	2,357	15	(44)	2,328
Total debt obligations	$ 3,831	$ 707	$ (971)	$ 3,567

(1) Balance was reclassified to short-term debt as of March 31, 2019.

Commercial Paper Program

Our U.S. dollar commercial paper program is supported by our 2017 Credit Facility which provides liquidity support for the repayment of commercial paper issued through the commercial paper program. See "2017 Credit Facility" below for further discussion of our 2017 Credit Facility. The effective interest rate of commercial paper issuances fluctuates as short term interest rates and demand fluctuate. The fluctuation of these rates due to market conditions may impact our interest expense.

As of March 31, 2019, commercial paper notes in the table above reflect the aggregate principal amount, less the unamortized discount which is being accreted through interest expense over the life of the applicable notes. The original maturities of these notes range from 3 days to 19 days and the weighted-average maturity is 2 days. The weighted-average effective interest rate is 2.78% per annum.

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 March 31, 2019, 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.

Senior Unsecured Floating Rate Notes

In March 2019, we used net proceeds from the sale of commercial paper and cash on hand to redeem all of our 2019 Notes.

Nasdaq issued the 2019 Notes in September 2017. The 2019 Notes paid interest quarterly in arrears at a rate equal to the three-month U.S. dollar LIBOR as determined at the beginning of each quarterly period plus 0.39% per annum until March 22, 2019.

5.55% Senior Unsecured Notes Due 2020

In April 2019, we sent a redemption notice to the trustee to redeem all $600 million aggregate principal amount outstanding of our 2020 Notes, at a cash redemption price to be calculated as provided in the indenture governing the 2020 Notes, plus accrued and unpaid interest, if any, to the redemption date of May 1, 2019. Upon completion of the redemption, no 2020 Notes will remain outstanding.

Payment of the redemption price will be made on or after the redemption date only upon presentation and surrender of the 2020 Notes to the trustee. Interest on the 2020 Notes called for redemption will cease to accrue from and after the redemption date.

Nasdaq issued the 2020 Notes in January 2010. The 2020 Notes paid interest semiannually at a rate of 5.55%% per annum.

Nasdaq will primarily use the net proceeds from the sale of the 2029 Notes to redeem the 2020 Notes. For further discussion of the 2029 Notes, see "1.75% Senior Unsecured Notes Due 2029" below.

3.875% Senior Unsecured Notes Due 2021

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 $15 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 Condensed Consolidated Balance Sheets as of March 31, 2019.

4.25% Senior Unsecured Notes Due 2024

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 Due 2023

In May 2016, Nasdaq issued the 2023 Notes. 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 $15 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 Condensed Consolidated Balance Sheets as of March 31, 2019.

3.85% Senior Unsecured Notes Due 2026

In June 2016, Nasdaq issued the 2026 Notes. 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%.

1.75% Senior Unsecured Notes Due 2029

In April 2019, Nasdaq issued €600 million aggregate principal amount of 1.75% senior notes due 2029, or the 2029 Notes, at a discount. As a result of the discount, the proceeds received from the issuance were less than the aggregate principal amount.

The 2029 Notes are unsecured, pay interest annually in arrears, beginning on March 28, 2020 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The proceeds from the 2029 Notes, approximately $669 million after deducting the underwriting discount and expenses of this offering, will primarily be used to redeem the 2020 Notes. For further discussion of the 2020 Notes, see "5.55% Senior Unsecured Notes Due 2020" above.

The 2029 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries.

Credit Facilities

As of March 31, 2019, 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.

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, 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 properties and insurance, and events of default, including cross-defaults to our material indebtedness.

2017 Credit Facility

In April 2017, Nasdaq entered into the 2017 Credit Facility. The 2017 Credit Facility consists of a $1 billion five-year revolving credit facility (with sublimits for non-dollar borrowings, swingline borrowings and letters of credit), which replaced a former credit facility. Nasdaq intends to use funds available under the 2017 Credit Facility for general corporate purposes and to provide liquidity support for the repayment of commercial paper issued through the commercial paper program.

As of March 31, 2019, no amounts were outstanding on the 2017 Credit Facility. The $3 million balance represents unamortized debt issuance costs. Of the $1 billion that is available for borrowing, $541 million provides liquidity support for the commercial paper program and for a letter of credit. As such, as of March 31, 2019, the total remaining amount available under the 2017 Credit Facility was $459 million. See "Commercial Paper Program" above for further discussion of our commercial paper program.

Under our 2017 Credit Facility, borrowings under the revolving credit facility and swingline borrowings bear interest on the principal amount outstanding at a variable interest rate based on either the LIBOR or the base rate (as defined in the credit agreement) (or other applicable rate with respect to non-dollar borrowings), plus an applicable margin that varies with Nasdaq's debt rating. We are charged commitment fees of 0.125% to 0.4%, depending on our credit rating, whether or not amounts have been borrowed. These commitment fees are included in interest expense and were not material for the three months ended March 31, 2019 and 2018.

The 2017 Credit Facility includes an option for Nasdaq to increase the available aggregate amount by up to $500 million, subject to the consent of the lenders funding the increase and certain other conditions.

2016 Credit Facility

In March 2016, Nasdaq entered into the 2016 Credit Facility. Under our 2016 Credit Facility, borrowings bear interest on the principal amount outstanding 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.

As of March 31, 2019, the amount outstanding of $100 million is due upon maturity at November 25, 2019, which we expect to repay with cash on hand and proceeds from issuances of commercial paper or borrowings from our revolving credit commitment under our 2017 Credit Facility.

Other Credit Facilities

We also have credit facilities related to our Nasdaq Clearing operations in order to provide further liquidity. Credit facilities, which are available in multiple currencies, totaled $210 million as of March 31, 2019 and $220 million as of December 31, 2018 in available liquidity, none of which was utilized.

Debt Covenants

As of March 31, 2019, we were in compliance with the covenants of all of our debt obligations.

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. Savings plan expense included in compensation and benefits expense in the Condensed Consolidated Statements of Income was $3 million for the three months ended March 31, 2019 and $4 million for three months ended March 31, 2018.

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 Condensed Consolidated Statements of Income and was $5 million the three months ended March 31, 2019 and $6 million for three months ended March 31, 2018.

12. Share-Based Compensation

We have a share-based compensation program for employees and non-employee directors. 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 three months ended March 31, 2019 and 2018 in the Condensed Consolidated Statements of Income:

	Three Months Ended March 31,	
	2019	2018
	(in millions)	
Share-based compensation expense before income taxes	$ 16	$ 15
Income tax benefit	(4)	(4)
Share-based compensation expense after income taxes	$ 12	$ 11

Common Shares Available Under Our Equity Plan

As of March 31, 2019, we had approximately 11.3 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 stock 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.

Summary of Restricted Stock Activity

The following table summarizes our restricted stock activity for the three months ended March 31, 2019:

	Restricted Stock	
	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested balances at January 1, 2019	1,583,375	$ 68.62
Granted	250	$ 77.54
Vested	(435,765)	$ 57.07
Forfeited	(65,798)	$ 70.35
Unvested balances at March 31, 2019	1,082,062	$ 73.12

The awards granted in the above table do not include the all-employee grant which occurred on April 1, 2019.

As of March 31, 2019, $45 million of total unrecognized compensation cost related to restricted stock is expected to be recognized over a weighted-average period of 1.7 years.

PSUs

PSUs are based on performance measures that impact the amount of shares that each recipient will receive upon vesting. 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

The grant date fair value of PSUs under the one-year performance-based program is based on the closing stock price at the date of grant less the present value of future cash dividends. Under this program, an eligible employee receives a target grant of PSUs, but 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 one-year performance period. Compensation cost is recognized over the performance period and the three-year vesting period based on the probability that such performance measures will be achieved, taking into account an estimated forfeiture rate.

During 2018, certain grants of PSUs with a one-year performance period exceeded the applicable performance parameters. As a result, an additional 51,914 units above target were considered granted in the first quarter of 2019 and are included in the below table.

Three-Year PSU Program

Under the three-year performance-based program, each eligible individual receives PSUs, subject to market conditions, with a three-year cumulative performance period that vest at the end of the performance period. Compensation cost is recognized over the three-year vesting period, taking into account an estimated forfeiture rate, regardless of whether the market condition is satisfied, provided that the requisite service period has been completed. Performance will be determined by comparing Nasdaq's TSR to two peer groups, each weighted 50.0%. The first peer group consists of exchange companies, and the second peer group consists of all companies in the S&P 500. Nasdaq's relative performance ranking against each of these groups will determine the final number of shares delivered to each individual under the program. The 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 PSUs 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 2016 with a three-year performance period exceeded the applicable performance parameters. As a result, an additional 99,622 units above target were considered granted in the first quarter of 2019 and are included in the below table.

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 three months ended March 31, 2018:

	Three Months Ended March 31, 2018
Weighted-average risk free interest rate[1]	2.36%
Expected volatility[2]	18.7%
Weighted-average grant date share price	$ 86.22
Weighted-average fair value at grant date	$ 116.79

(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 three months ended March 31, 2019:

	PSUs			
	One-Year Program		Three-Year Program	
	Number of Awards	Weighted-Average Grant Date Fair Value	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested balances at January 1, 2019	314,231	$ 74.01	837,750	$ 96.57
Granted[1]	51,914	$ 82.08	99,622	$ 93.25
Vested	(6,888)	$ 64.93	(431,751)	$ 93.25
Forfeited	(13,984)	$ 74.54	(6,101)	$ 103.29
Unvested balances at March 31, 2019	345,273	$ 75.38	499,520	$ 98.70

(1) Only includes certain additional awards granted based on overachievement of performance parameters as the all-employee grant occurred on April 1, 2019.

As of March 31, 2019, $11 million of total unrecognized compensation cost related to the one-year PSU program is expected to be recognized over a weighted-average period of 1.5 years. For the three-year PSU program, $23 million of total unrecognized compensation cost is expected to be recognized over a weighted-average period of 1.3 years.

Stock Options

In January 2017, our CEO received 268,817 performance-based non-qualified stock options which will vest annually over a three-year period, with each vesting contingent upon the achievement of annual performance parameters. On January 29, 2019, Nasdaq's management compensation committee and board of directors determined that the performance goal for 2018 was met, resulting in the settlement of the second one-third of the grant. There were no stock option awards granted during the three months ended March 31, 2019.

The weighted-average grant date fair value for the 2017 grant was $66.68. We estimated the fair value of this stock option award using the Black-Scholes valuation model using the following assumptions:

Expected life (in years)	6
Weighted-average risk free interest rate	2.1%
Expected volatility	25.6%
Dividend yield	1.92%

Our computation of expected life was based on an estimate of the average length of time between option grant and exercise. The interest rate for periods within the expected life of the award was based on the U.S. Treasury yield curve in effect at the time of grant. Our computation of expected volatility was an estimate of the future upward/downward fluctuations in the underlying share price. We used Nasdaq's historical volatility for the trailing 6-year period as of the grant date. Our computation of dividend yield was based on annualized dividends expressed as a percentage of share price.

Summary of Stock Option Activity

A summary of stock option activity for the three months ended March 31, 2019 is as follows:

	Number of Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding at January 1, 2019	448,966	$ 49.11	5.51	$ 15
Exercised	(8,666)	23.81		
Outstanding at March 31, 2019	440,300	$ 49.61	5.33	$ 17
Exercisable at March 31, 2019	350,694	$ 45.25	4.71	$ 15

The net cash proceeds from the exercise of 8,666 stock options for the three months ended March 31, 2019 was immaterial. We received net cash proceeds of $1 million from the exercise of 34,195 stock options for the three months ended March 31, 2018.

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 March 29, 2019 of $87.49 and the exercise price, times the number of shares) based on stock options with an exercise price less than Nasdaq's closing price of $87.49 as of March 29, 2019, 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 March 31, 2019 was 0.4 million and the weighted-average exercise price was $45.25. As of March 31, 2018, 0.4 million outstanding stock options were exercisable and the weighted-average exercise price was $34.28.

The total pre-tax intrinsic value of stock options exercised was $1 million for the three months ended March 31, 2019 and $2 million for the three months ended March 31, 2018.

ESPP

We have an ESPP under which approximately 1.9 million shares of our common stock have been reserved for future issuance as of March 31, 2019. 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 which totaled $1 million for both the three months ended March 31, 2019 and 2018.

13. Nasdaq Stockholders' Equity

Common Stock

As of March 31, 2019, 300,000,000 shares of our common stock were authorized, 171,592,982 shares were issued and 165,701,483 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 Condensed Consolidated Balance Sheets. Shares repurchased under our share repurchase program are currently retired and canceled. When treasury shares are reissued, they are recorded at the average cost of the treasury shares acquired. We held 5,891,499 shares of common stock in treasury as of March 31, 2019 and 5,544,321 shares as of December 31, 2018, most of which are related to shares of our common stock repurchased for the settlement of employee tax withholding obligations arising from the vesting of restricted stock and PSUs.

Share Repurchase Program

In January 2018, our board of directors authorized an additional $500 million for the share repurchase program bringing the total capacity to $726 million.

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 share repurchase program has no defined expiration date.

There was no share repurchase activity during the three months ended March 31, 2019. The following is a summary of our share repurchase activity, reported based on settlement date, for the three months ended March 31, 2018:

	Three Months Ended March 31, 2018
Number of shares of common stock repurchased	1,258,946
Average price paid per share	$ 78.75
Total purchase price (in millions)	$ 99

As discussed above in "Common Stock in Treasury, at Cost," shares repurchased under our share repurchase program are currently retired and cancelled. As of March 31, 2019, the remaining amount authorized for share repurchases under the program was $332 million.

Other Repurchases of Common Stock

During the first three months of 2019, we repurchased 346,691 shares of our common stock in settlement of employee tax withholding obligations arising from the vesting of restricted stock and PSUs.

Preferred Stock

Our certificate of incorporation authorizes the issuance of 30,000,000 shares of preferred stock, par value $0.01 per share, issuable from time to time in one or more series. As of March 31, 2019 and December 31, 2018, no shares of preferred stock were issued or outstanding.

* * * * * *

Cash Dividends on Common Stock

During the first three months of 2019, our board of directors declared the following cash dividends:

Declaration Date	Dividend Per Common Share	Record Date	Total Amount Paid (in millions)	Payment Date
January 29, 2019	$ 0.44	March 15, 2019	$ 73	March 29, 2019

The total amount paid of $73 million was recorded in retained earnings in the Condensed Consolidated Balance Sheets at March 31, 2019.

In April 2019, the board of directors approved a regular quarterly cash dividend of $0.47 per share on our outstanding common stock, which reflects a 7.0% increase from our prior quarterly cash dividend of $0.44. The dividend is payable on June 28, 2019 to shareholders of record at the close of business on June 14, 2019. The estimated amount of this dividend is $78 million. Future declarations of quarterly dividends and the establishment of future record and payment dates are subject to approval by the board of directors.

Our board of directors maintains a dividend policy with the intention to provide stockholders with regular and growing dividends over the long term as earnings and cash flow grow.

14. Earnings Per Share

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

	Three Months Ended March 31,	
	2019	2018
Numerator:	(in millions, except share and per share amounts)	
Net income attributable to common shareholders	$ 247	$ 177
Denominator:		
Weighted-average common shares outstanding for basic earnings per share	165,343,968	166,921,542
Weighted-average effect of dilutive securities:		
Employee equity awards[1]	1,682,787	2,070,997
Weighted-average common shares outstanding for diluted earnings per share	167,026,755	168,992,539
Basic and diluted earnings per share:		
Basic earnings per share	$ 1.49	$ 1.06
Diluted earnings per share	$ 1.48	$ 1.05

(1) PSUs, which are considered contingently issuable, are included in the computation of dilutive earnings per share on a weighted average basis when management determines the related performance criteria are met.

Securities that were not included in the computation of diluted earnings per share because their effect was antidilutive were immaterial for the three months ended March 31, 2019 and 2018.

15. Fair Value of Financial Instruments

The following tables present our financial assets and financial liabilities that are measured at fair value on a recurring basis as of March 31, 2019 and December 31, 2018.

	March 31, 2019			
	Total	Level 1	Level 2	Level 3
Assets at Fair Value	(in millions)			
Financial investments, at fair value	$ 220	$ 162	$ 58	$ —
Default fund and margin deposit investments	1,604	180	1,424	—
Total Assets at Fair Value	$ 1,824	$ 342	$ 1,482	$ —
Liabilities at Fair Value				
Other financial instruments	$ 99	$ —	$ 99	$ —
Total Liabilities at Fair Value	$ 99	$ —	$ 99	$ —

	December 31, 2018			
	Total	Level 1	Level 2	Level 3
Assets at Fair Value	(in millions)			
Financial investments, at fair value	$ 268	$ 133	$ 135	$ —
Default fund and margin deposit investments	1,649	327	1,322	—
Total Assets at Fair Value	$ 1,917	$ 460	$ 1,457	$ —
Liabilities at Fair Value				
Other financial instruments	$ 112	$ —	$ 112	$ —
Total Liabilities at Fair Value	$ 112	$ —	$ 112	$ —

As of March 31, 2019 and December 31, 2018, Level 1 financial investments, at fair value were primarily comprised of trading securities, mainly highly rated European government debt securities. As of March 31, 2019 and December 31, 2018, Level 2 financial investments, at fair value were primarily comprised of trading securities, mainly corporate bonds and European mortgage bonds. Of the Level 1 and Level 2 financial investments, at fair value, $194 million as of March 31, 2019 and $166 million as of December 31, 2018 are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing.

Our Level 1 default fund and margin deposit investments were primarily comprised of highly rated European and U.S. government debt securities. Level 2 default fund and margin deposit investments were primarily comprised of central bank certificates and reverse repurchase agreements, as of March 31, 2019 and December 31, 2018.

Our Level 2 other financial instruments include a liability associated with Nasdaq Clearing's requirement to fulfill the settlement of certain contracts of a defaulted member. The fair value of this guarantee was $99 million as of March 31, 2019 and $112 million as of December 31, 2018 and is included in other current liabilities in the Condensed Consolidated Balance Sheets. Collateral of $99 million as of March 31, 2019 and $112 million as of December 31, 2018 was recorded in other current assets which offsets this liability. See Note 16, "Clearing Operations," for further discussion of default fund contributions and margin deposits.

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, commercial paper and certain other current liabilities.

Our investment in OCC is accounted for under the equity method of accounting. We have elected the measurement alternative for the majority of our equity securities, which primarily represent various strategic investments made through our corporate venture program. See "Equity Method Investments," and "Equity Securities," of Note 8, "Investments," for further discussion.

We also consider our debt obligations to be financial instruments. The fair value of our debt obligations, utilizing discounted cash flow analyses for our floating rate debt and prevailing market rates for our fixed rate debt, was $3.7 billion as of March 31, 2019 and $3.9 billion as of December 31, 2018. The discounted cash flow analyses are based on borrowing rates currently available to us for debt with similar terms and maturities. The fair value of our commercial paper approximates the carrying value since the rates of interest on this short-term debt approximate market rates as of March 31, 2019. Our commercial paper and our fixed rate and floating rate debt are categorized as Level 2 in the fair value hierarchy.

For further discussion of our debt obligations, see Note 10, "Debt Obligations."

Non-Financial Assets Measured at Fair Value on a Non-Recurring Basis

Our non-financial assets, which include goodwill, intangible assets, and other long-lived assets, are not required to be carried at fair value on a recurring basis. Fair value measures of non-financial assets are primarily used in the impairment analysis of these assets. Any resulting asset impairment would require that the non-financial asset be recorded at its fair value. Nasdaq uses Level 3 inputs to measure the fair value of the above assets on a non-recurring basis. As of March 31, 2019 and December 31, 2018, there were no non-financial assets measured at fair value on a non-recurring basis.

