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

FORM 10-Q

(Mark One)

☑ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the quarterly period ended March 31, 2021

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 or 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to

Commission File Number 001-34091

MARKETAXESS HOLDINGS INC.
(Exact name of registrant as specified in its charter)

Delaware	**52-2230784**
(State or other jurisdiction of incorporation or organization)	**(IRS Employer Identification No.)**
55 Hudson Yards, 15th Floor New York, New York	**10001**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (212) 813-6000

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, $0.003 par value	MKTX	NASDAQ Global Select Market

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

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

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

Large accelerated filer	☒	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 ☑

As of April 23, 2021, the number of shares of the Registrant's voting common stock outstanding was 37,982,694.

MARKETAXESS HOLDINGS INC.
FORM 10-Q FOR THE QUARTERLY PERIOD ENDED MARCH 31, 2021
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PART I — Financial Information

Item 1. Financial Statements

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF FINANCIAL CONDITION
(Unaudited)

	As of	
	March 31, 2021	**December 31, 2020**
	(In thousands, except share and per share amounts)	
ASSETS		
Cash and cash equivalents	$ 390,915	$ 460,858
Cash segregated under federal regulations	50,083	50,059
Investments, at fair value	24,308	28,111
Accounts receivable, net of allowance of $107 and $163 as of March 31, 2021 and December 31, 2020, respectively	87,452	79,577
Receivables from broker-dealers, clearing organizations and customers	564,957	279,915
Goodwill	147,388	147,388
Intangible assets, net of accumulated amortization	90,945	95,354
Furniture, equipment, leasehold improvements and capitalized software, net of accumulated depreciation and amortization	88,655	85,204
Operating lease right-of-use assets	75,223	75,924
Prepaid expenses and other assets	25,943	29,039
Total assets	$ 1,545,869	$ 1,331,429
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities		
Accrued employee compensation	$ 28,223	$ 62,326
Payables to broker-dealers, clearing organizations and customers	308,268	133,326
Income and other tax liabilities	48,193	42,750
Accounts payable, accrued expenses and other liabilities	80,202	44,354
Operating lease liabilities	92,750	93,612
Total liabilities	557,636	376,368
Commitments and Contingencies (Note 13)		
Stockholders' equity		
Preferred stock, $0.001 par value, 4,855,000 shares authorized, no shares issued and outstanding as of March 31, 2021 and December 31, 2020	$ —	$ —
Series A Preferred Stock, $0.001 par value, 110,000 shares authorized, no shares issued and outstanding as of March 31, 2021 and December 31, 2020	—	—
Common stock voting, $0.003 par value, 110,000,000 shares authorized, 40,830,772 shares and 40,851,100 shares issued and 37,985,818 shares and 38,005,330 shares outstanding as of March 31, 2021 and December 31, 2020, respectively	123	123
Common stock non-voting, $0.003 par value, 10,000,000 shares authorized, no shares issued and outstanding as of March 31, 2021 and December 31, 2020	—	—
Additional paid-in capital	309,988	329,742
Treasury stock - Common stock voting, at cost, 2,844,954 and 2,845,770 shares as of March 31, 2021 and December 31, 2020, respectively	(170,043)	(169,523)
Retained earnings	854,747	799,369
Accumulated other comprehensive loss	(6,582)	(4,650)
Total stockholders' equity	988,233	955,061
Total liabilities and stockholders' equity	$ 1,545,869	$ 1,331,429

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

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

	Three Months Ended March 31,	
	2021	**2020**
	(In thousands, except per share amounts)	
Revenues		
Commissions	$ 175,838	$ 155,954
Information services	9,162	8,642
Post-trade services	10,261	4,153
Other	203	229
Total revenues	195,464	168,978
Expenses		
Employee compensation and benefits	48,088	41,194
Depreciation and amortization	11,779	8,067
Technology and communications	10,036	8,161
Professional and consulting fees	9,640	5,675
Occupancy	3,317	3,474
Marketing and advertising	1,204	2,675
Clearing costs	4,694	5,510
General and administrative	3,232	3,133
Total expenses	91,990	77,889
Operating income	103,474	91,089
Other income (expense)		
Investment income	107	1,269
Interest expense	(191)	—
Other, net	(1,589)	(656)
Total other income (expense)	(1,673)	613
Income before income taxes	101,801	91,702
Provision for income taxes	21,344	16,886
Net income	$ 80,457	$ 74,816
Net income per common share		
Basic	$ 2.15	$ 2.01
Diluted	$ 2.11	$ 1.96
Cash dividends declared per common share	$ 0.66	$ 0.60
Weighted average shares outstanding		
Basic	37,470	37,303
Diluted	38,155	38,075

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

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	Three Months Ended March 31, 2021	Three Months Ended March 31, 2020
	(In thousands)	
Net income	$ 80,457	$ 74,816
Net cumulative translation adjustment and foreign currency exchange hedge, net of tax of $(413) and $2,441, respectively	(1,932)	(3,859)
Net unrealized (loss) on securities available-for-sale, net of tax of $(155)	—	(491)
Comprehensive income	$ 78,525	$ 70,466

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

MARKETAXESS HOLDINGS INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(Unaudited)

	Common Stock Voting	Additional Paid-In Capital	Treasury Stock - Common Stock Voting	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	(In thousands, except per share amounts)					
Balance at January 1, 2021	$ 123	$ 329,742	$ (169,523)	$ 799,369	$ (4,650)	$ 955,061
Net income	—	—	—	80,457	—	80,457
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(1,932)	(1,932)
Stock-based compensation	—	7,424	—	—	—	7,424
Exercise of stock options	—	244	—	—	—	244
Withholding tax payments on restricted stock vesting and stock option exercises	—	(27,422)	—	—	—	(27,422)
Repurchases of common stock	—	—	(520)	—	—	(520)
Cash dividend on common stock ($0.66 per share)	—	—	—	(25,079)	—	(25,079)
Balance at March 31, 2021	$ 123	$ 309,988	$ (170,043)	$ 854,747	$ (6,582)	$ 988,233

	Common Stock Voting	Additional Paid-In Capital	Treasury Stock - Common Stock Voting	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	(In thousands, except per share amounts)					
Balance at January 1, 2020	$ 122	$ 342,541	$ (153,388)	$ 591,086	$ (10,270)	$ 770,091
Net income	—	—	—	74,816	—	74,816
Cumulative translation adjustment and foreign currency exchange hedge, net of tax	—	—	—	—	(3,859)	(3,859)
Unrealized net loss on securities available-for-sale, net of tax	—	—	—	—	(491)	(491)
Stock-based compensation	—	6,677	—	—	—	6,677
Exercise of stock options	—	80	—	—	—	80
Withholding tax payments on restricted stock vesting and stock option exercises	—	(21,243)	—	—	—	(21,243)
Repurchases of common stock	—	—	(5,415)	—	—	(5,415)
Cash dividend on common stock ($0.60 per share)	—	—	—	(22,773)	—	(22,773)
Balance at March 31, 2020	$ 122	$ 328,055	$ (158,803)	$ 643,129	$ (14,620)	$ 797,883

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

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

	Three Months Ended March 31,	
	2021	**2020**
	(In thousands)	
Cash flows from operating activities		
Net income	$ 80,457	$ 74,816
Adjustments to reconcile net income to net cash (used in) provided by operating activities:		
Depreciation and amortization	11,779	8,067
Amortization of operating lease right-of-use assets	1,664	1,645
Stock-based compensation expense	7,424	6,677
Deferred taxes	591	2,734
Other	(74)	2,036
Changes in operating assets and liabilities:		
(Increase) in accounts receivable	(7,880)	(31,640)
(Increase) in receivables from broker-dealers, clearing organizations and customers	(270,491)	—
Decrease in prepaid expenses and other assets	3,082	8,539
Decrease in trading investments	5,495	56,394
(Increase) in mutual funds held in rabbi trust	(1,613)	(289)
(Decrease) in accrued employee compensation	(34,103)	(25,436)
Increase in payables to broker-dealers, clearing organizations and customers	174,942	—
Increase in income and other tax liabilities	4,814	1,950
Increase in accounts payable, accrued expenses and other liabilities	2,599	16,392
(Decrease) in operating lease liabilities	(1,845)	(1,516)
Net cash (used in) provided by operating activities	(23,159)	120,369
Cash flows from investing activities		
Acquisition of business	—	(533)
Available-for-sale investments		
Proceeds from maturities and sales	—	45,154
Purchases	—	(8,995)
Purchases of furniture, equipment and leasehold improvements	(4,257)	(4,291)
Capitalization of software development costs	(8,075)	(6,778)
Net cash (used in) provided by investing activities	(12,332)	24,557
Cash flows from financing activities		
Cash dividend on common stock	(25,454)	(23,244)
Exercise of stock options	244	80
Withholding tax payments on restricted stock vesting and stock option exercises	(27,422)	(21,243)
Repurchases of common stock	(520)	(5,415)
Proceeds from short-term borrowings	69,302	—
Repayments of short-term borrowings	(35,000)	—
Net cash (used in) financing activities	(18,850)	(49,822)
Effect of exchange rate changes on cash and cash equivalents	(1,027)	(3,360)
Cash and cash equivalents including restricted cash		
Net (decrease) increase for the period	(55,368)	91,744
Beginning of period	608,050	274,253
End of period	$ 552,682	$ 365,997
Supplemental cash flow information		
Non-cash activity		
Operating lease right-of-use assets obtained in exchange for operating lease liabilities	$ 878	$ 674

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

1. Organization and Principal Business Activity

MarketAxess Holdings Inc. (the "Company" or "MarketAxess") was incorporated in the State of Delaware on April 11, 2000. Through its subsidiaries, MarketAxess operates leading electronic trading platforms delivering expanded liquidity opportunities, improved execution quality and significant cost savings across global fixed-income markets. Over 1,800 institutional investor and broker-dealer firms are active users of MarketAxess' patented trading technology, accessing global liquidity on its platforms in U.S. investment-grade bonds, U.S. high-yield bonds, U.S. Treasuries, emerging market debt, Eurobonds and other fixed-income securities. Through its Open Trading® protocols, MarketAxess executes bond trades between and among institutional investor and broker-dealer clients in the leading all-to-all anonymous trading environment for corporate bonds. MarketAxess also offers a number of trading-related products and services, including: Composite+™ pricing and other market data products to assist clients with trading decisions; auto-execution and other execution services for clients requiring specialized workflow solutions; connectivity solutions that facilitate straight-through processing; and technology services to optimize trading environments. The Company also provides a range of pre- and post-trade services, including trade matching, trade publication, regulatory transaction reporting and market and reference data across a range of fixed-income and other products.

2. Significant Accounting Policies

Basis of Presentation

The consolidated financial statements include the accounts of the Company and its subsidiaries. All intercompany transactions and balances have been eliminated. These consolidated financial statements are unaudited and should be read in conjunction with the audited consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2020. The consolidated financial information as of December 31, 2020 has been derived from audited financial statements not included herein. These unaudited consolidated financial statements are prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and the rules and regulations of the U.S. Securities and Exchange Commission ("SEC") with respect to Form 10-Q and reflect all adjustments that, in the opinion of management, are normal and recurring, and that are necessary for a fair statement of the results for the interim periods presented. In accordance with such rules and regulations, certain disclosures that are normally included in annual financial statements have been omitted. Interim period operating results may not be indicative of the operating results for a full year. Certain reclassifications have been made to the prior periods' consolidated financial statements in order to conform to the current period presentation. Such reclassifications are immaterial, individually and in the aggregate, to both current and all previously issued financial statements taken as a whole and have no effect on previously reported net income.

Accounting Pronouncements, Not Yet Adopted

In March 2020, the Financial Accounting Standards Board ("FASB") issued ASU 2020-04, "Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting" (the "ASU"), which is designed to ease the potential burden in accounting for the transition away from the London Inter-bank Offered Rate ("LIBOR"). The ASU applies to contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate expected to be discontinued and replaced with alternative reference rates as a result of reference rate reform. The ASU provides optional expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The ASU was effective for all entities as of March 12, 2020 and can be adopted from this date through December 31, 2022. The Company does not expect adoption of this ASU to have a material impact on its Consolidated Financial Statements.