16. Clearing Operations

Nasdaq Clearing

Nasdaq Clearing is authorized and supervised under EMIR as a multi-asset clearinghouse by the SFSA. Such authorization is effective for all member states of the European Union and certain other non-member states that are part of the European Economic Area, including Norway. The clearinghouse acts as the CCP for exchange and OTC trades in equity derivatives, fixed income derivatives, resale and repurchase contracts, power derivatives, emission allowance derivatives, fuel oil derivatives, and seafood derivatives.

Through our clearing operations in the financial markets, which include the resale and repurchase market, the commodities markets, and the seafood market, Nasdaq Clearing is the legal counterparty for, and guarantees the fulfillment of, each contract cleared. These contracts are not used by Nasdaq Clearing for the purpose of trading on its own behalf. As the legal counterparty of each transaction, Nasdaq Clearing bears the counterparty risk between the purchaser and seller in the contract. In its guarantor role, Nasdaq Clearing has precisely equal and offsetting claims to and from clearing members on opposite sides of each contract, standing as the CCP on every contract cleared. In accordance with the rules and regulations of Nasdaq Clearing, default fund and margin collateral requirements are calculated for each clearing member's positions in accounts with the CCP. See "Default Fund Contributions and Margin Deposits" below for further discussion of Nasdaq Clearing's default fund and margin requirements.

Nasdaq Clearing maintains 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 align risk between Nasdaq Clearing and its clearing members.

Nasdaq Commodities Clearing Default

In September 2018, a member of the Nasdaq Clearing commodities market defaulted due to inability to post sufficient collateral to cover increased margin requirements for the positions of the relevant member, which had experienced losses due to sharp adverse movements in the Nordic - German power market spread. Nasdaq Clearing followed default procedures and offset the future market risk on the defaulting member's positions. The default resulted in a loss of $133 million. In accordance with the liability waterfall, the first $8 million of the loss was allocated to Nasdaq Clearing's junior capital and the remainder was allocated on a pro-rata basis to the commodities clearing members' default funds. In September 2018, these funds were replenished**.**

In December 2018, we initiated a capital relief program. The capital relief program was a voluntary program open to each commodities default fund participant; each such participant who agreed to the capital relief program received a proportion of the funds made available under the capital relief program as reflected by their proportionate share of the aggregate of the clearing members' default fund replenishments. As of March 31, 2019, we have disbursed substantially all of the $23 million offered through the program.

As a result of the default, a liability of $99 million as of March 31, 2019 and $112 million as of December 31, 2018 was recorded in other current liabilities. Collateral of $99 million as of March 31, 2019 and $112 million as of December 31, 2018 was recorded in other current assets in the Condensed Consolidated Balance Sheets in order to allow Nasdaq Clearing to fulfill the settlement of certain contracts of the defaulted member arising from the default management process. We have established mitigating positions. The collateral and liability were previously included in default funds and margin deposits.

Default Fund Contributions and Margin Deposits

As of March 31, 2019, clearing member default fund contributions and margin deposits were as follows:

	March 31, 2019		
	Cash Contributions	Non-Cash Contributions	Total Contributions
	(in millions)		
Default fund contributions	$ 475	$ 78	$ 553
Margin deposits	2,799	3,541	6,340
Total	$ 3,274	$ 3,619	$ 6,893

In accordance with its investment policy, of the total cash contributions of $3,274 million, Nasdaq Clearing has invested $1,249 million in highly rated European and U.S. government debt securities or central bank certificates with maturity dates primarily 90 days or less and $355 million in reverse repurchase agreements secured with highly rated government securities with maturity dates that range from 1 day to 11 days. The carrying value of these securities approximates their fair value due to the short-term nature of the instruments and reverse repurchase agreements. The remainder of this balance was held in cash in demand deposit accounts at central banks and large, highly rated financial institutions. Of the total default fund contributions of $553 million, Nasdaq Clearing can utilize $464 million as capital resources in the event of a counterparty default. The remaining balance of $89 million pertains to member posted surplus balances.

In the investment activity related to default fund and margin contributions, we are exposed to counterparty risk related to reverse repurchase agreement transactions, which reflect the risk that the counterparty might become insolvent and, thus, fail to meet its obligations to Nasdaq Clearing. We mitigate this risk by only engaging in transactions with high credit quality reverse repurchase agreement counterparties and by limiting the acceptable collateral under the reverse repurchase agreement to high quality issuers, primarily government securities and other securities explicitly guaranteed by a government. The value of the underlying security is monitored during the lifetime of the contract and in the event the market value of the underlying security falls below the reverse repurchase amount our clearinghouse may require additional collateral or a reset of the contract.

Default Fund Contributions

Required contributions to the default funds are proportional to the exposures of each clearing member. When a clearing member is active in more than one market, contributions must be made to all markets' default funds in which the member is active. Clearing members' eligible contributions may include cash and non-cash contributions. Cash contributions received are 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 Condensed Consolidated Balance Sheets as both a current asset and a current liability. Non-cash contributions include highly rated government debt securities that must meet specific criteria approved by Nasdaq Clearing. Non-cash contributions are pledged assets that are not recorded in the Consolidated Balance Sheets as Nasdaq Clearing does not take legal ownership of these assets and the risks and rewards remain with the clearing members. These balances may fluctuate over time due to changes in the amount of deposits required and whether members choose to provide cash or non-cash contributions. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default. In addition to clearing members' required contributions to the liability waterfall, Nasdaq Clearing is also required to contribute capital to the liability waterfall and overall regulatory capital as specified under its clearinghouse rules. As of March 31, 2019, Nasdaq Clearing committed capital totaling $151 million to the liability waterfall and overall regulatory capital, in the form of government debt securities, which are recorded as financial investments, at fair value in the Condensed Consolidated Balance Sheets. The combined regulatory capital of the clearing members and Nasdaq Clearing is intended to secure the obligations of a clearing member exceeding such member's own margin and default fund deposits and may be used to cover losses sustained by a clearing member in the event of a default.

Margin Deposits

Nasdaq Clearing requires all clearing members to provide collateral, which may consist of cash and non-cash contributions, to guarantee performance on the clearing members' open positions, or initial margin. In addition, clearing members must also provide collateral to cover the daily margin call if needed. See "Default Fund Contributions" above for further discussion of cash and non-cash contributions.

Similar to default fund contributions, Nasdaq Clearing maintains and manages all cash deposits related to margin collateral. All risks and rewards of collateral ownership, including interest, belong to Nasdaq Clearing and are recorded in revenues. These cash deposits are recorded in default funds and margin deposits in the Condensed Consolidated Balance Sheets as both a current asset and a current liability. Pledged margin collateral is not recorded in our Condensed Consolidated Balance Sheets as all risks and rewards of collateral ownership, including interest, belong to the counterparty. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default.

Nasdaq Clearing marks to market all outstanding contracts and requires payment from clearing members whose positions have lost value. The mark-to-market process helps identify any clearing members that may not be able to satisfy their financial obligations in a timely manner allowing Nasdaq Clearing the ability to mitigate the risk of a clearing member defaulting due to exceptionally large losses. In the event of a default, Nasdaq Clearing can access the defaulting member's margin and default fund deposits to cover the defaulting member's losses.

Regulatory Capital and Risk Management Calculations

Nasdaq Clearing manages risk through a comprehensive counterparty risk management framework, which is comprised of policies, procedures, standards and financial resources. The level of regulatory capital is determined in accordance with Nasdaq Clearing's regulatory capital policy, as approved by the SFSA. Regulatory capital calculations are continuously updated through a proprietary capital-at-risk calculation model that establishes the appropriate level of capital.

As mentioned above, Nasdaq Clearing is the legal counterparty for each contract cleared and thereby guarantees the fulfillment of each contract. Nasdaq Clearing accounts for this guarantee as a performance guarantee. We determine the fair value of the performance guarantee by considering daily settlement of contracts and other margining and default fund requirements, the risk management program, historical evidence of default payments, and the estimated probability of potential default payouts. The calculation is determined using proprietary risk management software that simulates gains and losses based on historical market prices, extreme but plausible market scenarios, volatility and other factors present at that point in time for those particular unsettled contracts. Based on this analysis, excluding any liability related to the Nasdaq commodities clearing default (see discussion above), the estimated liability was nominal and no liability was recorded as of March 31, 2019.

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 $33 million as of March 31, 2019;
- 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 $22 million as of March 31, 2019; 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 liability waterfall, then Nasdaq Clearing will utilize its power of assessment and additional capital contributions will be required by non-defaulting members up to the limits established under the terms of the clearinghouse rules.

In addition to the capital held to withstand counterparty defaults described above, Nasdaq Clearing also has committed capital of $96 million to ensure that it can handle an orderly wind-down of its operation, and that it is adequately protected against investment, operational, legal, and business risks.

Market Value of Derivative Contracts Outstanding

The following table includes the market value of derivative contracts outstanding prior to netting:

	March 31, 2019
	(in millions)
Commodity and seafood options, futures and forwards[(1)(2)(3)]	$ 577
Fixed-income options and futures[(1)(2)]	674
Stock options and futures[(1)(2)]	151
Index options and futures[(1)(2)]	73
Total	$ 1,475

(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.

Derivative Contracts Cleared

The following table includes the total number of derivative contracts cleared through Nasdaq Clearing for the three months ended March 31, 2019 and 2018:

	March 31, 2019	March 31, 2018
Commodity and seafood options, futures and forwards[(1)]	146,249	570,057
Fixed-income options and futures	5,404,135	6,047,859
Stock options and futures	6,854,813	5,738,212
Index options and futures	11,743,268	13,360,119
Total	24,148,465	25,716,247

(1) The total volume in cleared power related to commodity contracts was 250 Terawatt hours (TWh) for the three months ended March 31, 2019 and 272 TWh for the three months ended March 31, 2018.

The outstanding contract value of resale and repurchase agreements was $5.5 billion as of March 31, 2019 and $3.3 billion as of March 31, 2018. The total number of contracts cleared was 1,885,698 for the three months ended March 31, 2019 and was 2,280,212 for the three months ended March 31, 2018.

17. Income Taxes

Income Tax Provision

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

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	(in millions)		
Income tax provision	$ 66	$ 62	6.5%
Effective tax rate	21.1%	25.9%	

The lower effective tax rate in the first quarter of 2019 is primarily due to a tax benefit from a dividends received deduction related to capital distributions from the OCC and the reversal of a previously accrued tax penalty in Finland, partially offset by a net tax benefit recorded in 2018 related to Swedish interest expense.

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.

Tax Audits

Nasdaq and its eligible subsidiaries file a consolidated U.S. federal income tax return and applicable state and local income tax returns and non-U.S. income tax returns. Federal income tax returns for the years 2008 through 2016 are currently under examination by the Internal Revenue Services and we are subject to examination by the Internal Revenue Service for the year 2017. Several state tax returns are currently under examination by the respective tax authorities for the years 2007 through 2016 and we are subject to examination for the year 2017. Non-U.S. tax returns are subject to examination by the respective tax authorities for the years 2009 through 2017. Although the results of such examinations may have an impact on our unrecognized tax benefits, we do not anticipate that such impact will be material to our consolidated financial position or results of operations. In addition, we do not anticipate that the amount of unrecognized tax benefits as of March 31, 2019 will decrease in the next twelve months as we do not expect to settle any material tax audits.

The Swedish Tax Agency has disallowed certain interest expense deductions for the years 2013 - 2016. We appealed to the Lower Administrative Court for the years 2013 - 2015. In the first quarter of 2018, the Lower Administrative Court denied our appeal. We have appealed to the Administrative Court of Appeal. Through March 31, 2018, we had recorded tax benefits of $56 million associated with this matter. We continue to pay all assessments from the Swedish Tax Agency while this matter is pending and have paid $40 million through March 31, 2019. In the second quarter of 2018, the Administrative Court of Appeal decided similar cases against other taxpayers. Although we continue to assert the validity of these interest expense deductions, the decisions of the court lead us to conclude that we can no longer assert that we are more than likely to be successful in our appeal. As such, in 2018, we recorded tax expense of $41 million, or $0.24 per diluted share, which is net of any related U.S. tax benefits and reflects the impact of foreign currency translation. We expect to record future quarterly net tax expense of $1 million related to this matter.

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.

Tax Cuts and Jobs Act

On January 1, 2018, we adopted ASU 2018-02, “Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income (Topic 220).” As a result of the adoption of this standard, we recorded a reclassification of $142 million for stranded tax effects related to the Tax Cuts and Jobs Act from accumulated other comprehensive loss to retained earnings within stockholders’ equity in the Condensed Consolidated Balance Sheets as of March 31, 2018. Of the $142 million of stranded tax effects, $135 million relates to the effect on net foreign currency translation gains and losses and $7 million relates to the effect on employee benefit plan adjustment gains and losses. These provisional amounts were finalized in the fourth quarter of 2018.

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 $11 million as of March 31, 2019 and $12 million as of December 31, 2018. As discussed in “Other Credit Facilities,” of Note 10, “Debt Obligations,” clearing-related credit facilities, which are available in multiple currencies, totaled $210 million as of March 31, 2019 and $220 million as of December 31, 2018, 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 Industrial and Commercial Bank of China Financial Services LLC, or ICBC. As of March 31, 2019, we have contributed $15 million of clearing deposits to ICBC in connection with this clearing arrangement. These deposits are recorded in other current assets in our Condensed Consolidated Balance Sheets. Some of the trading activity in Execution Access is cleared by ICBC through the Fixed Income Clearing Corporation, with ICBC acting as agent. 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 at least one business day (or more, if specified by the U.S. Treasury issuance calendar). 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. Daily position trading limits are also enforced for such counterparties.

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 Condensed Consolidated Balance Sheets for these arrangements. However, no guarantee can be provided that these arrangements will at all times be sufficient.

Other Guarantees

Through our clearing operations in the financial markets, Nasdaq Clearing is the legal counterparty for, and guarantees the performance of, its clearing members. See Note 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 condensed 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 Condensed 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. As of March 31, 2019, these escrow agreements provide for future payment of $12 million which is included in other current liabilities in the Condensed 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 Condensed Consolidated Balance Sheets for these arrangements.

Offer for Oslo Børs VPS

In February 2019, we, through our indirect wholly-owned subsidiary Nasdaq AB, made a public offer, or the Offer, to acquire all of the issued shares of Oslo Børs VPS Holding ASA, or Oslo Børs VPS. On March 4, 2019, we increased the Offer price from NOK 152 per share to NOK 158 per share, plus an interest payment of 6% per annum on the increased Offer price, pro-rated per day from January 29, 2019 until the conditions of the Offer have been fulfilled or waived. The Offer price values the entire issued share capital of Oslo Børs VPS at NOK 6,795 million, or approximately $795 million. Oslo Børs VPS' board of directors has unanimously recommended that its shareholders accept the Offer.

The Offer is subject to the fulfillment or waiver of certain customary conditions, including but not limited to acceptances from at least two-thirds of the shares of Oslo Børs VPS or such higher percentage as may be necessary to comply with any regulatory requirement, certain regulatory clearances, limited confirmatory due diligence and completion of the Offer by the date which is the later of: (i) March 4, 2020 and (ii) the date which is sixty (60) days after the Euronext offer lapses, closes or is withdrawn.

In April 2019, we purchased approximately 2% of the shares in Oslo Børs VPS at NOK 158 per share, equal to our Offer price. As a result, over 37% of Oslo Børs VPS shares are either owned by Nasdaq or are subject to pre-commitments to accept the Offer.

Legal and Regulatory Matters

Litigation

As previously disclosed, we are named as one of many defendants in City of Providence v. BATS Global Markets, Inc., et al., 14 Civ. 2811 (S.D.N.Y.), which was filed on April 18, 2014 in the United States District Court for the Southern District of New York. The district court appointed lead counsel, who filed an amended complaint on September 2, 2014. The amended complaint names as defendants seven national exchanges, as well as Barclays PLC, which operated a private 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. The plaintiffs seek injunctive and monetary relief of an unspecified amount. We filed a motion to dismiss the amended complaint on November 3, 2014. In response, the plaintiffs filed a second amended complaint on November 24, 2014, which names the same defendants and alleges essentially the same violations. We then filed a motion to dismiss the second amended complaint on January 23, 2015. On August 26, 2015, the district court entered an order dismissing the second amended complaint in its entirety 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 appealed the judgment of dismissal to the United States Court of Appeals for the Second Circuit. On December 19, 2017, the Second Circuit issued an opinion vacating the district court's judgment of dismissal and remanding to the district court for further proceedings. The exchanges filed a petition before the Second Circuit seeking panel or en banc rehearing on January 31, 2018, which the Second Circuit denied on March 13, 2018. On May 18, 2018, the exchanges filed a motion to dismiss the amended complaint, raising issues not addressed in the proceedings to date. Given the preliminary nature of the proceedings, we are unable to estimate what, if any, liability may result from this litigation. However, we believe that the claims are without merit and will continue to litigate vigorously.

Nasdaq Commodities Clearing Default

During September 2018, a clearing member of Nasdaq Clearing's commodities market was declared in default. Consistent with our regulatory obligations, we notified all relevant regulators and are cooperating fully with information requests. We are unable to predict the outcome or exact timing of this matter. See "Nasdaq Commodities Clearing Default," of Note 16, "Clearing Operations," for further information on this event.

SEC Decisions

In recent years, certain industry groups have challenged the level of fees that U.S. exchanges charge for market data and connectivity. We have defeated two challenges in federal appeals court pertaining to market data and an additional challenge at the administrative level within the SEC. However, in October 2018, the SEC reversed that administrative decision and found that Nasdaq had not met a burden of demonstrating that certain challenged fees were fair and reasonable; we estimate that this decision will reduce our revenues by approximately $1 million. Nasdaq has appealed this decision to the U.S. Court of Appeals for the District of Columbia Circuit. In addition, the SEC remanded a series of additional challenges to market data and connectivity fees back to Nasdaq for further consideration. Nasdaq has also appealed this decision to the U.S. Court of Appeals for the District of Columbia Circuit. We are unable to predict the outcome or the timing of the ultimate resolution of these matters.

Other Matters

Except as disclosed above and in prior reports filed under the Exchange Act, we are not currently a party to any litigation or proceeding that we believe could have a material adverse effect on our business, consolidated financial condition, or operating results. However, from time to time, we have been threatened with, or named as a defendant in, lawsuits or involved in regulatory proceedings.

In the normal course of business, Nasdaq discusses matters with its regulators raised during regulatory examinations or otherwise subject to their inquiries. Management believes that censures, fines, penalties or other sanctions that could result from any ongoing examinations or inquiries will not have a material impact on its consolidated financial position or results of operations. However, we are unable to predict the outcome or the timing of the ultimate resolution of these matters, or the potential fines, penalties or injunctive or other equitable relief, if any, that may result from these matters.

Tax Audits

We are engaged in ongoing discussions and audits with taxing authorities on various tax matters, the resolutions of which are uncertain. Currently, there are matters that may lead to assessments, some of which may not be resolved for several years. Based on currently available information, we believe we have adequately provided for any assessments that could result from those proceedings where it is more likely than not that we will be assessed. We review our positions on these matters as they progress. See "Tax Audits," of Note 17, "Income Taxes," for further discussion.

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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 business segments for the three months ended March 31, 2019 and 2018:

	Market Services	Corporate Services	Information Services	Market Technology	Corporate Items	Consolidated
			(in millions)			
Three Months Ended March 31, 2019						
Total revenues	$ 638	$ 131	$ 193	$ 77	$ —	$ 1,039
Transaction-based expenses	(405)	—	—	—	—	(405)
Revenues less transaction-based expenses	233	131	193	77	—	634
Operating income (loss)	$ 135	$ 46	$ 124	$ 7	$ (37)	$ 275
Three Months Ended March 31, 2018						
Total revenues	$ 735	$ 132	$ 174	$ 60	$ 50	$ 1,151
Transaction-based expenses	(485)	—	—	—	—	(485)
Revenues less transaction-based expenses	250	132	174	60	50	666
Operating income (loss)	$ 147	$ 43	$ 113	$ 2	$ (32)	$ 273

Certain amounts are allocated to corporate items in our management reports as we believe they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance. These items include the following:

Amortization expense of acquired intangible assets: We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the segments, and the relative operating performance of the segments between periods. Management does not consider intangible asset amortization expense for the purpose of evaluating the performance of our segments or their managers or when making decisions to allocate resources. Therefore, we believe performance measures excluding intangible asset amortization expense provide management with a more useful representation of our segments' ongoing activity in each period.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction.

2018 Divestiture: We have included in corporate items the revenues and expenses of the Public Relations Solutions and Digital Media Services businesses which were part of the Corporate Solutions business within our Corporate Services segment as these businesses were sold in April 2018. See “2018 Divestiture,” of Note 5, “Acquisitions and Divestitures,” for further discussion.

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.

* * * * * *

A summary of our corporate items is as follows:

	Three Months Ended March 31,	
	2019	2018
	(in millions)	
Revenues - divested businesses	$ —	$ 50
Expenses:		
Amortization expense of acquired intangible assets	26	28
Merger and strategic initiatives expense	9	10
Expenses - divested businesses	—	42
Other	2	2
Total expenses	37	82
Operating loss	$ (37)	$ (32)

Item 2. 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 condensed consolidated financial statements and related notes included in this Form 10-Q.

Overview

We are a leading provider of trading, clearing, marketplace technology, regulatory, securities listing, information and public and private company services. Our global offerings are diverse and include trading and clearing across multiple asset classes, trade management services, market data products, financial indexes, investment data and analytics, 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, trading surveillance and many other functions. We manage, operate and provide our products and services in four business segments: Market Services, Corporate Services, Information Services and Market Technology.

2019 Developments

- In April, the board of directors approved a regular quarterly cash dividend of $0.47 per share on our outstanding common stock which reflects a 7.0% increase from our prior quarterly cash dividend of $0.44;
- In April 2019, we issued the 2029 Notes. The net proceeds will primarily be used to redeem all of our 2020 Notes;
- In March 2019, we sold our BWise enterprise governance, risk and compliance software platform which was part of our Corporate Solutions business within our Corporate Services segment to SAI Global;
- In March 2019, we entered into an agreement to sell Nordic Fund Market, an electronic mutual fund service which is a smaller part of our Broker Services business; and
- In January 2019, we acquired Cinnober, a major Swedish financial technology provider to brokers, exchanges and clearinghouses worldwide. Cinnober is part of our Market Technology segment.

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.

	Three Months Ended March 31,	
	2019	2018
Market Services		
Equity Derivative Trading and Clearing		
U.S. equity options		
Total industry average daily volume (in millions)	17.3	19.6
Nasdaq PHLX matched market share	16.0%	16.0%
The Nasdaq Options Market matched market share	9.2%	10.1%
Nasdaq BX Options matched market share	0.3%	0.5%
Nasdaq ISE Options matched market share	8.6%	8.4%
Nasdaq GEMX Options matched market share	4.1%	4.6%
Nasdaq MRX Options matched market share	0.2%	0.1%
Total matched market share executed on Nasdaq's exchanges	38.4%	39.7%
Nasdaq Nordic and Nasdaq Baltic options and futures		
Total average daily volume of options and futures contracts(1)	353,454	354,744
Cash Equity Trading		
Total U.S.-listed securities		
Total industry average daily share volume (in billions)	7.52	7.62
Matched share volume (in billions)	90.6	88.6
The Nasdaq Stock Market matched market share	16.8%	14.9%
Nasdaq BX matched market share	2.2%	3.3%
Nasdaq PSX matched market share	0.7%	0.9%
Total matched market share executed on Nasdaq's exchanges	19.7%	19.1%
Market share reported to the FINRA/Nasdaq Trade Reporting Facility	29.9%	33.6%
Total market share(2)	49.6%	52.7%
Nasdaq Nordic and Nasdaq Baltic securities		
Average daily number of equity trades executed on Nasdaq's exchanges	574,195	651,405
Total average daily value of shares traded (in billions)	$ 5.1	$ 6.0
Total market share executed on Nasdaq's exchanges	66.8%	69.6%
FICC		
Fixed Income		
U.S. fixed income notional trading volume (in billions)	$ 2,715	$ 5,156
Total average daily volume of Nasdaq Nordic and Nasdaq Baltic fixed income contracts	116,262	132,330
Commodities		
Power contracts cleared (TWh)(3)	250	272
Corporate Services		
Initial public offerings		
The Nasdaq Stock Market	37	37
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	4	13
Total new listings		
The Nasdaq Stock Market(4)	59	62
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic(5)	9	15
Number of listed companies		
The Nasdaq Stock Market(6)	3,059	2,969
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic(7)	1,018	986
Information Services		
Number of licensed ETPs	346	328
ETP assets under management tracking Nasdaq indexes (in billions)	$ 196	$ 173
Market Technology		
Order intake (in millions)(8)	$ 54	$ 45
Total order value (in millions)(9)	$ 820	$ 704

(1) Includes Finnish option contracts traded on Eurex.
(2) 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.
(3) Transactions executed on Nasdaq Commodities or OTC and reported for clearing to Nasdaq Commodities measured by Terawatt hours (TWh).
(4) 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.
(5) 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.
(6) Number of total listings on The Nasdaq Stock Market at period end, including 388 ETPs as of March 31, 2019 and 376 as of March 31, 2018.
(7) Represents companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North at period end.
(8) Total contract value of orders signed during the period.
(9) Represents total contract value of signed orders that are yet to be recognized as revenue. Market technology deferred revenue, as discussed in Note 9, "Deferred Revenue," to the condensed consolidated financial statements, represents consideration received that is yet to be recognized as revenue for these signed orders.

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Financial Summary

The following table summarizes our financial performance for the three months ended March 31, 2019 as compared to the same period in 2018. The comparability of our results of operations between reported periods is impacted by our acquisition of Cinnober in January 2019, the divestiture of the Public Relations Solutions and Digital Media Services businesses in April 2018, and an increase in net income from unconsolidated investees. See Note 5, "Acquisitions and Divestitures," and "Equity Method Investments," of Note 8, "Investments," to the condensed consolidated financial statements for further discussion of these transactions. For a detailed discussion of our results of operations, see "Segment Operating Results" below.

	Three Months Ended March 31,		
	2019	2018	Percentage Change
	(in millions, except per share amounts)		
Revenues less transaction-based expenses	$ 634	$ 666	(4.8)%
Operating expenses	359	393	(8.7)%
Operating income	275	273	0.7 %
Interest expense	(37)	(38)	(2.6)%
Net gain on divestiture of business	27	—	N/M
Net income from unconsolidated investees	45	2	2,150.0 %
Income before income taxes	313	239	31.0 %
Income tax provision	66	62	6.5 %
Net income attributable to Nasdaq	$ 247	$ 177	39.5 %
Diluted earnings per share	$ 1.48	$ 1.05	41.0 %
Cash dividends declared per common share	$ 0.44	$ 0.82	(46.3)%

N/M - Not meaningful.

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 3. Quantitative and Qualitative Disclosures about Market Risk."

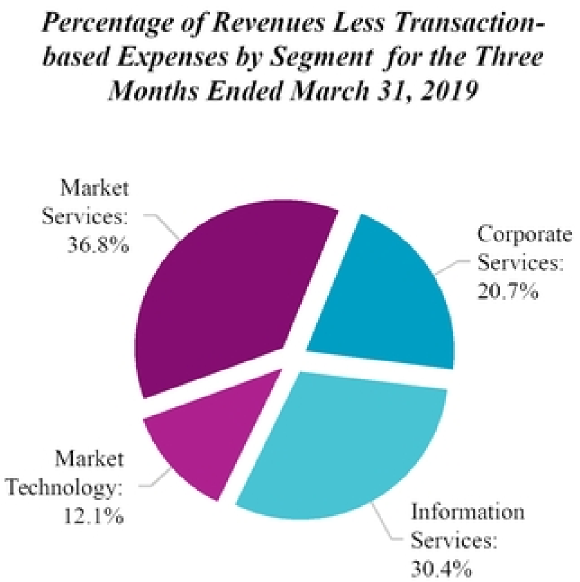
Segment Operating Results

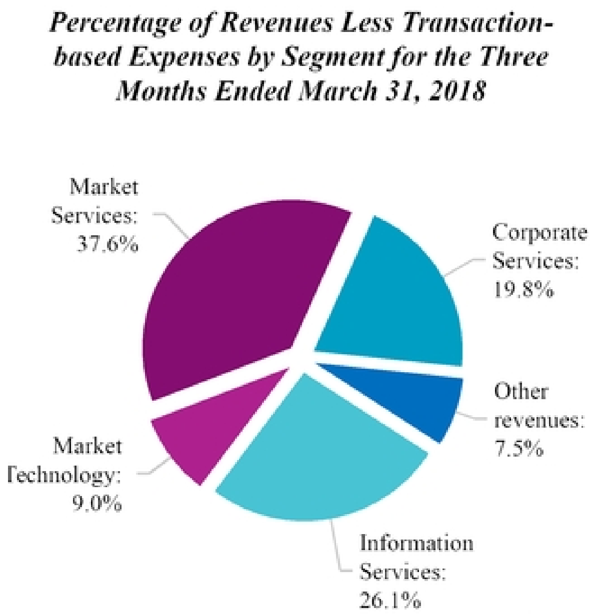
The following table shows our revenues by segment, transaction-based expenses for our Market Services segment and total revenues less transaction-based expenses:

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	(in millions)		
Market Services	$ 638	$ 735	(13.2)%
Transaction-based expenses	(405)	(485)	(16.5)%
Market Services revenues less transaction-based expenses	233	250	(6.8)%
Corporate Services	131	132	(0.8)%
Information Services	193	174	10.9 %
Market Technology	77	60	28.3 %
Other revenues[(1)]	—	50	(100.0)%
Total revenues less transaction-based expenses	$ 634	$ 666	(4.8)%

(1) Includes the revenues from the Public Relations Solutions and Digital Media Services businesses which were sold in April 2018. Prior to the sale date, these revenues were included in our Corporate Solutions business. See "2018 Divestiture," of Note 5, "Acquisitions and Divestitures," to the condensed consolidated financial statements for further discussion.

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 $634 million for the three months ended March 31, 2019 and $666 million for the three months ended March 31, 2018:





MARKET SERVICES

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

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	(in millions)		
Market Services Revenues:			
Equity Derivative Trading and Clearing Revenues[1]	$ 193	$ 231	(16.5)%
Transaction-based expenses:			
Transaction rebates	(113)	(137)	(17.5)%
Brokerage, clearance and exchange fees[1]	(8)	(16)	(50.0)%
Equity derivative trading and clearing revenues less transaction-based expenses	**72**	**78**	**(7.7)%**
Cash Equity Trading Revenues[2]	352	402	(12.4)%
Transaction-based expenses:			
Transaction rebates	(217)	(208)	4.3 %
Brokerage, clearance and exchange fees[2]	(66)	(120)	(45.0)%
Cash equity trading revenues less transaction-based expenses	**69**	**74**	**(6.8)%**
FICC Revenues	20	27	(25.9)%
Transaction-based expenses:			
Transaction rebates	(1)	(3)	(66.7)%
Brokerage, clearance and exchange fees	—	(1)	(100.0)%
FICC revenues less transaction-based expenses	**19**	**23**	**(17.4)%**
Trade Management Services Revenues	**73**	**75**	**(2.7)%**
Total Market Services revenues less transaction-based expenses	**$ 233**	**$ 250**	**(6.8)%**

(1) Includes Section 31 fees of $7 million in the first quarter of 2019 and $14 million in the first quarter of 2018. 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 $62 million in the first quarter of 2019 and $115 million in the first quarter of 2018. 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 decreased in the first quarter of 2019 compared with the same period in 2018. The decrease in equity derivative trading and clearing revenues was primarily due to lower U.S. industry trading volumes and lower Section 31 pass-through fee revenue. The decrease in equity derivative trading and clearing revenues less transaction-based expenses was primarily due to lower U.S. industry trading volumes and a lower European 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. Section 31 fees decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to lower average SEC fee rates.

Transaction rebates, in which we credit a portion of the per share execution charge to the market participant, decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to lower U.S. industry trading volumes, a decrease in our overall U.S. matched market share executed on Nasdaq's exchanges and a decrease in the U.S. rebate capture rate.

Brokerage, clearance and exchange fees decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to lower Section 31 pass-through fees, as discussed above.

Cash Equity Trading Revenues

Cash equity trading revenues and cash equity trading revenues less transaction-based expenses decreased in first quarter of 2019 compared with the same period in 2018. The decrease in cash equity trading revenues was primarily due to lower Section 31 pass-through fee revenue due to lower average SEC fee rates. The decrease in cash equity trading revenues less transaction-based expenses was primarily due to lower European industry trading volumes. Further impacting the decreases in cash equity trading revenues and cash equity trading revenues less transaction-based expenses was an unfavorable impact from foreign exchange of $3 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. Section 31 fees decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to lower dollar value traded on Nasdaq's exchanges and lower average SEC fee rates.

Transaction rebates increased in the first quarter of 2019 compared with the same period in 2018. For The Nasdaq Stock Market, Nasdaq PSX and Nasdaq Canada, we credit a portion of the per share execution charge to the market participant that provides the liquidity, and for Nasdaq BX, we credit a portion of the per share execution charge to the market participant that takes the liquidity. The increase in 2019 was primarily due to an increase in our overall U.S. matched market share executed on Nasdaq's exchanges, partially offset by lower U.S. industry trading volumes.

Brokerage, clearance and exchange fees decreased in the first quarter of 2019 compared with the same period in 2018. The decrease was primarily due to lower Section 31 pass-through fees, as discussed above.

FICC Revenues

FICC revenues and FICC revenues less transaction-based expenses decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to a decline in revenues related to U.S. fixed income and an unfavorable impact from foreign exchange of $2 million.

Trade Management Services Revenues

Trade management services revenues decreased in the first quarter of 2019 compared with the same period in 2018 primarily due to a decrease in broker services revenues and an unfavorable impact from foreign exchange of $1 million.

CORPORATE SERVICES

The following table shows revenues from our Corporate Services segment:

	Three Months Ended March 31,		
	2019	2018	Percentage Change
	(in millions)		
Corporate Services:			
Corporate Solutions	$ 60	$ 60	— %
Listing Services	71	72	(1.4)%
Total Corporate Services	$ 131	$ 132	(0.8)%

Corporate Solutions Revenues

Corporate solutions revenues were flat in the first quarter of 2019 compared with the same period 2018 as an increase in governance solutions (formerly board & leadership) revenues was offset by an unfavorable impact from foreign exchange of $1 million.

Listing Services Revenues

Listing services revenues decreased slightly in the first quarter of 2019 compared with the same period in 2018 primarily due to the run-off of fees earned from U.S. listing of additional shares and an unfavorable impact from foreign exchange of $2 million, partially offset by higher annual listing fees due to an increase in the number of listed companies.

INFORMATION SERVICES

The following table shows revenues from our Information Services segment:

	Three Months Ended March 31,		
	2019	2018	Percentage Change
	(in millions)		
Information Services:			
Market Data	$ 100	$ 100	—%
Index	54	50	8.0%
Investment Data & Analytics	39	24	62.5%
Total Information Services	$ 193	$ 174	10.9%

Market Data Revenues

Market data revenues were flat in the first quarter of 2019 compared with the same period in 2018 as an increase in U.S. tape plan revenues from under-reported data usage was offset by an unfavorable impact from foreign exchange of $2 million.

Index Revenues

Index revenues increased in the first quarter of 2019 compared with the same period in 2018 primarily due to higher licensing revenues from futures trading linked to the Nasdaq 100 Index, higher average assets under management in ETPs linked to Nasdaq indexes and higher index data revenues.

Investment Data & Analytics Revenues

Investment data & analytics revenues increased in the first quarter of 2019 compared with the same period in 2018 primarily due to an increase in eVestment revenues resulting from an $11 million purchase price adjustment on deferred revenue included in the first quarter of 2018 and organic growth.

MARKET TECHNOLOGY

The following table shows revenues from our Market Technology segment:

	Three Months Ended March 31, 2019	2018	Percentage Change
	(in millions)		
Market Technology	$ 77	$ 60	28.3%

Market Technology Revenues

Market technology revenues increased in the first quarter of 2019 compared with the same period in 2018 primarily due to an increase in the size and number of software delivery projects, an increase in software as a service surveillance revenues, and our acquisition of Cinnober, partially offset by an unfavorable impact from foreign exchange of $3 million.

OTHER REVENUES

Other revenues include the revenues from the Public Relations Solutions and Digital Media Services businesses which were sold in April 2018. Prior to the sale date, these revenues were included in our Corporate Solutions business. See “2018 Divestiture,” of Note 5, “Acquisitions and Divestitures,” to the condensed consolidated financial statements for further discussion.

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Expenses

Operating Expenses

The following table shows our operating expenses:

	Three Months Ended March 31, 2019	2018	Percentage Change
	(in millions)		
Compensation and benefits	$ 175	$ 197	(11.2)%
Professional and contract services	37	37	— %
Computer operations and data communications	33	32	3.1 %
Occupancy	24	25	(4.0)%
General, administrative and other	16	22	(27.3)%
Marketing and advertising	10	9	11.1 %
Depreciation and amortization	48	53	(9.4)%
Regulatory	7	8	(12.5)%
Merger and strategic initiatives	9	10	(10.0)%
Total operating expenses	$ 359	$ 393	(8.7)%

The decrease in compensation and benefits expense in the first three months of 2019 was primarily due to lower compensation costs resulting from the sale of the Public Relations Solutions and Digital Media Services businesses and lower performance incentives, partially offset by the acquisition of Cinnober. The decrease also included a favorable impact from foreign exchange of $7 million.

Headcount decreased to 4,281 employees as of March 31, 2019 from 4,758 as of March 31, 2018 primarily due to the sale of the Public Relations Solutions and Digital Media Services businesses, partially offset by our 2019 and 2018 acquisitions.

Professional and contract services expense was flat in the first quarter of 2019 primarily due to the sale of the Public Relations Solutions and Digital Media Services businesses offset by certain litigation and consulting costs.

Computer operations and data communications expense increased slightly in the first quarter of 2019 primarily due to higher market data feed costs and additional costs associated with our 2019 and 2018 acquisitions, partially offset by lower costs resulting from the sale of the Public Relations Solutions and Digital Media Services businesses.

Occupancy expense decreased slightly in the first quarter of 2019 as lower costs due to the sale of Public Relations Solutions and Digital Media Services businesses were partially offset by increases associated with additional facility and rent costs resulting from expansion of our new world headquarters and our 2019 and 2018 acquisitions.

The decrease in general, administrative and other expense in the first quarter of 2019 was primarily due to unrealized gains on foreign currency contracts used as economic hedges as well as the sale of the Public Relations Solutions and Digital Media Services businesses.

Marketing and advertising expense increased slightly in the first quarter of 2019 primarily due to an increase in advertising spend.

Depreciation and amortization expense decreased in the first quarter of 2019 primarily due to a decrease in amortization expense recorded on intangible assets which became fully amortized, partially offset by additional amortization expense associated with acquired intangible assets.

Merger and strategic initiatives expense decreased slightly in the first quarter of 2019 compared with the same period in 2018. We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs and will vary based on the size and frequency of the activities described above.