Cash and Cash Equivalents

The Company defines cash equivalents as short-term interest-bearing investments with maturities at the time of purchase of three months or less.

Investments

The Company determines the appropriate classification of securities at the time of purchase which are recorded in the Consolidated Statements of Financial Condition on the trade date. Securities are classified as available-for-sale or trading. Available-for-sale investments are carried at fair value with the unrealized gains or losses reported in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition. Trading investments include investment grade corporate debt securities carried at fair value, with realized and unrealized gains or losses included in other, net in the Consolidated Statements of Operations.

Fair Value Financial Instruments

Fair value is defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." A three-tiered hierarchy for determining fair value has been established that prioritizes inputs to valuation techniques used in fair value calculations. The three levels of inputs are defined as Level 1 (unadjusted quoted prices for identical assets or liabilities in active markets), Level 2 (inputs that are observable in the marketplace other than those inputs classified in Level 1) and Level 3 (inputs that are unobservable in the marketplace). The Company's financial assets and liabilities measured at fair value on a recurring basis consist of its money market funds, securities available-for-sale, trading securities and foreign currency forward contracts. All other financial instruments are short-term in nature and the carrying amount is reported on the Consolidated Statements of Financial Condition at approximate fair value.

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

Receivables from broker-dealers, clearing organizations and customers include amounts receivable for securities not delivered by the Company to the purchaser by the settlement date (''securities failed-to-deliver'') and cash deposits held at clearing organizations and clearing brokers to facilitate the settlement and clearance of matched principal transactions. Payables to broker-dealers, clearing organizations and customers include amounts payable for securities not received by the Company from a seller by the settlement date (''securities failed-to-receive''). Securities failed-to-deliver and securities failed-to-receive for transactions executed between and among institutional investor and broker-dealer clients on a matched principal basis where the Company serves as a counterparty to both the buyer and the seller are recorded on a settlement date basis. The Company presents its securities failed-to-deliver and securities failed-to-receive balances on a net-by-counterparty basis within receivables from and payables to broker-dealers, clearing organizations and customers. The difference between the Company's trade-date receivables and payables for unsettled matched principal transactions reflects commissions earned and is recorded within accounts receivable, net on a trade-date basis.

Allowance for Credit Losses

All accounts receivable have contractual maturities of less than one year and are derived from trading-related fees and commissions and revenues from products and services. The Company continually monitors collections and payments from its customers and maintains an allowance for doubtful accounts. The allowance for credit losses is based on an estimate of the amount of potential credit losses in existing accounts receivable, as determined from a review of aging schedules, past due balances, historical collection experience and other specific collection issues that have been identified. Account balances are grouped for evaluation based on various risk characteristics, including billing type, legal entity, and geographic region. Additions to the allowance for credit losses are charged to bad debt expense, which is included in general and administrative expense in the Company's Consolidated Statements of Operations. Balances that are determined to be uncollectable are written off against the allowance for credit losses.

Depreciation and Amortization

Fixed assets are carried at cost less accumulated depreciation. The Company uses the straight-line method of depreciation over three to seven years. The Company amortizes leasehold improvements on a straight-line basis over the lesser of the life of the improvement or the remaining term of the lease.

Software Development Costs

The Company capitalizes certain costs associated with the development of internal use software, including, among other items, employee compensation and related benefits and third party consulting costs at the point at which the conceptual formulation, design and testing of possible software project alternatives have been completed. Once the product is ready for its intended use, such costs are amortized on a straight-line basis over three years. The Company reviews the amounts capitalized for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable.

Cloud Computing Costs

The Company capitalizes certain costs associated with cloud computing arrangements, including, among other items, employee compensation and related benefits and third party consulting costs that are part of the application development stage. These costs are setup as a prepaid asset on the Consolidated Statement of Financial Condition and are amortized over the period of the hosting service contract. The Company reviews the amounts capitalized for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable.

Foreign Currency Translation and Forward Contracts

Assets and liabilities denominated in foreign currencies are translated using exchange rates at the end of the period; revenues and expenses are translated at average monthly rates. Gains and losses on foreign currency translation are a component of accumulated other comprehensive loss in the Consolidated Statements of Financial Condition. Transaction gains and losses are recorded in other, net in the Consolidated Statements of Operations.

The Company enters into foreign currency forward contracts to hedge its net investment in its U.K. subsidiaries. Gains and losses on these transactions are included in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition.

Revenue Recognition

The Company's classification of revenues in the Consolidated Statements of Operations represents revenues from contracts with customers disaggregated by type of revenue. The Company has four revenue streams as described below.

Commission Revenue — The Company charges its broker-dealer clients variable transaction fees for trades executed on its platform and, under certain plans, distribution fees or monthly minimum fees to use the platform for a particular product area. Variable transaction fees are recognized on a trade date basis, are generally calculated as a percentage of the notional dollar volume of bonds traded on the platforms and vary based on the type, size, yield and maturity of the bond traded, as well as individual client incentives. Bonds that are more actively traded or that have shorter maturities generally generate lower commissions, while bonds that are less actively traded or that have longer maturities generally command higher commissions. Under the Company's disclosed trading transaction fee plans, variable transaction fees, distribution fees and unused monthly fee commitments are invoiced and recorded on a monthly basis.

For Open Trading trades that the Company executes between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller, the Company earns its commission through the difference in price between the two trades. The commission is collected upon settlement of the trade, which typically occurs within one to two trading days after the trade date. For U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis. The following table presents commission revenue by fee type:

	Three Months Ended March 31,	
	2021	**2020**
	(In thousands)	
Commission revenue by fee type		
Variable transaction fees		
Disclosed trading	$ 98,818	$ 84,245
Open Trading - matched principal trading	46,320	40,358
U.S. Treasuries - matched principal trading	3,260	4,563
Total variable transaction fees	148,398	129,166
Distribution fees and unused minimum fees	27,440	26,788
Total commissions	$ 175,838	$ 155,954

Information services – Information services includes data licensed to the Company's broker-dealer clients, institutional investor clients and data-only subscribers; professional and consulting services; technology software licenses; and maintenance and support services. The nature and timing of each performance obligation may vary as these contracts are either subscription-based services transferred over time, and may be net of volume-based discounts, or one-time services that are transferred at a point in time. Revenues for services transferred over time are recognized ratably over the contract period as the Company's performance obligation is met whereas revenues for services transferred at a point in time are recognized in the period the services are provided. Customers are generally billed monthly, quarterly, or annually; revenues billed in advance are deferred and recognized ratably over the contract period. The following table presents information services revenue by timing of recognition:

	Three Months Ended March 31,	
	2021	2020
	(In thousands)	
Information services revenue by timing of recognition		
Services transferred over time	$ 9,045	$ 7,806
Services transferred at a point in time	117	836
Total information services revenues	$ 9,162	$ 8,642

Post-trade services – Post-trade services revenue is generated from regulatory transaction reporting, trade publication and trade matching services. Customers are generally billed in the current month or monthly in arrears and revenue is recognized in the period transactions are processed. Revenues billed in advance are deferred and recognized ratably over the contract period. The Company also generates one-time implementation fees for onboarding clients which are invoiced and recognized in the period the implementation is completed. The following table presents post-trade services revenue by timing of recognition:

	Three Months Ended March 31,	
	2021	2020
	(In thousands)	
Post-trade services revenue by timing of recognition		
Services transferred over time	$ 10,020	$ 4,150
Services transferred at a point in time	241	3
Total post-trade services revenues	$ 10,261	$ 4,153

Other revenues – Other revenues primarily includes revenue from telecommunications line charges to broker-dealer clients.

Contract liabilities consist of deferred revenues that the Company records when cash payments are received or due in advance of services to be performed. The revenue recognized from contract liabilities and the remaining balance is shown below:

	December 31, 2020	Payments received in advance of services to be performed	Revenue recognized for services performed during the period	Foreign Currency Translation	March 31, 2021
			(In thousands)		
Information services	$ 3,203	$ 2,417	$ (2,454)	$ —	$ 3,166
Post-trade services	1,045	4,607	(4,003)	10	1,659
Total deferred revenue	$ 4,248	$ 7,024	$ (6,457)	$ 10	$ 4,825

The majority of the Company's contracts are short-term in nature with durations of less than one year. For contracts with original durations extending beyond one year, the aggregate amount of the transaction price allocated to remaining performance obligations was $21.6 million as of March 31, 2021. The Company expects to recognize revenue associated with the remaining performance obligations over the next 30 months.

Stock-Based Compensation

The Company measures and recognizes compensation expense for all share-based payment awards based on their estimated fair values measured as of the grant date. These costs are recognized as an expense in the Consolidated Statements of Operations over the requisite service period, which is typically the vesting period, with an offsetting increase to additional paid-in capital. Forfeitures are recognized as they occur.

Income Taxes

Income taxes are accounted for using the asset and liability method. Deferred income taxes reflect the net tax effects of temporary differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when such differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. A valuation allowance is recognized against deferred tax assets if it is more likely than not that such assets will not be realized in future years. The Company recognizes interest and penalties related to unrecognized tax benefits in the provision for income taxes in the Consolidated Statements of Operations. All tax effects related to share-based payments are recorded in the provision for income taxes in the periods during which the awards are exercised or vest.

Business Combinations, Goodwill and Intangible Assets

Business combinations are accounted for under the purchase method of accounting. The total cost of an acquisition is allocated to the underlying net assets based on their respective estimated fair values. The excess of the purchase price over the estimated fair values of the net assets acquired is recorded as goodwill. Determining the fair value of certain assets acquired and liabilities assumed requires judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash flows, discount rates, growth rates and asset lives.

The Company operates as a single reporting unit. Following an acquisition, goodwill no longer retains its identification with a particular acquisition, but instead becomes identifiable with the entire reporting unit. As a result, all of the fair value of the Company is available to support the value of goodwill. An impairment review of goodwill is performed on an annual basis, at year-end, or more frequently if circumstances change. Intangible assets with definite lives, including purchased technologies, customer relationships and other intangible assets, are amortized over their estimated useful lives which range from one to 15 years using either a straight-line or accelerated amortization method based on the pattern of economic benefit the Company expects to realize from such assets. Intangible assets are assessed for impairment when events or circumstances indicate the existence of a possible impairment.

Earnings Per Share

Basic earnings per share is computed by dividing the net income attributable to common stock by the weighted-average number of shares of common stock outstanding during the period. For purposes of computing diluted earnings per share, the weighted-average shares outstanding of common stock reflects the dilutive effect that could occur if convertible securities or other contracts to issue common stock were converted into or exercised for common stock.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

3. Regulatory Capital Requirements

Certain U.S. subsidiaries of the Company are registered as a broker-dealer or swap execution facility ("SEF") and therefore are subject to the applicable rules and regulations of the SEC and the Commodity Futures Trading Commission ("CFTC"). These rules contain minimum net capital requirements, as defined in the applicable regulations, and also may require that a significant part of the registrants' assets be kept in relatively liquid form. Certain of the Company's foreign subsidiaries are regulated by the Financial Conduct Authority ("FCA") in the U.K. or other foreign regulators and must maintain financial resources, as defined in the applicable regulations, in excess of the applicable financial resources requirement. As of March 31, 2021, each of the Company's subsidiaries that are subject to these regulations had net capital or financial resources in excess of their minimum requirements. As of March 31, 2021, the Company's subsidiaries maintained aggregate net capital and financial resources that were $493.5 million in excess of the required levels of $31.1 million.

One of the Company's U.S. broker-dealer subsidiaries is required to segregate funds in a special reserve bank account for the benefit of customers pursuant to Rule 15c3-3 of the Securities Exchange Act of 1934. As of March 31, 2021, the broker-dealer subsidiary had a balance of $50.1 million in its special reserve bank account.