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Non-operating Income and Expenses

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

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	(in millions)		
Interest income	$ 3	$ 2	50.0 %
Interest expense	(37)	(38)	(2.6)%
Net interest expense	(34)	(36)	(5.6)%
Net gain on divestiture of business	27	—	N/M
Net income from unconsolidated investees	45	2	2,150.0 %
Total non-operating income (expenses)	$ 38	$ (34)	(211.8)%

N/M - Not meaningful.

Interest Income

Interest income increased in the first quarter of 2019 compared with the same period in 2018 primarily due to an increase in prevailing market rates.

Interest Expense

The following table shows our interest expense:

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	(in millions)		
Interest expense on debt	$ 35	$ 35	— %
Accretion of debt issuance costs and debt discount	2	2	— %
Other bank and investment-related fees	—	1	(100.0)%
Interest expense	$ 37	$ 38	(2.6)%

Net Gain on Divestiture of Business

In March 2019, we sold our BWise enterprise governance, risk and compliance software platform which was part of our Corporate Solutions business within our Corporate Services segment to SAI Global and recognized a pre-tax gain on the sale of $27 million, net of disposal costs ($20 million after tax). See "2019 Divestiture," of Note 5, "Acquisitions and Divestitures," to the condensed consolidated financial statements for further discussion.

Net Income from Unconsolidated Investees

Net income from unconsolidated investees increased in the first quarter of 2019 compared with the same period in 2018 primarily due to income recognized from our equity method investment in OCC. See "Equity Method Investments," of Note 8, "Investments," to the condensed consolidated financial statements for further discussion.

Tax Matters

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

	Three Months Ended March 31, 2019	Three Months Ended March 31, 2018	Percentage Change
	($ in millions)		
Income tax provision	$ 66	$ 62	6.5%
Effective tax rate	21.1%	25.9%	

The lower effective tax rate in first quarter of 2019 is primarily due to a tax benefit from a dividends received deduction related to capital distributions from the OCC and the reversal of a previously accrued tax penalty in Finland, partially offset by a net tax benefit recorded in 2018 related to Swedish interest expense. For further discussion of our tax matters, see Note 17, "Income Taxes," to the condensed consolidated financial statements.

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 our ongoing operating performance.

These measures are not in accordance with, or an alternative to, U.S. GAAP, and may be different from non-GAAP measures used by other companies. 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 Quarterly Report on Form 10-Q, including our condensed consolidated financial statements and the notes thereto. When viewed in conjunction with our U.S. GAAP results and the accompanying reconciliation, we believe these non-GAAP measures provide greater transparency and a more complete understanding of factors affecting our business than U.S. GAAP measures alone.

We understand that analysts and investors regularly rely on non-GAAP financial measures, such as non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share, to assess operating performance. We use non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share because they highlight trends more clearly in our business that may not otherwise be apparent when relying solely on U.S. GAAP financial measures, since these measures eliminate from our results specific financial items that have less bearing on our ongoing operating performance. Non-GAAP net income attributable to Nasdaq for the periods presented below is calculated by adjusting for the following items:

Amortization expense of acquired intangible assets: We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the businesses, the relative operating performance of the businesses between periods, and the earnings power of Nasdaq. Performance measures excluding intangible asset amortization therefore provide investors with a more useful representation of our businesses' ongoing activity in each period.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs. 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.

Net Income from Unconsolidated Investee: See "OCC Capital Plan," of Note 8, "Investments," for further discussion. Our income on this investment will vary significantly compared to prior years due to the disapproval of the OCC's capital plan. Accordingly, we will exclude this income from current and prior periods for purposes of calculating non-GAAP measures which provide a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods.

Other significant items: We have excluded certain other charges or gains, including certain tax items, that are the result of other non-comparable events to measure operating performance. We believe the exclusion of such amounts allows management and investors to better understand the ongoing financial results of Nasdaq.

For the three months ended March 31, 2019, other significant items primarily included a pre-tax gain of $27 million, net of disposal costs, on the sale of our BWise enterprise governance, risk and compliance software platform.

Significant tax items: The non-GAAP adjustment to the income tax provision includes the tax impact of each non-GAAP adjustment and for the three months ended March 31, 2019 also includes a tax benefit of $10 million related to capital distributions from the OCC. See "OCC Capital Plan," of Note 8, "Investments," for further discussion, and:

- Excess tax benefits related to employee share-based compensation reflects the recognition of income tax effects of share-based awards when awards vest or are settled. This item is subject to volatility and will vary based on the timing of the vesting of employee share-based compensation arrangements and fluctuation in our stock price.
- The impact of enacted U.S. tax legislation is related to the Tax Cuts and Jobs Act which was enacted on December 22, 2017. For the three months ended March 31, 2018, we recorded an increase to tax expense of $5 million, which reflected the reduced federal tax benefit associated with state unrecognized tax benefits.

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

	Three Months Ended March 31, 2019		Three Months Ended March 31, 2018	
	Net Income	Diluted Earnings Per Share	Net Income	Diluted Earnings Per Share
	(in millions, except share and per share amounts)		(in millions, except share and per share amounts)	
U.S. GAAP net income attributable to Nasdaq and diluted earnings per share	$ 247	$ 1.48	$ 177	$ 1.05
Non-GAAP adjustments:				
Amortization expense of acquired intangible assets	26	0.16	28	0.17
Merger and strategic initiatives expense	9	0.05	10	0.06
Net gain on divestiture of business	(27)	(0.16)	—	—
Net income from unconsolidated investee	(45)	(0.27)	(2)	(0.01)
Other	2	0.01	2	0.01
Total non-GAAP adjustments	(35)	(0.21)	38	0.23
Adjustment to the income tax provision to reflect non-GAAP adjustments and other tax items	(4)	(0.03)	(8)	(0.06)
Impact of enacted U.S. tax legislation	—	—	5	0.03
Excess tax benefits related to employee share-based compensation	(4)	(0.02)	(5)	(0.03)
Total non-GAAP tax adjustments	(8)	(0.05)	(8)	(0.06)
Total non-GAAP adjustments, net of tax	(43)	(0.26)	30	0.17
Non-GAAP net income attributable to Nasdaq and diluted earnings per share	$ 204	$ 1.22	$ 207	$ 1.22
Weighted-average common shares outstanding for diluted earnings per share		167,026,755		168,992,539

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Liquidity and Capital Resources

Historically, we have funded our operating activities and met our commitments through cash generated by operations, augmented by the periodic issuance of our common stock and debt. Currently, our cost and availability of funding remain healthy.

In March 2019, we used net proceeds from the sale of commercial paper and cash on hand to redeem all of our 2019 Notes. In April 2019, we issued the 2029 Notes. See "1.75% Senior Unsecured Notes Due 2029," of Note 10, "Debt Obligations," to the condensed consolidated financial statements for further discussion of the 2029 Notes.

In April 2017, we entered into the 2017 Credit Facility which replaced a former credit facility. We also entered into a commercial paper program which enables us to borrow efficiently at reasonable short-term interest rates and is supported by our 2017 Credit Facility. See "Commercial Paper Program," and "2017 Credit Facility," of Note 10, "Debt Obligations," to the condensed consolidated financial statements for further discussion.

As of March 31, 2019, no amounts were outstanding on the 2017 Credit Facility. The $3 million balance represents unamortized debt issuance costs. Of the $1 billion that is available for borrowing, $541 million provides liquidity support for the commercial paper program and for a letter of credit. As such, as of March 31, 2019, the total remaining amount available under the 2017 Credit Facility was $459 million.

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. See "Non-Cash Contingent Consideration," of Note 18, "Commitments, Contingencies and Guarantees," to the condensed consolidated financial statements for further discussion.

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

The value of various assets and liabilities, including cash and cash equivalents, receivables, accounts payable and accrued expenses, the current portion of long-term debt and commercial paper can fluctuate from month to month. Working capital (calculated as current assets less current liabilities) was $(905) million as of March 31, 2019, compared with $(200) million as of December 31, 2018, a decrease of $705 million. Current asset balance changes decreased working capital by $1,634 million, with decreases in default funds and margin deposits, other current assets, cash and cash equivalents, and financial investments, at fair value, partially offset by increases in receivables, net and restricted cash. Current liability balance changes increased working capital by $929 million, due to decreases in default funds and margin deposits, accrued personnel costs, and Section 31 fees payable to the SEC, partially offset by increases in short-term debt, deferred revenue, other current liabilities, and accounts payable and accrued expenses.

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

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

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

- operating covenants contained in our credit facilities that limit our total borrowing capacity;
- 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 or disruption in the public debt and equity markets.

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

Financial Assets

The following table summarizes our financial assets:

	March 31, 2019	December 31, 2018
	(in millions)	
Cash and cash equivalents	$ 472	$ 545
Restricted cash	67	41
Financial investments, at fair value	220	268
Total financial assets	$ 759	$ 854

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 March 31, 2019, our cash and cash equivalents of $472 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 March 31, 2019 decreased $73 million from December 31, 2018, primarily due to:

- repayments of long-term debt;
- cash paid for an acquisition, net of cash and cash equivalents acquired; and
- cash dividends paid on our common stock, partially offset by;
- net cash provided by operating activities;
- proceeds from commercial paper, net; and
- proceeds from the divestiture of a business.

See "Cash Flow Analysis" below for further discussion.

Restricted cash is restricted from withdrawal due to a contractual or regulatory requirements or is not available for general use. Restricted cash was $67 million as of March 31, 2019 and $41 million as of December 31, 2018, an increase of $26 million. The increase primarily relates to an increase in customer funds held in connection with privately negotiated securities transactions. Restricted cash is classified as restricted cash in the Condensed Consolidated Balance Sheets.

Repatriation of Cash

Repatriation of Cash

Our cash and cash equivalents held outside of the U.S. in various foreign subsidiaries totaled $298 million as of March 31, 2019 and $367 million as of December 31, 2018. The remaining balance held in the U.S. totaled $174 million as of March 31, 2019 and $178 million as of December 31, 2018.

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

Share Repurchase Program

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

Cash Dividends on Common Stock

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

	2019	2018
First quarter	$ 0.44	$ 0.38

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

Financial Investments, at Fair Value

Our financial investments, at fair value totaled $220 million as of March 31, 2019 and $268 million as of December 31, 2018 and are primarily comprised of trading securities, mainly highly rated European government debt securities. Of these securities,

$194 million as of March 31, 2019 and $166 million as of December 31, 2018 are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing. See Note 8, “Investments,” to the condensed consolidated financial statements for further discussion of our trading investment securities.

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Debt Obligations

The following table summarizes our debt obligations by contractual maturity:

	Maturity Date	March 31, 2019	December 31, 2018
		(in millions)	
Short-term debt:			
Commercial paper	Weighted-average maturity of 2 days	$ 540	$ 275
Senior unsecured floating rate notes	Repaid March 2019	—	500
5.55% senior unsecured notes[1]	January 2020	599	599
$400 million senior unsecured term loan facility	November 2019	100	100
Total short-term debt		1,239	1,474
Long-term debt:			
3.875% senior unsecured notes	June 2021	671	686
$1 billion revolving credit commitment	April 2022	(3)	(4)
1.75% senior unsecured notes	May 2023	667	682
4.25% senior unsecured notes	June 2024	497	497
3.85% senior unsecured notes	June 2026	496	496
Total long-term debt		2,328	2,357
Total debt obligations		$ 3,567	$ 3,831

(1) Balance was reclassified to short-term debt as of March 31, 2019.

In addition to the $1 billion revolving credit commitment, we also have other credit facilities primarily related to our Nasdaq Clearing operations in order to provide further liquidity. Other credit facilities, which are available in multiple currencies, totaled $210 million as of March 31, 2019 and $220 million as of December 31, 2018, in available liquidity, none of which was utilized.

As of March 31, 2019, we were in compliance with the covenants of all of our debt obligations.

See Note 10, “Debt Obligations,” to the condensed consolidated financial statements for further discussion of our debt obligations.

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Regulatory Capital Requirements

Clearing Operations Regulatory Capital Requirements

We are required to maintain minimum levels of regulatory capital for the clearing operations of Nasdaq Clearing. The level of regulatory capital required to be maintained is dependent upon many factors, including market conditions and creditworthiness of the counterparty. As of March 31, 2019, our required regulatory capital of $151 million is comprised of highly rated European government debt securities that are included in financial investments, at fair value in the Condensed Consolidated Balance Sheets.

Broker-Dealer Net Capital Requirements

Our 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. As of March 31, 2019, the combined required minimum net capital totaled $1 million and the combined excess capital totaled $52 million. The required minimum net capital is included in restricted cash in the Condensed Consolidated Balance Sheets.

Nordic and Baltic Exchange Regulatory Capital Requirements

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations and are required to maintain regulatory capital intended to ensure their general financial soundness and liquidity. As of March 31, 2019, our required regulatory capital of $33 million is primarily invested in European mortgage bonds that are included in financial investments, at fair value and restricted cash in the Condensed Consolidated Balance Sheets.

Other Capital Requirements

We operate several other businesses which are subject to local regulation and are required to maintain certain levels of regulatory capital. As of March 31, 2019, other required regulatory capital was $16 million and was primarily included in restricted cash and financial investments, at fair value in the Condensed Consolidated Balance Sheets.

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Cash Flow Analysis

The following table summarizes the changes in cash flows:

	Three Months Ended March 31,		
	2019	2018	Percentage Change
Net cash provided by (used in):	(in millions)		
Operating activities	$ 337	$ 375	(10.1)%
Investing activities	(74)	(8)	825.0 %
Financing activities	(302)	(337)	(10.4)%
Effect of exchange rate changes on cash and cash equivalents and restricted cash	(8)	—	N/M
Net increase in cash and cash equivalents and restricted cash	(47)	30	(256.7)%
Cash and cash equivalents and restricted cash at beginning of period	586	399	46.9 %
Cash and cash equivalents and restricted cash at end of period	$ 539	$ 429	25.6 %

Net Cash Provided by Operating Activities

Net cash provided by operating activities decreased $38 million for the three months ended March 31, 2019 compared with the same period in 2018. The decrease was primarily driven by relatively flat operating income due to a decrease in our equity derivative trading and clearing, cash equity trading, and FICC businesses due to lower industry trading volumes, higher performance incentive payments made in the three months ended March 31, 2019 for the 2018 performance period as compared to the same period in 2018 for the 2017 performance period, and the sale of our Public Relations Solutions and Digital Media Services businesses in April 2018.

Net Cash Used in Investing Activities

Net cash used in investing activities increased $66 million for the three months ended March 31, 2019 compared with the same period in 2018. The increase was primarily due to cash used for an acquisition of a business, net of cash and cash equivalents acquired, partially offset by an increase in cash received from a divestiture of a business and an increase in cash received from the sales of securities, net.

Net Cash Used in Financing Activities

Net cash used in financing activities decreased $35 million for the three months ended March 31, 2019 compared with the same period in 2018. The decrease was primarily due to an increase in proceeds from commercial paper, net, a decrease in repurchases of common stock, an increase in proceeds of customer funds, an increase in proceeds from long-term debt issuances and a decrease in payments related to employee shares withheld for taxes, partially offset by an increase in repayments of long term debt and an increase in dividends paid.

See Note 5, “Acquisitions and Divestitures,” to the condensed consolidated financial statements for further discussion of our divestiture and acquisitions.

See Note 10, “Debt Obligations,” to the condensed 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 condensed consolidated financial statements for further discussion of our share repurchase program and cash dividends paid on our common stock.

Contractual Obligations and Contingent Commitments

In the first quarter of 2019, there were no significant changes to our contractual obligations and commercial commitments from those disclosed in “Part I. Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 as filed with the SEC on February 22, 2019.

Off-Balance Sheet Arrangements

For discussion of off-balance sheet arrangements see:

- Note 16, “Clearing Operations,” to the condensed consolidated financial statements for further discussion of our non-cash default fund contributions and margin deposits received for clearing operations; and
- Note 18, “Commitments, Contingencies and Guarantees,” to the condensed consolidated financial statements for further discussion of:
    - Guarantees issued and credit facilities available;
    - Other guarantees;
    - Non-cash contingent consideration;

- Escrow agreements;
- Routing brokerage activities;
- Offer for Oslo Børs VPS;
- Legal and regulatory matters; and
- Tax audits.

Item 3. 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 March 31, 2019, 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 March 31, 2019, the fair value of this portfolio would have declined by $4 million.

Debt Obligations

As of March 31, 2019, 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 the borrowings under our 2017 Credit Facility and 2016 Credit Facility, and amounts outstanding from the sale of commercial paper under our commercial paper program, all of which have variable interest rates. As of March 31, 2019, we had principal amounts outstanding of $100 million under the 2016 Credit Facility and $540 million of commercial paper. A hypothetical 100 basis points increase in interest rates on our outstanding 2016 Credit Facility and our outstanding commercial paper would increase annual interest expense by approximately $6 million based on borrowings as of March 31, 2019.

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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 three months ended March 31, 2019 is presented in the following table:

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)				
Three Months Ended March 31, 2019					
Average foreign currency rate to the U.S. dollar	1.1356	0.1090	#	N/A	N/A
Percentage of revenues less transaction-based expenses	8.2%	8.1 %	5.0 %	78.7%	100.0%
Percentage of operating income	12.9%	(1.3)%	(7.0)%	95.4%	100.0%
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$ (5)	$ (5)	$ (3)	$ —	$ (13)
Impact of a 10% adverse currency fluctuation on operating income	$ (4)	$ —	$ (2)	$ —	$ (6)

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

* * * * * *

Our investments in foreign subsidiaries are exposed to volatility in currency exchange rates through translation of the foreign subsidiaries' net assets or equity to U.S. dollars. Substantially all of our foreign subsidiaries operate in functional currencies other than the U.S. dollar. 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 Condensed Consolidated Balance Sheets.

Our primary exposure to net assets in foreign currencies as of March 31, 2019 is presented in the following table:

	Net Assets	Impact of a 10% Adverse Currency Fluctuation
	(in millions)	
Swedish Krona[(1)]	$ 3,411	$ (341)
Norwegian Krone	174	(17)
Canadian Dollar	123	(12)
British Pound	216	(22)
Euro	26	(3)
Australian Dollar	105	(10)

(1) Includes goodwill of $2,426 million and intangible assets, net of $617 million.

Credit Risk

Credit risk is the potential loss due to the default or deterioration in credit quality of customers or counterparties. We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. We limit our exposure to credit risk by evaluating the counterparties with which we make investments and execute agreements. 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 Fixed Income business to trade in U.S. Treasury securities. Execution Access has a clearing arrangement with Industrial and Commercial Bank of China Financial Services LLC, or ICBC. As of March 31, 2019, we have contributed $15 million of clearing deposits to ICBC 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 ICBC through the Fixed Income Clearing Corporation, with ICBC acting as agent. 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 at least one business day (or more, if specified by the U.S. Treasury issuance calendar). 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. Daily position trading limits are also enforced for such counterparties.

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

We also are exposed to credit risk through our clearing operations with Nasdaq Clearing. See Note 16, "Clearing

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

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

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Item 4. 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, Accounting and 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, Accounting and 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***. There have been no changes in Nasdaq's internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) that occurred during the quarter ended March 31, 2019 that have materially affected, or are reasonably likely to materially affect, Nasdaq's internal control over financial reporting.

PART II - OTHER INFORMATION

Item 1. Legal Proceedings

See "Legal and Regulatory Matters - Litigation," of Note 18, "Commitments, Contingencies and Guarantees," to the condensed consolidated financial statements, which is incorporated herein by reference.

Item 1A. Risk Factors

In addition to the other information set forth in this Quarterly Report on Form 10-Q, you should carefully consider the factors discussed under "Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 as filed with the SEC on February 22, 2019. These risks could materially and adversely affect our business, financial condition and results of operations. The risks and uncertainties in our Form 10-K and Form 10-Q 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.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

Issuer Purchases of Equity Securities

Share Repurchase Program

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

Employee Transactions

During the fiscal quarter ended March 31, 2019, 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 March 31, 2019:

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 million)
January 2019				
Share repurchase program	—	$ —	—	$ 322
Employee transactions	186,831	$ 84.60	N/A	N/A
February 2019				
Share repurchase program	—	$ —	—	$ 322
Employee transactions	3,025	$ 87.37	N/A	N/A
March 2019				
Share repurchase program	—	$ —	—	$ 322
Employee transactions	156,835	$ 91.97	N/A	N/A
Total Quarter Ended March 31, 2019				
Share repurchase program	—	$ —	—	$ 322
Employee transactions	346,691	$ 87.96	N/A	N/A

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit Number	
10.1	Transaction Agreement, dated as of January 29, 2019, between Oslo Børs VPS Holding ASA and Nasdaq AB.
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, Accounting and 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.

* The following materials from the Nasdaq, Inc. Quarterly Report on Form 10-Q for the three months ended March 31, 2019,

formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of March 31, 2019 and December 31, 2018; (ii) Condensed Consolidated Statements of Income for the three months ended March 31, 2019 and 2018; (iii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three months ended March 31, 2019 and 2018; (iv) Condensed Consolidated Statements of Changes in Equity for the three months ended March 31, 2019 and 2018; (v) Condensed Consolidated Statements of Cash Flows for the three months ended March 31, 2019 and 2018; and (vi) notes to condensed consolidated financial statements.

SIGNATURES

Pursuant to the requirements 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.

Nasdaq, Inc.
(Registrant)

Date:	May 1, 2019	**By:**	/s/ Adena T. Friedman
		Name:	**Adena T. Friedman**
		Title:	**President and Chief Executive Officer**
Date:	May 1, 2019	**By:**	/s/ Michael Ptasznik
		Name:	**Michael Ptasznik**
		Title:	**Executive Vice President, Accounting and Corporate Strategy and Chief Financial Officer**

Exhibit 10.1

EXECUTION VERSION

TRANSACTION AGREEMENT

between

OSLO BØRS VPS HOLDING ASA

and

NASDAQ AB

Contents

Clause **Page**

TRANSACTION AGREEMENT

This agreement (the **Agreement**) is entered into on _29January 2019 between

(1) Oslo Børs VPS Holding ASA, a public limited liability company (Nw.:allmennaksjeselskap) incorporated under the laws of Norway with registered number 983 268 617, having its registered business address at Tollbugata 2, 0152 Oslo, Norway (**Oslo Børs VPS**); and

(2) NASDAQ AB, a private limited company incorporated under the laws of Sweden with registered number 556243-8001, having its registered business address at Tullvaktsvägen 15, 105 78 Stockholm, Sweden (the **Offeror**).

The Target and the Offeror are jointly referred to as the **Parties** and individually as a **Party**. **WHEREAS**

(A) Following the announcement on 24 December 2018 by Euronext N.V. (**Euronext**) of its intention to launch a voluntary public offer for all of the shares in Oslo Børs VPS (the **Oslo Børs VPS Shares**), Oslo Børs VPS and the Offeror have conducted discussions regarding a possible combination of their businesses in order to create additional value for the Oslo Børs VPS shareholders and other stakeholders.

(B) Following such discussions, the Offeror has agreed to make a recommended voluntary tender offer for the Oslo Børs VPS Shares, on the terms and conditions set out in this Agreement (the **Offer**).

(C) This Agreement sets out, among other things, the Parties' agreement on the final terms and conditions upon which the Offeror will make the Offer, the form of recommendation of the Offer by the Oslo Børs VPS board of directors (the **Oslo Børs VPS Board**), and the form and contents of the announcement of the Offer.

(D) The Offeror has entered into irrevocable pre-acceptances with certain of Oslo Børs VPS' major shareholders, in aggregate representing 35.11% of the Oslo Børs VPS Shares.

(E) On 14 January 2019, Euronext published an offer document for its all-cash tender offer to acquire the Oslo Børs VPS Shares at a price of NOK 145 per share (the **Euronext Offer**).

1. Definitions

1.1 **Affiliate** shall mean, with reference to a specified Person, a Person that, directly or indirectly, controls, is controlled by, or is under common control with, the specified Person. The term «control" as used in this definition (including its correlative meanings "controlled by" and "under common control with") shall mean the ability, directly or indirectly, to direct the management or policies of another body corporate, whether through ownership of voting rights or otherwise.

1.2 **Applicable Law** shall mean all foreign, federal, state, local, municipal or other laws, ordinances, regulations, rules and other provisions having the force or effect of law, applicable to the Parties, their Affiliates or their respective businesses (which for the avoidance of doubt shall include the rules of any listing authority or stock exchange on which the securities of a Party or any Affiliate of a Party are listed (and which for Oslo Børs VPS shall include the rules applicable to N-OTC listed companies)).

1.3 **Board Recommendation** has the meaning given to it in clause 3.1.1.

1.4 **Business Day** shall mean a day other than a Saturday or Sunday on which banks are open for general business in Oslo, Norway and New York, the United States of America.

1.5 **Clearances** shall mean the permits, consents, approvals and actions referred to in item (c) of the Closing Conditions.

1.6 **Closing Conditions** has the meaning given in clause 2.3.1.

1.7 **Competing Offer** means any agreement, offer or proposal for, or any indication of interest in, any acquisition of (i) more than 1/3 of the Oslo Børs VPS Shares, (ii) more than 1/3 of the Group's total assets based on the latest approved annual accounts, or (iii) any assets representing more than 1/3 of the Group's revenue, earnings before interests, taxes, depreciation and amortization or net income, on an annual basis based on the latest approved annual accounts, whichever is lower, whether by way of a merger, consolidation, asset sale, purchase of shares, tender offer or other business combination or otherwise, other than any offer, proposal or indication of interest made by or on behalf of the Offeror.

1.8 **Contract** shall mean any contract, subcontract, note, bond, mortgage, indenture, lease, license, sublicense, guaranty, security agreement, franchise or other legally binding instrument, commitment or obligation, whether oral or in writing.

1.9 **Euronext** has the meaning given to in Recital (A).

1.10 **Euronext Offer** has the meaning given to it in Recital (E).

1.11 **Euronext Representative** means Euronext and each of its Affiliates and each of its and their respective directors, officers, employees, agents, representatives and advisors.

1.12 **Group** shall mean Oslo Børs VPS and its subsidiaries.

1.13 **Higher Priced Offer** shall mean a written offer that constitutes a Competing Offer (provided that, for purposes of this definition, each instance of "1/3" in the definition of Competing Offer shall be read as "1/2") that the Oslo Børs VPS Board has determined, in good faith and after consulting with its financial advisors and outside counsel, to satisfy each of the following conditions:

(a) that such Competing Offer is more favourable, from a financial point of view, to the holders of Oslo Børs VPS' Shares than the Offer (including any adjustment to the terms and conditions of the Offer proposed by the Offeror in accordance with this Agreement);

(b) that such Competing Offer is reasonably capable of being completed in accordance with its terms without undue delay, taking into account all legal, financial, regulatory and other aspects (including but not limited to any financing condition) of such Competing Offer and the party making such Competing Offer; and

(c) that such Competing Offer did not result from a breach of clause 3.3.

1.14 **Inside Information** shall have the meaning ascribed to such term in section 3-2 of the Norwegian Securities Trading Act.

1.15 **Interim Period** shall mean the period from the date of this Agreement until the earlier of

(i) the termination of this Agreement, (ii) the lapse or withdrawal of the Offer, or (iii) completion of the Offer.

1.16 **Joint Announcement** has the meaning given in clause 4.1.1.

1.17 **Long Stop Date** means 31 December 2019 or such later date as is mutually agreed in writing between Oslo Børs VPS and the Offeror.

1.18 **Main Terms and Conditions** has the meaning given in clause 2.1.

1.19 **Matching Offer** has the meaning given in clause 3.2.2.

1.20 **Matching Period** has the meaning given in clause 3.1.2.

1.21 **Material Adverse Change** means any fact, circumstance, development, event, change or effect, individually or in aggregate, that is, or is reasonably likely to be, materially adverse to the business, assets, operations, condition (financial or otherwise), assets, or result of operations of the Group taken as a whole, but excluding any fact, circumstance, development, event, change or effect resulting from (i) the announcement of the Offer and the identity of the Offeror as the prospective acquirer of the Group, or any communication by or on behalf of the Offeror regarding the Offeror's plans or intentions with respect to the Group; (ii) general economic, regulatory or political conditions, or (iii) changes in conditions generally affecting the industries in which the Group operates, in the case of (ii) and (iii) except to the extent such fact, circumstance, development, event, change or effect disproportionately affects the Group when taken as a whole.

1.22 **Offer** has the meaning given in Recital (B).

1.23 **Offer Price** shall mean NOK 152 per Oslo Børs VPS Share, subject to adjustment in accordance with this Agreement and the terms and conditions of the Offer.

1.24 **Offeror Representatives** means the Offeror and each of its Affiliates and each of its and their respective directors, officers, employees, agents, representatives and advisors.

1.25 **Oslo Børs VPS Board** has the meaning given in Recital (C).

1.26 **Oslo Børs VPS Representatives** has the meaning given in clause 3.3.1.

1.27 **Oslo Børs VPS Shares** has the meaning given in Recital (A).

1.28 **Permitted Statement** has the meaning given in clause 3.1.2.

1.29 **Person** shall mean an individual, a corporation, a partnership, a limited liability company or partnership, a trust, an unincorporated organization, a government or any department or agency thereof, or any other juridical entity.

1.30 **Relevant Authority** shall mean any (a) nation, principality, state, commonwealth, province, territory, county, municipality, district or other jurisdiction of any nature; (b) federal, state, local, municipal, foreign or other government (including any subdivision, court, administrative agency or commission or other authority thereof); (c) central bank, ministry, governmental, quasi-governmental (including the European Union), supranational, statutory, regulatory or investigative body or authority (including any national or supranational anti-trust or merger authority) (d) individual, entity or body exercising, or entitled to exercise, any executive, legislative, judicial, administrative, regulatory, police, military or taxing or arbitral authority or power of any nature; or (e) trade agency, association, institution or professional or environmental body in any jurisdiction.

2. The Offer

2.1 Terms and conditions of the Offer

The Offeror will make the Offer on the main terms and conditions set out in this Agreement and in appendix 1 (the **Main Terms and Conditions**).

2.2 Offer document

2.2.1 The Offeror will prepare an offer document for the Offer substantially in accordance with Chapter 6 of the Norwegian Securities Trading Act (the **Offer Document**), setting out the terms and conditions of the Offer. The Offer Document shall include the Main Terms and Conditions.

2.2.2 Oslo Børs VPS shall have the right to review and comment upon the draft Offer Document prior to its publication but shall not have any right or obligation to approve or authorise the contents of the Offer Document, except for the statement of the Oslo Børs VPS Board.

2.2.3 The Offeror shall use its commercially reasonable efforts to ensure that the Offer Document is finalised in time for the acceptance period in the Offer to commence no later than on 28 February 2019. Oslo Børs VPS shall provide the Offeror and its advisers with such assistance, including access to, and procuring the provision of assistance by, relevant professional advisors, and information concerning the business, assets, contracts, properties, liabilities, personnel and other aspects of the Group as they may reasonably request in order to enable the Offeror to finalise the Offer Document and make the Offer in accordance with this Agreement. Notwithstanding the foregoing, the Offeror acknowledges and accepts that due diligence will be permitted only when the Offeror has obtained the Clearances.

2.2.4 Oslo Børs VPS undertakes that the information supplied by Oslo Børs VPS or its representatives for the purposes of preparing the Offer Document will be in accordance with the facts in all material respects and will not omit any material information likely to affect the import of such information.

2.3 Closing Conditions

2.3.1 The completion of the Offer shall be subject to the “Conditions for completion of the Offer” set out in appendix 1 (the **Closing Conditions**), each one of which may be waived by the Offeror in its sole discretion.

2.3.2 If the Offeror has not publicly announced that the Closing Conditions are satisfied or waived by the Offeror on or before the Long Stop Date the Offer will lapse.

2.4 Compulsory acquisition

2.4.1 As soon as practicable after the completion of the Offer, assuming that the Closing Conditions shall have been either satisfied or waived and the Offeror has acquired at least 90% of the Oslo Børs VPS Shares, the Offeror shall complete a compulsory acquisition of the remaining Oslo Børs VPS Shares in accordance with clause 4-25 of the Norwegian Public Limited Companies Act.

3. Board recommendation; Matching Right

3.1 Oslo Børs VPS Board recommendation

3.1.1 The Oslo Børs VPS Board undertakes to announce the unanimous recommendation of the Offer in the form attached as appendix 2 (the **Board Recommendation**). The Board Recommendation shall be included as an attachment to the Offer Document. If Oslo Børs VPS requires that an additional statement on behalf of Oslo Børs VPS is made by an independent third party, any such statement shall not entitle the Oslo Børs VPS Board to withdraw or modify the Board Recommendation.

3.1.2 The Board Recommendation shall, when issued, not be withdrawn, modified or amended by the Oslo Børs VPS Board, provided however that if:

(a) a Competing Offer is made and is not withdrawn;

(b) Oslo Børs VPS provides the Offeror with written notice of the Competing Offer in accordance with clause 3.3.6 below;

(c) the Oslo Børs VPS Board determines that such Competing Offer constitutes a Higher Priced Offer and the Offeror is immediately notified in writing of such decision;

(d) the Offeror is provided with the opportunity to announce a Matching Offer (as defined below) during a period of five Business Days commencing when the Offeror is given notice and information as set out under c) above (the "**Matching Period**"); and

(e) the Offeror does not announce a Matching Offer in accordance with clause 3.2 by the end of the Matching Period,

then any public statement it may make with respect to the Higher Priced Offer shall comply with the following requirements (the **Permitted Statement**): the Oslo Børs VPS Board may only acknowledge that the Higher Priced Offer is more favourable from a purely financial point of view than the Offer and that Oslo Børs VPS shareholders whose focus is on the financial perspective will prefer the Higher Priced Offer but shall (i) reiterate and maintain unaltered all statements from the Board Recommendation regarding the Offeror as the preferred owner of Oslo Børs VPS from an industrial/strategic perspective; (ii) advise Oslo Børs VPS shareholders that the Offer would be more likely than the Higher Priced Offer to promote the long term success of the Group having regard to the strategic interests of capital market participants based in Norway and elsewhere in the Nordic region and (iii) reiterate the fact that Oslo Børs VPS shareholders holding in excess of 35.11% of Oslo Børs VPS Shares, including customers of Oslo Børs VPS, have irrevocably undertaken to accept the Offer.

3.1.3 Oslo Børs VPS undertakes not to enter into any agreement in relation to, or make or permit the making of, any announcement or other public statement (unless required by Applicable Law) in respect of any Competing Offer unless the Matching Period has expired and the Offeror has not announced a Matching Offer, in which case any announcement or other public statement which Oslo Børs VPS makes or permits to be made in respect of such Competing Offer shall not be inconsistent in any respect with the Permitted Statement.

3.2 Right to match

3.2.1 In case of a Higher Priced Offer the Oslo Børs VPS Board shall permit the Offeror to amend the Offer during the Matching Period.

3.2.2 If the Offeror prior to expiry of the Matching Period amends its Offer so that the amended Offer Price is as high as the offer price in the Higher Priced Offer and otherwise on terms not significantly less favourable than the terms of the Offer on the date of this Agreement (a **Matching Offer**), then the Oslo Børs VPS Board shall issue a statement whereby the Oslo Børs VPS Board maintains its recommendation of the Offer (as amended). In such event, the provisions of this Agreement shall to the extent applicable, apply to such Matching Offer.

3.2.3 If the Offeror does not amend its offer within the Matching Period, or if the amended Offer is not a Matching Offer, then subsequent to the expiry of the Matching Period, Oslo Børs VPS may make a statement with respect to the Higher Priced Offer in accordance with the provisions of clause 3.1.2. For the avoidance of doubt, in such circumstances, Oslo Børs VPS shall not make, or permit to be made, any announcement or other public statement in respect of a Higher Priced Offer which is inconsistent in any respect with the Permitted Statement.

3.3 Non-solicitation

3.3.1 Oslo Børs VPS undertakes to the Offeror that, with effect from the entry into this Agreement, Oslo Børs VPS and its Affiliates and their respective directors, officers, key employees, agents, representatives and advisors (collectively **Oslo Børs VPS Representatives**) shall terminate immediately any discussions or negotiations with any person which could reasonably be expected to result in any Competing Offer being announced or made.

3.3.2 Subject to clause 3.3.5, Oslo Børs VPS shall also discontinue access to any of its confidential information (and not establish or allow access to any of its confidential information, or any data room, virtual or otherwise).

3.3.3 Subject to clause 3.3.5, until the earlier of the date on which (i) the Offer is completed and (ii) the Offer lapses, Oslo Børs VPS shall not, and shall procure that no Oslo Børs VPS Representative shall, directly or indirectly, (i) solicit, seek, encourage, assist or initiate the making of any inquiries, expressions of interest, proposals, offers or announcement from any Person (including, without limitation, brokerage firms, corporate advisors and/or other advisors), relating to any possible Competing Offer; (ii) furnish any information regarding the Group or its businesses and Affiliates to any Person in connection with or in response to a Competing Offer, or an inquiry or indication of interest that could reasonably be expected to lead to a Competing Offer; (iii) engage or participate in discussions or negotiations with any Person with respect to any Competing Offer; (iv) approve, endorse or recommend any Competing Offer; or (v) enter into any letter of intent, agreement, commitment, understanding or transaction with any entity or Person relating to any transaction which is a Competing Offer.

3.3.4 Without prejudice to the generality of clause 3.3.3, until the earlier of the date on which

(a) the Offer is completed and (b) the Offer lapses, Oslo Børs VPS shall not, and shall procure that none of the Oslo Børs VPS Representatives, directly or indirectly, (i) furnish any information regarding itself or its businesses and Affiliates to any Euronext Representative with respect to the Euronext Offer; (ii) unless required by Applicable Law, engage in discussions or negotiations with any Euronext Representative with respect to the Euronext Offer; (iii) approve, endorse or recommend the Euronext

Offer; or (iv) enter into any letter of intent, agreement, commitment, understanding or transaction with any Euronext Representative or any other Person with respect to the Euronext Offer.

3.3.5 Notwithstanding the restrictions in clauses 3.3.2, 3.3.3 and 3.3.4, if Oslo Børs VPS subsequent to the date of this Agreement receives an unsolicited bona fide written proposal which makes it likely that a potential Competing Offer (which for the avoidance of doubt can be an improved unsolicited offer from Euronext) will be presented, it shall be entitled to enter into discussions and share confidential information with such parties (and enter into a confidentiality agreement for the disclosure of such confidential information on terms that are not more favourable to such parties than the terms of the confidentiality agreement between Oslo Børs VPS and the Offeror (or its Affiliates), but shall not enter into any other agreement or make any other commitment in connection with a Competing Offer unless required by Applicable Law) to the same extent as such information at such point in time has been shared with the Offeror, if and to the extent that (i) the Oslo Børs VPS Board has determined in good faith and after consulting with its financial advisors and outside counsel that such potential Competing Offer is likely to result in a Higher Priced Offer being made within a reasonable time frame; and (ii) that the Oslo Børs VPS Board determines in good faith, after consulting with its outside counsel, that it would breach its fiduciary duties if it did not respond to such potential Competing Offer.