Each of the Company's U.S. and foreign regulated subsidiaries are subject to local regulations which generally prohibit repayment of borrowings from the Company or affiliates, paying cash dividends, making loans to the Company or affiliates or otherwise entering into transactions that result in a significant reduction in regulatory net capital or financial resources without prior notification to or approval from such regulated entity's principal regulator.

4. Fair Value Measurements

The following table summarizes the valuation of the Company's assets and liabilities measured at fair value as categorized based on the hierarchy described in Note 2.

	Level 1	Level 2	Level 3	Total
	(In thousands)			
As of March 31, 2021				
Money market funds	$ 11,327	$ —	$ —	$ 11,327
Trading securities				
Corporate debt	—	13,806	—	13,806
Mutual funds held in rabbi trust	—	10,502	—	10,502
Foreign currency forward position	—	(1,349)	—	(1,349)
Total	$ 11,327	$ 22,959	$ —	$ 34,286
As of December 31, 2020				
Money market funds	$ 20,856	$ —	$ —	$ 20,856
Trading securities				
Corporate debt	—	19,222	—	19,222
Mutual funds held in rabbi trust	—	8,889	—	8,889
Foreign currency forward position	—	(805)	—	(805)
Total	$ 20,856	$ 27,306	$ —	$ 48,162

Securities classified within Level 2 were valued using a market approach utilizing prices and other relevant information generated by market transactions involving comparable assets. The foreign currency forward contracts are classified within Level 2 as the valuation inputs are based on quoted market prices. The mutual funds held in a rabbi trust represent investments associated with the Company's deferred cash incentive plan. There were no financial assets classified within Level 3 during the three months ended March 31, 2021 and 2020.

The table below presents the carrying value, fair value and fair value hierarchy category of the Company's financial assets and liabilities that are not measured at fair value on the Consolidated Statement of Financial Condition. The carrying values of the Company's financial assets and liabilities not measured at fair value categorized in the fair value hierarchy as Level 1 and Level 2 approximate fair value due to the short-term nature of the underlying assets and liabilities.

	Carrying Value	Fair Value	Level 1	Level 2	Level 3	Total
			(In thousands)			
As of March 31, 2021						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 390,915	$ 390,915	$ 390,915	$ —	$ —	$ 390,915
Cash segregated under federal regulations	50,083	50,083	50,083	—	—	50,083
Accounts receivable, net of allowance	87,452	87,452	87,452	—	—	87,452
Receivables from broker-dealers, clearing organizations and customers	564,957	564,957	111,594	453,363	—	564,957
Total	$ 1,093,407	$ 1,093,407	$ 640,044	$ 453,363	$ —	$ 1,093,407
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	$ 308,268	$ 308,268	$ —	$ 308,268	$ —	$ 308,268
As of December 31, 2020						
Financial assets not measured at fair value:						
Cash and cash equivalents	$ 460,858	$ 460,858	$ 460,858	$ —	$ —	$ 460,858
Cash segregated under federal regulations	50,059	50,059	50,059	—	—	50,059
Accounts receivable, net of allowance	79,577	79,577	—	79,577	—	79,577
Receivables from broker-dealers, clearing organizations and customers	279,915	279,915	97,043	182,872	—	279,915
Total	$ 870,409	$ 870,409	$ 607,960	$ 262,449	$ —	$ 870,409
Financial liabilities not measured at fair value:						
Payables to broker-dealers, clearing organizations and customers	$ 133,326	$ 133,326	$ —	$ 133,326	$ —	$ 133,326

The Company enters into foreign currency forward contracts to hedge the net investment in the Company's U.K. subsidiaries. The Company designates each foreign currency forward contract as a hedge and assesses the risk management objective and strategy, including identification of the hedging instrument, the hedged item and the risk exposure and how effectiveness is to be assessed prospectively and retrospectively. These hedges are for a one-month period and are used to limit exposure to foreign currency exchange rate fluctuations. The fair value of the asset is included in prepaid expenses and other assets and the fair value of the liability is included in accounts payable, accrued expenses and other liabilities in the Consolidated Statements of Financial Condition. Gains or losses on foreign currency forward contracts designated as hedges are included in accumulated other comprehensive loss in the Consolidated Statements of Financial Condition. The following table summarizes the Company's foreign currency forward position:

	As of	
	March 31, 2021	**December 31, 2020**
	(In thousands)	
Notional value	$ 196,085	$ 157,057
Fair value of notional	197,434	157,862
Fair value of the (liability)	$ (1,349)	$ (805)

The following table summarizes the Company's investments:

	Amortized cost	**Gross unrealized gains**	**Gross unrealized losses**	**Fair value**
	(In thousands)			
As of March 31, 2021				
Trading securities				
Corporate debt	$ 13,721	$ 85	$ —	$ 13,806
Mutual funds held in rabbi trust	10,172	330	—	10,502
Total trading securities	23,893	415	—	24,308
Total investments	$ 23,893	$ 415	$ —	$ 24,308
As of December 31, 2020				
Trading securities				
Corporate debt	$ 19,081	$ 141	$ —	$ 19,222
Mutual funds held in rabbi trust	7,680	1,209	—	8,889
Total investments	$ 26,761	$ 1,350	$ —	$ 28,111

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

	As of	
	March 31, 2021	**December 31, 2020**
	(In thousands)	
Less than one year	$ 17,191	$ 18,290
Due in 1 - 5 years	7,117	9,821
Total	$ 24,308	$ 28,111

Proceeds from the sales and maturities of investments during the three months ended March 31, 2021 and 2020 were $5.5 million and $111.4 million, respectively.

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

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

	March 31, 2021	December 31, 2020
	(In thousands)	
Receivables from broker-dealers, clearing organizations and customers:		
Securities failed-to-deliver - broker-dealers	$ 155,693	$ 93,294
Securities failed-to-deliver - customers	288,235	87,685
Deposits with clearing organizations and broker-dealers	111,594	97,043
Other	9,435	1,893
Total	$ 564,957	$ 279,915
Payables to broker-dealers, clearing organizations and customers:		
Securities failed-to-receive - broker-dealers	156,322	70,917
Securities failed-to-receive - customers	144,958	60,784
Other	6,988	1,625
Total	$ 308,268	$ 133,326

6. Acquisitions

On November 30, 2020, the Company acquired Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group. The purchase price consists of $22.5 million in cash paid at closing and up to $24.6 million in contingent consideration payable in cash within 18 months of the closing. The Company is accounting for the transaction as a purchase of assets and recorded $37.4 million in amortizable intangible assets as of the acquisition date.

On April 9, 2021, the Company acquired MuniBrokers LLC, a central electronic venue serving municipal bond brokers and dealers. The purchase price consists of $17.0 million in cash paid at closing and up to $25.0 million in contingent consideration payable within approximately two years of the closing.

7. Goodwill and Intangible Assets

Goodwill and intangible assets with indefinite lives was $147.4 million as of March 31, 2021 and December 31, 2020. Intangible assets that are subject to amortization, including the related accumulated amortization, are comprised of the following:

	March 31, 2021			December 31, 2020		
	Cost	Accumulated amortization	Net carrying amount	Cost	Accumulated amortization	Net carrying amount
	(In thousands)					
Customer relationships	$ 100,962	$ (10,044)	$ 90,918	$ 102,696	$ (7,369)	$ 95,327
Technology and other intangibles	6,550	(6,523)	27	6,550	(6,523)	27
Total	$ 107,512	$ (16,567)	$ 90,945	$ 109,246	$ (13,892)	$ 95,354

Amortization expense associated with identifiable intangible assets was $2.7 million and $0.7 million for the three months ended March 31, 2021 and 2020, respectively. Estimated total amortization expense associated with the Company’s intangible assets as of March 31, 2021 is $5.7 million, $6.9 million, $7.9 million, $6.7 million and $5.7 million, respectively, for each year from 2021 through 2025.

8. Income Taxes

The provision for income taxes consists of the following:

	Three Months Ended March 31,	
	2021	2020
Current:	(In thousands)	
Federal	$ 12,523	$ 7,766
State and local	3,411	2,910
Foreign	4,819	3,447
Total current provision	20,753	14,123
Deferred:		
Federal	602	1,905
State and local	101	352
Foreign	(112)	506
Total deferred provision	591	2,763
Provision for income taxes	$ 21,344	$ 16,886
Effective tax rate	21.0%	18.4%

The Company recognized excess tax benefits on share-based payments of $4.0 million and $6.3 million through the provision for income taxes for the three months ended March 31, 2021 and 2020, respectively.

The Company or one of its subsidiaries files U.S. federal, state and foreign income tax returns. The Company is currently under a New York State income tax examination for the tax years 2010 through 2017 and a New York City income tax examination for the tax years 2016 through 2018. At this time, the Company cannot estimate when the examinations will conclude or the impact such examinations will have on the Company's Consolidated Financial Statements, if any. Generally, other than New York City and State, the Company is no longer subject to tax examinations by tax authorities for years prior to 2017.

9. Stock-Based Compensation Plans

Total stock-based compensation expense was as follows:

	Three Months Ended March 31,	
	2021	2020
	(In thousands)	
Employees	$ 7,103	$ 6,399
Non-employee directors	321	278
Total stock-based compensation	$ 7,424	$ 6,677

The Company records stock-based compensation expense for employees in employee compensation and benefits and for non-employee directors in general and administrative expenses in the Consolidated Statements of Operations.

During the three months ended March 31, 2021, the Company granted to employees a total of 32,251 shares of restricted stock or restricted stock units, 15,982 options to purchase shares of common stock and performance-based shares with an expected pay-out at target of 12,185 shares of common stock. The fair value of the restricted stock and performance-based share awards was based on a weighted-average fair value per share at the grant date of $526.50 and $523.00, respectively. Based on the Black-Scholes option pricing model, the weighted-average fair value for each option granted was $138.51 per share.

As of March 31, 2021, the total unrecognized compensation cost related to all non-vested awards was $50.9 million. That cost is expected to be recognized over a weighted-average period of 2.2 years.

10. Earnings Per Share

The following table sets forth basic and diluted weighted average shares outstanding used to compute earnings per share:

	Three Months Ended March 31,	
	2021	2020
	(In thousands, except per share amounts)	
Basic weighted average shares outstanding	37,470	37,303
Dilutive effect of stock options and restricted stock	685	772
Diluted weighted average shares outstanding	38,155	38,075
Basic earnings per share	$ 2.15	$ 2.01
Diluted earnings per share	2.11	1.96

Stock options and restricted stock totaling 61,089 shares and 62,964 shares for the three months ended March 31, 2021 and 2020, respectively, were excluded from the computation of diluted earnings per share because their effect would have been antidilutive. The computation of diluted shares can vary among periods due, in part, to the change in the average price of the Company's common stock.

11. Credit Agreements and Short-term Financing

Prior Revolving Credit Agreement

In October 2015, the Company entered into an amended and restated credit agreement (the "Prior Credit Agreement") that provided for revolving loans and letters of credit up to an aggregate of $100.0 million. The Prior Credit Agreement matured on November 13, 2020, when the Company entered into a new one-year credit agreement.

Revolving Credit Agreement

On November 13, 2020, the Company entered into a credit agreement (the "Credit Agreement") with a syndicate of lenders and JPMorgan Chase Bank, N.A., as administrative agent, that provides aggregate commitments totaling $500.0 million, consisting of a revolving credit facility and a $5.0 million letter of credit sub-limit for standby letters of credit. The Credit Agreement replaced the Prior Credit Agreement and will mature on November 12, 2021, with the Company's option to request up to two additional 364-day extensions at the discretion of each lender and subject to customary conditions. Subject to satisfaction of certain specified conditions, the Company is permitted to upsize the Credit Agreement by up to $250.0 million in total. As of March 31, 2021, the Company had $1.0 million in letters of credit outstanding and $499.0 million in available borrowing capacity under the Credit Agreement.