3.3.6 Subject to Applicable Laws, if Oslo Børs VPS subsequent to the announcement of the Offer receives a Competing Offer, it shall if it has decided to pursue such Competing Offer immediately notify the Offeror in writing of such Competing Offer, the material terms and conditions of any such Competing Offer (including, but not limited to the proposed price) and any subsequent amendment thereof, and the identity of the proposing party, such notice to be given as promptly as practicable and in any event within two Business Days of such decision to proceed, and Oslo Børs VPS shall provide the Offeror with any other reasonably requested information which the Offeror may require in order to evaluate the Competing Offer. If Oslo Børs VPS enters into discussions with a third party in accordance with clause 3.3.5 it shall on a timely basis inform and keep informed the Offeror of all significant developments in such discussions and provide the Offeror with all non-public information furnished to the proposing party which has not been disclosed to the Offeror yet. Oslo Børs VPS shall, subject to Applicable Laws, as soon as possible on a no name basis inform the Offeror of the contemplated announcement of any Competing Offer of which Oslo Børs VPS is made aware. For the avoidance of doubt, notwithstanding any other provision of this Agreement and subject only to the requirements of Applicable Law, Oslo Børs VPS shall not make, or permit to be made, any announcement or other public statement in respect of any Competing Offer which is inconsistent in any respect with the Permitted Statement.

3.3.7 Oslo Børs VPS undertakes to the Offeror that, prior to the Long Stop Date, it shall not agree with any other person or its representatives any break fee, work fee, payment, benefit, incentive, indemnity, contribution for costs or similar arrangement in relation to the evaluation, preparation, submission, completion or termination of any actual or potential Competing Offer.

4. Announcement

4.1 Joint announcement

4.1.1 The Parties shall issue a joint press release/stock exchange notice reflecting the terms of the Offer and the recommendation of the Offer by the Board, in the form set out in appendix 3 (the **Joint Announcement**) immediately after the execution of this Agreement.

4.2 No other announcements

4.2.1 Except as set out clause 4.1, the Parties shall not make any announcements relating to the transactions contemplated by this Agreement, including but not limited to press releases and stock exchange notices relating to the Offer, except with the other Party's prior consent, such consent not to be unreasonably withheld or delayed.

4.2.2 This clause 4.2 shall not prohibit any public announcement or notice required to be made by any Applicable Law, provided that the Parties shall, to the extent practicable, consult with each other concerning the timing and content of any such announcement before it is made and shall give a copy thereof to the other Party at the same time as, or as soon as reasonably practicable after, the making of such announcement.

4.2.3 This clause 4.2 shall not prohibit any public announcement or notice, and the Parties shall be entitled to make such announcements as they deem appropriate, in response to any Competing Offer (subject to clause 3) or if the Board Recommendation is withdrawn, amended or modified, subject to, in the case of Oslo Børs VPS, any such announcement or notice not being inconsistent in any respect with the Permitted Statement.

4.2.4 Subject to clause 3.1.2, Oslo Børs VPS shall not, and shall procure that no Oslo Børs VPS Representative shall, make any statement or express any opinion regarding the Offer which is inconsistent with the Board Recommendation.

5. Oslo Børs VPS' covenants

5.1 Conduct of business

Subject to any requirements pursuant to Applicable Laws, including the requirement to comply with the Group's permits from Relevant Authorities and related conditions, Oslo Børs VPS undertakes to the Offeror that during the Interim Period:

(a) except as contemplated by any other provision of this Agreement, the business of Oslo Børs VPS and the Group shall in all material respects be conducted only in the ordinary course of business consistent with past practice or plans that have been publicly disclosed or disclosed in writing to the Offeror prior to the date of this Agreement and in accordance with Applicable Law, it will pay or perform all of its obligations when due and seek to: (i) preserve its present business organisation, (ii) keep available the services of its present officers and key employees, (iii) preserve its present lines of business, and (iv) unless reasonably and in good faith considered by the Oslo Børs VPS Board or management not to be in the best interest of the Group, preserve its present relationships with customers, suppliers and other third parties;

(b) neither it nor any of its Affiliates will incur capital expenditures (i.e. CAPEX according to Group's relevant accounting principles) which exceed NOK 100 million in aggregate;

(c) neither it nor any of its Affiliates will (whether by one transaction or by a series of transactions) undertake any acquisitions or disposals (including, without limitation, by way of sale of shares in a subsidiary or disposals by way of sale, leasing or licensing) with a value in excess of NOK 100 million or which may otherwise be outside the ordinary course in the context of the Group's business or novate or enter into binding agreements for such acquisitions or disposals, or enter into any form of joint venture, association or partnership, in each case if such joint venture, association or partnership is or would reasonably be expected to be material in the context of the Offer or of the Group taken as a whole;

(d) neither it nor any of its Affiliates will enter into any Contracts (which when used in this clause 5.1(d) for the avoidance of doubt shall not comprise business terms generally applicable) or agree to materially amend any existing Contracts which agreement or amendment individually involve or may involve total annual expenditure, before or after any amendment, in excess of NOK 50 million or which are otherwise outside the ordinary course in the context of the business of the Group;

(e) it will use all reasonable endeavours to ensure that neither it nor any of its Affiliates will in any material respect breach any terms of any material Contracts and neither it nor any of its Affiliates shall, except in the ordinary course of the Group's business, novate any of its material Contracts (which for the avoidance of doubt shall not comprise business terms generally applicable);

(f) neither it nor any of its Affiliates will enter into any Contracts which are: (i) not on arm's length terms or for full value; (ii) not in the ordinary course of business; (iii) on unusual, abnormal or onerous terms; or (iv) with a person who directly or indirectly holds shares in Oslo Børs VPS or members of Oslo Børs VPS' executive management except, in each case, in the ordinary course of business consistent with past practice;

(g) neither it nor any of its Affiliates will make or agree to any material change of the terms of employment or engagement of its directors or of any member of the executive management (other than changes in the ordinary course of business consistent with past practice and at normal market terms);

(h) it will not make any proposal or pass any resolution to (i) amend or propose to amend its articles of association; (ii) allot or issue shares or change its share capital or number of Oslo Børs VPS Shares, (iii) declare or distribute any dividend or make any other distribution to its shareholders other than regular cash dividends in a manner and in amounts consistent with past practice, or (iv) issue any financial instrument giving a right to acquire or subscribe for Oslo Børs VPS Shares;

(i) it will not, and will procure that none of its Affiliates will, acquire or sell any treasury shares, except for any treasury shares acquired and/or sold as part of Oslo Børs VPS' existing employee share saving scheme in the ordinary course of business, consistent with past practice, and in an amount not to exceed 100,000 shares;

(j) neither it nor any of its Affiliates will merge, consolidate with or into any other corporation, enter into any reorganisations, corporate restructuring, liquidation, dissolution or change in any manner the rights of its capital stock or the character of its business;

(k) neither it nor any of its Affiliates will acquire (by merger, consolidation or acquisition of stock or assets) any corporation, partnership or other business organization or division thereof or make any equity investments therein (other than equity investments in majority-owned members of the Group);

(l) neither it nor any of its Affiliates will incur any indebtedness from any party that is not a member of the Group for borrowed money, or issue any debt securities, in excess of NOK 100 million;

(m) neither it nor any of its Affiliates will repay, accelerate or otherwise materially amend the terms of any indebtedness of any member of the Group from any party that is not a member of the Group otherwise than in the ordinary course of business consistent with past practice;

(n) it will not adopt, materially amend or withdraw any employee benefit, bonus, profit sharing or equity incentive program;

(o) it will in connection with the Offer, the Euronext Offer or any Competing Offer not agree, incur or pay any fees, bonuses, consulting fees, advisory fees, monitoring fees, services fees or directors fees, other than to Oslo Børs VPS' currently retained advisors in connection with the Offer and the Euronext Offer;

(p) except as disclosed to the Offeror in writing prior to the date of this Agreement, it will not change any member of its executive management, nor implement any lay- offs or new general hires, that is outside the ordinary course or material in the context of the Offer, provided, however, that Oslo Børs VPS shall not be in breach of this clause 5.1(p) in the event of any member of Oslo Børs VPS's executive management voluntarily resigning from his/her position and Oslo Børs VPS, after such resignation, hiring a new member of the executive management;

(q) it shall give prompt written notice to the Offeror of any Material Adverse Change;

(r) it will not, subject as otherwise envisaged or permitted in this Agreement, take any action which it knows would or might reasonably be expected to be prejudicial to the successful completion of the Offer or which would or might reasonably be expected to have the effect of preventing any of the conditions to the Offer from being fulfilled or resulting in a delay to the expected timetable for the completion of the Offer, including not entering into any other transaction comprised by Section 6-17 (1) of the Norwegian Securities Trading Act;

(s) it will refrain from announcing, agreeing or committing to do anything in breach of the matters referred to in items (a) to (r) above,

in each case except with the prior written consent of the Offeror, such consent not to be unreasonably withheld or delayed (and if no response is given within five Business Days of receiving written notice from Oslo Børs VPS with sufficient details for the Offeror to conclude on the matter, such consent shall be deemed to have been given).

5.2 Duty to inform

Oslo Børs VPS shall promptly, to the extent not prohibited by Applicable Law, notify the Offeror if it becomes aware that any fact, circumstance, act, matter or thing that is inconsistent with its obligations under clause 5.1 that has occurred or if it becomes aware of any matter that may cause any of the Closing Conditions not to be capable of satisfaction.

5.3 Call for extraordinary general meeting

Following an announcement by the Offeror that all of the Closing Conditions have been satisfied or waived by the Offeror, Oslo Børs VPS shall as soon as possible upon request from the Offeror, but no later than four Business Days after the request from the Offeror, convene a general meeting of Oslo Børs VPS to be held on a date following completion of the Offer as determined by the Offeror, subject to applicable advance notice rules, for the purpose of electing new members of the Oslo Børs VPS Board nominated by the Offeror.

5.4 Release of inside information

No later than simultaneously with the release of the Joint Announcement, Oslo Børs VPS shall upon specific request by the Offeror in respect of the information to be disclosed take all reasonable actions to ensure that the Offeror is released from any trading or disclosure restrictions that may have been caused by the disclosure by Oslo Børs VPS to the Offeror or its Affiliates of any information that constitutes Inside Information in respect of Oslo Børs VPS or securities issued by Oslo Børs VPS, including by, if and to the extent necessary, disclosure of all such information to the market. Subsequent to the date of the release of the Joint Announcement, Oslo Børs VPS shall publicly disclose any Inside Information made available to the Offeror or its Affiliates by or on behalf of Oslo Børs VPS as soon as reasonably practicable until the completion of the Offer, unless such Inside Information is made subject to delayed disclosure by Oslo Børs VPS pursuant to the continuing obligations for N-OTC listed companies.

5.5 Information and Employees

Without limiting clause 7, with effect from receipt of the Clearances by the Offeror , Oslo Børs shall:

a) co-operate with the Offeror and its Affiliates and their respective directors, officers, employees, advisers, agents and representatives and afford them, upon reasonable notice, access to the properties, books and management, advisers and representatives of the Group for the purposes of the Offer and to facilitate business integration planning, and shall furnish to them such information in relation to the operation, trading, tax affairs and strategy of the business of the Group as they may from time to time reasonably request, subject always to any requirement of Applicable Law restricting the same; and

b) provide the Offeror with access to identified key employees to allow it to discuss and agree incentive packages. Oslo Børs VPS shall be given the opportunity to participate in any such meeting. Oslo Børs VPS agrees that it will assist wherever possible to encourage key employees to remain with Oslo Børs VPS.

5.6 Third party consents

Oslo Børs VPS shall upon the request from the Offeror make reasonable efforts to seek to obtain such consents of clients, customers and other third parties as are necessary to avoid termination or variation of any Contract which is material to the Group (including financing agreements) as a consequence of the Offer, provided, however that the Offeror shall have no claim against Oslo Børs VPS in case Oslo Børs VPS is unable to obtain such consents and completion of the Offer is not conditional upon such consents being obtained.

6. Offeror's covenants

6.1 If the Offeror in the period until the later of 31 December 2019 and six months from completion of the Offer acquires Oslo Børs VPS Shares or rights to acquire Oslo Børs VPS Shares (in the open market or in privately negotiated transactions or otherwise) at a price which is higher than the Offer Price, then the Offeror will increase the Offer Price to be at least equal to such higher consideration and Oslo Børs VPS shareholders tendering in the Offer will be entitled to receive such higher consideration. Any non-cash element in such higher consideration shall be valued and converted into cash based on fair market value for the purpose of determining the increase of the Offer Price.

6.2 If the Offeror in the period until the later of 31 December 2019 and six months from completion of the Offer should sell or enter into an agreement to sell Oslo Børs VPS Shares acquired in the Offer to any third party at a consideration higher than the Offer Price, then the Offeror shall distribute any net profit from such sale to the Oslo Børs VPS shareholders tendering in the Offer on a pro rata basis.

6.3 If the Offeror, prior to expiry of the acceptance period for the Offer, pays or agrees to pay a higher price than the Offer Price for any Oslo Børs VPS Share or the terms of the Offer are otherwise amended or improved, the Offer shall be deemed to have been amended with an offer price equivalent to the higher payment or price or otherwise with the amended or improved terms, as applicable. In such event, any acceptances of the Offer already made shall be deemed an acceptance of the Offer as revised. In such event, the acceptance period for the Offer shall be extended so that at least two weeks remain to its expiry, and any acceptances of the Offer already made shall be deemed an acceptance of the Offer as revised.

6.4 If (i) the condition for the completion of the Offer set out in paragraph (a) of appendix 1 has not been satisfied or waived prior to the expiry of the offer period for the Offer and

(ii) the Euronext Offer (as revised if applicable) is withdrawn after the expiry of the offer period for the Offer but prior to the Long Stop Date, the Offeror undertakes to reopen the offer period for the Offer or by other adequate means permit the Oslo Børs VPS shareholders to accept the Offer in order to satisfy such condition.

7. Joint covenants

7.1 General

The Parties undertake to cooperate for the purpose of completing the Offer and the acquisition of control of Oslo Børs VPS by the Offeror as described in this Agreement.

7.2 Clearances

7.2.1 The Offeror shall diligently pursue the Clearances with a view to obtaining these as soon as is reasonably practicable and, in any event, by the Long Stop Date and Oslo Børs VPS shall provide information, assistance and access as further set out in this section 7.2 to assist the Offeror to achieve this.

7.2.2 Subject to Applicable law, the Offeror and Oslo Børs VPS shall cooperate with each other and provide each other with all reasonable information, assistance and access in a timely manner in order to allow the Offeror, or the Offeror and Oslo Børs VPS jointly, as may be required, to make any filings with the Relevant Authorities as are necessary in connection with the Clearances, taking into account all applicable waiting periods and/or deadlines and ensure that all information necessary for the making of (or responding to any requests for further information consequent upon) any such filings (including draft versions) is supplied accurately and promptly, provided that the co-operation will be conducted in a manner reasonably designed to preserve applicable lawyer/client and lawyer work product privileges and to limit the exchange of any competitively sensitive information to outside counsel or pursuant to an appropriately established clean team arrangement.

7.2.3 The Offeror and its Affiliates shall be responsible for determining the strategy for obtaining the Clearances and (except where Oslo Børs VPS is required by Applicable Law to do so) contacting and corresponding with the Relevant Authorities in relation to such Clearances.

7.2.4 Without prejudice to the foregoing, and except to the extent that to do so is prohibited by Applicable Law:

(a) The Offeror will submit the notices and applications to obtain the required Clearances for completion of the Offer, including the application to the Norwegian FSA and Norwegian Ministry of Finance (as applicable) as soon as is reasonably practicable after the signing of this Agreement and in any case the Offeror shall commence discussions with the Relevant Authorities with respect to the Clearances within 20 Business Days from the date of this Agreement, provided that the Offeror's obligations under this clause 7.2.4(a) are subject to the provision by Oslo Børs VPS on a timely basis of the cooperation, information, assistance and access contemplated by clause 7.2.2;

(b) The Offeror and Oslo Børs VPS shall co-operate in the preparation of all such filings referred to in this clause 7.2 and in relation to the preparation of any other submissions, material correspondence or material communications to any Relevant Authority in connection with the Clearances;

(c) to the extent reasonably practicable each Party shall provide, or procure the provision of, draft copies of all filings, submissions, material correspondence and material communications intended to be sent to any Relevant Authority in relation to obtaining any Clearances to the other Party and its legal advisers at such time as will allow the receiving Party a reasonable opportunity to provide comments on such filings, submissions, correspondence and communications before they are submitted, sent or made and each Party shall provide the other Party with copies of all such filings, submissions, material correspondence and material communications in the form finally submitted or sent (including, in the case of non-written communications, reasonably detailed summaries of material non-written communications);

(d) each Party shall have regard in good faith to comments made in a timely manner by the other Party on draft copies of filings, submissions, material correspondence and material communications provided pursuant to item (c) above;

(e) the Offeror and Oslo Børs VPS shall notify each other, and provide copies (including, in the case of non-written communications, reasonably detailed summaries of material non-written communications), in a timely manner of any material communication or material correspondence from any Relevant Authority in relation to obtaining any Clearance. Each Party further agrees to keep the other Party reasonably informed as to the progress of any notification submitted pursuant to item (a) above and shall reasonably consider requests by the other Party or its advisers to attend all meetings or material calls with any Relevant Authority or other persons or bodies (unless prohibited by the Relevant Authority, Applicable Law or other person or body or where commercially sensitive information is likely to be discussed at such meetings or on such calls) relating to obtaining any Clearance and requests to make oral submissions at such meetings or calls; and

(f) where reasonably requested by a Party, and insofar as permitted by the Relevant Authority, the other Party shall make available appropriate representatives for meetings and calls with any Relevant Authority in connection with the obtaining of any Clearances, provided that in respect of any information the circulation of which would adversely affect the relevant Party's legitimate business interests, items (a) to (f) above shall only require the disclosing Party to provide, or procure the provision of, non-confidential versions of such information to the other Party and in respect of any competitively sensitive information, to provide such information on an outside counsel basis only or pursuant to an appropriately established clean team arrangement.

7.2.5 Each Party undertakes to keep the other informed promptly of (i) developments which are material or reasonably likely to be material to the obtaining of a Clearance and (ii) the attainment of a Clearance.

8. Representations and warranties

8.1 Representations and warranties by Oslo Børs VPS

Oslo Børs VPS hereby represents and warrants as of the date of this Agreement to the Offeror as follows:

8.1.1 Organisation and good standing

(a) Oslo Børs VPS is a corporation duly organized and validly existing under the laws of Norway, and has the requisite corporate power and authority to conduct its business as it is presently being conducted and to own, lease or operate its properties and assets; and

(b) Oslo Børs VPS is not in violation of its certificate of incorporation or bylaws.

(c) The share capital of Oslo Børs VPS is NOK 86,008,000.- divided on 43,004,000 shares, each with a nominal value of NOK 2.00. Oslo Børs VPS has not issued to any of its employees, directors or any third party any options, warrants or rights to subscribe for and/or to acquire shares in Oslo Børs VPS other than pursuant to the existing share saving scheme for employees.

(d) No Material Adverse Change has occurred during the period from December 31, 2017 to the date of this Agreement.

8.1.2 Corporate power and enforceability

(a) Oslo Børs VPS has the requisite corporate power and authority to execute and deliver this Agreement, to perform its covenants and obligations hereunder and consummate the transactions contemplated hereby (provided however, that the shareholders of Oslo Børs VPS will decide whether to accept the Offer in respect of their Oslo Børs VPS Shares). The execution and delivery by Oslo Børs VPS of this Agreement, the performance by Oslo Børs VPS of its covenants and obligations hereunder and the consummation by Oslo Børs VPS of the transactions contemplated hereby have been duly authorized by all necessary corporate action on the part of Oslo Børs VPS, and no additional corporate proceedings on the part of Oslo Børs VPS are necessary to authorize the execution and delivery by Oslo Børs VPS of this Agreement, the performance by Oslo Børs VPS of its covenants and obligations hereunder or the consummation of the transactions contemplated hereby.

(b) This Agreement has been duly executed and delivered by Oslo Børs VPS and, assuming the due authorization, execution and delivery by the Offeror, constitutes a legal, valid and binding obligation of Oslo Børs VPS, enforceable against Oslo Børs VPS in accordance with its terms.

(c) The Oslo Børs VPS Board, at a meeting duly called and held at which all directors of Oslo Børs VPS were present, duly and unanimously adopted resolutions (i) approving the execution of this

Agreement, and (ii) resolving to recommend that the shareholders of Oslo Børs VPS accept the Offer.

8.2 Representation and warranty of the Offeror

The Offeror hereby represents and warrants as at the date of this Agreement to Oslo Børs VPS as follows:

(a) it has the requisite power and authority to execute and deliver this Agreement, to perform its obligations hereunder and to consummate the transactions as contemplated hereby. The execution and delivery by the Offeror of this Agreement, the performance of its obligations hereunder and the consummation of the transactions as contemplated hereby, have been duly authorized by all necessary corporate action on the part of the Offeror, and no additional corporate proceedings on the part of the Offeror are necessary to authorize the execution and delivery of this Agreement, the performance of its obligations hereunder or the consummation of the transactions as contemplated hereby;

(b) this Agreement has been duly executed and delivered by the Offeror and, assuming the due authorization, execution and delivery by Oslo Børs VPS, constitutes a legal, valid and binding obligation of the Offeror, enforceable against the Offeror in accordance with its terms; and

(c) the Offeror has access to sources of financing sufficient to complete the Offer.

9. Termination

9.1 Termination

This Agreement may be terminated:

(a) by the Offeror by written notice to Oslo Børs VPS: (i) if the Oslo Børs VPS Board has amended, modified or withdrawn the Board Recommendation without the Offeror’s consent, or (ii) upon a material breach of this Agreement by Oslo Børs VPS, if such breach is not cured within five Business Days of delivery of a written notice by the Offeror to Oslo Børs VPS requesting Oslo Børs VPS to cure such breach, provided that, for the purposes of this clause 9.1(a)(ii) and clause 9.1(b)(iv), any breach of this Agreement shall be determined without regard to any materiality qualifiers set forth in this Agreement (including any warranty, representation or covenant), as if such materiality qualifiers were deleted from the applicable provision in this Agreement, where materiality qualifiers shall mean words or phrases including the term "material", "material adverse change" or "material adverse effect" or other variations of the term "material" set forth in this Agreement;

(b) by Oslo Børs VPS by written notice to the Offeror: (i) if the Offeror has not consented to the issuance of the Joint Announcement by 08:00 CET on 31 January 2019, (ii) if the Offeror has not published the offer document and commenced the offer period for the Offer on or before 28 February 2019, (iii) if the Offeror has not commenced discussions with the Relevant Authorities with respect to the Clearances within 20 Business Days from the date of this Agreement, subject to Oslo Børs VPS having provided on a timely basis the cooperation, information, assistance and access contemplated by clause 7.2.2, or (iv) upon a material breach of this Agreement by the Offeror, if such breach is not cured within five Business Days of delivery of a written notice by Oslo Børs VPS to the Offeror requesting the Offeror to cure such breach;

(c) by either Party if (i) a Closing Condition is or becomes incapable of being satisfied and will not be waived and the Offeror has made a public announcement in this respect (such announcement not to be unreasonably withheld or delayed by the Offeror in such event); or (ii) the public announcement by the Offeror of the satisfaction or waiver of all Closing Conditions has not been made by the Long Stop Date, provided however, that the right to terminate under clause 9.1(c) shall not be available to a Party whose failure to fulfil any obligation hereunder has been the principal cause of the failure of any Closing Condition to be satisfied by the Long Stop Date; and

(d) by mutual written consent of both Parties.

9.2 Effect of Termination

In the event of the termination of this Agreement in accordance with clause 9.1 above, this Agreement shall be of no further force or effect; provided, however, that termination of this Agreement shall be without prejudice to the rights of a Party which have arisen prior to termination, including (without limitation) any claim in respect of a breach of this Agreement. Clauses 4 and 10 shall survive termination.

10. Miscellaneous

10.1 Costs and Expenses

The Parties shall bear their own costs and expenses rendered in connection with the transactions contemplated by this Agreement, whether or not the Offer is completed.

10.2 Assignment

The rights and obligations of the Parties under this Agreement shall not be assignable, provided that the Offeror shall have the right to assign any of its rights and obligations under this Agreement to any of its Affiliates if it undertakes to Oslo Børs VPS to procure the Affiliate's performance of such obligations.

10.3 Notices

Any notices required to be given hereunder by either Party shall be in writing and shall be deemed to have been given if mailed by prepaid registered mail or sent by e-mail or delivered to the address of the other Party which is hereinafter set forth:

If to Oslo Børs VPS: Oslo Børs VPS Holdings ASA

Att: Øivind Amundsen, Executive Vice President Telephone: + 47 91 18 15 26
Email: Oivind.Amundsen@oslobors.no

With a copy to: Advokatfirmaet Thommessen AS Att: Anders Arnkværn

Haakon VIIs gate 10 0161 Oslo, Norway
Telephone: + 47 90 59 54 45 Email: aar@thommessen.no

If to the Offeror: Nasdaq AB

c/o Nasdaq, Inc.

Att: Office of General Counsel 805 King Farm Blvd.

Rockville, MD 20850 USA Email: ogc@nasdaq.com

With a copy to:

Lars Kristian Sande BAHR
Tjuvholmen allé 16
P.O. Box 1524 Vika No-0117 Oslo Norway
Telephone: + 47 908 58464 Email: Iks@bahr.no

And:

Arne Tjaum BAHR

Tjuvholmen allé 16
P.O. Box 1524 Vika No-0117 Oslo Norway
Telephone: + 47 950 39851 Email: at@bahr.no

10.4 Confidentiality

10.4.1 The existence of this Agreement shall be treated as strictly confidential information until the publication of the Joint Announcement in accordance with clause 4.1. The content of this Agreement is strictly confidential unless otherwise disclosed in the Joint Announcement, to be disclosed in the Offer Document, or otherwise as required by Applicable Law.

10.4.2 The confidentiality obligations shall terminate on the second anniversary of the date hereof.

10.5 Modifications

This Agreement may be modified or amended only by written agreement of the Parties.

10.6 Entire Agreement, etc.

This Agreement and the documents referred to herein constitute the entire agreement between the Parties. The provisions of this Agreement are binding upon and inure solely to the benefit of the parties hereto. Notwithstanding the foregoing the non-disclosure agreement between the Parties shall continue to apply to the extent not inconsistent with or superseded by this Agreement and the Parties shall enter into a separate due diligence agreement on mutually acceptable terms prior to the due diligence to be conducted by the Offeror when the Offeror has obtained the Clearances.

10.7 Governing Law and Arbitration

10.7.1 This Agreement is governed by and construed in accordance with Norwegian law.

10.7.2 Any dispute arising under or in connection with this Agreement shall be finally settled by arbitration pursuant to the Norwegian Arbitration Act 2004. The arbitration shall be held in Oslo, Norway. All arbitrators shall be appointed by the Oslo District Court if the Parties cannot agree on the composition of the arbitration tribunal. The language of any arbitration proceeding is English. The arbitration proceedings and arbitration award shall be confidential.

* * *

This Agreement is executed in two (2) originals, one for each of the Parties.

[SIGNATURE PAGE FOLLOWS]

For and on behalf of **OSLO B0RS VPS HOLDING ASA**

Name in block letters: CATHARINA E. HELLERUD Title: Board of Directors Chair

For and on behalf of **NASDAQ AB**

Name in block letters: ADENA T. FRIEDMAN

Title: PRESIDENT AND CEO
AUTHORIZED PERSON

Appendix 1 – Main terms and conditions of the Offer

Offeror	NASDAQ AB, business registration number 556243-8001 (the **Offeror**).
Target	Oslo Børs VPS ASA, business registration number 983 268 617 (**Oslo Børs VPS**).
Offer Price	NOK 152 per Oslo Børs VPS Share. The Offer Price will be reduced by the amount of any dividends or other distributions declared on the Oslo Børs VPS Shares after 29 January 2019.
Interest Payment	In addition to the Offer Price, each accepting shareholder will receive an interest payment at a rate of 6% per annum on the Offer Price, pro-rated per day from 29 January 2019 until the completion conditions have been fulfilled and/or waived.
Blocking of tendered Shares	By delivering a duly executed acceptance form, shareholders give the receiving agent an authorization to block the Oslo Børs VPS Shares to which the acceptance form relates, in favour of the receiving agent. The receiving agent is at the same time authorized to transfer such Oslo Børs VPS Shares to the Offeror against payment of the Offer Price and the Interest Payment. In the event the Offer is cancelled, the blocking will be terminated. It is not possible for the shareholder to dispose of the Oslo Børs VPS Shares when they are blocked. The shareholder is free to dispose of any other securities registered in the same VPS- account as the blocked Oslo Børs VPS Shares.
Offer Period	The Offer Period shall commence at the latest on 28 February 2019 and shall remain open for a period of no less than four weeks. The Offeror may in its sole discretion extend the Offer Period (one or more times) up to a total of ten weeks. Any extension of the Offer Period will be announced on or before the last day of the prevailing Offer Period.
Conditions for completion of the Offer	Completion of the Offer is subject to the following conditions, each one of which may be waived by the Offeror in its sole discretion:

(a) **Minimum acceptance**. The Offer shall have been validly accepted by shareholders of Oslo Børs VPS representing (together with any shares in Oslo Børs VPS already owned by the Offeror or its Affiliates at such point in time) more than 90% (or such lower percentage as the Offeror may determine in its sole discretion) of the issued and outstanding share capital and voting rights of Oslo Børs VPS on a Fully Diluted (as defined below) basis, and such acceptances not being subject to any third party consents in respect of pledges or other rights. If such minimum acceptance has not been satisfied by the end of the acceptance period, the Offeror may, at its sole discretion, elect to seek to satisfy the minimum acceptance condition by re-opening the acceptance period (to no later than 31 December 2019) or by other adequate means. For this purpose, **Fully Diluted** shall mean all issued Oslo Børs VPS Shares together with all shares which Oslo Børs VPS would be required to issue if all rights to subscribe for or otherwise require Oslo Børs VPS to issue additional shares, under any agreement or instrument, existing at or prior to completion of the Offer, were exercised.

(b) **Board Recommendation**. That an unanimous recommendation from the board of directors of Oslo Børs VPS to its shareholders to accept the Offer, in
such form as set out in Appendix 2, has been issued and not been withdrawn

or amended or qualified in any manner adverse to the Offeror.

(c) **Clearances**. The necessary permits, consents, approvals and actions from competent Relevant Authorities (including but not limited to, the Financial Supervisory Authority of Norway, the Norwegian Ministry of Finance and relevant competition authorities, which also shall include a filing to the competition authority in Norway, Sweden and United Kingdom to the extent such filing is recommended) in connection with the Offer shall have been obtained either without conditions or upon conditions that are acceptable to the Offeror in its reasonable discretion.

(d) **No action by Relevant Authority.** No Relevant Authority of a competent jurisdiction shall have taken any form of legal action (whether temporary, preliminary or permanent) that is in effect and restrains or prohibits the consummation of the Offer or shall in connection with the Offer have imposed any conditions upon the Offeror, Oslo Børs VPS or any of their respective Affiliates which are not acceptable to the Offeror in its reasonable discretion.

(e) **Accuracy of information.** That the information relating to Oslo Børs VPS and the Group made public, or disclosed privately to the Offeror or its Affiliates, by Oslo Børs VPS prior to the date of the Transaction Agreement, taken as a whole, was not materially inaccurate or materially misleading.

(f) **No Material Adverse Change**. That no Material Adverse Change has occurred since the date of the Transaction Agreement (whether as a result of facts, circumstances, events or conditions occurring after the date of the Transaction Agreement, or facts circumstances, events or conditions not publicly disclosed by Oslo Børs VPS nor disclosed by Oslo Børs VPS in writing to the Offeror prior to the date of the Transaction Agreement, or a combination of both).

(g) **No material breach**. There shall have been no material breach by Oslo Børs VPS of the Transaction Agreement, provided that, for the purposes of this Condition, any breach of the Transaction Agreement shall be determined without regard to any materiality qualifiers set forth in the Transaction Agreement (including any warranty, representation or covenant), as if such materiality qualifiers were deleted from the applicable provision in the Transaction Agreement, where materiality qualifiers shall mean words or phrases including the term "material", "material adverse change" or "material adverse effect" or other variations of the term "material" set forth in the Transaction Agreement.

(h) **Completion of Limited Confirmatory Due Diligence.** The Offeror shall have completed a short and limited confirmatory due diligence to the Offeror's satisfaction, limited to certain key contracts, financial and regulatory matters, as identified and communicated to the Board of Oslo Børs VPS.

Settlement of the Settlement will be made within two weeks after announcement that all conditions have

Offer been met or waived.

On settlement, the relevant amount to each shareholder who has accepted the Offer will be transferred to the bank account that at the time of acceptance was registered in VPS as the account for payment of dividends to the shareholder. Settlement will be made in cash in Norwegian Kroner (NOK).

Long Stop Date In the event the conditions for closing of the Offer have not been met or waived by 16:30 CET on the Long Stop Date, the Offer will not be completed and shareholders who have tendered their Shares will be released from their acceptance of the Offer.

Acceptance binding The acceptance of the Offer is irrevocable, and may not be withdrawn, in whole or in part, once the settlement agent has received the acceptance form.

Shareholders that accept the Offer will remain the legal owners of their Shares and retain voting rights and other shareholder rights related thereto to the extent permitted under Norwegian law until settlement has taken place.

Amendments to the Offer The Offeror reserves the right to amend the Offer, including the Offer Price, in its sole discretion at any time during the Offer Period (in addition to in any Competing Offer situation), provided however that the Offeror may not amend the Offer in a manner which disadvantages Oslo Børs VPS shareholders. Any acceptance received is binding even if the Offer Period or the Long Stop Date is extended and/or the Offer is otherwise amended in accordance with the terms of the Offer. Shareholders who have already accepted the Offer in its original form or with previous amendments will be entitled to any benefits arising from such amendments.

Governing Law and Jurisdiction The Offer is governed by Norwegian law. Any dispute that may arise in relation to this Offer shall be subject to the Norwegian Courts with Oslo city as legal venue.

Appendix 2 – Board Recommendation

STATEMENT FROM THE BOARD OF DIRECTORS OF OSLO BØRS VPS HOLDING ASA IN CONNECTION WITH THE OFFER FROM NASDAQ AB

This statement is made by the Board of Directors (the "**Board**") of Oslo Børs VPS Holding ASA ("**Oslo Børs VPS**" or the "**Company**") in connection with the offer (the "**Offer**") from Nasdaq AB ("**Nasdaq**") to acquire all issued and outstanding shares in Oslo Børs VPS against a consideration of NOK 152 per share in cash (the "**Offer Price**"). The statement is attached as an appendix to the offer document prepared by Nasdaq for the Offer dated [•] 2019 (the "**Offer Document**").

The Offer is not subject to the take-over rules in chapter 6 of the Norwegian Securities Trading Act, and the Board is not under any legal obligation to make any statements on the Offer.
However, pursuant to clause 14 (Takeover) of Oslo Børs VPS' corporate governance policy, the Board shall in the event of a take-over offer arrange for a valuation by an independent expert and issue a statement evaluating the offer, including a recommendation to shareholders as to whether or not they should accept the offer.

Introduction and background

On 24 December 2018 Euronext N.V. ("**Euronext**") announced its intention to launch an offer in January 2019 for all the outstanding shares in Oslo Børs VPS. Euronext launched such offer on 14 January 2019 by the publication of an offer document (the "**Euronext Offer**").

The Euronext Offer was a result of a compact auction process conducted by Carnegie ASA on the initiative of certain minority shareholders of the Company and without any involvement of the Board and management of the Company. Against this background, and in light of the fact that it surfaced that several relevant parties did not participate in the auction process, the Board announced on 4 January 2019 that it had decided to invite parties that may be interested in the opportunity of making an offer for the shares in Oslo Børs VPS to participate in an offer process. Based on this invitation, and within the time frame and other limitations imposed on the Board by the Euronext Offer, Nasdaq and the Company entered into negotiations regarding a combination of the two companies.

The negotiations between Nasdaq and Oslo Børs VPS resulted in a joint press release on 30 January 2019, announcing that the two parties had entered into a transaction agreement (the "**Transaction Agreement**") whereby Nasdaq agreed to launch the Offer and the Board undertook to announce its unanimous recommendation of the Offer to Oslo Børs VPS's shareholders in this form.

The Offer

Nasdaq launched the Offer through the Offer Document submitted to Oslo Børs VPS' shareholders on [•] 2019, with an acceptance period commencing on [•] 2019 and ending on [•] 2019 at 16:30 hours (CET), subject to extensions. Completion of the Offer is made subject to fulfilment or waiver of the conditions for the Offer. Detailed information about the Offer, including the conditions for completion of the Offer, is included in the Offer Document.

Pursuant to the Offer, the Oslo Børs VPS shareholders are offered NOK 152 in cash per share (subject to adjustment for any dividends or other distributions declared on the shares in the Company after 29 January 2019). In addition, each accepting shareholder will receive an interest payment at a rate of 6% per annum on the Offer Price, pro-rated per day from [●] January 2019 until the completion conditions have been fulfilled and/or waived.

The Offer Price (excluding the interest compensation) values the aggregate of Oslo Børs VPS' issued and outstanding shares at NOK 6,537 million (based on 43,004,000 issued and outstanding shares in the Company). The Offer Price represents a premium of 38% to the undisturbed N-OTC closing price per share on 17 December 2018. Further, the Offer Price represents a premium of 5% to the offer price of NOK 145 in the Euronext Offer. Nasdaq has obtained irrevocable undertakings from shareholders representing approximately 35.11% of the Shares to tender their Shares pursuant to the Offer and they are binding, including in the event of any other offer.

As is further detailed and specified in the Offer Document, the completion of the Offer will be subject to the following conditions being satisfied or waived by Nasdaq (acting in its sole discretion): *[Conditions from Appendix 1 of the Transaction Agreement to be inserted]*.

Pursuant to the Norwegian Public Limited Liability Companies Act, Nasdaq will have the right to commence a compulsory acquisition for cash of the Oslo Børs VPS shares not already owned by Nasdaq if Nasdaq becomes the owner of Oslo Børs VPS shares representing more than 90% of the total number of shares issued by Oslo Børs VPS. The Board notes that Nasdaq in such case intends to effectuate a compulsory acquisition upon completion of the Offer.

Recommendation: The Board recommends the shareholders of Oslo Børs VPS to accept the Offer made by Nasdaq.

The Board has reviewed the Offer Document and duly considered all factors considered significant when assessing whether the Offer should be accepted by the shareholders of Oslo Børs VPS. Furthermore, the Board has compared the Offer with the Euronext Offer.

Terms of the Offer

The Board has concluded that the Offer Price (i) falls within the valuation ranges derived by a full set of valuation techniques; (ii) represents the highest value received following the Board's invitation to make offers for the shares in the Company; (iii) provides better value relative to the Euronext Offer; and (iv) provides a fair value to the shareholders of Oslo Børs VPS.