Borrowings under the Credit Agreement will bear interest at a rate per annum equal to the base rate or adjusted LIBOR plus an applicable margin that varies with the Company's consolidated total leverage ratio. The Credit Agreement requires that the Company satisfy certain covenants, which include leverage ratios and minimum earnings before interest, tax, and depreciation and amortization ("EBITDA") requirements. The Company was in compliance with all applicable covenants at March 31, 2021. The Company incurred no interest expense under the Credit Agreement for the three months ended March 31, 2021.

Collateralized Agreement

In connection with its self-clearing operations, one of the Company's U.S. broker-dealer subsidiaries entered into an agreement (the "Collateralized Agreement") with its settlement bank to provide loans to the subsidiary in amounts up to an aggregate of $200.0 million on an uncommitted basis. Borrowings under the Collateralized Agreement are collateralized by securities pledged by the Company's broker-dealer subsidiary to the settlement bank, subject to applicable haircuts and concentration limits. Borrowings under the Collateralized Agreement will bear interest at a rate per annum equal to the Federal Funds Rate plus 1.00%. The Company incurred less than $0.1 million of interest expense on borrowings under the Collateralized Agreement during the three months ended March 31, 2021. As of March 31, 2021, the Company had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement.

Short-term Financing

Under an arrangement with its settlement bank, one of the Company's U.K. subsidiaries received overnight financing in the form of bank overdrafts. The U.K. subsidiary incurred interest expense on such overnight financing of $0.2 million during the three months ended March 31, 2021. As of March 31, 2021, the U.K. subsidiary had $34.3 million of overdrafts payable outstanding which is included within accounts payable, accrued expenses and other liabilities on the Consolidated Statement of Financial Condition.

12. Leases

The Company has operating leases for corporate offices with initial lease terms ranging from one year to 15 years. Certain leases contain options to extend the initial term at the Company's discretion. The Company accounts for the option to extend when it is reasonably certain of being exercised. The Company's lease agreements do not contain any material residual value guarantees, restrictions or covenants.

The following table presents the components of lease expense:

		Three Months Ended March 31,	
Lease cost:	**Classification**	**2021**	**2020**
		(In thousands)	
Operating lease cost	Occupancy	$ 3,323	$ 3,449
Operating lease cost for subleased/assigned properties	Other, net	497	536
Variable lease costs	Occupancy	6	16
Sublease income subleased/assigned properties	Other, net	(502)	(536)
Net lease cost		$ 3,324	$ 3,465

The Company determines whether an arrangement is, or includes, a lease at contract inception. Operating lease right-of-use assets and liabilities are recognized at commencement date and are initially measured based on the present value of lease payments over the defined lease term. As the Company's leases do not provide an implicit rate, the Company used its incremental borrowing rate based on the information available at the adoption date in determining the present value of lease payments.

The weighted average remaining lease term (in years) and weighted average discount rate are as follows:

	As of	
Lease Term and Discount Rate	**March 31, 2021**	**December 31, 2020**
Weighted average remaining lease term (in years)	12.0	12.3
Weighted average discount rate	5.9%	5.9%

The following table presents the maturity of lease liabilities as of March 31, 2021:

	(In thousands)
Remainder of 2021	$ 9,177
2022	10,692
2023	10,451
2024	11,122
2025	11,127
2026 and thereafter	79,095
Total lease payments	131,664
Less: interest	38,914
Operating lease liabilities	$ 92,750

The Company has entered into agreements that sublease or assign the Company's lease obligations on two properties to third parties and is contingently liable should the third parties default on future lease obligations through the lease termination dates of February 2022 and May 2022. The aggregate amount of the future lease obligations under these arrangements is $1.7 million as of March 31, 2021.

13. Commitments and Contingencies

Legal

In the normal course of business, the Company and its subsidiaries included in the consolidated financial statements may be involved in various lawsuits, proceedings and regulatory examinations. The Company assesses its liabilities and contingencies in connection with outstanding legal proceedings, if any, utilizing the latest information available. For matters where it is probable that the Company will incur a material loss and the amount can be reasonably estimated, the Company will establish an accrual for the loss. Once established, the accrual will be adjusted to reflect any relevant developments. When a loss contingency is not both probable and estimable, the Company does not establish an accrual.

Based on currently available information, the outcome of the Company’s outstanding matters is not expected to have a material adverse impact on the Company’s financial position. It is not presently possible to determine the ultimate exposure to these matters and there is no assurance that the resolution of the outstanding matters will not significantly exceed any reserves accrued by the Company.

Other

The Company, through certain of its subsidiaries, executes bond transactions between its institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. One of the Company’s U.S. broker-dealer subsidiaries operates under a self-clearing model for the settlement of such transactions. The Company’s other U.S. and U.K. subsidiaries settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded. Under both the self-clearing and the third-party clearing models, the Company may be exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is an error in executing a matched principal transaction. Pursuant to the terms of the securities clearing agreements, each third-party clearing broker has the right to charge the Company for any losses they suffer resulting from a counterparty’s failure on any of the Company’s trades. The Company did not record any liabilities or losses with regard to counterparty failures for the three months ended March 31, 2021 and 2020.

In the normal course of business, the Company enters into contracts that contain a variety of representations, warranties and indemnification provisions. The Company’s maximum exposure under these arrangements is unknown, as this would involve future claims that may be made against the Company that have not yet occurred. However, based on experience, the Company expects the risk of loss to be remote.

14. Share Repurchase Program

In January 2019, the Board of Directors authorized a two-year share repurchase program for up to $100.0 million that commenced in April 2019 and expired on March 31, 2021. In January 2021, the Board of Directors authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021. For the three months ended March 31, 2021, the Company repurchased 1,050 shares of common stock at a cost of $0.5 million. Shares repurchased under each program will be held in treasury for future use.

15. Segment and Geographic Information

The Company operates an electronic platform for the trading of fixed-income securities and provides related data, analytics, compliance tools and post-trade services. The Company considers its operations to constitute a single business segment because of the highly integrated nature of these products and services, the financial markets in which the Company competes and the Company’s worldwide business activities. The Company believes that results by geographic region or client sector are not necessarily meaningful in understanding its business.

For the three months ended March 31, 2021 and 2020, the U.K. was the only individual foreign country in which the Company had a subsidiary that accounted for 10% or more of the total revenues or total long-lived assets of the Company. Revenues and long-lived assets are attributed to a geographic area based on the location of the particular subsidiary. Long-lived assets are defined as furniture, equipment, leasehold improvements and capitalized software. Revenues for the three months ended March 31, 2021 and 2020 and long-lived assets as of March 31, 2021 and December 31, 2020 were as follows:

	Three Months Ended March 31, 2021	Three Months Ended March 31, 2020
	(In thousands)	
Revenues		
Americas	$ 160,119	$ 142,637
Europe	29,544	22,419
Asia	5,801	3,922
Total	$ 195,464	$ 168,978

	As of March 31, 2021	As of December 31, 2020
	(In thousands)	
Long-lived assets, as defined		
Americas	$ 70,812	$ 68,707
Europe	17,838	16,491
Asia	5	6
Total	$ 88,655	$ 85,204

16. Cash and Cash Equivalents and Restricted Cash

The following table provides a reconciliation of cash and cash equivalents together with restricted or segregated cash as reported within the Consolidated Statements of Financial Condition to the sum of the same such amounts shown in the Consolidated Statements of Cash Flows.

	Statement of Financial Condition Location	March 31, 2021	December 31, 2020
		(In thousands)	
Cash and cash equivalents	Cash and cash equivalents	$ 390,915	$ 460,858
Cash segregated for regulatory purposes	Cash segregated under federal regulations	50,083	50,059
Deposits with clearing organizations and broker-dealers	Receivables from broker-dealers, clearing organizations and customers	111,594	97,043
Other deposits	Prepaid expenses and other assets	90	90
Total		$ 552,682	$ 608,050

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Forward-Looking Statements

This report contains certain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as "expects," "intends," "anticipates," "plans," "believes," "seeks," "estimates," "will," or words of similar meaning and include, but are not limited to, statements regarding the outlook for our future business and financial performance. Forward-looking statements are based on management's current expectations and assumptions, which are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. It is routine for our internal projections and expectations to change as the year or each quarter in the year progresses, and therefore it should be clearly understood that the internal projections and beliefs upon which we base our expectations may change prior to the end of each quarter or the year. Although these expectations may change, we undertake no obligation to revise or update any forward-looking statements contained in this report, except to the extent required by applicable law. Our company policy is generally to provide our expectations only once per quarter, and not to update that information until the next quarter. Actual future events or results may differ, perhaps materially from those contained in the projections or forward-looking statements. Factors that could cause or contribute to such differences include those discussed below and elsewhere in this report, particularly in the section captioned Part II, Item 1A, "Risk Factors."

Executive Overview

MarketAxess operates leading electronic trading platforms delivering expanded liquidity opportunities, improved execution quality and significant cost savings across global fixed-income markets. Over 1,800 institutional investor and broker-dealer firms are active users of our patented trading technology, accessing global liquidity on our platforms in U.S. investment-grade bonds, U.S. high-yield bonds, U.S. Treasuries, emerging market debt, Eurobonds and other fixed income securities. Through our Open Trading® protocols, we execute bond trades between and among institutional investor and broker-dealer clients in the leading all-to-all anonymous trading environment for corporate bonds. We also offer a number of trading-related products and services, including: Composite+ TM pricing and other market data products to assist clients with trading decisions; auto-execution and other execution services for clients requiring specialized workflow solutions; connectivity solutions that facilitate straight-through processing; and technology services to optimize trading environments. In addition, we provide a range of pre- and post-trade services, including trade matching, trade publication, regulatory transaction reporting and market and reference data across a range of fixed-income and other products.

Our platforms' innovative technology solutions are designed to increase the number of potential trading counterparties and create a menu of solutions to address different trade sizes and bond liquidity characteristics. Our traditional request-for-quote ("RFQ") model allows our institutional investor clients to simultaneously request competing, executable bids or offers from our broker-dealer clients and execute trades with the broker-dealer of their choice from among those that choose to respond. Our Open Trading protocols complement our RFQ model by increasing the number of potential counterparties and improving liquidity by allowing all participants to interact anonymously in an all-to-all trading environment. Clients can use our auto-execution technology with both our traditional RFQ and Open Trading protocols, thereby using rules-based execution to connect to diverse sources of liquidity while reducing trading inefficiencies and human errors. Leveraging the benefits of our Open Trading marketplace, we launched Live Markets, an order book that will create a single view of two-way, actionable prices for the most active bonds, including newly issued debt, benchmark issues and news-driven securities. We expect that Open Trading participants will improve their trading capacity through the Live Markets order book, by more efficiently trading liquid names in larger size and accessing integrated real-time market data, such as Composite+.

We derive revenue from commissions for trades executed on our platform, information services, post-trade services and other revenues. Our expenses consist of employee compensation and benefits, depreciation and amortization, technology and communication expenses, professional and consulting fees, occupancy, marketing and advertising, clearing costs and other general and administrative expenses.

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

- to use our broad network of over 1,800 active institutional investor and broker-dealer participants to drive more clients to our leading electronic fixed-income trading platforms;
- to increase the secondary market liquidity on our trading platforms by deploying innovative technology solutions, such as our Open Trading protocols, to increase the number of potential trading counterparties on our platforms and to address different trade sizes, bond liquidity characteristics and trading preferences;

- to continue to develop innovative next-generation technologies that will allow our clients to further automate and improve the performance of their trading desks through increased liquidity, enhanced trading efficiencies and the ability to identify trends within the bond market;
- to expand and strengthen our existing service, data and analytical offerings throughout the trading cycle so that we are more fully integrated into the workflow of our broker-dealer and institutional investor clients; and
- to increase and supplement our internal growth by entering into strategic alliances, or acquiring businesses or technologies that will enable us to enter new markets, provide new products or services, or otherwise enhance the value of our platform to our clients. We acquired Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group ("Regulatory Reporting Hub") in November 2020, and MuniBrokers LLC, a central electronic venue serving municipal bond inter-dealer brokers and dealers in April 2021.