The Board has received a fairness opinion from its financial advisor Arctic Securities AS, [attached hereto as Appendix 1], which concludes that the Offer Price represents a fair consideration to all the shareholders of Oslo Børs VPS from a financial point of view.

With respect to other terms of the Offer, and in particular the transaction risk relating to completion of the Offer created by the conditions for completion, a public offer for the shares of Oslo Børs VPS Holding will necessarily involve such risk. Both the Offer and the Euronext Offer involve risks relating to the ability of the offerors to complete the offers. Based on an overall assessment, the Board has concluded that the Offer does not involve a higher degree of risk in this respect than the Euronext Offer.

On this basis, the opinion of the Board is that the Offer is made on fair terms and offers a fair consideration to all its shareholders.

Future operations of Oslo Børs VPS and the Norwegian capital market

In order to ensure the function of the Norwegian securities market and the ability to access capital, the Norwegian market must be maintained and further enhanced. It is therefore important for Oslo Børs VPS to become part of a structure that (i) provides good visibility for Norwegian issuers, (ii) offers strong local influence, (iii) demonstrates adaptability to local considerations, and

(iv) has a strategy for the further development and modernisation of the central securities depository's functions and products.

The Board is committed to ensuring that the competitive advantages of Oslo Børs VPS and the attractiveness of its local marketplaces are maintained and further enhanced in relation to both Norwegian and international issuers, particularly within the group's sectors of particular strength.

Based on thorough discussions with Nasdaq, it is the view of the Board that there is strong industrial, market and strategic logic to a combination between Nasdaq and Oslo Børs VPS, and that Nasdaq would continue to uphold the strong values of Oslo Børs VPS and enhance the Norwegian capital market through:

i) Nasdaq's expressed intent to maintain the Norwegian model of regulation, governance and supervision in combination with a unique Norwegian Advisory Board and Norwegian representation on Nasdaq's Nordic committees;

ii) Nasdaq's expressed intent to retain the Oslo Børs brand and to continue to enhance its global leading positions in energy, shipping and seafood, to leverage its talent and experience in these sectors, to further develop Norway as a centre of excellence in commodities and to enable Oslo Børs to benefit from the full global reach of Nasdaq's resources, technology, data and brand;

iii) Nasdaq's expressed intent to capitalize on, and develop, VPS in a Nordic perspective and to make it Nasdaq's regional centre of excellence for custody and settlement services;

iv) Nasdaq's expressed intent to develop international solution offerings in the post-trade area based on VPS' expertise;

v) Nasdaq's expressed intent to maintain and further develop Oslo Børs' marketplaces as venues for the listing and trading of equity, bonds and equity certificates; and

vi) Nasdaq's expressed intent to enhance the securities environment with strong expertise in Oslo, including co-location with Nasdaq's commodity exchange as well as to leverage the local talent pool's expertise in exchange and post-trade services, product offerings and IT competence.

The Board is of the opinion that a combination with Nasdaq would combine and strengthen the Nordic region as a capital market with strong international distribution and visibility for Norwegian issuers as well as efficient infrastructure and limited adaptation requirements for Norwegian and Nordic companies. Oslo Børs VPS' largest customers are Nordic financial groups preferring harmonised services in the Nordic region and Nordic delivery models. There is already a well- established collaboration between, inter alia, Nordic banks, brokers, broker associations and supervisory authorities, which will help ensure focus on and development of the Norwegian market following such a combination.

Employees

The employees of the Oslo Børs VPS group have been informed about the Offer through a meeting held on [•] 2019. We have been informed of the following by Nasdaq. Nasdaq operates on a global basis with a strong local presence leveraging the local talent pool's unique areas of expertise. Nasdaq operates as a meritocracy, and national market employees have the opportunity to assume global roles and responsibilities and a combination with Nasdaq would accord the same benefits to Oslo Børs VPS and its employees. Further, as both Oslo Børs VPS and Nasdaq are highly committed to providing superior service to clients, Nasdaq would seek to ensure that any combination retains and enhances the respective strengths of each business.

Nasdaq also believes in an effective, collaborative and customer-focused integration process. To that end, Nasdaq would work collaboratively with the Oslo Børs VPS management team to approach the integration in a constructive fashion, and to ensure that appropriate arrangements are made, including working to find opportunities in other areas and functions.

Based on the above, including the presentation held for the employees, the involved employees have stated that[to be inserted when statement from employees has been obtained].]

Other factors

The Offer must also be considered in light of the situation created by the Euronext Offer and the time limitations and other limitations thereby imposed on the subsequent auction process conducted by the Board.

Furthermore, the Board has noted that shareholders representing 35.11% of the shares in the Company have pre-accepted the Offer, while shareholders representing 45.2% of the shares in the Company have pre-accepted the Euronext Offer (in addition to the shares already acquired by Euronext representing 5.3% of the shares in the Company).

Conclusion

Based on an overall evaluation of the factors considered relevant, the Board considers the Offer as the best alternative for all stakeholders (including shareholders, issuers, banks, investors and investment banks operating in the Norwegian capital market) and therefore recommends the shareholders of Oslo Børs VPS to accept the Offer made by Nasdaq and not to accept the Euronext offer.

The recommendation is unanimous.

Own shareholding

[To be inserted prior to publication of the statement].

[date]

The Board of Directors of Oslo Børs VPS Holding ASA

Appendix 3 – Joint Announcement

*** DRAFT joint press release ***

Nasdaq to Make an Offer to Acquire Oslo Børs VPS with Unanimous Support from Oslo Børs VPS Board of Directors

- **Cash offer to acquire all issued and outstanding shares in Oslo Børs VPS Holding ASA to be made by Nasdaq AB**
- **Oslo Børs VPS' Board of Directors and executive management team have unanimously decided to recommend that its shareholders accept the Offer and do not accept the offer from Euronext**
- **Nasdaq AB has received irrevocable pre-acceptances of the Offer from shareholders representing 35.11% of the total shares of Oslo Børs VPS. Pre-accepting shareholders include Oslo Børs VPS' two largest shareholders (DNB and KLP)**
- **The proposed transaction is expected to achieve Nasdaq's stated ROIC target of at least 10% within 3-5 years, and be accretive to non-GAAP EPS within 12 months of closing**
- **The transaction is consistent with Nasdaq's existing capital deployment priorities including its organic business investment, shareholder capital return and leverage objectives**

Oslo, Norway and Stockholm, Sweden, Jan. 30, 2019 – Nasdaq AB, an indirect subsidiary of Nasdaq Inc. (Nasdaq: NDAQ) ("Nasdaq"), announced today that it will make a public offer to acquire all of the issued shares of Oslo Børs VPS Holding ASA (NOTC: OSLO/OTCMKTS: OSBHF) ("Oslo Børs VPS") at NOK 152 per share (the "Offer"). The formal Offer will be made pursuant to an offer document (the "Offer Document"), which is expected to be published on or around 4 February 2019.

Based on an overall evaluation of the factors considered relevant, the Board of Directors of Oslo Børs VPS considers that the Offer is the best alternative for all stakeholders (including shareholders, issuers, investors, banks and investment banks operating in the Norwegian capital market) and therefore unanimously recommends that the shareholders of Oslo Børs VPS accept the Offer and do not accept the offer to acquire the shares of Oslo Børs VPS made by Euronext NV (the "Euronext Offer").

The key features of the Offer include:

- Nasdaq AB is offering NOK 152 in cash per share in Oslo Børs VPS (the "Offer Price"), plus an interest payment of 6% per annum on the Offer Price, pro-rated per day from 29 January 2019 until the conditions to the Offer have been fulfilled or waived.
- The Offer Price represents a 5% premium to the price of the offer to acquire the shares of Oslo Børs VPS made by Euronext of NOK 145 per share, excluding the interest payment which Euronext has offered to pay.
- The Offer Price values the entire issued share capital of Oslo Børs VPS at NOK 6,537 million, or approximately $770 million, and represents a premium of 38% to the undisturbed closing price of the Oslo Børs VPS shares on the NOTC on 17 December 2018.
- Nasdaq has obtained pre-acceptances of the Offer from shareholders representing approximately 35.11% of the shares in Oslo Børs VPS, including DNB and KLP. These pre- acceptances are irrevocable and unconditional, including in the event of a higher offer until the long stop date of 31 December 2019.
- Nasdaq AB and Oslo Børs VPS have entered into a transaction agreement (the "Transaction Agreement"), pursuant to which Oslo Børs VPS and Nasdaq AB have provided certain undertakings to each other in connection with the Offer.

- The Offer can, subject to extension, be accepted in the period from publication of the Offer Document (expected on or around 4 February 2019) to and including the expiry of the offer period (expected on or around 4 March 2019). The Offer is subject to the fulfillment or waiver of certain customary conditions, including but not limited to Nasdaq AB obtaining acceptances of the Offer from shareholders holding 90% or more of the shares of Oslo Børs VPS, certain regulatory clearances, a limited confirmatory due diligence and completion of the Offer by 31 December 2019.

Based on thorough discussions with Nasdaq, it is the view of the Board of Oslo Børs VPS that there is strong industrial, market and strategic logic to a combination between Nasdaq and Oslo Børs VPS, and that this combination will uphold the strong values of Oslo Børs VPS and enhance the Norwegian capital market as demonstrated by the following expressed intentions of Nasdaq:

- Maintain the Norwegian model of regulation, governance and supervision in combination with a unique Norwegian Advisory Board and Norwegian representation on Nasdaq's Nordic committees;
- Retain the Oslo Børs brand and to continue to enhance its global leading positions in energy, shipping and seafood, to leverage its talent and experience in these sectors, to further develop Norway as a centre of excellence in commodities and to enable Oslo Børs to benefit from the full global reach of Nasdaq's resources, technology, data and brand;
- Capitalize on, and develop, VPS from a Nordic perspective and to make it Nasdaq's regional centre of excellence for custody and settlement services;
- Develop international solution offerings in the post-trade area based on VPS' expertise;
- Maintain and further develop Oslo Børs VPS' marketplaces as venues for the listing and trading of equity, bonds and equity certificates; and
- Enhance the securities environment with strong expertise in Oslo, including co-location with Nasdaq's commodity exchange as well as to leverage the local talent pool's expertise in exchange and post-trade services, product offerings and IT competence.

The Board of Oslo Børs VPS is of the opinion that a combination with Nasdaq would combine and strengthen the Nordic region as a capital market with strong international distribution and visibility for Norwegian issuers as well as efficient infrastructure and limited adaptation requirements for Norwegian and Nordic companies. Oslo Børs VPS' largest customers are Nordic financial groups that are likely to prefer harmonized services in the Nordic region and Nordic delivery models. There is already a well-established collaboration between, inter alia, Nordic banks, brokers, broker associations and supervisory authorities, which will help ensure focus on and development of the Norwegian market following such a combination.

The Board of Oslo Børs VPS has further noted that (i) completion of the Euronext Offer is conditional upon acceptance from shareholders representing (together with shares already owned by Euronext N.V.) 50.01% of the shares in the Company and that (ii) Euronext N.V. currently owns 5.3% of the shares in the Company, while shareholders representing 45.2% of the shares in the Company have pre-accepted the Euronext Offer.

Both the Euronext Offer and the Offer from Nasdaq AB are made conditional upon receipt of relevant regulatory approvals. The Norwegian Ministry of Finance will decide on the matter, based on advice from the Norwegian Financial Supervisory Authority. The Board of Oslo Børs VPS has concluded that the Offer from Nasdaq AB will provide a better industrial and strategic solution for the Norwegian capital market. Furthermore, a situation in which 1/3 or more of the shareholders refuse to accept the Euronext Offer is likely to result in a sub-optimal ownership- and governance structure. Several of such minority shareholders would be significant Norwegian financial institutions. Oslo Børs VPS has assumed that such considerations will be relevant in the broad suitability assessment to be made by the authorities, taking due account of the fact that Oslo Børs VPS represents a key financial infrastructure of national significance.

“The addition of Oslo Børs VPS to Nasdaq will be a tremendous step to unite the Nordic financial markets,” said Adena Friedman, President and CEO of Nasdaq. “Combining Oslo Børs VPS’ exchange and securities depository expertise with our technology leadership and experience supporting the growth of small- and medium- sized enterprises and investors in the region, will not only help make the Norwegian markets stronger but the region in its entirety can become an even greater economic engine for long term growth.”

“We have reviewed the offer from Nasdaq thoroughly, and duly considered all factors significant when assessing whether it should be accepted by our shareholders, including comparing the offer with the one made by Euronext,” said Catharina E. Hellerud, Chair of the Board of Directors of Oslo Børs VPS. “Our conclusion is unanimous and clear in that Nasdaq represents a more attractive partner, both from a shareholder value perspective and from an industrial, market and strategic perspective.”

“Our customers are primarily Nordic financial groups preferring harmonized services throughout the Nordic region and Nordic delivery models,” said Bente A. Landsnes, President and CEO of Oslo Børs VPS. “There is already a well-established collaboration between Nordic banks, brokers, broker associations and supervisory authorities. We see a combination for Oslo Børs with Nasdaq to be a natural step to further develop both the Norwegian and Nordic markets.”

“Oslo Børs VPS is a unique financial institution with a strong national heritage and international position,” said Lauri Rosendahl, President of Nasdaq Nordic. “We see a tremendous opportunity to further strengthen Oslo Børs VPS’ offering and position in Norway as well as increase the strategic relevance of the exchange and the CSD in the Nordic region and around the world. Retaining the unique qualities of Oslo Børs VPS as part of Nasdaq Nordic, while further strengthening its leading positions in energy, shipping and seafood would be our two main priorities.”

Nasdaq operates exchanges, clearinghouses and central securities depositories in eight countries across the Nordic and Baltic regions. Through Nasdaq First North, Nasdaq Nordic also offers alternative marketplaces for small and medium sized growth companies. Nasdaq’s Nordic and Baltic exchanges, together with Nasdaq First North, employs more than 1,100 people and is home to more than 1,000 listed companies. Since 2016, Nasdaq’s Nordic operations have added more than 290 new company listings, including 198 initial public offerings raising in excess of €14 billion of capital.

Among other things, the Transaction Agreement:

- Includes an undertaking from Oslo Børs VPS not to solicit any competing offers and to notify Nasdaq AB of any unsolicited competing offers it receives.
- Regulates the Offer, including the main terms of the Offer and certain undertakings by Nasdaq AB relating to the Offer, including an undertaking to launch it.
- Provides that the Oslo Børs VPS board’s unanimous recommendation may not be withdrawn, modified or amended, provided that in the event an unsolicited competing offer is a higher priced offer which Nasdaq AB does not match, the Oslo Børs VPS board may acknowledge that the competing offer is more favorable from a purely financial point of view, but shall also reiterate that Nasdaq AB is the preferred owner of Oslo Børs from an industrial and strategic perspective and advise Oslo Børs VPS shareholders that the Offer would be more likely than the competing offer to promote the long term success of Oslo Børs VPS and its group having regard to the strategic interests of capital market participants based in Norway and elsewhere in the Nordic region.

- Includes customary undertakings from Oslo Børs VPS as to the conduct of its business in the period from its entry into the Transaction Agreement to the completion of the Offer or its earlier lapse or withdrawal.
- Includes certain representations and warranties by both parties and a limited termination right (mainly in the event of a material breach of the agreement by the other party).

As of the date of this release, neither Nasdaq AB nor Nasdaq owns any shares in Oslo Børs VPS.

Nasdaq intends to fund the Offer through a mix of debt and cash on hand. The proposed transaction is expected to achieve Nasdaq's stated ROIC target of at least 10% within 3-5 years, and be accretive to non-GAAP EPS within 12 months of closing. The acquisition of Oslo Børs VPS would be consistent with Nasdaq's existing capital deployment priorities. As such, Nasdaq does not expect any change to its organic business investments, its intention to continue growing dividends as income and cash flows grow, or its equity repurchase program. Assuming a close in the third quarter of 2019, Nasdaq's gross leverage would rise to approximately 3.1x debt to EBITDA, and the company would be in position to reduce leverage to the mid 2x's during the second half of 2020.

The Offer Document containing the complete terms and conditions of the Offer is expected to be published on or around 4 February 2019. Subject to restrictions under applicable securities laws, the Offer Document will be distributed to all shareholders listed in Oslo Børs VPS' share register.

The recommendation by the Board will be included in the Offer Document and also be made available on Oslo Børs VPS' website when Nasdaq AB publishes the Offer Document. Arctic Securities AS has provided the Board of Oslo Børs VPS an independent fairness opinion of the Offer, which is also included in the recommendation.

For further information, please contact: Nasdaq:

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Per Eikrem
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Important Information about the Offer:

This joint press release is neither an offer to purchase nor a solicitation of an offer to sell shares. The Offer to purchase all the shares of Oslo Børs VPS will be contained in the Offer Document to be published by Nasdaq AB. The complete Offer Document will, subject to restrictions under applicable securities laws, be distributed free of charge to all Oslo Børs VPS' shareholders registered in Oslo Børs VPS' share register in Verdipapirsentralen (the Norwegian Central Securities Depository).

About Oslo Børs

Oslo Børs VPS offers listing and trading in equities, equity certificates, ETPs, fixed income products and derivatives products on six different marketplaces: Oslo Børs, Oslo Axess, Merkur Market, NOTC, Nordic ABM and Oslo Connect. Through its business areas, the Oslo Børs VPS Group operates marketplaces for trading in financial instruments, together with settlement, securities registration and information services, in order to give customers access to an efficient and effective capital market.

About Nasdaq

Nasdaq is a leading provider of trading, clearing, exchange technology, listing, information and public company services across six continents. Through its diverse portfolio of solutions, Nasdaq enables customers to plan, optimize and execute their business vision with confidence, using proven technologies that provide transparency and insight for navigating today’s global capital markets. As the creator of the world's first electronic stock market, its technology powers more than 100 marketplaces in 50 countries, and 1 in 10 of the world's securities transactions.

Cautionary Note Regarding Forward-Looking Statements

Statements in this press release relating to future status and circumstances, including statements regarding the anticipated offer timeline, future performance, growth and other projections as well as benefits of the Offer, are forward-looking statements. These statements may generally, but not always, be identified by the use of words such as “anticipates”, “expects”, “believes”, or similar expressions. By their nature, forward-looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future. Actual results may differ materially from those expressed or implied by these forward-looking statements due to many factors, many of which are outside the control of Nasdaq and its subsidiaries. Such risk factors may include the performance of the global economy, ability of Nasdaq to integrate Oslo Børs VPS, ability of Nasdaq to receive regulatory approvals necessary for the Offer, ability of Nasdaq to complete the Offer and any other risk factors detailed in Nasdaq's annual report on Form 10-K, and periodic reports filed with the U.S. Securities and Exchange Commission. Any such forward-looking statements speak only as of the date on which they were made and Nasdaq has no obligation (and undertake no such obligation) to update or revise any of them, whether as a result of new information, future events or otherwise, except for as required by applicable laws and regulations.

Website Disclosure

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.”

Exhibit 31.1

CERTIFICATION

I, Adena T. Friedman, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

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

Date: May 1, 2019

Exhibit 31.2

CERTIFICATION

I, Michael Ptasznik, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

	/s/ Michael Ptasznik
Name:	Michael Ptasznik
Title:	Executive Vice President, Accounting and Corporate Strategy and Chief Financial Officer

Date: May 1, 2019

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 Quarterly Report on Form 10-Q of Nasdaq, Inc. (the “Company”) for the period ended March 31, 2019 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, Accounting and 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:	May 1, 2019
	/s/ Michael Ptasznik
Name:	Michael Ptasznik
Title:	Executive Vice President, Accounting and Corporate Strategy and Chief Financial Officer
Date:	May 1, 2019

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.