Critical Factors Affecting Our Industry and Our Company

Economic, Political and Market Factors

The global fixed-income securities industry is risky and volatile and is directly affected by a number of economic, political and market factors that may result in declining trading volume. These factors could have a material adverse effect on our business, financial condition and results of operations. These factors include, among others, credit market conditions, the current interest rate environment, including the volatility of interest rates and investors' forecasts of future interest rates, economic and political conditions in the United States, Europe and elsewhere, and the consolidation or contraction of our broker-dealer and institutional investor clients.

During the first quarter of 2021, the improving economic conditions resulted in lower volatility, tightening credit spreads and a rising interest rate environment. In the first quarter of 2021, market volumes in the U.S. high-grade corporate bonds as reported by Financial Industry Regulatory Authority's Trade Reporting and Compliance Engine ("TRACE") increased 7.5% while U.S. high-yield corporate bond market volumes as reported by TRACE decreased 5.5%, compared to the first quarter of 2020. Our trading volume growth remained strong during the first quarter of 2021, as our other credit and U.S. high-grade trading volume increased 18.6% and 10.1%, respectively, compared to the first quarter of 2020.

As a result of the COVID-19 pandemic (the "Pandemic"), we have continued to experience significant changes in our daily operations. In mid-March 2020, we successfully implemented a global work from home mandate for all our employees and we were able to continue to provide our trading platforms and other services to our clients without interruption. In particular, we believe that Open Trading liquidity has been increasingly essential to the functioning of credit markets during the Pandemic, and MarketAxess has played a valuable role keeping our clients connected to the market as traders moved from their centralized trading floors to home offices. During the first several months of the Pandemic, we helped over 10,000 individual users connect to our trading platforms from their homes. Although we have reprioritized certain technology projects due to the changing needs of our clients in the current market environment, we have largely continued with our hiring plans, capital expenditures and the expansion of our trading platforms and services into new jurisdictions.

The global spread of the Pandemic is complex and rapidly-evolving, with authorities around the world implementing numerous measures to try to contain the coronavirus, such as travel bans and restrictions, social distancing, quarantines, stay at home orders, business limitations and vaccinations. While we remain confident that we can continue to maintain business continuity, serve our clients and provide efficient execution in a virtual environment as necessary, we have re-opened our offices and have allowed our employees to return to work, on a voluntary basis, where local regulations permit. The re-opening of offices has created additional risks and operational challenges relating to maintaining the health and safety of our employees. We also anticipate that the full re-opening of our offices may require investments in the design, implementation and enforcement of new workplace safety protocols. These efforts may divert management attention, and the protocols may create logistical challenges for our employees which could adversely impact employee productivity and morale.

We believe that we have sufficient liquidity and flexibility to operate during any future disruptions caused by the Pandemic. While we have experienced increased market volumes and market share since the outbreak, we are cautious of the damaging impact the Pandemic may have on the global economy in the longer-term.

We expect that current cash and investment balances, in combination with cash flows that are generated from operations and the ability to borrow under our Credit Agreement, will be sufficient to meet our liquidity needs and planned capital expenditure requirements for at least the next twelve months. We have not altered our capital management programs and we have increased our dividend for the 12th consecutive year. We ended the quarter with a strong balance sheet, no borrowings under our Credit Agreement and with capital significantly in excess of our regulatory requirements.

Competitive Landscape

The global fixed-income securities industry generally, and the electronic financial services markets in which we engage in particular, are highly competitive, and we expect competition to intensify in the future. Sources of competition for us will continue to include, among others, bond trading conducted directly between broker-dealers and their institutional investor clients over the telephone or electronically and other multi-dealer or all-to-all trading platforms. Competitors, including companies in which some of our broker-dealer clients have invested, have developed or acquired electronic trading platforms or have announced their intention to explore the development of electronic platforms or information networks that may compete with us.

In general, we compete on the basis of a number of key factors, including, among others, the liquidity provided on our platform, the magnitude and frequency of price improvement enabled by our platforms, total transaction costs and the quality and speed of execution. We believe that our ability to grow volumes and revenues will largely depend on our performance with respect to these factors.

Our competitive position is also enhanced by the familiarity and integration of our broker-dealer and institutional investor clients with our electronic trading platform and other systems. We have focused on the unique aspects of the credit markets we serve in the development of our platform, working closely with our clients to provide a system that is suited to their needs.

Regulatory Environment

Our business is subject to extensive regulations in the United States and internationally, which may expose us to significant regulatory risk and cause additional legal costs to ensure compliance. The existing legal framework that governs the financial markets is periodically reviewed and amended, resulting in the enactment and enforcement of new laws and regulations that apply to our business. For example, the new administration elected in the 2020 U.S. presidential election may enact regulatory changes that may affect our business. The SEC has recently solicited public comment to obtain information about fixed income electronic trading platforms in order to help the SEC and other regulators evaluate potential regulatory gaps that may exist among such platforms with respect to access to markets, system integrity, surveillance, and transparency, among other things. The impact of any of these reform efforts on us and our operations remains uncertain.

In addition, the U.K. ceased to be a member of the E.U. on January 31, 2020, triggering a transition period in which the U.K. continued to observe applicable E.U. regulations through December 31, 2020 (commonly referred to as "Brexit"). In preparation for Brexit, we obtained authorizations from the Netherlands Authority for the Financial Markets for our subsidiaries in the Netherlands in 2019. Following Brexit, we now provide regulated services to our clients within the E.U. in reliance on the cross-border services passport held by our Dutch subsidiaries. Brexit has led to legal uncertainty and potentially divergent national laws and regulations as the U.K. determines which E.U. laws to replace or replicate, which may impact our ability to comply with the extensive government regulation to which we are subject. In addition, the cost and complexity of operating across increasingly divergent regulatory regimes is likely to increase following Brexit.

Compliance with regulations may require us to dedicate additional financial and operational resources, which may adversely affect our profitability. However, we believe new regulations may also increase demand for our platforms and we believe we are well positioned to benefit from those regulatory changes that cause market participants to seek electronic platforms that meet the various regulatory requirements and help them comply with their regulatory obligations.

Technology Environment

We must continue to enhance and improve our electronic trading platform. The electronic financial services industry is characterized by increasingly complex systems and infrastructures and new business models. Our future success will depend on our ability to enhance our existing products and services, develop and/or license new products and technologies that address the increasingly sophisticated and varied needs of our existing and prospective broker-dealer and institutional investor clients and respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis. We plan to continue to focus on technology infrastructure initiatives and continually improve our platforms to further enhance our leading market position. We expect that our transition to agile software development processes will help us continue to be a market leader in developing the technology solutions for our clients' trading needs.

As the overall share of electronic trading grows in global credit products, we are experiencing continued demand for, and growth in, our automated trading solutions. Automated trading volumes rose to $39.1 billion in the first quarter of 2021, up 24.2% from $31.5 billion in the first quarter of 2020. In addition, the use of dealer algorithms is continuing to grow on our platforms, with approximately 4.8 million algorithmic responses in the first quarter of 2021, up 56.7% from the same period last year.

We experience cyber-attacks and attempted security breaches. Cybersecurity incidents could impact revenue and operating income and increase costs. We therefore continue to make investments, which may result in increased costs, to strengthen our cybersecurity measures.

Trends in Our Business

The majority of our revenue is derived from commissions for transactions executed on our platforms between and among our institutional investor and broker-dealer clients and monthly distribution fees. We believe that there are five key variables that impact the notional value of such transactions on our platforms and the amount of commissions and distribution fees earned by us:

- the number of participants on our platforms and their willingness to originate transactions through the platforms;
- the frequency and competitiveness of the price responses by participants on our platforms;
- the number of markets that are available for our clients to trade on our platforms;
- the overall level of activity in these markets; and
- the level of commissions that we collect for trades executed through the platforms.

We believe that overall corporate bond market trading volume is affected by various factors including the absolute levels of interest rates, the direction of interest rate movements, the level of new issues of corporate bonds and the volatility of corporate bond spreads versus U.S. Treasury securities. Because a significant percentage of our revenue is tied directly to the volume of securities traded on our platforms, it is likely that a general decline in trading volumes, regardless of the cause of such decline, would reduce our revenues and have a significant negative impact on profitability.

Commission Revenue

Commissions are recognized on a trade date basis, are generally calculated as a percentage of the notional dollar volume of bonds traded on our platforms and vary based on the type, size, yield and maturity of the bond traded, as well as individual client incentives. Bonds that are more actively traded or that have shorter maturities are generally charged lower commissions, while bonds that are less actively traded or that have longer maturities generally command higher commissions.

For Open Trading trades that we execute between and among institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller, we earn our commission through the difference in price between the two trades. For U.S. Treasury matched principal trades, commissions are invoiced and recorded on a monthly basis.

U.S. High-Grade Corporate Bond Commissions. Our U.S. high-grade corporate bond fee plans generally incorporate variable transaction fees and fixed distribution fees billed to our broker-dealer clients on a monthly basis. Certain dealers participate in fee programs that do not contain monthly distribution fees and instead incorporate additional per transaction execution fees and minimum monthly fee commitments. Under these fee plans, we electronically add the transaction fee to the spread quoted by the broker-dealer client. The U.S. high-grade transaction fee is generally designated in basis points in yield and, as a result, is subject to fluctuation depending on the duration of the bond traded. The average U.S. high-grade fees per million may vary in the future due to changes in yield, years-to-maturity and nominal size of bonds traded on our platforms. Distribution fees include any unused monthly fee commitments under our variable fee plans.

Other Credit Commissions. Other credit includes Eurobonds, emerging markets bonds, high-yield bonds, municipal bonds and leveraged loans. Commissions for other credit products generally vary based on the type of the instrument traded using standard fee schedules. Our high-yield fee plan structure is similar to our U.S. high-grade fee plans. Certain dealers participate in a high-yield fee plan that incorporates a variable transaction fee and fixed distribution fee, while other dealers participate in a plan that does not contain monthly distribution fees and instead incorporates additional per transaction execution fees and minimum monthly fee commitments. The average other credit fees per million may vary in the future due to changes in product mix or trading protocols.

Rates Commissions. Rates includes U.S. Treasury, U.S. agency, European government bonds and credit derivatives. Commissions for rates products generally vary based on the type of the instrument traded. U.S. Treasury fee plans are typically volume tiered and can vary based on the trading protocol. The average rates fee per million may vary in the future due to changes in product mix or trading protocols.

We anticipate that average fees per million may change in the future. Consequently, past trends in commissions are not necessarily indicative of future commissions.

Information Services

We generate revenue from data licensed to our broker-dealer clients, institutional investor clients and data-only subscribers; professional and consulting services; technology software licenses; and maintenance and support services. These revenues are either for subscription-based services transferred over time, and may be net of volume-based discounts, or one-time services. Revenues for services transferred over time are recognized ratably over the contract period while revenues for services transferred at a point in time are recognized in the period the services are provided. Customers are generally billed monthly, quarterly, or annually; revenues billed in advance are deferred and recognized ratably over the contract period.

Post-trade Services

We generate revenue from regulatory transaction reporting, trade publication and trade matching services. Customers are generally billed in the current month or monthly in arrears and revenue is recognized in the period that the transactions are processed. Revenues billed in advance are deferred and recognized ratably over the contract period. We also generate one-time implementation fees for onboarding clients which are invoiced and recognized in the period the implementation is complete.

Other Revenue

Other revenue includes revenue generated from telecommunications line charges to broker-dealer clients.

Expenses

In the normal course of business, we incur the following expenses:

Employee Compensation and Benefits. Employee compensation and benefits is our most significant expense and includes employee salaries, stock-based compensation costs, other incentive compensation, employee benefits and payroll taxes.

Depreciation and Amortization. We depreciate our computer hardware and related software, office hardware and furniture and fixtures and amortize our capitalized software development costs on a straight-line basis over three to seven years. We amortize leasehold improvements on a straight-line basis over the lesser of the life of the improvement or the remaining term of the lease. Intangible assets with definite lives, including purchased technologies, customer relationships and other intangible assets, are amortized over their estimated useful lives, which range from one to 15 years, using either a straight-line or accelerated amortization method based on the pattern of economic benefit that we expect to realize from such assets. Intangible assets are assessed for impairment when events or circumstances indicate a possible impairment.

Technology and Communications. Technology and communications expense consists primarily of costs relating to maintenance on software and hardware, our internal network connections, data center hosting costs, data feeds provided by outside vendors or service providers and U.S. treasuries technology platform licensing fees. The majority of our broker-dealer clients have dedicated high-speed communication lines to our network in order to provide fast data transfer. We charge our broker-dealer clients a monthly fee for these connections, which is recovered against the relevant expenses we incur.

Professional and Consulting Fees. Professional and consulting fees consist primarily of accounting fees, legal fees and fees paid to information technology and other consultants for services provided for the maintenance of our trading platforms, information and post-trade services products and other services.

Occupancy. Occupancy costs consist primarily of office and equipment rent, utilities and commercial rent tax.

Marketing and Advertising. Marketing and advertising expense consists primarily of print and other advertising expenses we incur to promote our products and services. This expense also includes costs associated with attending or exhibiting at industry-sponsored seminars, conferences and conventions, and travel and entertainment expenses incurred by our sales force to promote our trading platforms, information services and post-trade services.

Clearing Costs. Clearing costs consist of fees that we are charged by third-party clearing brokers and depositories for the clearing and settlement of matched principal trades, regulatory reporting fees and variable transaction fees assessed by the provider of our third-party middle office system.

General and Administrative. General and administrative expense consists primarily of general travel and entertainment, board of directors' expenses, charitable contributions, provision for doubtful accounts and various state franchise and U.K. value-added taxes.

Expenses may grow in the future, notably in employee compensation and benefits as we increase headcount to support investment in new products, operational support and geographic expansion, depreciation and amortization due to increased investment in new products and enhancements to our trading platforms, and technology and communication costs. Expenses may also grow due to acquisitions.

Other Income (Expense)

Investment Income. Investment income consists of income earned on our investments.

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

Other, Net. Other, net consists of unrealized gains or losses on trading security investments, realized gains or losses on investments, foreign currency transaction gains or losses, investment advisory fees, credit facility administrative fees and other miscellaneous revenues and expenses.

Critical Accounting Policies and Estimates

This Management's Discussion and Analysis of Financial Condition and Results of Operations discusses our Consolidated Financial Statements, which have been prepared in accordance with accounting principles generally accepted in the United States, also referred to as U.S. GAAP. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the reported amounts of income and expenses during the reporting periods. We base our estimates and judgments on historical experience and on various other factors that we believe are reasonable under the circumstances. Actual results may differ from these estimates under varying assumptions or conditions. Note 2 of the Notes to our Consolidated Financial Statements includes a summary of the significant accounting policies and methods used in the preparation of our Consolidated Financial Statements. There were no significant changes to our critical accounting policies and estimates during the three months ended March 31, 2021, as compared to those we disclosed in Management's Discussion and Analysis of Financial Condition and Results of Operations included in our Annual Report on Form 10-K for the year ended December 31, 2020.

Recent Accounting Pronouncements

See Note 2 to the Consolidated Financial Statements for a discussion of recent accounting pronouncements.

Segment Results

We operate electronic platforms for the trading of fixed-income securities and provide related data, analytics, compliance tools and post-trade services. We consider our operations to constitute a single business segment because of the highly integrated nature of these product and services, the financial markets in which we compete and our worldwide business activities. We believe that results by geographic region or client sector are not necessarily meaningful in understanding our business. See Note 15 to the Consolidated Financial Statements for certain geographic information about our business required by U.S. GAAP.

Results of Operations

Three Months Ended March 31, 2021 Compared to Three Months Ended March 31, 2020

The following table summarizes our financial results for the three months ended March 31, 2021 and 2020. Results for the three months ended March 31, 2021 include Regulatory Reporting Hub related revenue of $4.0 million and expenses of $3.6 million, including amortization of acquired intangibles expense of $1.4 million:

	Three Months Ended March 31,			
	2021	2020	$ Change	% Change
	($ in thousands, except per share amounts)			
Revenues	$ 195,464	$ 168,978	$ 26,486	15.7 %
Expenses	91,990	77,889	14,101	18.1
Operating income	103,474	91,089	12,385	13.6
Other income	(1,673)	613	(2,286)	N/M
Income before income taxes	101,801	91,702	10,099	11.0
Provision for income taxes	21,344	16,886	4,458	26.4
Net income	$ 80,457	$ 74,816	$ 5,641	7.5 %
Net income per common share - Diluted	$ 2.11	$ 1.96	$ 0.15	7.7 %

A 7.8% change in the average foreign currency exchange rates of the British pound sterling compared to the U.S. dollar from the three months ended March 31, 2020 had the effect of increasing each of revenues and expenses by $1.6 million for the three months ended March 31, 2021.

Revenues

Our revenues for the three months ended March 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended March 31,					
	2021		2020			
	($ in thousands)					
		% of Revenues		% of Revenues	$ Change	% Change
Commissions	$ 175,838	90.0 %	$ 155,954	92.3 %	$ 19,884	12.7 %
Information services	9,162	4.7	8,642	5.1	520	6.0
Post-trade services	10,261	5.2	4,153	2.5	6,108	147.1
Other	203	0.1	229	0.1	(26)	(11.4)
Total revenues	$ 195,464	100.0 %	$ 168,978	100.0 %	$ 26,486	15.7 %

Commissions. Our commission revenues for the three months ended March 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended March 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Variable transaction fees				
U.S. high-grade	$ 65,356	$ 57,970	$ 7,386	12.7 %
Other credit	78,899	65,610	13,289	20.3
Total credit	144,255	123,580	20,675	16.7
Rates	4,143	5,586	(1,443)	(25.8)
Total variable transaction fees	148,398	129,166	19,232	14.9
Distribution fees				
U.S. high-grade	20,970	19,974	996	5.0
Other credit	6,404	6,658	(254)	(3.8)
Total credit	27,374	26,632	742	2.8
Rates	66	156	(90)	(57.7)
Total distribution fees	27,440	26,788	652	2.4
Total commissions	$ 175,838	$ 155,954	$ 19,884	12.7 %

U.S. high-grade variable transaction fees increased $7.4 million due to a 10.1% increase in trading volume and a 2.4% increase in average variable transaction fee per million. Other credit variable transaction fees increased $13.3 million due to a 18.6% increase in trading volume and a 1.4% increase in the average variable transaction fee per million. Open Trading credit volume totaled $246.3 billion during the three months ended March 31, 2021, up 20.1%, and represented 31.0% and 31.1% of variable transaction fees for the three months ended March 31, 2021 and 2020, respectively. The 25.8% decrease in variable transaction fees for rates was mainly attributable to lower U.S. Treasury trading volume.

U.S. high-grade distribution fees increased $1.0 million mainly due to the migration of certain dealers from all-variable fee plans to plans that incorporate a monthly distribution fee.

Our trading volumes for the three months ended March 31, 2021 and 2020 were as follows:

	Three Months Ended March 31,			
	2021	2020	$ Change	% Change
	($ in millions)			
Trading volume data				
U.S. high-grade - fixed rate	$ 349,815	$ 312,188	$ 37,627	12.1 %
U.S. high-grade - floating rate	13,626	17,806	(4,180)	(23.5)
Total U.S. high grade	363,441	329,994	33,447	10.1
Other credit	391,020	329,753	61,267	18.6
Total credit	$ 754,461	$ 659,747	$ 94,714	14.4 %
Rates	1,120,868	1,444,878	(324,010)	(22.4) %
Number of U.S. Trading Days	61	62		
Number of U.K. Trading Days	63	64		

For volume reporting purposes, transactions in foreign currencies are converted to U.S. dollars at average monthly rates. The 10.1% increase in our U.S. high-grade volume was principally due to an increase in overall market volume coupled with growth in our estimated market share. Estimated U.S. high-grade TRACE volume increased by 7.5% to $1.8 trillion for the three months ended March 31, 2021. Our estimated market share of total U.S. high-grade corporate bond volume increased to 20.5% for the three months ended March 31, 2021 from 20.0% for the three months ended March 31, 2020.

Other credit volumes increased by 18.6% due to increases of 20.5% in high-yield bond volume, 18.0% in emerging markets bond volume, 14.8% in Eurobonds volume, and 75.0% in municipal bonds volume, primarily as a result of increases in estimated market share. Estimated TRACE and Trax® emerging markets and TRACE reported high-yield market volume were down 9.5% and 5.5%, respectively, compared to the three months ended March 31, 2020. Estimated Trax® reported Eurobond market volume was up 1.5% year-over-year. Rates trading volume decreased 22.4% primarily due to a 17.5% decline in U.S. treasuries dealer-to-dealer estimated average daily trading volume.

Our average variable transaction fee per million for the three months ended March 31, 2021 and 2020 was as follows:

	Three Months Ended March 31,			
	2021	2020	$ Change	% Change
Average variable transaction fee per million				
U.S. high-grade - fixed rate	$ 185.07	$ 182.95	$ 2.12	1.2%
U.S. high-grade - floating rate	45.11	47.96	(2.85)	(5.9)
Total U.S. high-grade	179.83	175.67	4.16	2.4
Other credit	201.78	198.97	2.81	1.4
Total credit	191.20	187.31	3.89	2.1
Rates	3.70	3.87	(0.17)	(4.4)

Total U.S. high-grade average variable transaction fee per million increased 2.4% to $179.83 per million for the three months ended March 31, 2021 due to an increase in the duration of bonds traded on our platforms partially offset by the migration of certain of our broker-dealer clients from an all-variable fee plan to a plan that incorporates a monthly distribution fee. Other credit average variable transaction fee per million increased 1.4% to $201.78 per million for the three months ended March 31, 2021 mainly due to a larger percentage of trading volume in high-yield bonds that command higher fees per million. The decrease in the average variable transaction fee per million for rates products was primarily attributable to the higher mix of U.S. Treasuries trading volumes that command lower fees per million.

Information Services. Information services revenue increased $0.5 million for the three months ended March 31, 2021 mainly due to new data contract revenue of $0.9 million and the positive impact of foreign exchange of $0.3 million, offset by lower non-recurring data sales of $0.7 million.

Post-Trade Services. Post-trade services revenue increased $6.1 million for the three months ended March 31, 2021 principally due to additional regulatory transaction reporting revenue of $4.0 million generated by Regulatory Reporting Hub, which was acquired on November 30, 2020, new SFTR reporting services revenue of $0.5 million and the positive impact of foreign exchange of $0.4 million.

Expenses

The following table summarizes our expenses for the three months ended March 31, 2021 and 2020. Expenses for the three months ended March 31, 2021 include $3.6 million of expenses related to Regulatory Reporting Hub, including amortization of acquired intangibles expense of $1.4 million.

	Three Months Ended March 31,			
	2021	**2020**	**$ Change**	**% Change**
	($ in thousands)			
Expenses				
Employee compensation and benefits	$ 48,088	$ 41,194	$ 6,894	16.7 %
Depreciation and amortization	11,779	8,067	3,712	46.0
Technology and communications	10,036	8,161	1,875	23.0
Professional and consulting fees	9,640	5,675	3,965	69.9
Occupancy	3,317	3,474	(157)	(4.5)
Marketing and advertising	1,204	2,675	(1,471)	(55.0)
Clearing costs	4,694	5,510	(816)	(14.8)
General and administrative	3,232	3,133	99	3.2
Total expenses	$ 91,990	$ 77,889	$ 14,101	18.1 %

Employee compensation and benefits increased by $6.9 million, primarily due to higher salaries, taxes and benefits on higher employee headcount of $6.4 million and higher stock-based compensation expense of $0.7 million.

Depreciation and amortization increased by $3.7 million primarily due to higher amortization of acquired intangibles expense of $2.0 million and amortization of software development costs of $1.4 million. For the three months ended March 31, 2021 and 2020, $4.3 million and $4.3 million, respectively, of equipment purchases and leasehold improvements and $8.1 million and $6.8 million, respectively, of software development costs were capitalized.

Technology and communications expenses increased by $1.9 million primarily due to higher software subscription costs of $0.6 million, higher cloud hosting costs of $0.5 million and higher market data costs of $0.5 million.

Professional and consulting fees increased $4.0 million mainly due to higher acquisition-related fees of $1.5 million, higher consulting fees associated with our self-clearing initiative of $0.8 milllion, higher IT consulting fees of $0.7 million and higher recruiting fees of $0.5 million.

Marketing and advertising expense decreased $1.5 million due to reduced sales related travel and entertainment activities as a result of the Pandemic.

Clearing costs decreased by $0.8 million primarily due to lower clearing expenses as a result of our self-clearing initiative of $0.4 million and lower clearing expenses associated with U.S. Treasuries matched principal transactions due to lower volumes of $0.4 million. Even though Open Trading credit volume increased 20.1% from the three months ended March 31, 2020, clearing costs as a percentage of Open Trading matched principal trading revenue from credit products decreased from 9.7% to 7.3%.

Other Income (Expense)

Our other income (expense) for the three months ended March 31, 2021 and 2020, and the resulting dollar and percentage changes, were as follows:

	Three Months Ended March 31,			
	2021	**2020**	**$ Change**	**% Change**
	($ in thousands)			
Investment income	$ 107	$ 1,269	$ (1,162)	(91.6) %
Interest expense	(191)	—	(191)	NM
Other, net	(1,589)	(656)	(933)	142.2
Total other income (expense)	$ (1,673)	$ 613	$ (2,286)	(372.9) %

Investment income decreased by $1.2 million primarily due to lower investment balances resulting from new self-clearing related deposit, reserve and liquidity requirements and a decrease in interest rates.

Interest expense increased by $0.2 million due to short-term overdraft financing activity related to our clearing arrangements during the three months ended March 31, 2021.

Other, net increased by $0.9 million primarily due to an increase in credit facility administration costs of $0.8 million.

Provision for Income Taxes

The provision for income taxes and effective tax rate for the three months ended March 31, 2021 and 2020 were as follows:

	Three Months Ended March 31,			
	2021	**2020**	**$ Change**	**% Change**
	($ in thousands)			
Provision for income taxes	$ 21,344	$ 16,886	$ 4,458	26.4 %
Effective tax rate	21.0%	18.4%		

The provision for income taxes reflected $4.0 million and $6.3 million of excess tax benefits related to share-based compensation awards that vested or were exercised during the three months ended March 31, 2021 and 2020, respectively. Our consolidated effective tax rate can vary from period to period depending on geographic mix of our earnings, changes in tax legislation and tax rates and the amount and timing of excess tax benefits related to share-based payments, among other factors.

Liquidity and Capital Resources

During the three months ended March 31, 2021, we have met our funding requirements through cash on hand, internally generated funds and short-term borrowings. Cash and cash equivalents and investments totaled $415.2 million at March 31, 2021. Our investments are generally invested in investment-grade securities. We limit the amounts that can be invested in any single issuer and invest in short- to intermediate-term instruments whose fair values are less sensitive to interest rate changes.

In November 2020, we entered into the Credit Agreement with a syndicate of lenders and JPMorgan, as administrative agent, that provides aggregate commitments totaling $500.0 million, consisting of a revolving credit facility and a $5.0 million letter of credit sub-limit for standby letters of credit. The Credit Agreement replaced the Prior Credit Agreement and will mature on November 12, 2021, with our option to request up to two additional 364-day extensions at the discretion of each lender and subject to customary conditions. As of March 31, 2021, we had $1.0 million in letters of credit outstanding and $499.0 million in available borrowing capacity under the Credit Agreement. See Note 11 to the Consolidated Financial Statements for a discussion of the Credit Agreement.

In connection with its self-clearing operations, one of our U.S. broker-dealer subsidiaries entered into an agreement (the "Collateralized Agreement") with its settlement bank to provide loans up to an aggregate of $200.0 million on an uncommitted basis. Borrowings under the Collateralized Agreement are collateralized by securities pledged by the broker-dealer subsidiary to the settlement bank, subject to applicable haircuts and concentration limits. As of March 31, 2021, the broker-dealer subsidiary had no borrowings outstanding and $200.0 million in available borrowing capacity under the Collateralized Agreement. See Note 11 to the Consolidated Financial Statements for a discussion of the Collateralized Agreement.

Under an arrangement with its settlement bank, one of our U.K. subsidiaries may receive overnight financing in the form of bank overdrafts from its settlement bank. The U.K. subsidiary incurred interest expense such overnight financing of $0.2 million during the three months ended March 31, 2021. As of March 31, 2021, the U.K. subsidiary had $34.3 million of overdrafts payable outstanding that is included within accounts payable, accrued expenses and other liabilities on the Consolidated Statement of Financial Condition.

As a result of our self-clearing and settlement activities, we are required to finance certain transactions, maintain deposits with various clearing organizations and clearing broker-dealers and maintain a special reserve bank account for the benefit of customers pursuant to SEC Rule 15c3-3. As of March 31, 2021, the aggregate amount of the positions financed, deposits and customer reserve balances associated with our self-clearing and settlement activities was $247.0 million. These requirements can fluctuate based on trading activity, market volatility or other factors which may impact our liquidity or require us to use our capital resources.

Our cash flows were as follows:

	Three Months Ended March 31,			
	2021	2020	$ Change	% Change
	($ in thousands)			
Net cash (used in) provided by operating activities	$ (23,159)	$ 120,369	$ (143,528)	(119.2) %
Net cash (used in) provided by investing activities	(12,332)	24,557	(36,889)	(150.2)
Net cash (used in) financing activities	(18,850)	(49,822)	30,972	(62.2)
Effect of exchange rate changes on cash and cash equivalents	(1,027)	(3,360)	2,333	(69.4)
Net (decrease) increase for the period	$ (55,368)	$ 91,744	$ (147,112)	(160.4) %

The $143.5 million decrease in net cash (used in) provided by operating activities was primarily due to an increase in net receivables from broker-dealers, clearing organizations and customers associated with our clearing activities of $95.5 million, lower proceeds from sales of trading investments of $50.9 million and lower deferred taxes of $2.1 million, offset by an increase in net income of $5.6 million.

The $36.9 million decrease in net cash (used in) provided by investing activities was primarily due to a decrease in net sales of available-for-sale investments of $36.2 million.

The $31.0 million decrease in net cash (used in) financing activities was principally due to an increase in net proceeds from short-term borrowings of $34.3 million and a decrease in repurchases of common stock of $4.9 million, offset by increases in withholding tax payments on restricted stock vesting and stock option exercises of $6.1 million and cash dividends paid on common stock of $2.2 million.

Past trends of cash flows are not necessarily indicative of future cash flow levels. A decrease in cash flows may have a material adverse effect on our liquidity, business and financial condition.

Other Factors Influencing Liquidity and Capital Resources

We believe that our current resources are adequate to meet our liquidity needs and capital expenditure requirements for at least the next 12 months. However, our future liquidity and capital requirements will depend on a number of factors, including liquidity requirements associated with our self-clearing operations and expenses associated with product development and expansion and new business opportunities that are intended to further diversify our revenue stream. We may also acquire or invest in technologies, business ventures or products that are complementary to our business. In the event we require any additional financing, it will take the form of equity or debt financing. Any additional equity offerings may result in dilution to our stockholders. Any debt financings, if available at all, may involve restrictive covenants with respect to dividends, issuances of additional capital and other financial and operational matters related to our business.

Certain of our U.S. subsidiaries are registered as a broker-dealer or a SEF and therefore are subject to the applicable rules and regulations of the SEC, FINRA and the CFTC. These rules contain minimum net capital requirements, as defined in the applicable regulations, and also may require that a significant part of the registrants' assets be kept in relatively liquid form. Certain of our foreign subsidiaries are regulated by the FCA in the U.K. or other foreign regulators and must maintain financial resources, as defined in the applicable regulations, in excess of the applicable financial resources requirement. As of March 31, 2021, each of our subsidiaries that are subject to these regulations had net capital or financial resources in excess of their minimum requirements. As of March 31, 2021, our subsidiaries maintained aggregate net capital and financial resources that were $493.5 million in excess of the required levels of $31.1 million.

Each of our U.S. and foreign regulated subsidiaries are subject to local regulations which generally prohibit repayment of borrowings from our affiliates, paying cash dividends, making loans to our affiliates or otherwise entering into transactions that result in a significant reduction in regulatory net capital or financial resources without prior notification to or approval from such regulated entity's principal regulator. As of March 31, 2021, the amount of unrestricted cash held by our non-U.S. subsidiaries was $97.5 million.

We execute bond transactions between our institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. One of our U.S. broker-dealer subsidiaries operates under a self-clearing model for the settlement of such transactions. Our other U.S. and U.K subsidiaries settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded. Under both the self-clearing and the third-party clearing models, we may be exposed to credit risk in the event a counterparty does not fulfill its obligation to complete a transaction or if there is an error in executing a matched principal transaction. Pursuant to the terms of the securities clearing agreements, each third-party clearing broker has the right to charge us for any losses they suffer resulting from a counterparty's failure on any of our trades. We did not record any liabilities or losses with regard to counterparty failures for the three months ended March 31, 2021 and 2020.

In the normal course of business, we enter into contracts that contain a variety of representations, warranties and indemnification provisions. Our maximum exposure from any claims under these arrangements is unknown, as this would involve claims that have not yet occurred. However, based on past experience, we expect the risk of material loss to be remote.

In January 2019, the Board of Directors authorized a two-year share repurchase program for up to $100.0 million that commenced in April 2019 and expired on March 31, 2021. In January 2021, the Board of Directors authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021. Shares repurchased under each program will be held in treasury for future use.

In April 2021, our Board of Directors approved a quarterly cash dividend of $0.66 per share payable on May 26, 2021 to stockholders of record as of the close of business on May 12, 2021. Any future declaration and payment of dividends will be at the sole discretion of our Board of Directors. Our Board of Directors may take into account such matters as general business conditions, our financial results, capital requirements, contractual obligations, legal, and regulatory restrictions on the payment of dividends to our stockholders or by our subsidiaries to their respective parent entities, and any such other factors as the Board of Directors may deem relevant.

On November 30, 2020 we acquired Regulatory Services GmbH, the pan-European regulatory reporting business of Deutsche Börse Group. The purchase price consists of $22.5 million in cash paid at closing and up to $24.6 million in contingent consideration payable in cash within 18 months of the closing. On April 9, 2021 we acquired MuniBrokers LLC, a central electronic venue serving municipal bond brokers and dealers. The purchase price consists of $17.0 million in cash paid at closing and up to $25.0 million in contingent consideration payable within approximately two years of the closing.

Non-GAAP Financial Measures

In addition to reporting financial results in accordance with GAAP, we use certain non-GAAP financial measures: earnings before interest, taxes, depreciation and amortization ("EBITDA") and free cash flow ("FCF"). As a result of our conversion to self-clearing in the third quarter of 2020, we redefined FCF as cash flow from operating activities excluding the net change in trading investments and net change in securities failed-to-deliver and securities failed-to-receive from broker-dealers, clearing organizations and customers, less expenditures for furniture, equipment and leasehold improvements and capitalized software development costs. We believe these non-GAAP financial measures, when taken into consideration with the corresponding GAAP financial measures, are important in understanding our operating results. EBITDA and FCF are not measures of financial performance or liquidity under GAAP and therefore should not be considered an alternative to net income or cash flow from operating activities as an indicator of operating performance or liquidity. We believe that EBITDA and FCF provide useful additional information concerning profitability of our operations and business trends and the cash flow available to pay dividends, repurchase stock and meet working capital requirements.

The table set forth below presents a reconciliation of our net income to EBITDA:

	Three Months Ended March 31,	
	2021	**2020**
	($ in thousands)	
Net income	$ 80,457	$ 74,816
Add back:		
Interest expense	191	—
Provision for income taxes	21,344	16,886
Depreciation and amortization	11,779	8,067
Earnings before interest, taxes, depreciation and amortization	$ 113,771	$ 99,769

The table set forth below presents a reconciliation of our cash flow from operating activities to FCF:

	Three Months Ended March 31,	
	2021	**2020**
	($ in thousands)	
Net cash (used in) provided by operating activities	$ (23,159)	$ 120,369
Exclude: Net change in trading investments	(5,495)	(56,394)
Exclude: Net change in fail-to-deliver/receive from broker-dealers, clearing organizations and customers	93,370	—
Less: Purchases of furniture, equipment and leasehold improvements	(4,257)	(4,291)
Less: Capitalization of software development costs	(8,075)	(6,778)
Free Cash Flow	$ 52,384	$ 52,906

Effects of Inflation

Because the majority of our assets are short-term in nature, they are not significantly affected by inflation. However, the rate of inflation may affect our expenses, such as employee compensation, office leasing costs and communications expenses, which may not be readily recoverable in the prices of our services. To the extent inflation results in rising interest rates and has other adverse effects on the securities markets, it may adversely affect our financial condition and results of operations.

Contractual Obligations and Commitments

As of March 31, 2021, we had the following contractual obligations and commitments:

	Payments due by period				
	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
			($ in thousands)		
Operating leases	$ 131,664	$ 9,177	$ 21,143	$ 22,249	$ 79,095
Foreign currency forward contract	197,434	197,434	—	—	—
	$ 329,098	$ 206,611	$ 21,143	$ 22,249	$ 79,095

We enter into foreign currency forward contracts to hedge our exposure to variability in certain foreign currency cash flows resulting from the net investment in our U.K. subsidiaries. As of March 31, 2021, the notional value of the only foreign currency forward contract outstanding was $196.1 million and the fair value of the liability was $1.3 million.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Market risk is the risk of the loss resulting from adverse changes in market rates and prices, such as interest rates and foreign currency exchange rates.

Market Risk

The global financial services business is, by its nature, risky and volatile and is directly affected by many national and international factors that are beyond our control. Any one of these factors may cause a substantial decline in the U.S. and global financial services markets, resulting in reduced trading volume and revenues. These events could have a material adverse effect on our business, financial condition and results of operations.

As of March 31, 2021, we had $13.8 million of investments in corporate bonds that were classified as trading securities. Adverse movements, such as a 10% decrease in the value of these securities or a downturn or disruption in the markets for these securities, could result in a substantial loss. In addition, principal gains and losses resulting from these securities could on occasion have a disproportionate effect, positive or negative, on our financial condition and results of operations for any particular reporting period.

Interest Rate Risk

Interest rate risk represents our exposure to interest rate changes with respect to our cash, cash equivalents and investments. As of March 31, 2021, our cash and cash equivalents and investments amounted to $415.2 million. A hypothetical 100 basis point decrease in interest rates would decrease our investment income by approximately $4.1 million, assuming no change in the amount or composition of our cash and cash equivalents.

A similar hypothetical 100 basis point increase or decrease in interest rates would decrease or increase the fair value of the trading securities portfolio by approximately $0.1 million. The hypothetical unrealized gain (loss) of $0.1 million would be recognized in other, net in the Consolidated Statements of Operations.

We do not maintain an inventory of bonds that are traded on our platform.

Foreign Currency Exchange Rate Risk

We conduct operations in several different countries outside of the U.S., most notably the U.K., and substantial portions of our revenues, expenses, assets and liabilities are generated and denominated in non U.S. dollar currencies. Since our consolidated financial statements are presented in U.S. dollars, we must translate revenues, income and expenses, as well as assets and liabilities, into U.S. dollars at exchange rates in effect during or at the end of each reporting period. Accordingly, increases or decreases in the value of the U.S. dollar against the other currencies will affect our net operating revenues, operating income and the value of balance sheet items denominated in foreign currencies.

During the twelve months ended March 31, 2021, approximately 12.9% of our revenue and 27.3% of our expenses were denominated in currencies other than the U.S. dollar, most notably the British Pound Sterling. Based on actual results over the past year, a hypothetical 10% increase or decrease in the U.S. dollar against all other currencies would have increased or decreased revenue by approximately $9.2 million and operating expenses by approximately $9.0 million.

Derivative Risk

Our limited derivative risk stems from our activities in the foreign currency forward contract market. We use this market to mitigate our U.S. dollar versus British Pound Sterling exposure that arises from the activities of our U.K. subsidiaries. As of March 31, 2021, the fair value of the notional amount of our foreign currency forward contract was $197.4 million. We do not speculate in any derivative instruments.

Credit Risk

Through certain of our subsidiaries, we execute bond transactions between our institutional investor and broker-dealer clients on a matched principal basis by serving as counterparty to both the buyer and the seller in trades. One of our U.S. broker-dealer subsidiaries operates under a self-clearing model for the settlement of such transactions. Our other U.S. and U.K subsidiaries settle their transactions through third-party clearing brokers or settlement agents. Settlement typically occurs within one to two trading days after the trade date. Cash settlement of the transaction occurs upon receipt or delivery of the underlying instrument that was traded.

We are exposed to credit and performance risks in our role as matched principal trading counterparty to our clients executing bond trades on our platform, including the risk that counterparties that owe us money or securities will not perform their obligations. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. Adverse movements in the prices of securities that are the subject of these transactions can increase our risk. In connection with Open Trading or other anonymous protocols, we expect that the number of transactions in which we act as a matched principal will increase.

We have policies, procedures and automated controls in place to identify and manage our credit risk. There can be no assurance that these policies, procedures and automated controls will effectively mitigate our credit risk exposure. Some of our risk management procedures are reliant upon the evaluation of information regarding the fixed-income markets, our clients or other relevant matters that are publicly available or otherwise acquired from third party sources. Such information may not be accurate, complete, up-to-date or properly assessed and interpreted by us. If our risk management procedures fail, our business, financial condition and results of operations may be adversely affected. Furthermore, our insurance policies are unlikely to provide coverage for such risks.

Cash and cash equivalents includes cash and money market instruments that are primarily maintained at three major global banks. Given this concentration, we are exposed to certain credit risk in relation to our deposits at these banks.

Item 4. Controls and Procedures

(a) *Evaluation of Disclosure Controls and Procedures.* Our management, including the Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our “disclosure controls and procedures,” as that term is defined in Rule 13a-15(e) and Rule 15d-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), as of March 31, 2021. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures are effective to ensure that information required to be disclosed by MarketAxess in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and to ensure that information is accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

(b) *Changes in Internal Control over Financial Reporting.* There were no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) during the quarter ended March 31, 2021 identified in connection with the evaluation thereof by our management, including the Chief Executive Officer and Chief Financial Officer, that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II — Other Information

Item 1. Legal Proceedings

In the normal course of business, we and our subsidiaries included in the consolidated financial statements may be involved in various lawsuits, proceedings and regulatory examinations. We assess liabilities and contingencies in connection with outstanding legal proceedings, if any, utilizing the latest information available. Based on currently available information, the outcome of our outstanding matters is not expected to have a material adverse impact on our financial position. It is not presently possible to determine our ultimate exposure to these matters and there is no assurance that the resolution of the outstanding matters will not significantly exceed any reserves accrued by us. See Note 13 to the Consolidated Financial Statements for a discussion of our commitments and contingencies.

Item 1A. Risk Factors

There have been no material changes in our risk factors from those disclosed in our most recent Form 10-K for the year ended December 31, 2020. For a discussion of the risk factors affecting the Company, see "Risk Factors" in Part I, Item 1A of our 2020 Form 10-K.

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

Recent Sales of Unregistered Securities

None.

Issuer Purchases of Equity Securities

During the quarter ended March 31, 2021, we repurchased the following shares of common stock:

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs
				(In thousands)
January 1, 2021 - January 31, 2021	41,781	$ 538.50	—	$ 71,794
February 1, 2021 - February 28, 2021	10,686	552.60	—	71,794
March 1, 2021 - March 31, 2021	1,056	496.17	1,050	71,273
Total	53,523	$ 540.48	1,050	

During the three months ended March 31, 2021, we repurchased 53,523 shares of common stock. The repurchases included 1,050 shares repurchased in connection with our share repurchase program and 52,473 shares surrendered by employees to us to satisfy the withholding tax obligations upon the exercise of stock options and vesting of restricted shares.

In January 2019, the Board of Directors authorized a two-year share repurchase program for up to $100.0 million that commenced in April 2019 and expired on March 31, 2021. In January 2021, the Board of Directors authorized a new share repurchase program for up to $100.0 million that commenced on April 1, 2021. Shares repurchased under each program will be held in treasury for future use.

Item 3. Defaults upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit Listing:

Number	Description
31.1*	Certification by Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification by Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification by Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2*	Certification by Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL Document
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
104	The cover page from the Company’s Quarterly report on Form 10-Q for the quarter ended March 31, 2021 has been formatted in Inline XBRL and is included in Exhibits 101.

* Filed herewith.

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.

	MARKETAXESS HOLDINGS INC.
Date: April 28, 2021	By: /s/ RICHARD M. MCVEY Richard M. McVey Chief Executive Officer (principal executive officer)
Date: April 28, 2021	By: /s/ ANTONIO L. DELISE Antonio L. DeLise Chief Financial Officer (principal financial and accounting officer)

Exhibit 31.1

CERTIFICATIONS

I, Richard M. McVey, certify that:

1. I have reviewed this quarterly report on Form 10-Q of MarketAxess Holdings 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/ RICHARD M. MCVEY
Richard M. McVey
Chief Executive Officer
(principal executive officer)

Dated: April 28, 2021

Exhibit 31.2

CERTIFICATIONS

I, Antonio L. DeLise, certify that:

1. I have reviewed this quarterly report on Form 10-Q of MarketAxess Holdings 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/ ANTONIO L. DELISE
Antonio L. DeLise
Chief Financial Officer
(principal financial and accounting officer)

Dated: April 28, 2021

Exhibit 32.1

Certification Under Section 906 of the Sarbanes-Oxley Act of 2002
(United States Code, Title 18, Chapter 63, Section 1350)
Accompanying Quarterly Report on Form 10-Q of
MarketAxess Holdings Inc. for the Quarter Ended March 31, 2021

In connection with the Quarterly Report on Form 10-Q of MarketAxess Holdings Inc. (the “Company”) for the quarter ended March 31, 2021, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Richard M. McVey, Chief Executive Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, 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 operations of the Company.

/s/ RICHARD M. MCVEY
Richard M. McVey
Chief Executive Officer

April 28, 2021

This certification shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, except to the extent the Company specifically incorporates it by reference.

Exhibit 32.2

Certification Under Section 906 of the Sarbanes-Oxley Act of 2002
(United States Code, Title 18, Chapter 63, Section 1350)
Accompanying Quarterly Report on Form 10-Q of
MarketAxess Holdings Inc. for the Quarter Ended March 31, 2021

In connection with the Quarterly Report on Form 10-Q of MarketAxess Holdings Inc. (the "Company") for the quarter ended March 31, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Antonio L. DeLise, Chief Financial Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, 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 operations of the Company.

/s/ ANTONIO L. DELISE
Antonio L. DeLise
Chief Financial Officer

April 28, 2021

This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, except to the extent the Company specifically incorporates it by reference.